

STATE OF HAWAII
DEPARTMENT OF AGRICULTURE
ANIMAL INDUSTRY DIVISION
99-941 HALAWA VALLEY STREET
AIEA, HAWAII 96701

November 29, 2022

Board of Agriculture
Honolulu, Hawaii

SUBJECT: Request for Approval of a Right-of-Entry (ROE) in favor of the US Navy to Conduct a Site Survey and Utilities Toning for a Monitor Well and Laydown Area on the Animal Quarantine Station Property

AUTHORITY: Sections 141-1 (3) and (5), Hawaii Revised Statutes.

TAX MAP KEY: (1) 9-9-010:058 (the "Property").

LAND STATUS: Encumbered by Governor's Executive Order No. 4396 for animal quarantine, animal welfare, and general commercial purposes.

TERM: 5 years.

BASE RENTAL: None.

CHARACTER OF USE: The United States Navy ("USN") has requested permission from the Animal Industry Division ("Division") to enter the Property to 1) inspect and survey for the installation of a monitoring well, and 2) tone for utilities during the survey.

I. Background

The USN has requested permission from the Division to enter the Property to conduct:

- a. Inspections and surveys for the installation of up to one (1) monitoring well.
- b. Utility toning to confirm the location of the well as described on the attached NAVY EXHIBIT A-1.
- c. Large Long-Term Laydown Area.
 - The project laydown area required for the staging of vehicles and equipment is 80 feet wide x 154 feet long (12,320 square feet) as described on the attached NAVY EXHIBIT A-1.

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- The laydown area would have temporary security fencing around the perimeter and portable toilets would be staged inside of the fencing.
- In addition, a security firm will be subcontracted to provide trained security guards onsite when Navy subcontractors are not performing work including evening/night hours, holidays, or any other times when the Navy contractors are not onsite to ensure that there is no sabotage or vandalism to the vehicles or equipment.

II. Property and Site Location

The proposed site of the well, as shown in the attached Exhibit 1, is in an area at the far Northeast corner of the Animal Quarantine Station public parking lot. The location of a well at this site does not interfere with operations at the station.

The Navy is requesting access for conducting preliminary surveys in advance of submitting a formal request to potentially install a monitoring well, QQ, on land owned by the State of Hawaii. The total Area of Potential Effect (APE) is 80'x61' (4,880 sq. ft.) as indicated in the shaded green area in EXHIBIT 1. The Navy also requests a separate project laydown area of 80'x154' (12,320 sq. ft.), indicated with the pink outline, for the staging of vehicles and equipment for all offsite wells.

III. Recommendation

The Animal Industry Division recommends that the Board approves the request for the Division to execute an ROE in favor of the US Navy to enter the Property to 1) inspect and survey for the installation of a monitoring well and laydown area, and 2) tone for utilities during the survey.



Isaac Maeda, DVM
Administrator, Animal Industry Division

APPROVED FOR SUBMISSION:



Phyllis Shimabukuro-Geiser
Chairperson, Board of Agriculture

Attachments

EXHIBIT 1
RIGHT OF ENTRY AGREEMENT

1. Date of this

Agreement: < Date >

2. Parties to this Agreement:

Owner: State of Hawaii
Department of Agriculture
Animal Industry Division
99-941 Halawa Valley Street
Aiea, Hawaii 96701

Contact: Isaac Maeda, D.V.M.

Entrant: UNITED STATES OF AMERICA
Naval Facilities Engineering Systems Command, Hawaii
400 Marshall Road
Joint Base Pearl Harbor
Hickam, Hawaii 96860-3139

Contact: 1. Jesse Allen, Real Estate Contracting Officer
Phone: (808)471-3867, Email: jesse.r.allen6.civ@us.navy.mil
2. Caroline Rossi, Environmental Engineer
Phone: (808)430-8672, Email: caroline.e.rossi.civ@us.navy.mil

3. Property: TMK: (1) 9-9-010:58

4. Activities to be Conducted on the Property:

The entrant has requested permission from the Owner to enter the Property to conduct the following activities:

- a. Inspections and surveys for the installation of up to one (1) monitoring well.
- b. Utility toning to confirm the location of the well as described on the attached NAVY EXHIBIT A-1.
- c. Large Long-Term Laydown Area
 - The project laydown area required for the staging of vehicles and equipment is 80 feet wide x 154 feet long (12,320 square feet) as described on the attached NAVY EXHIBIT A-1.

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- The laydown area would have temporary security fencing around the perimeter and a portable toilet would be staged inside of the fencing.
- In addition, a security firm will be subcontracted to provide trained security guards onsite when Navy subcontractors are not performing work including evening/night hours, holidays, or any other times when Navy contractors are not onsite to ensure that there is no sabotage or vandalism to the vehicles or equipment.

5. Term of this Agreement:

The term of this agreement shall begin on the date of this Agreement set forth above and shall terminate five (5) years thereafter unless sooner terminated pursuant to the terms set forth in this paragraph 5 or in other provisions of this Agreement. Entrant and Owner may sooner terminate this Agreement, with or without cause, after furnishing to the other party one hundred eighty (180) days prior written notice of such.

6. Permission to Enter Property:

Owner hereby gives Entrant permission to enter the Property to conduct the activities listed in paragraph 4 above, subject to the terms and conditions contained in this Agreement.

7. Conditions for Entry:

Entrant may enter the Property subject to the following conditions:

- a. Entrant shall conduct only those activities listed in paragraph 4 above and no other activities and shall follow the protocols and procedures as listed in the attached Exhibit "A".
- b. Entrant shall not interfere with or disrupt any of the Owner's or Owner's lessees' or tenants' activities on the Property.
- c. Entrant shall exercise due care for public and private safety on the Property.
- d. The activities conducted on the Property by the Entrant shall be conducted in a manner that is unobtrusive and blends in with the surroundings to the extent possible.
- e. Upon expiration or earlier termination of this Agreement, Entrant shall remove all equipment, appurtenant works, and other items of Entrant.
- f. Prior to exercising the rights granted under this Agreement, the Entrant shall give the Owner at least forty-eight (48) hours prior written notice of the desire to exercise the rights granted under this Agreement, which notice shall indicate the dates of the intended access and use of the Property pursuant to the terms of this Agreement.

8. Indemnification:

Except as provided in this ROE and to the extent required by law, the determination of the Navy's liability for damage to persons or property arising from the exercise of its rights granted under this agreement shall be in accordance with the procedures and limitations of the Federal Torts Claims Act (28 U.S.C. 2671). Nothing contained in this agreement is intended or should be interpreted to require an obligation or expenditure of funds in violation of the Anti-Deficiency Act (31 U.S.C. 1341).

9. Self-Insurance:

Notwithstanding anything to the contrary that may be contained in this Agreement, the insurance required to be carried by Entrant under this Agreement or any part or portion thereof, may be carried under any plan or plans of self-insurance.

Except as provided in this ROE and to the extent required by law, the determination of the Navy's liability for damage to persons or property arising from its exercise of these rights granted under this agreement shall be in accordance with the procedures and limitations of the Federal Torts Claims Act (28 U.S.C. 2671).

If Entrant shall maintain such plan or plans of self-insurance, Entrant shall furnish to Owner a letter by a duly authorized signatory of Entrant certifying: 1) the plan or plans of self-insurance meet or exceed the insurance coverage required to be maintained by Entrant pursuant to this Agreement and 2) the procedure for Entrant to report any claims under such plan or plans of self-insurance.

10. Preservation of Historic and Archaeological Sites:

Entrant shall take every reasonable precaution to preserve and leave unaltered all places, if any, of historic and/or archaeological interest, including without limitation structures and sites listed on the Hawaii State Register of Historic Places and/or the National Register of Historic Places, ponds, reservoirs, heiau, agricultural terraces, lo'i, walls, auwai, house platforms, imu, petroglyph sites, cemeteries, and all objects, if any, of historic and/or archaeological interest, including without limitation antiquities and specimens of Hawaiian or other ancient art or handicraft which may be found in or on the Property. Upon the discovery of such objects or of any human remains in or on the Property, the Entrant shall leave the same untouched and shall immediately notify the Owner and the Historic Preservation Division of the State of Hawaii, Department of Land and Natural Resources, of the type and location of such discovery.

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11. No Assignment:

Entrant shall not assign or transfer any right under this Agreement. If the State assigns ownership to another State agency, this ROE remains in full effect and enforceable.

12. Termination of Agreement:

In the event that the Owner, in the Owner's reasonable judgment, determines that any of the terms or conditions contained in this Agreement have been breached, the entrant cannot correct the breach or rectify the determination of the owner, within 60 days, or upon the condemnation of the Property or any portion therefor, Owner shall have the right to terminate this Agreement upon the Owner giving sixty (60) days prior written notice to the Entrant.

13. No Real Property Interest:

Entrant agrees that Entrant does not and shall not claim at any time any real property interest in the Property. THIS AGREEMENT IS NOT A LEASE OR A GRANT OF AN EASEMENT.

14. Compliance with Law:

The Government will comply with all Federal, State, and local laws applicable to and enforceable against it as a tenant under this ROE, providing that nothing in this ROE shall be construed as a waiver of the sovereign immunity of the Government.

15. Insurance:

The UNITED STATES GOVERNMENT is self-insured for purposes of potential liability. Under the Federal Tort Claims Act, 28 U.S.C. 2671-2680, the Department of the Navy may consider and settle any claim for money damages for injury or loss of property or personal injury or death based on the wrongful act or negligence of its employees acting within the scope of their employment to the same extent that a private person would be liable in accordance with the law of the place where the negligent or wrongful act or omission occurred. The Navy does hereby agree to be liable to the extent of the Federal Tort Claims Act.

16. No Offensive Use:

Entrant shall not suffer, make, commit, or permit any waste or strip or unlawful or improper or offensive use of the Property or any part thereof. Entrant shall ensure that any and all material such as, but not limited to, paper products, soda cans, etc., brought

onto the Property by Entrant shall be removed from the Property each day of Entrant's exercise of the rights granted under this Agreement.

17. Operation and Control:

Entrant shall be responsible for the actions and activities of its employees, agents, consultants, and contractors acting in the course of their employment and operations pursuant to this Agreement. Entrant's operations shall be conducted in a professional, workmanlike and orderly manner.

18. No Warranties and Assumption of Risk:

Owner makes no representations as to the present or future condition of the Property. Entrant assumes all risks of personal injury or damage to Entrant, its employees, agents, consultants, and contractors in connection with the operations contemplated under this Agreement.

19. Amendments:

This Agreement may not be amended or modified in any respect except by an instrument in writing executed by the parties.

20. Notices:

Any notice under this Agreement shall be sufficient if mailed by U.S. mail, first-class postage, prepaid, to the party at the address given below or such other address as either party may designate from time to time by notice similarly given:

To Owner: State of Hawaii
Department of Agriculture
Animal Industry Division
99-941 Halawa Valley Street
Aiea, Hawaii 96701

Attention: Isaac Maeda, D.V.M.

To Entrant: Naval Facilities Engineering Systems Command, Hawaii
400 Marshall Road
Joint Base Pearl Harbor-Hickam, Hawaii 96860-3139

Attention: Jesse Allen, Director of Real Estate

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21. Counterparts:

This Agreement may be executed in one or more counterparts, and when so executed each counterpart shall be deemed to be an original and said counterparts together shall constitute one and the same instrument.

22. No Party Deemed Draftsperson:

Since all parties to this Agreement have had their respective legal counsel review this agreement or have had an opportunity to have such legal counsel review the Agreement for purposes of construing the terms and conditions of this Agreement, no party shall be deemed the draftsperson of this Agreement.

23. Section Headings:

Headings at the beginning of each section of this Agreement are solely for the convenience of the parties and are not a part of this Agreement.

24. Governing Law:

This Agreement shall be governed by and construed in accordance with the federal law of the United States of America, unless and to the extent state law naturally applies, in which case the laws of the State of Hawaii shall apply.

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IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

APPROVED AS TO FORM

Deputy Attorney General

Phyllis Shimabukuro-Geiser
Chairperson, Board of Agriculture

Area for Entrant's approvals and signature(s)
United States of America

Jesse Ryan Kawela Allen
Real Estate Contracting Officer
Naval Facilities Engineering Systems Command, Hawaii

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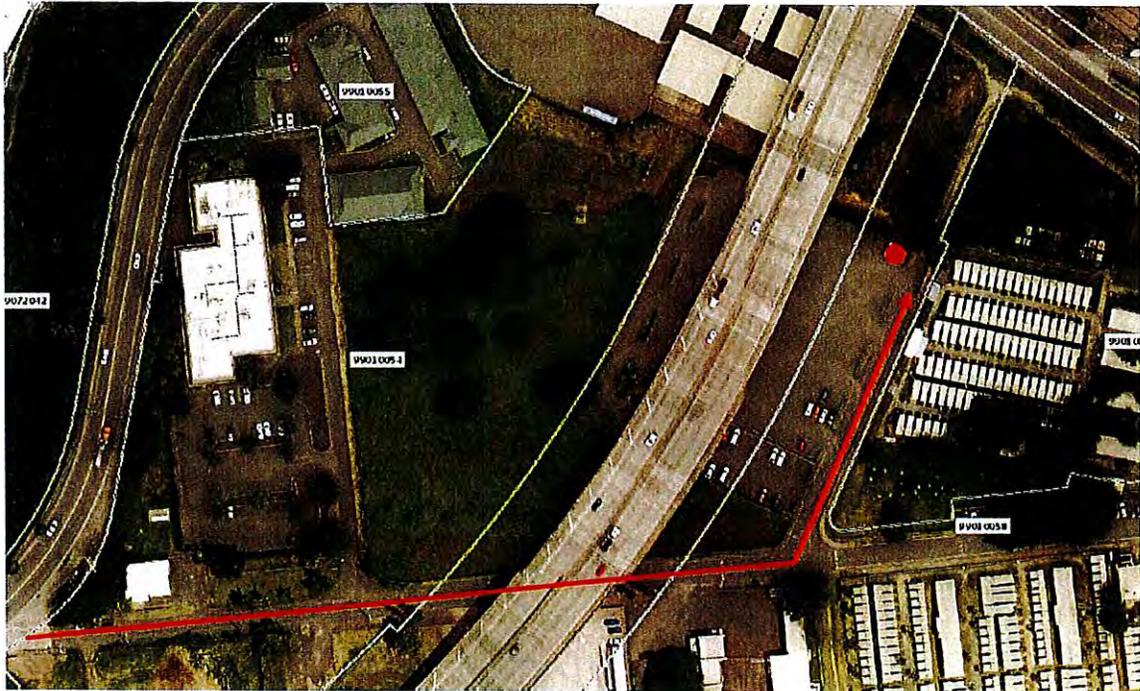
Exhibit "A"

Entrant shall be allowed ingress to and egress from the Property during normal hours of operation, which are Monday through Friday from 7:00 a.m. to 5:00 p.m.; and Saturday, Sunday, and State Holidays from 6:00 a.m. to 4:30 p.m., when the gate is open.

The ingress and egress route through the property that the Entrant will use shall be as depicted below. The potential project laydown area for the staging of vehicles and equipment and conducting preliminary site surveys for a potential ground monitoring well location, QQ, is also depicted below as Navy Exhibit A-1.

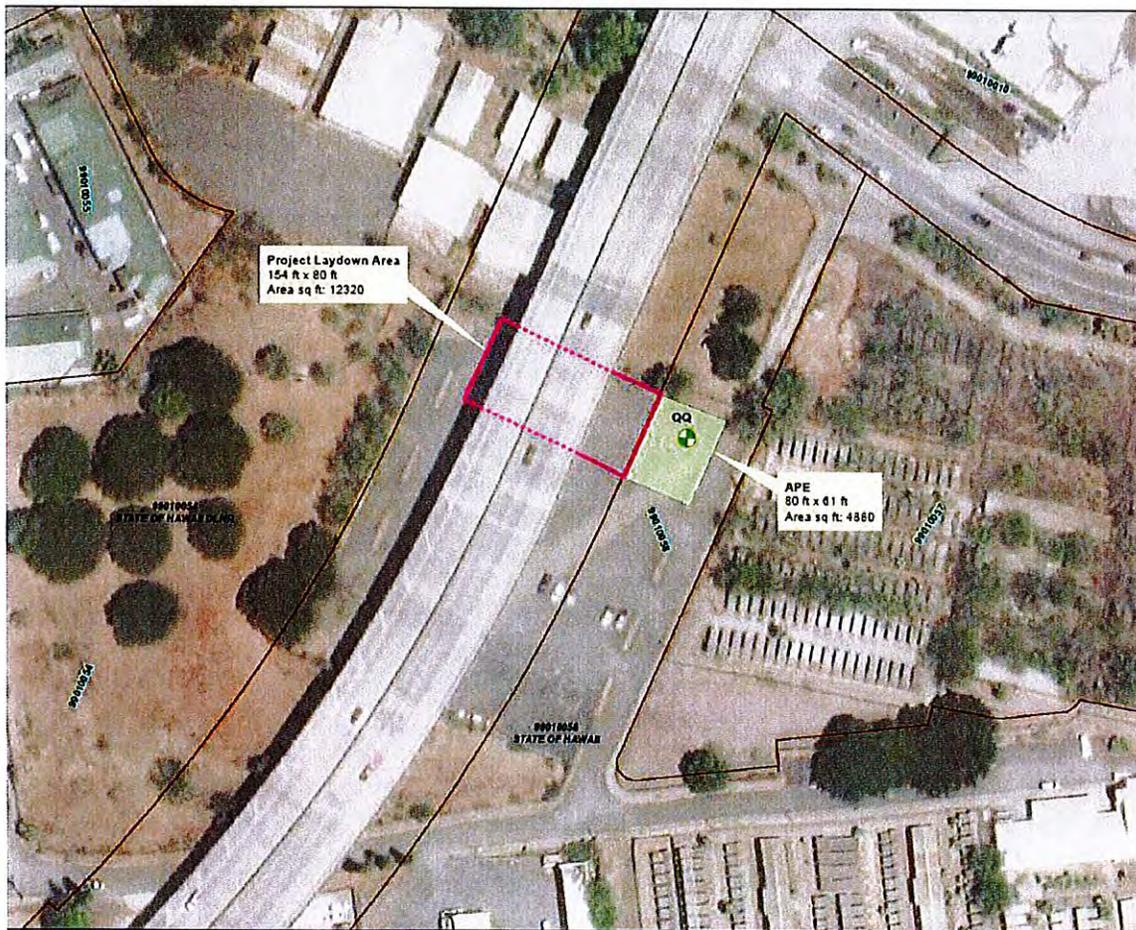
Requests for variation from the time periods indicated above have to be approved no less than 24 hours prior by the Owner's officer-in-charge.

Entrant shall check in at the Animal Quarantine Station office with the Owner's officer-in-charge before entering the Property. For the purpose of this Agreement, the Owner's officer-in-charge shall be Mary Tashiro, Quarantine Station Operations Supervisor, Isaac Maeda, Program Manager, or their designate.



NAVY EXHIBIT A-1

The Navy is requesting access for conducting preliminary surveys in advance of submitting a formal request to potentially install a monitoring well, QQ, on land owned by the State of Hawaii. The total Area of Potential Effect (APE) is 80'x61' (4,880 sq. ft.) as indicated in the shaded green area below. The Navy also requests a separate project laydown area of 80'x154' (12,320 sq. ft.), indicated with the pink outline, for staging vehicles and equipment for all offsite wells.



STATE OF HAWAII
DEPARTMENT OF AGRICULTURE
ANIMAL INDUSTRY DIVISION
ANIMAL DISEASE CONTROL BRANCH
99-941 HALAWA VALLEY STREET
AIEA, HAWAII 96701
November 29, 2022

Board of Agriculture
Honolulu, Hawaii

Subject: (1) Request for Approval to Adopt Proposed Amendments to Chapter 4-16, Hawaii Administrative Rules, entitled "Cattle, Sheep and Goats" Concerning: Objective, Construction of rules, Subchapters, Definitions, Quarantine-general, Quarantine area-feedlot, Quarantine area-slaughterhouse, Regulatory jurisdiction on importations, Entry status on imports, Ports of entry, Carrier responsibility on importations, Use of quarantine station facilities, Regulatory jurisdiction on exports; Subchapter 2 Cattle, Scope, Pre-shipment entry requirements, Post-shipment entry requirements, Anaplasmosis surveillance, control, and eradication, Brucellosis surveillance, control, and eradication, Vaccination for brucellosis prohibited; exceptions, Tuberculosis control and eradication; Subchapter 3 Sheep, Scope, Pre-shipment entry requirements, Post-shipment entry requirements; Subchapter 4 Goats, Scope, Pre-shipment entry requirements, Post-shipment entry requirements; and (2) Submission of Hearings Officers Summary of Public Hearings Testimony on Proposed Amendments to Chapter 4-16, Hawaii Administrative Rules, and Hearings Officers' Recommendation.

I. Background

The primary reasons for amending Chapter 4-16, Hawaii Administrative Rules are to amend and clarify definitions and carrier responsibility; add Bison, Water Buffalo and Camelid requirements, revise entry requirements; amend and clarify use of state quarantine station and fees; and update the chapter to reflect current science and terminology.

Proposed Amendments include:

(1) Add Bison, Water Buffalo and Camelid species to the Chapter. (2) Change definitions by: (a) simplifying the definitions Board", Chairperson", "Department", "Division Head"; (b) amending "Official vaccinate" "State veterinarian"; (c) adding the definitions "APHIS", "Certificate of Veterinary Inspection" or "CVI", "Contact", "Entry", "Hold order", "Polymerase Chain Reaction" or "PCR", "Premise"; (d) clarifying "Carrier", "Effects", "Health certificate", "Quarantine", "Shipmaster's Declaration" and "Vaccine; (e) expanding the definition of "Animals", "Domestic

animals”, “Inspector”; and (f) deleting “Premises” and “Provisional quarantine.” (3) Add “population of animals” as a group quarantine can be applied to. (4) Clarify movement for quarantine area feedlot and slaughterhouse. (5) Adding regulatory jurisdiction on importations of Bison, Water Buffalo and Camelids, entry status and add plant quarantine permitting for Bison and water buffalo. (6) Clarify ports of entry for added Bison, Water Buffalo and Camelids species. (7) Update and clarify carrier responsibility on importation and intrastate transport by sea. (8) Amend animal owner responsibility for use of quarantine station facilities. (9) Certificate of veterinary inspections issued in Hawaii for export is clarified. (10) Clarify import permitting, Trichomoniasis testing is added and Certificate of veterinary inspection clarified pertaining to Pre-shipment entry requirements. (11) Detail “Quarantine site” and “symptoms” is replaced with “signs” to correct terminology regarding post shipment entry requirements. (12) Amend Anaplasmosis and Brucellosis testing and management. (13) Clarify Tuberculosis control and eradication procedures and update test reactor management. (14) Add new section for Trichomoniasis control and eradication. (15) Add a new section covering disease investigation. (16) Add Scrapie entry requirements and clarify entry requirements for sheep and goats. (17) Specify the object in sheep post entry requirements by replacing “they” with “animals” (18) Add “camelids” to “goats” in subchapter 4. (19) Specify ectoparasite treatment, replace “health certificate” with “Certificate of Veterinary Inspection” for clarity, and add “official USDA” to “eartag” to specify acceptable tags in Pre-shipment entry requirements for goats. (20) Other changes are proposed throughout Chapter 4-16 for clarity, simplification or to correct format, grammar and punctuation.

II. Hearing Officer’s Summary of the Public Hearing Testimony

The proposed amendments to chapter 4-16, HAR, as preliminarily approved by the Board on November 30, 2021, were taken to public hearings on May 9, 2022 (Kauai), May 10, 2022 (Oahu), May 11, 2022 (Maui), May 12, 2022 (Kailua-Kona), and May 13, 2022, (Hilo). Thirteen individuals attended in-person or via video conferencing. In total, 62 individual written and oral testimonies were received and summarized. A summary sheet and the written testimonies from public hearings, facsimile transmissions, and postal and electronic mail are attached to this submittal.

A total of seven individuals testified in-person or via video conference at the public hearing at Lihue, Kauai, Honolulu, Oahu, Kahului, Maui, and Kona and Hilo, island of Hawaii. In addition, the Department’s proposed amendments received 62 written and email testimonies of which 17 testimonies (27.4%) were in support of the proposed amendments, and none were received in opposition. (refer to Appendix 2) Testimony was in support of the rule amendments by all individuals/groups identifying themselves as the Hawaiian Humane Society, ranchers, handlers, cattle industry organizations such as the Hawaii Cattleman’s Council, Hawaii Cattle Producers Cooperative Association, a veterinary hospital and a veterinarian.

The Hawaii Cattleman's Council (HCC) is the largest livestock industry organization in the State that represents most of Hawaii's cattle production. HCC submitted written testimony (refer to Appendix 2) that supported the proposed rule amendments and commented specifically:

- a) Support updating the carrier responsibility.
- b) The requirement for a Shipmaster's declaration to "better track livestock movement and control movement of disease" and ensure the safety of livestock during transport.
- c) That animals "...not be stowed in a manner that prevents natural ventilation," placement of shipping containers in areas that allow for natural airflow, and prevent placement where ventilation is restricted.
- d) Limiting time livestock spend on board by loading animals "last-on" at departure and "first-off" at the destination.
- e) Use shipping load densities using the Interisland Livestock Shipping Standards and not deviating by more than 10%. HCC also commented the standards have proven to be successful, as transporting livestock interisland.
- f) Access to food and water must be provided for livestock transported over 24 hours.
- g) Animal welfare has always been and remains the foundation of our operations.

Nine other testimony in support, contained similar comments as HCC.

Forty-two testimonies (67.7%) did not specifically support or oppose the proposed rule changes but contained similar comments and were sent via thesoftedge.com government relations and advocacy software. Three of these 42 testimonies varied by: one testimony had watched "...cows arriving at O'ahu's slaughterhouses in the shipping containers..." and described the animals as being in fear; one testimony stated to "...treat animals with as much respect as possible, regardless of their final destination," and one testimony stating "These are living things. You don't take it lightly. Please change procedures and be extremely careful."

The other 39 of those 42 testimonies were identical aside from email subject. Three subject titles used by these 39 testimonies were: Keep cattle and Goats Safe During Transport, Amend Proposed Transport Regulations to Protect Animals, and Protect Animals at Sea.

These 42 testimonies included comments on: amending the regulations to ensure that animals do not experience heat stress, that they have adequate ventilation, and that they be fit for travel, improving loading practices; requiring carriers to provide animals with food, water, and access to shade; and to restrict cow container locations on ships so that animals are not placed in areas with excessive heat. Additional comments were to disallow transportation of animals that are not fit to travel, and conditions listed as unfit were: lame, weak, or fatigued, blind in both eyes, females that have given birth within 48 hours, pregnant females within the final 10% of their gestation, newborns with unhealed navels, or animals with unhealed wounds. The testimony(s) also referred to an incident in 2019 where 21 cattle died on a barge traveling from Honolulu to Kauai. These testimonies stated that the "... proposed regulations rely on standards that have proved woefully inadequate..."

The Animal Welfare Institute (AWI) submitted detailed testimony in written format. That testimony included “AWI is dedicated to reducing animal suffering and advancing the welfare of all animals, including those raised for food. As part of our mission, we work to improve conditions for farm animals, including during transport. AWI has over a decade of experience advocating on behalf of animals transported by sea vessel. Refer to Appendix 2 for AWI testimony.

AWI’s testimony supported the proposed amendments to Chapter 4-16, which “will, if approved, provide legally mandated standards for interisland shipment of certain animal species.” Their testimony specifically supported requirement of the Shipmaster’s Declaration, “...the acknowledgement of the importance of adequate ventilation” and the “...inclusion of rules related to the condition of animal containers...”

AWI also testified that the proposed rule amendments “...codifies the same standards that gave rise to the circumstances that highlighted the rule’s necessity. In 2019, 21 cows perished on a barge due to a lack of adequate ventilation on a ship that purportedly complied with the Hawaii Cattlemen’s Council standards for the transport of cattle on sea vessel” and that “...*the proposal makes no improvements to this standard in adopting it in regulation.*”^{*} AWI testified to “...include minimum space requirements and/or maximum loading densities for cattle, sheep and goats, pigs, and horses. Ensure calculations are based on the correct internal dimensions of shipping containers. Decrease the “maximum number to load” as indicated (in an attached document). Remove any provision to exceed the maximum loading densities specified in the regulations.”

^{*}HDOA investigation of this 2019 incident indicated that the death loss was a result of human error that resulted in ventilation inadequacy, and not related to the cattle’s condition, container design or load density. Our investigation concluded that the container was stowed in a position with no ventilation because the assumption was that the container was empty and did not contain livestock. Per Young Brothers’ SOP containers with livestock are placed in locations that ensure adequate ventilation and that was not the case in the 2019 incident. The container was stowed in a manner that empty containers are stowed, which allowed no ventilation. Proposed amendments to 4-16-11(c) requires adequate ventilation and is a significant change and improvement from not having any requirements for ventilation.

AWI testified that load densities should be revised specifically because external and not internal container measurements were used to determine the load densities. HDOA initially utilized the Hawaii Cattlemen Council “Interisland Livestock Shipping Standards” that HDOA had previously participated with developing. Those standards allowed for more room, lower density than industry standards for the ground transportation of livestock. Those HCC standards were developed by an HCC task force made up of livestock veterinarians and livestock shippers with years of experience shipping livestock interisland. The group used references and standards for ground transportation recommended by the American Association of Bovine Practitioners (AABP) in conjunction with input from Dr. Temple Grandin. Dr. Grandin is a prominent proponent for the humane treatment of livestock and the author of more than 60 scientific papers

on animal behavior. The duration of the Intrastate movement of livestock in Hawaii is most closely aligned with the interstate ground transportation of livestock by trucks and trailers on the Mainland US. Densities recommended by the HCC task force also took into account the many decades of experience of successful inter-island shipping by the livestock shippers on the task force. Given that the densities recommended by the HCC guidelines is already lower than those recommended by AABP/Grandin, and have resulted in many decades of successful inter-island livestock shipments we believe the proposed densities with a 10% maximum deviation will continue to provide for successful and humane transport of livestock by inter-island barges. However, with the proposed mandatory Shipmaster's Declaration requirement proposed to be put in place HDOA will be able to more closely monitor and evaluate these shipments going forward.

Testimony by AWI also included the following specific comments:

- a) That "...the proposal should be revised to limit loading density and ensure placement and loading practices minimize heat stress." Specific comments were that pigs and horses are not included, the load density tables for sheep and goats are deleted, and that the proposed load densities are not correct for cattle sheep and goats.
- b) That "...regulations should thus be amended to ensure that animals are not placed in a location that prevents cross-ventilation for animals, or in locations that produce excessive heat. Examples of such locations include nearby engine boiler rooms, fuel oil storage walls, the ceiling on the uppermost deck, or the sides of the vessel."
- c) "The proposed rule should be amended to include practices to minimize time onboard by requiring carriers to implement loading practices that ensure that animals are the last on and first off a docked vessel."
- d) "HDOA's proposal should be revised to incorporate fitness for transport standards." Conditions are listed that would deem animal unfit for travel were "Animals that are injured, obviously ill, unable to bear weight on all 4 limbs, are likely to give birth during transport, or those that have not been weaned and are traveling separate from the mother should not be transported. Aggressive animals should be transported separately."
- e) That food and water be required for animals when transport or holding exceeds 12 – 24 hours.

Testimony was also received that did not comment on the proposed amendments. For example, one testimony received was related to mosquitoes. Other testimony were not directly related to the proposed rule amendments and included loading and staging area conditions, and comments on species other than cattle sheep and goats (such as horses and pigs).

In written testimony submitted during the public comment period on the amendments to chapter 4-16, the Animal Industry Division proposed to include the space requirements section of the Interisland Livestock Shipping Standards for Sheep and Goats that was inadvertently not included with the rest of that table in the proposed rules and changing the title “Exhibit B” with “Exhibit A” for correctness. That section of the Exhibit A table appears below.

*These space requirements only pertain to Hawaii interisland transportation and do not pertain to interstate shipping.					
AVG. BODY WEIGHT (lbs)	AREA PER ANIMAL (ft ²)	HEIGHT (ALL SPECIES)	20' CONTAINER (max number to load)	40' CONTAINER (max number to load)	40'X2 DOUBLEDECKER (max number to load)
60	2.4	Stand comfortably, ensure head clearance	67	133	203
80	2.7		59	119	181
100	3		53	107	163
120	3.6		44	89	136

The Division’s testimony is included in Appendix I. The specific recommended changes to chapter 4-16 are provided in section III below.

III. Specific Changes Recommended

Specific changes proposed to Chapter 4-16, HAR, from the amendments approved by the Board are:

(Bracketed material is removed; Underlined material is added)

1. Amend punctuation in the following sections by adding hyphen to pre-shipment.

- Section 4-16-15 Pre-shipment entry requirements.
- Section 4-16-22 Pre-shipment entry requirements
- Section 4-16-25 Pre-shipment entry requirements.

2. Amend Exhibit A to correct: a) an omission in Section 4-16-II Carrier responsibility for sheep and goats; b) space requirements listed; and c) clarify the space requirements only pertain to Hawaii interisland transportation and do not pertain to interstate shipping.

- a) Exhibit A is amended to add space requirements section of the Interisland Livestock Shipping Standards for Sheep and Goats that was inadvertently not included with the rest of that table in the proposed rules.
- b) Space requirements are changed in Exhibit A for cattle, and sheep and goats.
- c) Statement added: this only pertain to Hawaii interisland transportation and do not pertain to interstate shipping.

Exhibit A
Required Interisland Livestock Shipping Standards | CATTLE

SHIPPING METHOD	Trailers, 20' containers, 40' containers, shipping pens. Must be 4-sided, structurally sound and without protruding objects that could injure animals. Must have four sided forklift pockets to ensure container cannot shift or tip off the fork lift during lifting.
LEAK PROOF	All shipping trailers/containers shall be watertight up to a level of 2" and nonslip flooring is required.
SIDES	Sides shall be solid up to the level of the animals' backs or window guards should be indented to prevent discharge.
WINDOWS	Escape proof. Must contain entire animal. Tall enough to be above the backs of the animals or with 6" indented bars to prevent fecal discharge and allow proper airflow* *Window openings should be at least 7% of the area of the side panel surface to ensure proper ventilation
ROOF	Must have a solid roof to protect from the sun, rain, and contain the animal entirely.
WATER	Not required for trips < 24hrs; must have some form of watering system in case of transit delay. Please bring your own water when possible.
FEED	Not required for trips < 24hrs.
SPACE	*See table.
TRAILERS DELIVERING LIVESTOCK	All livestock trailers entering into the harbor must be constructed to contain animal fecal matter and urine.
TRANSFER AREA & STAGING AREA	In secured DOT designated area only. Water should be available nearby.
TRANSFER PROCESS (TRAILER TO CONTAINER)	Trailer with slide or inward opening gate abut flush to container with slide or inward opening gates.
OR TRANSFER PROCESS (DOT CHUTE)	Secure chute gates to trailer and container, if DOT chute is available.
SPILLAGE	All spillage must be cleaned up and removed from harbor. To comply with EPA, no water should be used to clean, the shipper must bring shovel, broom, etc to clean area. All shipping containers that remain in the harbor must be cleaned out and material hauled away. A fine/fee will be imposed if spillage is not cleaned.

*These space requirements only pertain to Hawaii interisland transportation and do not pertain to interstate shipping.

AVG. BODY WEIGHT (lbs)	AREA PER ANIMAL (ft ²)	HEIGHT (ALL SPECIES)	20' CONTAINER (max number to load)	40' CONTAINER (max number to load)	40'X2 DOUBLEDECKER (w/ feeders and water units) (max number to load)
400	6.4	Stand comfortably, ensure head clearance	23	46	70
500	7.5		20	40	61
600	8.5		17	36	54
800	10.4		14	29	Over height limit
1,000	13		11	23	Over height limit
1,200	14.7		10	21	Over height limit
1400	18		8	17	Over height limit

Exhibit A
Required Interisland Livestock Shipping Standards | SHEEP & GOATS

SHIPPING METHOD	Trailers, 20' containers, 40' containers, shipping pens. Must be structurally sound and without protruding objects that could injure animals. Must have four sided forklift pockets to ensure container cannot shift or tip off the fork lift during lifting.
LEAK PROOF	All shipping trailers/containers shall be watertight up to a level of 2" minimum absorptive bedding and nonslip flooring is required.
SIDES	Sides shall be solid up to the level of the animals' backs.
WINDOWS	Escape proof. Must contain entire animal. Tall enough to be above the backs of the animals or with 3" indented bars to prevent fecal discharge.
ROOF	Must have a solid roof to protect from the sun, rain, and contain the animal entirely.
WATER	Not required for trips < 24hrs; must have some form of watering system in case of transit delay. Please bring your own water when possible.
FEED	Not required for trips < 24hrs.
SPACE	*See table.
TRAILERS DELIVERING LIVESTOCK	All livestock trailers entering into the harbor must be constructed to contain animal's fecal matter and urine. and contain bedding material.
TRANSFER AREA & STAGING AREA	In DOT designated area only. Water should be available nearby.
TRANSFER PROCESS (TRAILER TO CONTAINER)	Trailer with slide or inward opening gate abut flush to container with slide or inward opening gates
OR TRANSFER PROCESS (DOT CHUTE)	Secure chute gates to trailer and container, if DOT chute is available. Block space between trailer back gate floor and ground.
SPILLAGE	All spillage must be cleaned up and removed from harbor. To comply with EPA, no water should be use to clean, the shipper must bring shovel, broom, etc to clean area. All shipping containers that remain in the harbor must be cleaned out and material hauled away. A fine/fee will be imposed if spillage is not cleaned.

*These space requirements only pertain to Hawaii interisland transportation and do not pertain to interstate shipping.

AVG. BODY WEIGHT (lbs)	AREA PER ANIMAL (ft ²)	HEIGHT (ALL SPECIES)	20' CONTAINER (max number to load)	40' CONTAINER (max number to load)	40'X2 DOUBLEDECKER (w/ feeders and water units) (max number to load)
60	2.2	Stand comfortably, ensure head clearance	67	137	240
80	2.5		59	121	211
100	2.8		53	107	189
120	3.4		44	89	156

3. Other change proposed in section 4-16-11 to remove “unless ventilation with large industrial type fans is provided”

Carriers are to place livestock in areas where ventilation is adequate at all times. Industry does not experience shipments of livestock demonstrating heat

stress at harbors and airports and on aircraft, ocean vessels and barges when adequate natural ventilation is provided. There are concerns that generators on barges to run fans may generate more heat and fans may end up blowing hot air.

(c) Carriers shall ensure that cattle, bison, water buffalo, camelids, sheep, and goats are provided adequate ventilation. Animals shall not be stowed during transportation or staged prior or subsequent to transportation in a manner that prevents natural ventilation

4. Change proposed in section 4-16-11 to add paragraph requirements for loading and unloading.

New paragraph g) is added in response to testimony from industry and AWI stipulating loading and unloading practices to minimize heat stress.

(g) Ocean carriers, baring harbor logistical limitations, shall implement loading practices that strive to ensure animals are the last on and first off a docked vessel. Carriers shall restrict animals from being loaded into locations that produce excessive heat, have restricted ventilation and are placed in locations that may flood containers with ocean water. Carriers shall ensure that livestock staging areas within harbors have access to clean water and adequate ventilation.

5. Change proposed in section 4-16-11 to add paragraph on types of animal conditions prohibited from transport.

A new paragraph (h) is added in response to testimony that addresses the health status of animals that are allowed to be shipped.

(h) No animal shall be transported via ocean vessel that is injured, ill, has unhealed wounds or is unable to bear weight on all

four limbs; is blind in both eyes; is likely to give birth during transport or has given birth in the past 48 hours and traveling without their offspring; or is not weaned and traveling separate from the mother. Aggressive animals shall be transported separately.

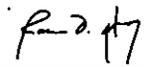
4. Other changes are proposed throughout Chapter 4-16 to correct format and punctuation.

No additional changes are recommended.

In addition to the hearing officers' summary and recommendation, this submission includes Appendix I, "Division Testimony" Appendix II, "Copies of Written Testimonies Received" and Appendix III, Summary of proposed changes and copy of proposed Chapter 4-16, HAR in Ramseyer format.

The Animal Industry Division recommends that the Board approve to adopt the attached proposed amendments to chapter 4-16, HAR, entitled "Cattle, Bison, Water Buffalo, Camelids, Sheep and Goats," including Hearings Officers' Summary of Public Hearings Testimony on Proposed Amendments to chapter 4-16, and Hearings Officer's Recommendations.

The Animal Industry Division recommends that the Board approve to adopt the attached proposed amendments to chapter 4-16, HAR, entitled "Cattle, Bison, Water Buffalo, Camelids, Sheep and Goats," including Hearing Officers summary of Public Hearings Testimony on Proposed Amendments to chapter 4-16, and Hearings Officer's Recommendations.



JASON D. MONIZ, DVM
Program Manager
Animal Disease Control Branch

CONCURRED:



ISAAC M. MAEDA, DVM
Administrator,
Animal Industry Division

APPROVED FOR SUBMISSION:



PHYLLIS SHIMABUKURO-GEISER,
Chairperson
Board of Agriculture

Summary of Specific Changes Recommended to Chapter 4-16, HAR:

1. Chapter 4-16 title is amended by adding "Bison, Water Buffalo, Camelids." Subchapter 2 title is amended by adding "'Bison, Water Buffalo." Subchapter 4 title is amended by adding "Camel ids."
2. Section 4-16-1, Objective. 'Bison, Water Buffalo, Camelids" is added and section simplified.
3. Section 4-16-3, Subchapters is amended to add "bison, water buffalo, camelids."
4. Amending Section 4-29-2 "Definitions"
 - a. Expand definition of "Animals."
 - b. The definition "APHIS" is added
 - c. The definition "Board" is simplified.
 - d. The definition "Carrier" is clarified.
 - e. The definition "Certificate of Veterinary Inspection" or "CVI" is added.
 - f. The definition "Chairperson" is simplified.
 - g. The definition "Contact" is added.
 - h. The definition "Department" is simplified.
 - i. The definition "Division head" is simplified.
 - j. The definition "Domestic animals" is expanded
 - k. The definition "Entry is added.
 - l. The definition "Hold order" is added.
 - m. The definition "Health Certificate" is clarified and relocated according to alphabetization.
 - n. The definition "Inspector" is expanded.
 - o. The definition "Official vaccinate" is updated.
 - p. The definition "Polymerase chain reaction" or "PCR" is added.
 - q. The definition "Premises" is replaced with "Premise'.
 - r. The definition "Provisional quarantine" is deleted.
 - s. The definition "Quarantine" is clarified.
 - t. The definition "Shipmaster's declaration" is clarified.
 - u. The definition "State veterinarian" is updated.
 - v. The definition "Vaccine" is clarified.
5. Amending Section 4-16-5 Quarantine-general by adding "population of animals" and deleting "his."
6. Amending Section 4-16-6 Quarantine area-feedlot . Clarifies newborn management

7. Amending Section 4-16-7 Quarantine area-slaughterhouse by clarifying movement.
8. Amending Section 4-16-8 Regulatory jurisdiction on importations. Bison, Water Buffalo and Camelids are added.
9. Amending Section 4-16-9 Entry status on imports. Bison, Water Buffalo and Camelids are added and permitting requirement for Plant Quarantine branch added.
10. Amending Section 4-16-10 Ports of entry. Ports are clarified by species and Bison, Water Buffalo, Camelids species are added.
11. Amending Section 4-16-11 Carrier responsibility on importation.
 - a. Section title is simplified by eliminating "on importation"
 - b. Bison, Water Buffalo and Camelids are added.
 - c. Intrastate transport requirements are added for loading, unloading, ventilation, food and water, shipping container standards and density.
 - d. Correct an omission in a portion of the table for in Exhibit A for Interisland Livestock Shipping Standards for Sheep and Goats and is added back.
 - e. "Load densities shall not deviate by greater than 10% of the maximum load densities listed in interisland space requirements by species listed." is deleted.
12. Amending Section 4-16-12 Use of quarantine station facilities. Bison, Water Buffalo and Camelids are added and responsibilities of owner clarified.
13. Amending Section 4-16-13 Regulatory jurisdiction on exports. Livestock certificates of veterinary inspection issued in Hawaii is clarified.
14. Amending Subchapter 2 title "Cattle" is amended to add "Bison, Water Buffalo"
15. Amending Section 4-16-14 Scope. Adding Bison and Water buffalo is proposed.
16. Amending Section 4-16-15 Pre-shipment entry requirements.
 - a. Import permitting is clarified.
 - b. Trichomoniasis requirements are added.
 - c. Certificate of veterinary inspection details are clarified.
17. Amending Section 4-16-16 Post-shipment entry requirements. Amendments are proposed to:
 - a. Specify post-shipping testing.
 - b. Detail quarantine site.

- c. Correct terminology changing "symptoms" to "signs".
18. Amending Section 4-16-17 Anaplasmosis surveillance, control and eradication.is amended to clarify Anaplasmosis testing and management.
19. Amending Section 4-16-18 Brucellosis surveillance, control, and eradication is amended to clarify testing and case management.
20. Amending Section 4-16-19 Control of Vaccination for Brucellosis is clarified.
21. Amending Section 4-16-20 Tuberculosis control and eradication procedures are clarified and test reactor management updated.
22. A new Section 4-16-20.1 Trichomoniasis control and eradication is proposed to address import and management requirements for this disease.
23. A new Section 4-16-20.2 Diseases and investigation is proposed to detail disease investigations and subsequent case management.
24. Amending Section 4-16-22 Pre-shipment entry requirements is updated to add Scrapie and clarify entry requirements.
25. Amending Section 4-16-23 Post-shipment entry requirements is corrected by replacing "they" with "animals".
26. Amending Subchapter 4 title "Goats" is amended to add "Camelids".
27. Amending Section 4-16-24 (a) Scope is amended to add "and Camelids".
28. Amending Section 4-16-25 Pre-shipment entry requirements.
 - a. "Camelids" is added to "Goats" in the section.
 - b. "Health certificate" is replaced with "Certificate of Veterinary Inspection" for clarity.
 - c. "Scrapie" is added to the list of diseases an imported animal's herd of origin may not be under quarantine for.
 - d. "official USDA" is added to "eartag" to specify acceptable tags.
 - e. Ectoparasite treatment is specified.
29. Other changes are proposed throughout Chapter 4-16 for clarity. simplification or to correct format, grammar, and punctuation.

APPENDIX I

Department of Agriculture
 Animal Industry Division
 99-941 Halawa Valley Street
 Aiea, Hawaii 96701
 May 17, 2022

To: Phyllis Shimabukuro-Geiser, Chairperson
 Board of Agriculture

From: Isaac Maeda, DVM, Administrator *IM*
 Animal Industry Division

Subject: Testimony on Proposed Amendments to Chapter 4-16 “Cattle, Sheep, and Goats” with regards to Required Interisland Livestock Shipping Standards | SHEEP & GOATS.”

The Board approved chapter 4-16, HAR “Cattle, Sheep, and Goats” for public hearings in November 30, 2021. Upon review, the division requests that the proposed amendments to section 4-16-11 (f) be changed by replacing “Exhibit B” with “Exhibit A” for correctness. The reason for the change in the Exhibit title is because the Board of Agriculture submission in November 2021 included a summary of proposed changes titled “Exhibit A” along with the “Required Interisland Livestock Shipping Standards | SHEEP & GOATS” that was titled “Exhibit B.” Chapter 4-16 does not include a BOA summary Exhibit A therefore Exhibit B is more appropriately termed Exhibit A. The following displays the change.

f) Ocean carriers for the intrastate movement of livestock shall ensure that the Interisland Livestock Shipping Standards by species, attached as [Exhibit B] Exhibit A are followed. Load densities shall not deviate by greater than 10% of the maximum load densities listed in interisland space requirements by species listed.

Furthermore, the division requests to include the space requirements section of the Interisland Livestock Shipping Standards for Sheep and Goats that was inadvertently not included with the rest of that table in the Exhibit B of the proposed rules. That section of the table appears below; and the entire Exhibit “A” with the title change and the added section appears on the following page.

*These space requirements only pertain to Hawaii interisland transportation and do not pertain to interstateshipping.					
AVG. BODY WEIGHT (lbs)	AREA PER ANIMAL (ft ²)	HEIGHT (ALL SPECIES)	20' CONTAINER (max number to load)	40' CONTAINER (max number to load)	40'X2 DOUBLEDECKER (max number to load)
60	2.4	Stand comfortably, ensure head clearance	67	133	203
80	2.7		59	119	181
100	3		53	107	163
120	3.6		44	89	136

Required Interisland Livestock Shipping Standards SHEEP & GOATS	
SHIPPING METHOD	Trailers, 20' containers, 40' containers, shipping pens. Must be structurally sound and without protruding objects that could injure animals. Must have four sided forklift pockets to ensure container cannot shift or tip off the fork lift during lifting.
LEAK PROOF	All shipping trailers/containers shall be watertight up to a level of 2" minimum absorptive bedding and nonslip flooring is required.
SIDES	Sides shall be solid up to the level of the animals' backs.
WINDOWS	Escape proof. Must contain entire animal. Tall enough to be above the backs of the animals or with 3" indented bars to prevent fecal discharge.
ROOF	Must have a solid roof to protect from the sun, rain, and contain the animal entirely.
WATER	Not required for trips < 24hrs; must have some form of watering system in case of transit delay. Please bring your own water when possible.
FEED	Not required for trips < 24hrs.
SPACE	*See table.
TRAILERS DELIVERING LIVESTOCK	All livestock trailers entering into the harbor must be constructed to contain animal's fecal matter and urine. and contain bedding material.
TRANSFER AREA & STAGING AREA	In DOT designated area only. Water should be available nearby.
TRANSFER PROCESS (TRAILER TO CONTAINER)	Trailer with slide or inward opening gate abut flush to container with slide or inward opening gates
OR TRANSFER PROCESS (DOT CHUTE)	Secure chute gates to trailer and container, if DOT chute is available. Block space between trailer back gate floor and ground.
SPILLAGE	All spillage must be cleaned up and removed from harbor. To comply with EPA, no water should be use to clean, the shipper must bring shovel, broom, etc to clean area. All shipping containers that remain in the harbor must be cleaned out and material hauled away. A fine/fee will be imposed if spillage is not cleaned.

*These space requirements only pertain to Hawaii interisland transportation and do not pertain to interstate shipping.

AVG. BODY WEIGHT (lbs)	AREA PER ANIMAL (ft ²)	HEIGHT (ALL SPECIES)	20' CONTAINER (max number to load)	40' CONTAINER (max number to load)	40'X2 DOUBLEDECKER (max number to load)
60	2.4	Stand comfortably, ensure head clearance	67	133	203
80	2.7		59	119	181
100	3		53	107	163
120	3.6		44	89	136

APPENDIX II

Alvarado, Kristy S

From: HDOA.BOARD.TESTIMONY
Sent: Friday, May 6, 2022 10:35 AM
To: Maeda, Isaac M; Moniz, Jason D
Cc: Alvarado, Kristy S
Subject: FW: Support of amendments to HAR Chapter 4-16: Cattle, Sheep, and Goats
Attachments: LivestockShippingTestimony5-10-22.pdf

Importance: High

Hi,
Forwarding. Is this for your public hearing? She has the date wrong.

Thank you,
Gayle

From: Stephanie Kendrick <skendrick@hawaiianhumane.org>
Sent: Thursday, May 5, 2022 4:03 PM
To: HDOA.BOARD.TESTIMONY <hdoa.board.testimony@hawaii.gov>
Subject: [EXTERNAL] Support of amendments to HAR Chapter 4-16: Cattle, Sheep, and Goats

Please see our attached testimony in support of the proposed rule amendments.

Mahalo,

Steph Kendrick (she/her/hers) | Director of Community Engagement
Hawaiian Humane Society
808.356.2217
HawaiianHumane.org



Hawaiian Humane Society
People for animals. Animals for people.

P.S. - Microchipping your pet helps you reunite with them quickly if they get lost. Learn more [HERE!](#)



Hawaiian Humane Society
 People for animals. Animals for people.

1700 Waiāloa Avenue, Honolulu, Hawaii 96826
 ACR 356-2200 • HawaiianHumane.org

Date: May 6, 2022

To: Chairman Phyllis Shimabukuro-Geiser
 and Members Hawaii State Board of Agriculture

Submitted By: Stephanie Kendrick, Director of Community Engagement
 Hawaiian Humane Society, 808-356-2217

RE: Testimony in support of proposed amendments to HAR Chapter 4-16:
 "Cattle, Sheep, and Goats"
 Monday, May 10, 2022, 10 a.m., Department of Agriculture, Plant
 Quarantine Conference Room, 1849 Auiki Street, Honolulu, Hawaii 96819

The Hawaiian Humane Society supports the proposed changes to Department of Agriculture rules governing the transport of animals by sea vessels.

Hawaiian Humane advocates for the enforcement and strengthening of current laws and the implementation of humane standards for animals in every phase of animal-based food production. All long-distance transportation of animals should include adequate opportunity for rest, adequate food and water, space, temperature control and clean shipping conditions. All efforts should be made to minimize stress, transport time and time awaiting shipment.

While the changes proposed represent progress in the treatment of livestock shipped between our islands, additional regulations are needed to protect animals from suffering.

Hawaiian Humane supports the amendments to the proposed rules suggested by the Animal Welfare Institute. AWI lays out a compelling case for implementing fitness to transport standards for all animals, including horses and pigs, which are neglected by the current draft. Its proposed amendments would also better ensure that heat stress is prevented by revising load density requirement, improving loading and holding practices, and requiring food and water for animals when the combination of transport and holding times exceed 12 to 24 hours.

We urge the board to incorporate AWI's suggestions and amend HAR Chapter 4-16 to prevent animal suffering and risks to human health.

Mahalo for your consideration and please let me know if I can be of assistance.

Alvarado, Kristy S

From: HDOA.BOARD.TESTIMONY
Sent: Tuesday, May 10, 2022 8:50 AM
To: Maeda, Isaac M; Moniz, Jason D; Wong, Raquel L
Cc: Alvarado, Kristy S
Subject: FW: Proposed Amendments to Administrative Rules for Animal Disease Control Program
Attachments: HCC Letter - Interstate livestock shipping standards public hearing .pdf

Importance: High

Forwarding. I wasn't aware that testimony was going to be send to my Board email.
Few more coming.

Thank you.

From: Nicole Galase <nicole@hicattle.org>
Sent: Monday, May 9, 2022 7:36 AM
To: HDOA.BOARD.TESTIMONY <hdoa.board.testimony@hawaii.gov>
Subject: [EXTERNAL] Proposed Amendments to Administrative Rules for Animal Disease Control Program

Aloha,

Please see the attached testimony on the Proposed Amendments to Administrative Rules for Animal Disease Control Program on behalf of the Hawaii Cattlemen's Council.

Thank you for the opportunity to weigh in on this important matter.

Nicole Galase | Managing Director

Hawaii Cattlemen's Council, Inc.

Hawaii Beef Industry Council

Mailing Address P.O. Box 934 | Hilo, HI 96721

Located Honolulu, Hawaii

Phone: (808) 209-0820

nicole@hicattle.org | www.HICattle.org



Hawaii Cattlemen's Council, Inc.

Proposed Amendments to Administrative Rules
for Animal Disease Control Program

May 10, 2022, at 10:00 a.m.
Department of Agriculture, Plant Quarantine Conference Room
1849 Auiki Street, Honolulu, Oahu
And via Zoom

To the Hawaii Department of Agriculture,

The Hawaii Cattlemen's Council (HCC) is the Statewide umbrella organization comprised of the four county level Cattlemen's Associations. Our member ranchers represent over 60,000 head of beef cows; more than 75% of all the beef cows in the State. Ranchers are the stewards of over 750 thousand acres of land in Hawaii, or 20% of the State's total land mass. We represent the interests of Hawaii's cattle producers.

HCC supports the proposed amendments to Chapter 4-16. These changes are necessary to clarify and update the rules to today's needs. These changes will allow the state to better track livestock movement and control movement of disease, which will protect the livestock industry from unwanted disease outbreaks. Additionally, the following will help ensure the safety of livestock during transport:

- Updating the carrier responsibility to specify that animals should not be stowed in a manner that prevents natural ventilation.
- Working with transportation partners to limit time livestock spend on board vessels by implementing "last-on, first-off" practices.
- Addressing load densities using the Interisland Livestock Shipping Standards and stipulating that densities shall not deviate by more than 10%.
- Ensuring livestock transported over more than a 24 hour period have access to feed and water.

The Interisland Livestock Shipping Standards that the rules refer to were vetted and updated in 2020 by livestock shipping experts and veterinarians. Further, these standards have proven to be successful, as transporting livestock interisland has resulted in very few losses.

Many of the proposed changes are currently in practice by our producers. Animal welfare has always been and remains the foundation of our operations. The thoughtful and responsible management of our livestock is an ongoing process. It is the result of collaborative efforts between our producers, health experts, transportation partners and regulatory agencies. Ultimately, it is to serve the people of Hawai'i by providing safe, wholesome and nutritious local food.

Nicole Galase
Managing Director

Page 7



Alvarado, Kristy S

From: HDOA.BOARD.TESTIMONY
Sent: Tuesday, May 10, 2022 8:50 AM
To: Maeda, Isaac M; Moniz, Jason D; Wong, Raquel L
Cc: Alvarado, Kristy S
Subject: FW: [EXTERNAL] Proposed amendments to chapter 4-16, Hawaii Administrative Rules, entitled "Cattle, Sheep, and Goats."
Attachments: HCC Itr for DOA shipping regulations final.docx
Importance: High

From: lbwood451@aol.com <lbwood451@aol.com>
Sent: Monday, May 9, 2022 11:06 AM
To: HDOA.BOARD.TESTIMONY <hdoa.board.testimony@hawaii.gov>
Subject: [EXTERNAL] Proposed amendments to chapter 4-16, Hawaii Administrative Rules, entitled "Cattle, Sheep, and Goats."

To the Board of Agriculture,

Please accept attached testimony in favor of proposed amendments.

Feel free to contact me if you have any additional questions or concerns.

Thank you,
Lisa Wood

L. B. Wood, DVM
Veterinary Associated, Inc.
PO Box 839
Kamuela, HI 96743
(808) 885-7941

Proposed Amendments to Administrative Rules for Animal Disease Control Program

May 10, 2022, at 10:00 a.m.
Department of Agriculture, Plant Quarantine Conference Room
1849 Auiki Street, Honolulu, Oahu
And via Zoom

To the Hawaii Department of Agriculture,

My name is Lisa Wood and I am a practicing veterinarian on the Big Island. I have worked with Hawai'i's cattle producers for over 30 years and currently serve as chair of the Animal Health and Well-being committee for Hawai'i Cattlemen's Council (HCC).

I strongly support the proposed amendments to Chapter 4-16 as presented.

The recent COVID 19 pandemic has placed a stark spotlight on the Hawaii's vulnerability to food insecurity. Our agricultural community must be able to sustain and expand their operations to ensure that Hawai'i moves towards more locally sourced food. Since cattle were first introduced to Hawai'i in 1793, the people of Hawai'i have always found innovative ways to get their goods to market. From preserving salted meat in barrels to shipping in modified livestock containers, our production methods have evolved over the last 200+ years to meet the current challenges of the everchanging agricultural landscape. Many of the proposed changes reflect the current practices of our Hawaii producers and we welcome the formal amendments.

Whether our animals are marketed locally or on the mainland, interisland shipment will always be a key factor in the success of our producers.

The proposed changes represent a statewide effort among livestock shippers to collaborate with each other and our transportation partners to ensure the humane treatment and well-being of not only cattle but other livestock species including goats, sheep and horses. In addition, industry has been in open dialogue with animal activists and while not all their recommendations can be practically implemented, we continue to work together to improve overall shipping standards.

Below are proposed changes that HCC's Animal Welfare committee strongly supports;

1. The need for mandatory reporting of losses that may occur enroute. This improved reporting allows for producers, veterinarians, and others to respond more quickly to adverse events and gather information in a more timely manner.
2. The essential need for adequate ventilation during transit - placement of shipping containers in areas that allow for natural airflow and prevent placement where ventilation is restricted.
3. As live cargo, transportation partners should be obligated to limit time livestock spend on board vessels by implementing "last-on, first-off" practices.
4. Loading densities based off the Interisland Livestock Shipping Standards that have been developed in cooperation with industry and University of Hawaii's Cooperative Extension Services. These standards shall be followed with no more than a 10% deviation and are modeled after those published by the American Association of Bovine Practitioners.
5. Access to food and water must be provided for livestock transported over 24 hours.

These amendments support our continued commitment to animal care and to thoughtful and responsible livestock management.

Thank you for the opportunity to testify in favor of these changes. We are grateful to the support and leadership HDOA has given to our industry over the many years.

Sincerely,

LB Wood, DVM

Veterinary Associates, Inc

Hawaii Cattlemen's Council, Animal Health and Well-being, Chair

Alvarado, Kristy S

From: HDOA.BOARD.TESTIMONY
Sent: Tuesday, May 10, 2022 8:51 AM
To: Maeda, Isaac M; Moniz, Jason D; Wong, Raquel L
Cc: Alvarado, Kristy S
Subject: FW: [EXTERNAL] Proposed Amendments to Administrative Rules for Animal Disease Control Program

Importance: High

-----Original Message-----

From: wcinkona@usa.com <wcinkona@usa.com>
Sent: Monday, May 9, 2022 6:48 PM
To: HDOA.BOARD.TESTIMONY <hdoa.board.testimony@hawaii.gov>
Subject: [EXTERNAL] Proposed Amendments to Administrative Rules for Animal Disease Control Program

My name is _____Woody Child of _____Kaaupahu ranch and I support the proposed amendments to Chapter 4-16. These changes are necessary to clarify and update the rules to today's needs. These changes will allow the state to better track livestock movement and control movement of disease, which will protect the livestock industry from unwanted disease outbreaks. Additionally, the following will help ensure the safety of livestock during transport:

- Updating the carrier responsibility to specify that animals should not be stowed in a manner that prevents natural ventilation.
- Working with transportation partners to limit time livestock spend on board vessels by implementing "last-on, first-off" practices.
- Addressing load densities using the Interisland Livestock Shipping Standards and stipulating that densities shall not deviate by more than 10%.
- Ensuring livestock transported over more than a 24 hour period have access to feed and water.

The Interisland Livestock Shipping Standards that the rules refer to were vetted and updated in 2020 by livestock shipping experts and veterinarians. Further, these standards have proven to be successful, as transporting livestock interisland has resulted in very few losses.

Many of the proposed changes are currently in practice by Hawaii's producers. Animal welfare has always been and remains the foundation of our operations. The thoughtful and responsible management of our livestock is an ongoing process. It is the result of collaborative efforts between producers like myself, health experts, transportation partners and regulatory agencies. Ultimately, it is to serve the people of Hawai'i by providing safe, wholesome and nutritious local food.

Alvarado, Kristy S

From: HDOA.BOARD.TESTIMONY
Sent: Tuesday, May 10, 2022 8:51 AM
To: Maeda, Isaac M; Moniz, Jason D; Wong, Raquel L
Cc: Alvarado, Kristy S
Subject: FW: [EXTERNAL] Proposed Amendments to Administrative Rules for Animal Disease Control Program

Importance: High

-----Original Message-----

From: Alex Franco <afrancokaupo@gmail.com>
Sent: Tuesday, May 10, 2022 7:34 AM
To: HDOA.BOARD.TESTIMONY <hdoa.board.testimony@hawaii.gov>
Subject: [EXTERNAL] Proposed Amendments to Administrative Rules for Animal Disease Control Program

My name is Alex Franco, I support the proposed amendments to Chapter 4-16. These changes are necessary to clarify and update the rules to today's needs. These changes will allow the state to better track livestock movement and control movement of disease, which will protect the livestock industry from unwanted disease outbreaks. Additionally, the following will help ensure the safety of livestock during transport:

- Updating the carrier responsibility to specify that animals should not be stowed in a manner that prevents natural ventilation.
- Working with transportation partners to limit time livestock spend on board vessels by implementing "last-on, first-off" practices.
- Addressing load densities using the Interisland Livestock Shipping Standards and stipulating that densities shall not deviate by more than 10%.
- Ensuring livestock transported over more than a 24 hour period have access to feed and water.

The Interisland Livestock Shipping Standards that the rules refer to were vetted and updated in 2020 by livestock shipping experts and veterinarians. Further, these standards have proven to be successful, as transporting livestock interisland has resulted in very few losses.

Many of the proposed changes are currently in practice by Hawaii's producers. Animal welfare has always been and remains the foundation of our operations. The thoughtful and responsible management of our livestock is an ongoing process. It is the result of collaborative efforts between producers like myself, health experts, transportation partners and regulatory agencies. Ultimately, it is to serve the people of Hawai'i by providing safe, wholesome and nutritious local food.

Sent from my iPad

Alvarado, Kristy S

From: HDOA.BOARD.TESTIMONY
Sent: Monday, May 16, 2022 2:13 PM
To: Maeda, Isaac M; Moniz, Jason D; Alvarado, Kristy S
Subject: FW: [EXTERNAL] Testimony submittal
Attachments: HCC producer template for transportation rule changes.pages

Importance: High

From: Willie-Joe Camara <wjcvai@yahoo.com>
Sent: Tuesday, May 10, 2022 8:34 PM
To: HDOA.BOARD.TESTIMONY <hdoa.board.testimony@hawaii.gov>
Subject: [EXTERNAL] Testimony submittal

Willie-Joe Camara

Veterinary Associates INC.
(808)-885-7941 Phone
(808)-885-3418 Fax

Proposed Amendments to Administrative Rules for Animal Disease Control Program

May 10, 2022, at 10:00 a.m.
Department of Agriculture, Plant Quarantine Conference Room
1849 Auiki Street, Honolulu, Oahu
And via Zoom

To the Hawaii Department of Agriculture,

My name is Willie-Joe Camara and I work in the local beef industry.
As a responsible cattle producer, one of the foundations of my business is animal welfare.
I am particularly concerned about the welfare of animals that are shipped interisland to various markets.

I strongly support the proposed amendments to Chapter 4-16 as presented by Hawaii Department of Agriculture.

Movement of animals between islands is vital to our industry. As cattle stewards, our industry is dedicated to the welfare of our animals and this serves as a foundation of our operations. Whether in pasture, in the corrals or during transport, we support responsible and reasonable cattle management.

The proposed changes are the result of meetings between livestock producers and shippers to ensure the humane treatment and well-being of not only cattle but other livestock species including goats, sheep and horses.

As a local producer, these amendments support my continued commitment to animal care and to providing customers with healthy, wholesome beef.

Thank you for the opportunity to testify in favor of these changes.

Sincerely,

Willie-Joe Camara

**Subject: Proposed Amendments to Administrative
Rules
For Animal Disease Control Program**

Date: May 10, 2022

**Place: DOA Plant Quarantine
1849 Auiki St.
Honolulu, Oahu**

To The Hawaii Department of Agriculture

**As a longtime Livestock Hauler, Shipper, Tender
and Owner I fully support the proposed
Amendments to Chapter 4-16.**

**Working towards our "Best Practices", for the
Health, Safety, and Well Being of all Livestock,
with other longtime shipper and veterinarians, has
brought about these positive changes for our
industry for disease control and safety with in
Hawaii.**

**Hawaii's unique island shipping standards have
brought together many ideas for those "Best
Practices" we as Livestock Owners and Shippers
strive for. With these amendments our Industry
will accomplish the goals we have worked so long
and hard to achieve.**

Submitted by


**Kea Among
657 Ululani St.
Kailua, HI 96734
keaamong@aol.com**

Alvarado, Kristy S

From: HDOA.BOARD.TESTIMONY
Sent: Monday, May 16, 2022 2:14 PM
To: Maeda, Isaac M; Moniz, Jason D; Alvarado, Kristy S
Subject: FW: [EXTERNAL] HCPCA Testimony Proposed Amendments 4-16
Attachments: 051022 HCPCA Testimony to Dept of Ag re Prop Amend Admin Rules 4-16.doc

Importance: High

From: Betty Spence <bspence@hawaiiranchers.com>
Sent: Wednesday, May 11, 2022 8:26 AM
To: HDOA.BOARD.TESTIMONY <hdoa.board.testimony@hawaii.gov>
Subject: [EXTERNAL] HCPCA Testimony Proposed Amendments 4-16

Aloha,
Please find attached HCPCA's Testimony for the Proposed Amendments to Administrative Rules 4-16.

Any questions, please do not hesitate to me.
Thank you for your time.

Thank you,
Betty Spence
Hawaii Cattle Producers Cooperative
Ph: 808-885-5599

HAWAII CATTLE PRODUCERS COOPERATIVE ASSOCIATIONPO Box 437199 Kamuela Hi 96743 Phone: 808.885-5599 Fax: 808.887-1607

Proposed Amendments to Administrative Rules 4-16
For Animal Disease Control Program

May 12, 2022, at 10:00 am
Kona Civic Center Conference Room
82-6130 Mamalahoa Hwy., Bldg 2
Capt Cook, Hawaii

To the Hawaii Department of Agriculture,
The Hawaii Cattle Producers Cooperative Association is a statewide cooperative operating under the provisions of the Agricultural Cooperative Act (Chapter 421 Hawaii Revised Statutes). HCPCA provides to its members goods, services, and marketing opportunities which maximize the benefits of the cooperatives economies of scale, operational efficiencies, and industry partnerships, hereby providing a positive ranching return that creates longevity for generations to come.

HCPCA members represent cow-calf operations where calves are shipped to mainland feed lots for grow out and processing. HCPCA arranges for the shipment of calves to the mainland via Coop owned cowntainers, tended by Coop stockers during the ocean voyage. Each year, HCPCA arranges for the transport of member owned cattle providing economies of scale and efficiency for its members.

The welfare and safety for livestock and its employees is of the utmost importance to the cooperative membership. The coop continually monitors all shipments for various analysis factors and take action as required with the focal point always being the welfare of livestock and transported and employees accompanying shipments. Coop stocktenders monitor constantly the environment and processes and are always on site with the loading and unloading for the voyages. It also takes seriously the communication and relationships necessary to achieve the safe transport of livestock. Logistics planning includes implemented safety measures and an awareness of changes.

HCPCA continuously works with its carrier, Matson Navigation Co, as well as all transportation partners to place the very highest priority on animal welfare.

HCPCA supports the proposed amendments to Chapter 4-16. HCPCA works closely with Department of Agriculture with review and implementation of the administrative rules.

HCPCA Board of Directors
HCPCA Membership

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of jdancer@kula.us
Sent: Thursday, May 12, 2022 9:08 AM
To: HDOAAI
Subject: [EXTERNAL] Keep Cattle and Goats Safe During Transport

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

Animals are extremely vulnerable during transport due to stress and environmental factors that can exacerbate existing conditions. The proposed regulations rely on standards that have proved woefully inadequate in preventing animals from suffering and dying: In 2019, 21 cattle died on a barge that was traveling from Honolulu to Kauai. The only animal care standards in use at the time were the voluntary standards of the Hawaii Cattlemen's Council, which are what the proposal is largely based upon. These standards are inadequate, as they did not keep those cows safe then and will not keep them safe going forward.

The rules should be amended to incorporate provisions to protect animals from heat stress, including limitations on load density; improvements to loading practices; requiring carriers to provide animals with food, water, and access to shade; and restrictions on cow container locations on ships so that animals are not placed in areas with excessive heat.

The HDOA should also revise its proposal to disallow transportation of animals that are not fit to travel because they are (1) lame, weak, or fatigued, (2) blind in both eyes, (3) females traveling without young that have given birth within the previous 48 hours, (4) pregnant females within the final 10% of their gestation period at the planned time of unloading, (5) newborns with unhealed navels, making them prone to infection, or (6) animals with unhealed wounds from recent procedures such as dehorning, castration, tail docking, or branding.

Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

John Naylor
PO Box 1749
Makawao, HI 96768-1749

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of suyin@hawaii.edu
Sent: Thursday, May 12, 2022 9:14 AM
To: HDOAAI
Subject: [EXTERNAL] Amend Proposed Transport Regulations to Protect Animals

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

Animals are extremely vulnerable during transport due to stress and environmental factors that can exacerbate existing conditions. The proposed regulations rely on standards that have proved woefully inadequate in preventing animals from suffering and dying: In 2019, 21 cattle died on a barge that was traveling from Honolulu to Kauai. The only animal care standards in use at the time were the voluntary standards of the Hawaii Cattlemen's Council, which are what the proposal is largely based upon. These standards are inadequate, as they did not keep those cows safe then and will not keep them safe going forward.

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Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

Suyin Phillips
4168 Huanui St.
Honolulu, HI 96816

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of jbcristo@hawaii.edu
Sent: Thursday, May 12, 2022 9:16 AM
To: HDOAAI
Subject: [EXTERNAL] Keep Cattle and Goats Safe During Transport

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

Animals are extremely vulnerable during transport due to stress and environmental factors that can exacerbate existing conditions. The proposed regulations rely on standards that have proved woefully inadequate in preventing animals from suffering and dying: In 2019, 21 cattle died on a barge that was traveling from Honolulu to Kauai. The only animal care standards in use at the time were the voluntary standards of the Hawaii Cattlemen's Council, which are what the proposal is largely based upon. These standards are inadequate, as they did not keep those cows safe then and will not keep them safe going forward.

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Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

Josephine Cristobal
2555 Dole St
Honolulu, HI 96822-2328

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of Melissa Singson
<mailagent@thesoftedge.com>
Sent: Thursday, May 12, 2022 9:40 AM
To: HDOAAI
Subject: [EXTERNAL] Amend Proposed Transport Regulations to Protect Animals

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

Animals are extremely vulnerable during transport due to stress and environmental factors that can exacerbate existing conditions. The proposed regulations rely on standards that have proved woefully inadequate in preventing animals from suffering and dying: In 2019, 21 cattle died on a barge that was traveling from Honolulu to Kauai. The only animal care standards in use at the time were the voluntary standards of the Hawaii Cattlemen's Council, which are what the proposal is largely based upon. These standards are inadequate, as they did not keep those cows safe then and will not keep them safe going forward.

The rules should be amended to incorporate provisions to protect animals from heat stress, including limitations on load density; improvements to loading practices; requiring carriers to provide animals with food, water, and access to shade; and restrictions on cow container locations on ships so that animals are not placed in areas with excessive heat.

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Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

Melissa Singson
94-1104 Eleu St
Waipahu, HI 96797

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of stephenfaes@hotmail.com
Sent: Thursday, May 12, 2022 9:40 AM
To: HDOAAI
Subject: [EXTERNAL] Keep Cattle and Goats Safe During Transport

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

Animals are extremely vulnerable during transport due to stress and environmental factors that can exacerbate existing conditions. The proposed regulations rely on standards that have proved woefully inadequate in preventing animals from suffering and dying: In 2019, 21 cattle died on a barge that was traveling from Honolulu to Kauai. The only animal care standards in use at the time were the voluntary standards of the Hawaii Cattlemen's Council, which are what the proposal is largely based upon. These standards are inadequate, as they did not keep those cows safe then and will not keep them safe going forward.

The rules should be amended to incorporate provisions to protect animals from heat stress, including limitations on load density; improvements to loading practices; requiring carriers to provide animals with food, water, and access to shade; and restrictions on cow container locations on ships so that animals are not placed in areas with excessive heat.

The HDOA should also revise its proposal to disallow transportation of animals that are not fit to travel because they are (1) lame, weak, or fatigued, (2) blind in both eyes, (3) females traveling without young that have given birth within the previous 48 hours, (4) pregnant females within the final 10% of their gestation period at the planned time of unloading, (5) newborns with unhealed navels, making them prone to infection, or (6) animals with unhealed wounds from recent procedures such as dehorning, castration, tail docking, or branding.

Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

Stephen Faes
3800 PAPALINA Rd
Kalaheo, HI 96741

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of TERR7 AKANA
<mailagent@thesoftedge.com>
Sent: Thursday, May 12, 2022 10:34 AM
To: HDOAAI
Subject: [EXTERNAL] Keep Cattle and Goats Safe During Transport

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

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The HDOA should also revise its proposal to disallow transportation of animals that are not fit to travel because they are (1) lame, weak, or fatigued, (2) blind in both eyes, (3) females traveling without young that have given birth within the previous 48 hours, (4) pregnant females within the final 10% of their gestation period at the planned time of unloading, (5) newborns with unhealed navels, making them prone to infection, or (6) animals with unhealed wounds from recent procedures such as dehorning, castration, tail docking, or branding.

Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

TERR7 AKANA
91-1053 MAULOHIWAWA ST
96707, HI 96707

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of Gillian Bell <mailagent@thesoftedge.com>
Sent: Thursday, May 12, 2022 10:56 AM
To: HDOAAI
Subject: [EXTERNAL] Protect Animals at Sea

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

Animals are extremely vulnerable during transport due to stress and environmental factors that can exacerbate existing conditions. The proposed regulations rely on standards that have proved woefully inadequate in preventing animals from suffering and dying: In 2019, 21 cattle died on a barge that was traveling from Honolulu to Kauai. The only animal care standards in use at the time were the voluntary standards of the Hawaii Cattlemen's Council, which are what the proposal is largely based upon. These standards are inadequate, as they did not keep those cows safe then and will not keep them safe going forward.

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Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

Gillian Bell
3908 Maunaloa Ave
Honolulu, HI 96816

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of lwhillock@hawaiiantel.net
Sent: Thursday, May 12, 2022 11:06 AM
To: HDOAAI
Subject: [EXTERNAL] Keep Cattle and Goats Safe During Transport

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

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Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

Laurel Whillock
71-1437 Puu Kamanu Ln.
Kailua Kona, HI 96740-8331

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of Lani H <mailagent@thesoftedge.com>
Sent: Thursday, May 12, 2022 11:32 AM
To: HDOAAI
Subject: [EXTERNAL] Keep Cattle and Goats Safe During Transport

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

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Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

Lani H
RR 3, Box 1256
Pahoa, HI 96778-7560

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of Melina Keawe
<mailagent@thesoftedge.com>
Sent: Thursday, May 12, 2022 11:34 AM
To: HDOAAI
Subject: [EXTERNAL] Protect Animals at Sea

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

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Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

Melina Keawe
12-4645 puni st
pahoa, HI 96778

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of Lenianne cooke
<mailagent@thesoftedge.com>
Sent: Thursday, May 12, 2022 11:36 AM
To: HDOAAI
Subject: [EXTERNAL] Protect Animals at Sea

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

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Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

Lenianne cooke
1212 Punahou
honolulu, HI 96826

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of patrick growe
<mailagent@thesoftedge.com>
Sent: Thursday, May 12, 2022 11:42 AM
To: HDOAAI
Subject: [EXTERNAL] Protect Animals at Sea

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

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Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

patrick growe
400 Hobron
Honolulu, HI 96815

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of Elle Cook <mailagent@thesoftedge.com>
Sent: Thursday, May 12, 2022 11:44 AM
To: HDOAAI
Subject: [EXTERNAL] Protect Animals at Sea

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

Animals are extremely vulnerable during transport due to stress and environmental factors that can exacerbate existing conditions. The proposed regulations rely on standards that have proved woefully inadequate in preventing animals from suffering and dying: In 2019, 21 cattle died on a barge that was traveling from Honolulu to Kauai. The only animal care standards in use at the time were the voluntary standards of the Hawaii Cattlemen's Council, which are what the proposal is largely based upon. These standards are inadequate, as they did not keep those cows safe then and will not keep them safe going forward.

The rules should be amended to incorporate provisions to protect animals from heat stress, including limitations on load density; improvements to loading practices; requiring carriers to provide animals with food, water, and access to shade; and restrictions on cow container locations on ships so that animals are not placed in areas with excessive heat.

The HDOA should also revise its proposal to disallow transportation of animals that are not fit to travel because they are (1) lame, weak, or fatigued, (2) blind in both eyes, (3) females traveling without young that have given birth within the previous 48 hours, (4) pregnant females within the final 10% of their gestation period at the planned time of unloading, (5) newborns with unhealed navels, making them prone to infection, or (6) animals with unhealed wounds from recent procedures such as dehorning, castration, tail docking, or branding.

Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

Elle Cook
425 Ena Rd
Honolulu, HI, HI 96815

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of cpuna@webtv.net
Sent: Thursday, May 12, 2022 12:16 PM
To: HDOAAI
Subject: [EXTERNAL] Protect Animals at Sea

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

Animals are extremely vulnerable during transport due to stress and environmental factors that can exacerbate existing conditions. The proposed regulations rely on standards that have proved woefully inadequate in preventing animals from suffering and dying: In 2019, 21 cattle died on a barge that was traveling from Honolulu to Kauai. The only animal care standards in use at the time were the voluntary standards of the Hawaii Cattlemen's Council, which are what the proposal is largely based upon. These standards are inadequate, as they did not keep those cows safe then and will not keep them safe going forward.

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Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

cheryl carocci
p.o box 572
P?hoa, HI 96778

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of Leigh Wales <mailagent@thesoftedge.com>
Sent: Thursday, May 12, 2022 12:32 PM
To: HDOAAI
Subject: [EXTERNAL] Protect Animals at Sea

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

I can't believe this happened to these poor cows. Precautions should have been taken before shipping them. These are living things. You don't take it lightly. Please change procedures and be extremely careful. These animals have feelings and they suffer like humans suffer. Please make changes.

Animals are extremely vulnerable during transport due to stress and environmental factors that can exacerbate existing conditions. The proposed regulations rely on standards that have proved woefully inadequate in preventing animals from suffering and dying: In 2019, 21 cattle died on a barge that was traveling from Honolulu to Kauai. The only animal care standards in use at the time were the voluntary standards of the Hawaii Cattlemen's Council, which are what the proposal is largely based upon. These standards are inadequate, as they did not keep those cows safe then and will not keep them safe going forward.

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Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

Leigh Wales
2556, KINOOLE STREET
HILO, HI 96720

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of michele@danismaui.com
Sent: Thursday, May 12, 2022 12:32 PM
To: HDOAAI
Subject: [EXTERNAL] Amend Proposed Transport Regulations to Protect Animals

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

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Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

Michele Hondo
230 S ALU RD, 96793
Wailuku, HI 96793-1512

Alvarado, Kristy S

From: HDOA.BOARD.TESTIMONY
Sent: Monday, May 16, 2022 2:14 PM
To: Maeda, Isaac M; Moniz, Jason D; Alvarado, Kristy S
Subject: FW: Test Ch 14 Shipping Lvstk.docx
Attachments: Test Ch 14 Shipping Lvstk.docx

Importance: High

From: Keoki Wood <woo.k@pri-hi.com>
Sent: Thursday, May 12, 2022 1:51 PM
To: HDOA.BOARD.TESTIMONY <hdoa.board.testimony@hawaii.gov>
Subject: [EXTERNAL] Test Ch 14 Shipping Lvstk.docx

Aloha

Pls find attached my testimony in support of the proposed amendments to Chpt 4-16 as presented. Thank you



Hawaii Cattlemen's Council, Inc.

Proposed Amendments to Administrative Rules for Animal Disease Control Program

May 10, 2022, at 10:00 a.m.

Department of Agriculture, Plant Quarantine Conference Room
1849 Auiki Street, Honolulu, Oahu
And via Zoom

To the Hawaii Department of Agriculture,

My name is Keoki Wood, I've been employed in the Hawaii Cattle industry for over 40 years and am currently Chairperson of the Hawaii Cattlemens Council Transportation Committee.

I strongly support the proposed amendments to Chapter 4-16 as presented.

The Dept of Agriculture has sought input from various shippers and has addressed the concerns regarding the welfare of the animals. As a result, these amendments help to insure that all parties involved in the interisland transportation of livestock understand their role in the safe movement of livestock from one island to the next.

Thank you for the opportunity to testify in favor of these changes. We are grateful to the support and leadership HDOA has given to our industry over the many years.

Sincerely,

Keoki Wood, Chair Transportation Committee



Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of mn4@hawaiiintel.net
Sent: Thursday, May 12, 2022 12:52 PM
To: HDOAAI
Subject: [EXTERNAL] Protect Animals at Sea

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

Animals are extremely vulnerable during transport due to stress and environmental factors that can exacerbate existing conditions. The proposed regulations rely on standards that have proved woefully inadequate in preventing animals from suffering and dying: In 2019, 21 cattle died on a barge that was traveling from Honolulu to Kauai. The only animal care standards in use at the time were the voluntary standards of the Hawaii Cattlemen's Council, which are what the proposal is largely based upon. These standards are inadequate, as they did not keep those cows safe then and will not keep them safe going forward.

The rules should be amended to incorporate provisions to protect animals from heat stress, including limitations on load density; improvements to loading practices; requiring carriers to provide animals with food, water, and access to shade; and restrictions on cow container locations on ships so that animals are not placed in areas with excessive heat.

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Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

Michael Newman
2161 KALIA RD APT 1312
Honolulu, HI 96815-1966

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of Lory Ono <mailagent@thesoftedge.com>
Sent: Thursday, May 12, 2022 2:28 PM
To: HDOAAI
Subject: [EXTERNAL] Keep Cattle and Goats Safe During Transport

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

Allowing animals to endure this stressful transport across the ocean, especially causing their deaths, is completely unacceptable and extremely upsetting. Please do not allow these poor creatures to suffer this cruelty.

Animals are extremely vulnerable during transport due to stress and environmental factors that can exacerbate existing conditions. The proposed regulations rely on standards that have proved woefully inadequate in preventing animals from suffering and dying: In 2019, 21 cattle died on a barge that was traveling from Honolulu to Kauai. The only animal care standards in use at the time were the voluntary standards of the Hawaii Cattlemen's Council, which are what the proposal is largely based upon. These standards are inadequate, as they did not keep those cows safe then and will not keep them safe going forward.

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Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

Lory Ono
44-022 Nohokai Place
Kaneohe, HI 96744-2543

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of ajarneson@hotmail.com
Sent: Thursday, May 12, 2022 4:02 PM
To: HDOAAI
Subject: [EXTERNAL] Protect Animals at Sea

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

Animals are extremely vulnerable during transport due to stress and environmental factors that can exacerbate existing conditions. The proposed regulations rely on standards that have proved woefully inadequate in preventing animals from suffering and dying: In 2019, 21 cattle died on a barge that was traveling from Honolulu to Kauai. The only animal care standards in use at the time were the voluntary standards of the Hawaii Cattlemen's Council, which are what the proposal is largely based upon. These standards are inadequate, as they did not keep those cows safe then and will not keep them safe going forward.

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Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

Andrew Arneson
73-1306 Onaona Dr. Unit 7F
Kailua Kona, HI 96740-8644

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of Danielle Spitz
<mailagent@thesoftedge.com>
Sent: Thursday, May 12, 2022 4:24 PM
To: HDOAAI
Subject: [EXTERNAL] Protect Animals at Sea

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

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Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

Danielle Spitz
62-2482 Anekona Place
Kamuela, HI 96743

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of Michelle Jorgensen
<mailagent@thesoftedge.com>
Sent: Thursday, May 12, 2022 4:32 PM
To: HDOAAI
Subject: [EXTERNAL] Amend Proposed Transport Regulations to Protect Animals

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

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Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

Michelle Jorgensen
4897 n Ashland
Chicago, IL 60640

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of makaliiginger@hotmail.com
Sent: Thursday, May 12, 2022 7:24 PM
To: HDOAAI
Subject: [EXTERNAL] Protect Animals at Sea

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

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Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

Nan Hart
103 22nd Ave SW
Olympia, WA 98501

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of Kelly Deese <mailagent@thesoftedge.com>
Sent: Thursday, May 12, 2022 7:34 PM
To: HDOAAI
Subject: [EXTERNAL] Protect Animals at Sea

Dear Chairperson Shimabukuro-Geiser:

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Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

Kelly Deese
1556 Magazine St.
honolulu, HI 96822

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of eric voorhies <mailagent@thesoftedge.com>
Sent: Thursday, May 12, 2022 9:40 PM
To: HDOAAI
Subject: [EXTERNAL] Protect Animals at Sea

Dear Chairperson Shimabukuro-Geiser:

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Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

eric voorhies
6171 Olohena Rd
Kapaa, HI 96746

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of RAWIL ISMAIL
<mailagent@thesoftedge.com>
Sent: Thursday, May 12, 2022 10:20 PM
To: HDOAAI
Subject: [EXTERNAL] Protect Animals at Sea

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

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Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

RAWIL ISMAIL
75-6060 KUAKINI HWY APT G23
KAILUA KONA, HI 96740

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of alessandra@veganaloha.com
Sent: Friday, May 13, 2022 8:10 AM
To: HDOAAI
Subject: [EXTERNAL] Amend Proposed Transport Regulations to Protect Animals

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

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Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

Alessandra Rupar
16-476 Napua St.
Keaau, HI 96749

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of kori olaso <mailagent@thesoftedge.com>
Sent: Friday, May 13, 2022 1:00 PM
To: HDOAAI
Subject: [EXTERNAL] Protect Animals at Sea

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

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Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

kori olaso
94-1053 waiolina st.
waipahu, HI 96797

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of Robin Swanson
<mailagent@thesoftedge.com>
Sent: Friday, May 13, 2022 1:40 PM
To: HDOAAI
Subject: [EXTERNAL] Protect Animals at Sea

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

Animals are extremely vulnerable during transport due to stress and environmental factors that can exacerbate existing conditions. The proposed regulations rely on standards that have proved woefully inadequate in preventing animals from suffering and dying: In 2019, 21 cattle died on a barge that was traveling from Honolulu to Kauai. The only animal care standards in use at the time were the voluntary standards of the Hawaii Cattlemen's Council, which are what the proposal is largely based upon. These standards are inadequate, as they did not keep those cows safe then and will not keep them safe going forward.

The rules should be amended to incorporate provisions to protect animals from heat stress, including limitations on load density; improvements to loading practices; requiring carriers to provide animals with food, water, and access to shade; and restrictions on cow container locations on ships so that animals are not placed in areas with excessive heat.

The HDOA should also revise its proposal to disallow transportation of animals that are not fit to travel because they are (1) lame, weak, or fatigued, (2) blind in both eyes, (3) females traveling without young that have given birth within the previous 48 hours, (4) pregnant females within the final 10% of their gestation period at the planned time of unloading, (5) newborns with unhealed navels, making them prone to infection, or (6) animals with unhealed wounds from recent procedures such as dehorning, castration, tail docking, or branding.

Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

Robin Swanson
748 Isenberg Street
Honolulu, HI 96826

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of Adrienne Stofko
<mailagent@thesoftedge.com>
Sent: Friday, May 13, 2022 8:06 PM
To: HDOAAI
Subject: [EXTERNAL] Keep Cattle and Goats Safe During Transport

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

I appreciate the difficult transportation logistics the beautiful islands present, however, it matters how that particular cow was treated from birth to harvest. Hawaiian culture reminds us that spirits are found in non-human beings and objects such as other animals, the waves, and the sky. Let's treat animals with as much respect as possible, regardless of their final destination in their physical life.

Animals are extremely vulnerable during transport due to stress and environmental factors that can exacerbate existing conditions. The proposed regulations rely on standards that have proved woefully inadequate in preventing animals from suffering and dying: In 2019, 21 cattle died on a barge that was traveling from Honolulu to Kauai. The only animal care standards in use at the time were the voluntary standards of the Hawaii Cattlemen's Council, which are what the proposal is largely based upon. These standards are inadequate, as they did not keep those cows safe then and will not keep them safe going forward.

The rules should be amended to incorporate provisions to protect animals from heat stress, including limitations on load density; improvements to loading practices; requiring carriers to provide animals with food, water, and access to shade; and restrictions on cow container locations on ships so that animals are not placed in areas with excessive heat.

The HDOA should also revise its proposal to disallow transportation of animals that are not fit to travel because they are (1) lame, weak, or fatigued, (2) blind in both eyes, (3) females traveling without young that have given birth within the previous 48 hours, (4) pregnant females within the final 10% of their gestation period at the planned time of unloading, (5) newborns with unhealed navels, making them prone to infection, or (6) animals with unhealed wounds from recent procedures such as dehorning, castration, tail docking, or branding.

Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

Adrienne Stofko
1977 Lawrence Rd
Kailua, HI 96734

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of Lauren Butcher
<mailagent@thesoftedge.com >
Sent: Saturday, May 14, 2022 1:16 PM
To: HDOAAI
Subject: [EXTERNAL] Amend Proposed Transport Regulations to Protect Animals

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

Animals are extremely vulnerable during transport due to stress and environmental factors that can exacerbate existing conditions. The proposed regulations rely on standards that have proved woefully inadequate in preventing animals from suffering and dying: In 2019, 21 cattle died on a barge that was traveling from Honolulu to Kauai. The only animal care standards in use at the time were the voluntary standards of the Hawaii Cattlemen's Council, which are what the proposal is largely based upon. These standards are inadequate, as they did not keep those cows safe then and will not keep them safe going forward.

The rules should be amended to incorporate provisions to protect animals from heat stress, including limitations on load density; improvements to loading practices; requiring carriers to provide animals with food, water, and access to shade; and restrictions on cow container locations on ships so that animals are not placed in areas with excessive heat.

The HDOA should also revise its proposal to disallow transportation of animals that are not fit to travel because they are (1) lame, weak, or fatigued, (2) blind in both eyes, (3) females traveling without young that have given birth within the previous 48 hours, (4) pregnant females within the final 10% of their gestation period at the planned time of unloading, (5) newborns with unhealed navels, making them prone to infection, or (6) animals with unhealed wounds from recent procedures such as dehorning, castration, tail docking, or branding.

Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

Lauren Butcher
45-677 Kaa Rd
Honokaa , HI 96727

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of Tina@kiheiice.com
Sent: Sunday, May 15, 2022 11:50 AM
To: HDOAAI
Subject: [EXTERNAL] Protect Animals at Sea

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

Animals are extremely vulnerable during transport due to stress and environmental factors that can exacerbate existing conditions. The proposed regulations rely on standards that have proved woefully inadequate in preventing animals from suffering and dying: In 2019, 21 cattle died on a barge that was traveling from Honolulu to Kauai. The only animal care standards in use at the time were the voluntary standards of the Hawaii Cattlemen's Council, which are what the proposal is largely based upon. These standards are inadequate, as they did not keep those cows safe then and will not keep them safe going forward.

The rules should be amended to incorporate provisions to protect animals from heat stress, including limitations on load density; improvements to loading practices; requiring carriers to provide animals with food, water, and access to shade; and restrictions on cow container locations on ships so that animals are not placed in areas with excessive heat.

The HDOA should also revise its proposal to disallow transportation of animals that are not fit to travel because they are (1) lame, weak, or fatigued, (2) blind in both eyes, (3) females traveling without young that have given birth within the previous 48 hours, (4) pregnant females within the final 10% of their gestation period at the planned time of unloading, (5) newborns with unhealed navels, making them prone to infection, or (6) animals with unhealed wounds from recent procedures such as dehorning, castration, tail docking, or branding.

Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

Tina Wildberger
2710 Kauhale st
Kihei, HI 96753

Alvarado, Kristy S

From: Erin Sutherland <erin@awionline.org>
Sent: Thursday, May 19, 2022 4:53 AM
To: HDOAAI
Subject: [EXTERNAL] FW: Comment on DOA Animal Transport Regulations
Attachments: Comment to HDOA re Sea Transport Regs_FINAL.pdf

Hello, I'd like to confirm that this comment was received?

Sincerely,
Erin

From: Erin Sutherland
Sent: Monday, May 16, 2022 11:58 AM
To: hdoaai@hawaii.gov
Cc: Inga Gibson <ponoadvocacy@gmail.com>; cathyg (cathyg@animalrightshawaii.org) <cathyg@animalrightshawaii.org>; Dena Jones <dena@awionline.org>
Subject: Comment on DOA Animal Transport Regulations

Hello,

Please see attached for a comment submitted on behalf of the Animal Welfare Institute and the following undersigned organizations: Aloha Animal Advocates, Aloha Lokahi Association, Animal Rights Hawai'i, Kauai Humane Society, Maui Humane Society, Animal Legal Defense Fund, Animal Outlook, Mercy For Animals, and The Humane Society of the United States.

Please contact me should you have any questions.

Best,
Erin

Erin Sutherland
Staff Attorney, Farm Animal Program
Animal Welfare Institute
(202) 446-2147

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Animal Welfare Institute

900 Pennsylvania Avenue, SE, Washington, DC 20003

May 16, 2022

Hawaii Department of Agriculture
Animal Industry Division
1428 S. King Street
Honolulu, HI 96814

Via email to hdooi@hawaii.gov

Re: Hawaii Department of Agriculture Proposed Rule Amendments Regarding the Transport of Farm Animals by Sea

Dear Chairperson Shimabukuro-Geiser:

On behalf of the Animal Welfare Institute (AWI)¹ and the undersigned organizations, the following comments are submitted in response to the Hawaii Department of Agriculture's (HDOA) proposed amendments to its regulations governing the transport of animals by sea vessels.

Our organizations support the proposed amendments to Chapter 4-16, which will, if approved, provide legally mandated standards for interisland shipment of certain animal species. These long-awaited changes are essential to mitigating the risk of suffering and untimely death of animals during transport.

Specifically, we welcome the requirement that carriers of animals submit to the HDOA a Shipmaster's Declaration that includes the number of animals shipped and the number of animals that died or were injured, with details describing the circumstances and nature of these events. We also appreciate the acknowledgement of the importance of adequate ventilation. Finally, we applaud the inclusion of rules related to the condition of animal containers, including requirements that they have a solid roof, be structurally sound without protruding objects that could injure animals, and include nonslip flooring.

However, the HDOA's proposal largely codifies the same standards that gave rise to the circumstances that highlighted the rule's necessity. In 2019, 21 cows perished on a barge due to a lack of adequate ventilation on a ship that purportedly complied with the Hawaii Cattlemen's Council standards for the transport of cattle on sea vessel.² The HDOA's proposal makes no improvements to this standard in adopting it in regulation.

In its commitment to promulgate these rules, the HDOA agreed to develop regulations consistent with 9 C.F.R. pt. 91 (federal live animal export regulations), and to include protections for all species. Our organizations were disappointed to find that the HDOA's proposal fails to meet this commitment. Key

¹ The Animal Welfare Institute, founded in 1951 and headquartered in Washington DC, is dedicated to reducing animal suffering and advancing the welfare of all animals, including those raised for food. As part of our mission, we work to improve conditions for farm animals, including during transport. AWI has over a decade of experience advocating on behalf of animals transported by sea vessel.

² Daysog, R. (2019). Critics: Deaths of 21 cattle on barge bound for Kauai 'cruel and inhumane.' *Hawaii News Now*. <https://tinyurl.com/2apsjyy6>.

provisions to prevent heat stress, prohibit the transport of unfit animals, and provide access to food and water are missing, and the proposal does not include protections for pigs and horses. Our organizations have thus prepared comments asking that HDOA meet its commitment by revising its proposal and by extending these protections to pigs and horses. Suggested in-text revisions are attached to this document.

Preventing Excessive Heat Stress Aboard Shipping Vessels

As written the HDOA's proposal fails to ensure that heat stress is prevented during transport. As such, the proposal should be revised to limit loading density and ensure placement and loading practices minimize heat stress.

Heat stress occurs when the body is exposed to and cannot get rid of excess heat. The tissues and organs of the body can only function within a relatively narrow range, so severe heat stress can result in debilitation, suffering, and death. Under natural conditions, livestock have many mechanisms for thermoregulation, which allow them to tolerate a range of temperature and humidity levels. However, these mechanisms are largely thwarted under transport conditions. Dehydration, which is likely to develop in transported livestock deprived of water for up to 24 hours, diminishes an animal's ability to deal with heat stress through evaporative cooling via panting or sweating.^{3, 4}

Farm animals being transported by sea in containers are particularly susceptible to heat stress, which has been identified in multiple studies as a major contributor to poor welfare during transport by ship.⁵ Excessive heat stress is a common cause of livestock mortality during transport by sea, especially in sheep.⁷ The American Veterinary Medical Association emphasizes the importance of protecting animals from environmental extremes during transport.⁸ The primary species of cattle raised in Hawaii is *Bos taurus*, which is more susceptible to heat stress than the *Bos indicus* species.^{9, 10}

In addition to the metabolic heat generated by the animals in the container, heat can radiate from hot metal surface and from nearby engine or boiler rooms, fuel oil storage walls, the ceiling on the

³ Hogan, J. P., Petherick, J. C., & Phillips, C. J. (2007). The physiological and metabolic impacts on sheep and cattle of feed and water deprivation before and during transport. *Nutrition research reviews*, 20(1), 17–28.

⁴ EFSA Panel on Animal Health and Welfare (AHAW). (2011). Scientific Opinion concerning the welfare of animals during transport. *EFSA Journal*, 9(1):1966.

⁵ Caulfield, M. P., Cambridge, H., Foster, S. F., & McGreevy, P. D. (2014). Heat stress: a major contributor to poor animal welfare associated with long-haul live export voyages. *Veterinary journal (London, England: 1997)*, 199(2), 223–228.

⁶ Phillips, C. J., & Santurtun, E. (2013). The welfare of livestock transported by ship. *Veterinary journal (London, England: 1997)*, 196(3), 309–314. ⁷

⁷ Collins, T., Hampton, J. O., & Barnes, A. L. (2018). A Systematic Review of Heat Load in Australian Livestock Transported by Sea. *Animals: an open access journal from MDPI*, 8(10), 164.

⁸ American Veterinary Medical Association. (n.d.). Transport, sale yard practices, and humane slaughter of hoofstock and poultry. *AVMA policies*. <https://tinyurl.com/mkkx2r2k>.

⁹ Fukumoto, G.K. & Kim, Y.S. (2007). Carcass Characteristics of Forage-Finished Cattle Produced in Hawai'i. Food Safety and Technology. <https://www.hicattle.org/Media/HICattle/Docs/fst-25.pdf>

¹⁰ Sullivan, K. F., & Mader, T. L. (2018). Managing Heat Stress Episodes in Confined Cattle. *The Veterinary clinics of North America. Food animal practice*, 34(2), 325–339. <https://doi.org/10.1016/j.cvfa.2018.05.001>

uppermost deck, and the sides of the ship.¹¹ Placing livestock containers too close together can impede ventilation such that excessive heat stress results.

Loading Density

Because of the metabolic heat generated by animals in shipping containers, ensuring that loading density is appropriate is essential to preventing excessive heat stress. It also ensures animals have room to brace themselves and shift their footing to keep their balance in the face of continuous floor motion due to waves. High loading densities increase the risk that animals who lose their balance will be unable to stand back up and will be trampled, potentially creating a domino effect in which additional animals go down as they trip on the fallen animals underfoot.¹²

For several reasons, the HDOA's current proposal to regulate loading density is inadequate. First, the document referenced as Exhibit B has several sections removed and includes space requirements only for cattle. All information related to pigs and horses has been removed. In the Sheep and Goats section, the standard entitled *Space* states “*See table,” however the accompanying table for load densities has been deleted.¹³

Second, the chart on cattle space requirements that is referenced by the proposal fails to account for the actual internal dimensions of shipping containers used to transport animals. This chart lays out the area (sq. ft.) each animal of a given weight class should be allotted as well as the loading density for each size of container, expressed as maximum number of animals to load per container. Unfortunately, as described below, the chart assumes a larger internal area for shipping containers than is the case; as a result, both the “Area per Animal” and loading density figures are incorrect.

It appears that the creators of the Space Requirement chart in the Interisland Transportation Space Requirements used the *external* dimensions of 40-ft. and 20-ft. containers (40 ft. x 8 ft. and 20 ft. x 8 ft., respectively) in their calculations; however, it is the *internal* dimensions that need to be used when calculating space allowance per animal and loading density per container. The internal dimensions of 40-ft. and 20-ft. containers are consistent across a range of references.¹⁴⁻¹⁵

The following equations, in conjunction with the internal dimensions of the respective container, can be used to determine the actual space allowance provided to each animal, and what the maximum loading density would need to be to provide the reported space allowance:

$$\text{Area (sq. ft.)} = \text{Length (ft.)} \times \text{Width (ft.)}$$

$$\text{Space Allowance (sq. ft./animal)} = \text{Area (sq. ft.)} \div \# \text{ of animals}$$

$$\text{Correct Loading Density to Achieve Reported Space Allowance}$$

¹¹ Anonymous. (2021). Heat Stress. *Veterinary Handbook*. <https://tinyurl.com/2p83z63p>.

¹² Schwartzkoff-Genswein, K. & Grandin, T. (2019) Cattle Transport in North America. In T. Grandin (Ed.), *Livestock Handling and Transport* (5th ed., pp. 153-183). CAB International.

¹³ The complete version of the document is available on the Hawaii Cattlemen's Council website. Hawaii Cattlemen's Council, Inc., *Interisland Livestock Shipping Standards Checklist All Species* (2020) <https://tinyurl.com/yc483duz>.

¹⁴ K & K Global, *Container Dimension* <https://tinyurl.com/3avmkdek>; <https://tinyurl.com/2p8hah98>.

¹⁵ *What is the internal dimensions of a 40FT container? Leanieclaire.* (2020). <https://tinyurl.com/2p8fmjny>.

$$= \text{Actual Area (sq. ft.)} \div \text{Reported Space Allowance (\# animals/sq. ft.)}$$

We noted these calculation errors in the Space Requirement charts for all species and weight classes in the complete Interisland Livestock Shipping Standards document. Here are some examples:

For a 40 ft. Container:

Reported Space Allowance = **19 sq. ft. per 1,500-lb. cow**, if loaded at **17 cattle/container**

Actual Area = 39.46 ft. x 7.71 ft. = 304.24 sq. ft.

Actual Space Allowance = 304.24 sq. ft. \div 17 cattle = **17.9 sq. ft. per 1,500-lb. cow**

Correct Loading Density to Achieve Reported Space Allowance

$$= 304.24 \text{ sq. ft.} \div 19 \text{ sq. ft./1,500-lb. cow} = \mathbf{16 \text{ cattle/container}}$$

For a 20 ft. Container:

Reported Space Allowance = **11 sq. ft. per 800-lb. cow**, if loaded at **15 cattle/container**

Actual Area¹⁶ = 18.67 ft. x 7.67 = 143.2 sq. ft.

Actual Space Allowance = 143.2 sq. ft. \div 15 cattle = **9.55 sq. ft. per 800-lb. cow**

Correct Loading Density to Achieve Reported Space Allowance

$$= 143.2 \text{ sq. ft.} \div 11 \text{ sq. ft./800-lb. cow} = \mathbf{13.01 \text{ cattle/container}}$$

Third, for most of the weight classes, the space requirement described in the chart falls significantly short of space allowances recommended in the available scientific literature and provide significantly less space allowance than federal regulations regarding export of animals via ocean vessel.

For example, calves being shipped often need to lie down due to fatigue, negative energy balance, and dehydration. Sheep also need to lie down after approximately four hours.¹⁷ For short duration transportation, use of the following equation is recommended to determine the minimum area necessary to permit all animals to lie down simultaneously:¹⁸

$$\text{area (m}^2\text{)} = 0.027W^{0.66}, \text{ where } W = \text{liveweight (kilograms)}$$

¹⁶ Young Brothers. (n.d.) YB Equipment Available for Use: 20-Foot Dry Container – Internal Dimensions. <https://tinyurl.com/4wh5xfpv>

¹⁷ Knowles, T.G. & Warriss, P. D. (2009). A comment on Space allowances for confined livestock and their determination from allometric principles. *Applied Animal Behaviour Science*, 120(1), 117–118. <https://doi.org/10.1016/j.applanim.2009.06.005>

¹⁸ Petherick, J.C., Phillips, C.J.C. (2009) Space allowances for confined livestock and their determination from allometric principles. *Applied Animal Behaviour Science*, 117, (1–2):1-12.

Utilizing this equation, a 400 lb. (181.8 kg) calf should receive a minimum of 9 sq. ft., rather than 7 sq. ft., and a 40' container should be loaded with no more than 33 calves, rather than 46, as indicated by the chart in the Interisland Livestock Shipping Standards.

A study that examined the effect of space allowance on simulated sea transport concluded that 0.26 sq. meter (2.8 sq. feet) for a 28 kg (61.6 lb.) sheep – a space allowance slightly *higher* than that in the complete version of Interisland Livestock Shipping Standards – was “likely to be inadequate” because of the promotion of pushing and aggression between the animals and failure to permit lying behaviors.¹⁹ A subsequent study found that increasing space allowance to 0.52 sq. meters (5.6 sq. ft.) per 25 kg (55 lb.) sheep improved animal welfare, particularly by providing more opportunity for them to step to keep their balance.²⁰ This space allowance is more than twice that in the Interisland Livestock Shipping Standards.

It is widely recognized that loading densities based on the physical dimensions of the animals alone are inappropriate because this will not permit effective thermoregulation.²¹ For example, both United States regulations and the European Commission require greatly increasing space allowance for unshorn sheep.²²⁻²³

Given that the space requirements under the Interisland Livestock Shipping Standards are already inadequate to ensure animal welfare and effective thermoregulation, it is extremely concerning that HDOA is proposing to allow for these loading densities to be exceeded by up to 10%. This virtually guarantees that severe heat stress and associated animal welfare issues will develop, thus, this provision should be deleted.

The following measures are recommended to correct the problems associated with loading density in the current proposal:

- Include minimum space requirements and/or maximum loading densities for cattle, sheep and goats, pigs, and horses. Ensure calculations are based on the correct internal dimensions of shipping containers.
- Decrease the “maximum number to load” as indicated in the attached document. Remove any provision to exceed the maximum loading densities specified in the regulations.
- Ensure that space requirements are not based on the animals’ physical dimensions alone. Space requirements should consider the physiologic status of animals, such as whether sheep are shorn or unshorn, whether animals have horns, and whether animals need to lie

¹⁹ Navarro, G., Col, R., & Phillips, C.J.C. (2018). Effects of space allowance and simulated sea transport motion on behavioural and physiological responses of sheep. *Applied Animal Behaviour Science*, 208: 40-48.

²⁰ Navarro, G., Col, R., & Phillips, C. (2020). Effects of Doubling the Standard Space Allowance on Behavioural and Physiological Responses of Sheep Experiencing Regular and Irregular Floor Motion during Simulated Sea Transport. *Animals: an open access journal from MDPI*, 10(3), 476.

²¹ Consortium of the Animal Transport Guides Project. (2017). Guide to good practices for the transport of cattle. Revision May 2018. <https://tinyurl.com/cnxvj59s>.

²² Consortium of the Animal Transport Guides Project. (2017). Guide to good practices for the transport of sheep. Revised 2018. <https://tinyurl.com/4sc9d3k4>.

²³ Animal and Plant Health Inspection Service. (2020). Program Handbook: Exportation of Live Animals, Hatching Eggs, and Animal Germplasm from the United States. <https://tinyurl.com/3asjusn3>.

down during the journey. Consider decreasing maximum loading density when temperature and humidity are high and thermoregulation is more difficult.

Loading Practices and Placement of Animals Onboard

While we are pleased that the proposal includes a requirement for adequate ventilation, additional amendments should be made to ensure that the loading practices and placement of animals onboard ensure adequate ventilation to protect from heat stress.

The proposed rule should be amended to include practices to minimize time onboard by requiring carriers to implement loading practices that ensure that animals are the last on and first off a docked vessel. Prioritizing animals in this way will ensure that animals are not exposed to the elements and stresses of transport for unnecessary durations, minimizing the potential for negative health and welfare outcomes.

Further, ventilation is essential to the welfare of animals transported by ship, as it mitigates heat stress, provides fresh air (including oxygen) and removes noxious fumes from accumulated urine and feces. The regulations should thus be amended to ensure that animals are not placed in a location that prevents cross-ventilation for animals, or in locations that produce excessive heat. Examples of such locations include nearby engine boiler rooms, fuel oil storage walls, the ceiling on the uppermost deck, or the sides of the vessel. Carriers should also be prohibited from placing animals in a location in which water intrusion may occur, such as on the sides of barges used for interisland transport.

Conditions in Loading and Staging Areas

Access to Food and Water

We also note that the proposed amendment includes only a very minimal requirement regarding the provision of food and water to transported animals, requiring that they not be deprived of food or water for longer than 24 hours (§ 4-16-11(f)). This is in contrast to the complete version of the Interisland Livestock Shipping Standards which requires pigs and horses not be deprived of water for longer than 12 hours and requires that horses have continuous access to feed.

Calves and other young animals are at particular risk of adverse health effects from food and water deprivation. Depending on their age, unweaned calves with free access to the dam feed an average of 12 times per day, or every two hours. The transport process increases energy expenditure above baseline. This means that calves who do not receive food and water for 24 hours experience prolonged hunger and thirst, develop significant dehydration, and may become hypoglycemic.^{24, 25, 26} They may also be more likely to develop enteric infections after arrival at their destination.²⁷ Their risk of dying or becoming nonambulatory during shipment and their risk of becoming sick and dying during the

²⁴ Roadknight, N., Mansell, P., Jongman, E., *et al.* (2021). Invited review: The welfare of young calves transported by road. *Journal of dairy science*, 104(6), 6343–6357.

²⁵ Marcato, F., van den Brand, H., Kemp, B., *et al.* (2020). Effects of pretransport diet, transport duration, and type of vehicle on physiological status of young veal calves. *Journal of dairy science*, 103(4), 3505–3520.

²⁶ González, L. A., Schwartzkopf-Genswein, K. S., Bryan, M., *et al.* (2012). Factors affecting body weight loss during commercial long haul transport of cattle in North America. *Journal of animal science*, 90(10), 3630–3639.

²⁷ Hogan, J. P., *supra* note 3.

immediate post-transport period is likely to increase if subjected to 24 hours of food and water deprivation.^{28, 29}

Similarly, weaned pigs become dehydrated and fatigued when transported for more than 12 hours without feed or water, and with dehydration worsening the longer the transport continues.³⁰ Clinical dehydration and thirst are considerable in weaned pigs transported for 24 hours, and significant weight loss and markedly elevated blood stress markers (neutrophil:lymphocyte ratio) are noted in pigs transported without water for 32 hours.³¹⁻³²

At high temperatures, evaporative cooling is the primary way that cattle and many other species dissipate heat.³³ For this reason, water requirements increase with increasing temperature and water availability during time of heat stress risk is crucial.³⁴

For these reasons, we suggest that the standard be revised to ensure that animals are not allowed to go without food or water for more than 24 hours during transport *including hold times*. It is essential that the carrier ensure clean water is accessible at the port and that the responsible party provide animals with this water if holding-plus-shipping time exceeds 24 hours or as indicated by the temperature-humidity conditions and evidence of heat stress.

We also suggest that the limit on water deprivation be decreased to 12 hours for pigs and horses, as indicated in the complete Interisland Livestock Shipping Standards, and for calves 3 months of age and younger.

Access to Shade

Currently, a major challenge for preventing dangerous levels of heat stress among livestock on interisland journeys is the lack of shade in loading and staging areas. While vessel movement may improve airflow at sea, stationary containers are subject to rapid increases in temperature-humidity index due to poor airflow.³⁵ Under these circumstances, solar radiation is a major component of heat load, and shade to mitigate this heat load is essential.³⁶

²⁸ Roadknight, N., *supra* note 24.

²⁹ Schwartzkoft-Genswein, K. & Grandin, T. *supra* note 12.

³⁰ Sutherland, M. A., Backus, B. L., & McGlone, J. J. (2014). Effects of Transport at Weaning on the Behavior, Physiology and Performance of Pigs. *Animals (Basel)*, 4(4), 657–669.

³¹ EFSA Panel on Animal Health and Welfare (AHAW), *supra* note 4.

³² Garcia, A., Sutherland, M., Pirner, G., *et al.* (2016). Impact of Providing Feed and/or Water on Performance, Physiology, and Behavior of Weaned Pigs during a 32-h Transport. *Animals: an open access journal from MDPI*, 6(5), 31.

³³ Blackshaw, J.K., Blackshaw, A.W. (1994). Heat stress in cattle and the effect of shade on production and behaviour: a review. *Aust J Exp Agric*, 34, 285–295.

³⁴ Sullivan, K. F., *supra* note 10.

³⁵ Fisher, A. D., Stewart, M., Duganzich, D. M., Tacon, J., & Matthews, L. R. (2005). The effects of stationary periods and external temperature and humidity on thermal stress conditions within sheep transport vehicles. *New Zealand veterinary journal*, 53(1), 6–9.

³⁶ Blackshaw, J.K., *supra* note 33.

In hot weather, cattle and other livestock are highly motivated to seek shade, and when prevented from doing so, they show signs of physiological and behavioral stress and may even engage in aggressive behaviors to gain access to shade.^{37, 38}

Shade can reduce the heat load from solar radiation by 30 to 45 percent or more.^{39, 40} Providing shade is considered the most effective method of reducing morbidity and mortality due to heat stress, reducing heat load by 1,400kJ/hour.⁴¹ Its importance is even greater in water-restricted animals. Research shows that shading cattle in hot weather improves physiologic indicators, such as rumination times, and indicators of heat stress, such as body surface temperatures and respiratory rate.⁴² While the containers in which livestock are shipped are typically roofed, this does not provide sufficient shade for mitigating heat stress. Because the roof is only slightly above the heads of the animals, it serves to decrease the airflow needed to dissipate metabolic heat generated by the animals' bodies. In addition, the heat absorbed by the roof and sides of the container is transmitted to the animals. While animals may technically be shaded by the roof when the sun is directly overhead, they will still experience direct solar radiation at other times of day. In addition, solar radiation is reflected from the ground and other surfaces adjacent to the container, further increasing heat load.

A variety of materials are available for providing shade, and effectiveness for mitigating heat stress varies widely. To ensure the shade structure constructed succeeds in providing an acceptable microclimate underneath the covered area, we recommend careful deliberation prior to selecting the shade material. While trees are often the most effective shade structure, providing beneficial cooling as moisture evaporates from their leaves, they are unlikely to be an effective solution under port conditions. Numerous resources are available for comparing the relative utility of differently types of shade materials, such as painted aluminum, shade cloths of different colors and light-excluding abilities, thatch, and other materials.^{43, 44, 45} Slats and other shade materials that only provide interrupted shade are considerably less effective and are not recommended.

Construction of shaded areas should take into consideration several factors including: (1) the orientation and slope of the shade structure, (2) the height of the shade structure, and (3) the length-to-width ratio

³⁷ Kamal, R., Dutt, T., Patel, M., Dey, A., Bharti, P. K., & Chandran, P. C. (2018). Heat stress and effect of shade materials on hormonal and behavior response of dairy cattle: a review. *Tropical animal health and production*, 50(4), 701–706. <https://doi.org/10.1007/s11250-018-1542-6>

³⁸ Mitlöchner, F. M., Morrow, J. L., Dailey, J. W., Wilson, S. C., Galyean, M. L., Miller, M. F., & McGlone, J. J. (2001). Shade and water misting effects on behavior, physiology, performance, and carcass traits of heat-stressed feedlot cattle. *Journal of animal science*, 79(9), 2327–2335. <https://doi.org/10.2527/2001.7992327x>

³⁹ Blackshaw, J.K., *supra* note 33.

⁴⁰ Kamal, R., *supra* note 37.

⁴¹ Blackshaw, J.K., *supra* note 33.

⁴² Reis, N. S., Ferreira, I. C., Mazocco, L. A., Souza, A., Pinho, G., da Fonseca Neto, Á. M., Malaquias, J. V., Macena, F. A., Muller, A. G., Martins, C. F., Balbino, L. C., & McManus, C. M. (2021). Shade Modifies Behavioral and Physiological Responses of Low to Medium Production Dairy Cows at Pasture in an Integrated Crop-Livestock-Forest System. *Animals: an open access journal from MDPI*, 11(8), 2411. <https://doi.org/10.3390/ani11082411>

⁴³ Blackshaw, J.K., *supra* note 33.

⁴⁴ Brown-Brandl, T. M., Chitko-McKown, C. G., Eigenberg, R. A., Mayer, J. J., Welsh, T. H., Davis, J. D., & Purswell, J. L. (2017). Physiological responses of feedlot heifers provided access to different levels of shade. *Animal: an international journal of animal bioscience*, 11(8), 1344–1353. <https://doi.org/10.1017/S17517311160D2664>

⁴⁵ Kamal, R., *supra* note 37.

of the shade structure.⁴⁶ It is important to ensure air movement is not inhibited by excessive width (>12 meters (39 ft.)), unless several continuous roof openings are provided for air circulation. It is also important that sufficient shade be provided such that the entire container is shaded throughout the entire day and areas around the containers are shaded to decrease the container's heat load from solar radiation reflected by the ground. Under feedlot conditions, 3.7-5.6 square meters (40-60 sq. ft.) of shade are recommended per animal.^{47, 48}

Ensuring Fitness for Transport

HDOA's proposal should be revised to incorporate fitness for transport standards. This can be achieved by incorporating the Hawaii Cattlemen's Council's fitness to travel provisions from its Interisland Livestock Shipping Standard and by further limiting the transport of vulnerable animals to be consistent with international standards.

Transporting animals involves the potential risk of death or injury, and the physiological and physical condition of an animal determines his or her "fitness for transport," or ability to cope with transport stressors.⁴⁹ Both within the United States and internationally, it is recognized that animals must be fit for transport, both to ensure animal welfare and to reduce risk of disease dissemination.^{50, 51, 52} This requirement is even more crucial for animals transported by ship, because of the additional challenge of maintaining balance in the face of constant floor motion due to waves.

In fact, although the version of the Interisland Livestock Shipping Standards included as Exhibit B was truncated to remove it, the complete version of this document includes a statement regarding fitness for transport:⁵³

Animals that are injured, obviously ill, unable to bear weight on all 4 limbs, are likely to give birth during transport, or those that have not been weaned and are traveling separate from the mother should not be transported. Aggressive animals should be transported separately.

In addition to the fitness criteria described in the complete version of the Interisland Livestock Shipping Standards, the regulations should adopt fitness criteria included in federal export regulations and in international standards.⁵⁴ The HDOA should forbid the transport of animals that are injured, ill, have unhealed wounds, or are unable to bear weight on all four limbs; are blind in both eyes; are likely to give birth during transport or have given birth in the past 48 hours and traveling without their offspring; or are not weaned and traveling separate from the mother. Aggressive animals should be transported separately.

⁴⁶ Blackshaw, J.K., *supra* note 33.

⁴⁷ *Id.*

⁴⁸ Sullivan, K. F., *supra* note 10.

⁴⁹ Schwartzkoft-Genswein, K. & Grandin, T., *supra* note 12.

⁵⁰ American Veterinary Medical Association, *supra* note 8.

⁵¹ World Org. for Animal Health (OIE). Chapter 7.2. Transport of Animals by Sea, <https://tinyurl.com/5y22pusf>.

⁵² Government of Canada. (2013). Guide to Assessing Fitness for Transport. <https://tinyurl.com/yn9pav8b>.

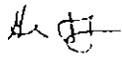
⁵³ Interisland Livestock Shipping Standards Checklist All Species, *supra* note 13.

⁵⁴ World Org. for Animal Health, *supra* note 51.

Conclusion

In sum, AWI and the undersigned organizations generally support the adoption of the proposal but believe that several changes to the standard are necessary for ensuring that the circumstances that gave rise to the rule's promulgation are not codified. HDOA should implement fitness to transport standards for all animals and ensure that heat stress is prevented by revising its load density requirement, improving loading and holding practices, and requiring food and water for animals when transport/holding exceed 12 to 24 hours. Thank you for the opportunity to comment on the proposed amendments and for your thoughtful consideration of our concerns.

Respectfully Submitted,



Gwendy Reyes-Illg, DVM, MA
Veterinary Advisor
Animal Welfare Institute



Erin Sutherland
Staff Attorney, Farm Animal Program
Animal Welfare Institute

Hawaii Supporters

Aloha Animal Advocates
Aloha Lokahi Association
Animal Rights Hawai'i
Kauai Humane Society
Maui Humane Society

National Supporters

Animal Legal Defense Fund
Animal Outlook
Mercy For Animals
The Humane Society of the United States

Attachments: Proposed Amendments to Hawaii Livestock Shipping Standards



Animal Welfare Institute

900 Pennsylvania Avenue, SE, Washington, DC 20003

Proposed Amendments to Hawaii Livestock Shipping Standards

Proposed amendments are indicated in red font.

4-16-11 Carrier responsibility ~~{on importations}~~

(a) Carriers transporting cattle, bison, water buffalo, camelids, sheep, or goats . . .

...

(c) Carriers shall ensure that cattle, bison, water buffalo, camelids, sheep, and goats are provided adequate ventilation. Carriers shall not place or stack containers in a manner that prevents cross-ventilation for animals. Animals shall not be stowed during transportation or staged prior or subsequent to transportation in a manner that prevents natural ventilation unless ventilation with large industrial type fans is provided.

...

(e) Ocean carriers for the intrastate movement of ~~livestock~~ cattle, bison, water buffalo, camelids, sheep, and goats shall ensure that the Interisland ~~Livestock~~ Animal Shipping Standards by species, attached as Exhibit B are followed. Load densities shall not deviate by greater than 10% of the maximum load densities listed in interisland space requirements by species listed.

(f) It shall be the responsibility of the carrier, owner, and stock tender of ~~livestock~~ animals being transported interstate and intrastate to ~~(1) provide provisions for the livestock during transport and not allow livestock animals to go without feed or water for a period exceeding a total of 24 hours at any time including transport and holding time.~~ Water deprivation for pigs, horses, and calves 3 months of age or younger shall not exceed 12 hours including transport and holding time.

(g) Ocean carriers shall implement loading practices that ensure animals are the last on and first off a docked vessel. Carriers shall restrict animals from being loaded into locations that produce excessive heat, such as nearby engine boiler rooms, fuel oil storage walls, the ceiling on the uppermost deck, or the sides of the vessel (except interstate ships with no water intrusion). Carrier practices shall minimize staging, loading, and off-loading area wait time for animals. Carriers shall ensure that staging areas have access to clean water and shade (constructed or natural) for animals.

(h) No animal shall be transported via ocean vessel that is injured, ill, has unhealed wounds or is unable to bear weight on all four limbs; is blind in both eyes; is likely to give birth during transport or has given birth in the past 48 hours and traveling without their offspring; or is not weaned and traveling separate from the mother. Aggressive animals shall be transported separately.

...

Exhibit B

Other standards contained in Exhibit B shall be revised to be consistent with above revisions (e.g., ventilation, water/food access, loading practices) for all animals.

Interisland Transportation Space Requirements – Cattle					
Avg. Body Wt. (lbs.)	Area per Animal (ft ²)	Height	20' container (max number to load)	40' container (max number to load)	40' x 2 Double Decker (max number to load)
400	7	Stand comfortably, ensure 12 inches of clearance above head	23 20	46 43	70 Over height limit
500	8		29 17	40 38	61 Over height limit
600	9		18 15	36 33	54 Over height limit
800	11		15 13	29 27	Over height limit
1,000	14		11 10	23 21	Over height limit
1,200	15.5		10 9	21 19	Over height limit
1,500	19		8 7	17 16	Over height limit

Interisland Transportation Space Requirements – Sheep & Goats					
Avg. Body Wt. (lbs.)	Area per Animal (ft ²)	Height	20' container (max number to load)	40' container (max number to load)	40' x 2 Double Decker (max number to load)
60	2.4	Stand comfortably, ensure 12 inches of clearance above head	59	126	Consistent with load density calculation. Must ensure 12 inches of clearance above head for each level.
80	2.7		53	112	
100	3		47	101	
120	3.6		39	84	

Interisland Transportation Space Requirements – Pigs					
Avg. Body Wt. (lbs.)	Area per Animal (ft ²)	Height	20' container (max number to load)	40' container (max number to load)	40' x 2 Double Decker (max number to load)
50	1.8	Stand comfortably, ensure 12 inches of clearance above head	79	168	Consistent with load density calculation. Must ensure 12 inches of clearance above head for each level.
100	2.8		51	108	
150	3.5		40	86	
200	4.2		34	72	
250	5.1		28	59	
300	6		23	50	
350	6.6		21	46	

Interisland Transport Space Requirements – Horses					
Avg. Body Wt. (lbs.)	Area per Animal (ft ²)	Height	20' container (max number to load)	40' container (max number to load)	40' x 2 Double Decker (max number to load)
300-1100	20 (2.5 x 8ft)	Stand comfortably, ensure 12 inches of clearance above head	6	13	Over height limitation

Alvarado, Kristy S

From: HDOA.BOARD.TESTIMONY
Sent: Tuesday, May 17, 2022 4:55 PM
To: Maeda, Isaac M; Moniz, Jason D; Alvarado, Kristy S
Subject: FW: Proposed Amendments to Administrative Rules for Animal Disease Control Program

From: Kristin Mack <km@urmaui.com>
Sent: Tuesday, May 17, 2022 1:30 PM
To: HDOA.BOARD.TESTIMONY <hdoa.board.testimony@hawaii.gov>
Subject: [EXTERNAL] Proposed Amendments to Administrative Rules for Animal Disease Control Program

My name is Kristin Mack Almasin and I work in the local beef industry as a Livestock Manager for Ulupalakua Ranch on Maui.

As a responsible cattle producer, one of the foundations of our business is animal welfare. Without healthy and content livestock, we don't have a business at all.

We are particularly concerned about the welfare of animals that are shipped interisland to various markets. Movement of animals between islands is vital to our industry. For instance, shipping interisland is important to our ability to access slaughter capability and to meet the needs of the Oahu local beef markets.

I strongly support the proposed amendments to Chapter 4-16 as presented by Hawaii Department of Agriculture. As cattle stewards, we are dedicated to the welfare of our animals and this serves as a foundation of our operations. Whether in pasture, in the corrals or during transport, we support responsible and reasonable cattle management.

The proposed changes are the result of meetings between livestock producers and shippers to ensure the humane treatment and well-being of not only cattle but other livestock species including goats, sheep and horses. As a local producer, these amendments support my continued commitment to animal care and to providing customers with healthy, wholesome beef.

Thank you for the opportunity to testify in favor of these changes.

Sincerely,
Kristin Mack Almasin
Ulupalakua Ranch, Inc
Maui, HI
(808) 269-4092

Alvarado, Kristy S

From: HDOA.BOARD.TESTIMONY
Sent: Tuesday, May 17, 2022 4:55 PM
To: Maeda, Isaac M; Moniz, Jason D; Alvarado, Kristy S
Subject: FW: [EXTERNAL] Support of amendments to HAR Chapter 4-16: Cattle, Sheep, and Goats

From: Taurie Kinoshita <taurie@hawaii.edu>
Sent: Tuesday, May 17, 2022 2:15 PM
To: HDOA.BOARD.TESTIMONY <hdoa.board.testimony@hawaii.gov>
Subject: [EXTERNAL] Support of amendments to HAR Chapter 4-16: Cattle, Sheep, and Goats

To Chairman Phyllis Shimabukuro-Geiser and Members Hawaii State Board of Agriculture,

My name is Taurie Kinoshita and I am writing in strong support of proposed amendments to HAR Chapter 4 - 16, concerning cattle, sheep and goats.

All long-distance transportation of animals should include adequate opportunity for good rest, food, water, space, temperature control and clean shipping conditions. Efforts to minimize stress, transport time and time awaiting shipment are crucial. Protecting animals from needlessly suffering is ethical and vital for the greater good.

I urge the board to please amend HAR Chapter 4-16 and prevent animal suffering and risks to human health caused by their suffering.

Thank you for your consideration.

Mahalo, Taurie
Kinoshita (*she, her, hers*)
Theatre Lecturer,
Windward Community
College,
University of Hawaii
Education Director,
Hawaii Shakespeare
Festival
Play Development
Committee, Kumu
Kahua Theatre
(808) 779 - 3456
taurie@hawaii.edu
taurie@crueltheater.com

Alvarado, Kristy S

From: HDOA.BOARD.TESTIMONY
Sent: Tuesday, May 17, 2022 4:56 PM
To: Maeda, Isaac M; Moniz, Jason D; Alvarado, Kristy S
Subject: FW: Support of amendments to HAR Chapter 4-16: Cattle, Sheep, and Goats

From: Natalie Graham-Wood <ngrahamwood@hotmail.com>
Sent: Tuesday, May 17, 2022 2:30 PM
To: HDOA.BOARD.TESTIMONY <hdoa.board.testimony@hawaii.gov>
Subject: [EXTERNAL] Support of amendments to HAR Chapter 4-16: Cattle, Sheep, and Goats

Please vote to accepting the addition of the three mosquitos, named in the proposed administrative rules.

Alvarado, Kristy S

From: HDOA.BOARD.TESTIMONY
Sent: Tuesday, May 17, 2022 4:56 PM
To: Maeda, Isaac M; Moniz, Jason D; Alvarado, Kristy S
Subject: FW: [EXTERNAL] Support of amendments to HAR Chapter 4-16: Cattle, Sheep, and Goats

From: Torun Almer <starfire.retreat@gmail.com>
Sent: Tuesday, May 17, 2022 3:26 PM
To: HDOA.BOARD.TESTIMONY <hdoa.board.testimony@hawaii.gov>
Subject: [EXTERNAL] Support of amendments to HAR Chapter 4-16: Cattle, Sheep, and Goats

Please support the amendments to HAR Chapter 4-16: Cattle, Sheep, and Goats. Thank you for your consideration.
Sincerely, Torun and David Almér
84-5142 Keala O Keawe Road
Captain Cook, HI. 96704-8418

Alvarado, Kristy S

From: HDOA.BOARD.TESTIMONY
Sent: Wednesday, May 18, 2022 9:26 AM
To: Maeda, Isaac M; Moniz, Jason D; Alvarado, Kristy S
Subject: FW: [EXTERNAL] Support of amendments to HAR Chapter 4-16: Cattle, Sheep, and Goats

From: mhussenbux <mhussenbux@btinternet.com>
Sent: Tuesday, May 17, 2022 11:38 PM
To: HDOA.BOARD.TESTIMONY <hdoa.board.testimony@hawaii.gov>
Subject: [EXTERNAL] Support of amendments to HAR Chapter 4-16: Cattle, Sheep, and Goats

Chairwoman Ms Phyllis Shimabukuro-Geiser and members of the Hawai'i State Board of Agriculture – aloha!

I write on behalf of The Animal Interfaith Alliance, an international alliance of faith groups founded in Britain concerned about the welfare of animals. Our member organisations and individual members include Buddhists, Christians, Hindus, Jains, Jews, Muslims and Sikhs. We are all united by our common concern for animals, based on our various faiths. Our member organisations are listed below.

Via our close connection with the *Hawai'ian Humane Society*, we regularly support animal welfare legislation passed at the State Capitol, and feel privileged to do so.

We would like to support the amendments to your regulations for the long distance inter-island transport of animals. We have a history of concern about, and lobbying for, animals transported live, both from Britain, in and beyond the EU, and from Australia.

All animals should receive adequate rest, food, water and space, and cleanliness and temperature control should be monitored and appropriate for the animals' welfare. Length of time waiting and on board should be minimised to avoid stress.

In common with the *Hawai'ian Humane Society*, we support the extra recommendations of the *Animal Welfare Institute*, viz:

Fitness for travel of all animals must be assessed, including that of horses and pigs – density on board should be minimised to avoid stress – handling on board and awaiting loading should be improved, again to minimise stress, and food and water must be provided when the whole operation exceeds 12-24 hours.

May we add that the control of temperature is crucial. We wrote to the Agriculture Chief Veterinarian in Puerto Rico in March, asking him not to license the entry of horses from Florida, as 8 had died in the hot metal containers in 2019.

Mahalo for considering our submission from overseas.

Best regards,

Marian Hussenbux. Secretary International Campaigns
 Animal Interfaith Alliance
www.animal-interfaith-alliance.com

Faiths Working Together for Animals

Member Organisations (in alphabetical order):-

The Anglican Society for the Welfare of Animals
Animals in Islam
Bhagvatinandji Education and Health Trust
Catholic Concern for Animals
Christian Vegetarians and Vegans UK
The Christian Vegetarian Association US
Dharma Voices for Animals
The Institute of Jainology

The International Ahimsa Organisation

The Jewish Vegetarian Society
The Mahavir Trust
The Oshwal Association of the UK
Pan-Orthodox Concern for Animals
Quaker Concern for Animals
The Romeera Foundation
The Sadhu Vaswani Centre
The Young Jains

In partnership with The Interfaith Vegan Coalition

President - Dr Richard D. Ryder. **Vice President** - Dr Deborah Jones.

Patrons (in alphabetical order) - Rev. Christa Blanke, Rabbi Prof. Dan Cohn-Sherbok, Joyce D'Silva, Kay, Duchess of Hamilton, Faizan Jalil, Satish Kumar, Nitin Mehta MBE, Dr Andre Menache, Fr Simon Nellist, Dr Alpesh Patel, Dr Matthieu Ricard, Anant Shah OBE, Ajit Singh MBE, Charanjit Singh, Mohammad Safa, Rabbi Jonathan Wittenberg.

Alvarado, Kristy S

From: HDOA.BOARD.TESTIMONY
Sent: Wednesday, May 18, 2022 9:27 AM
To: Maeda, Isaac M; Moniz, Jason D; Alvarado, Kristy S
Subject: FW: [EXTERNAL] Proposed Amendments to Administrative Rules for Animal Disease Control Program

From: ranchgirl808@aol.com <ranchgirl808@aol.com>
Sent: Wednesday, May 18, 2022 8:14 AM
To: HDOA.BOARD.TESTIMONY <hdoa.board.testimony@hawaii.gov>
Subject: [EXTERNAL] Proposed Amendments to Administrative Rules for Animal Disease Control Program

My name is Theresa Thompson of Thompson ranch, Maui and I support the proposed amendments to Chapter 4-16.

These changes are necessary to clarify and update the rules to today's needs. These changes will allow the state to better track livestock movement and control movement of disease, which will protect the livestock industry from unwanted disease outbreaks. Additionally, the following will help ensure the safety of livestock during transport:

- Updating the carrier responsibility to specify that animals should not be stowed in a manner that prevents natural ventilation.
 - Working with transportation partners to limit time livestock spend on board vessels by implementing "last-on, first-off" practices.
 - Addressing load densities using the Interisland Livestock Shipping Standards and stipulating that densities shall not deviate by more than 10%.
 - Ensuring livestock transported over more than a 24 hour period have access to feed and water.
- The Interisland Livestock Shipping Standards that the rules refer to were vetted and updated in 2020 by livestock shipping experts and veterinarians. Further, these standards have proven to be successful, as transporting livestock interisland has resulted in very few losses. Many of the proposed changes are currently in practice by Hawaii's producers. Animal welfare has always been and remains the foundation of our operations. The thoughtful and responsible management of our livestock is an ongoing process. It is the result of collaborative efforts between producers like myself, health experts, transportation partners and regulatory agencies. Ultimately, it is to serve the people of Hawai'i by providing safe, wholesome and nutritious local food.

Mahalo,
Theresa Thompson, Maui

Alvarado, Kristy S

From: HDOA.BOARD.TESTIMONY
Sent: Wednesday, May 18, 2022 9:27 AM
To: Maeda, Isaac M; Moniz, Jason D; Alvarado, Kristy S
Subject: FW: [EXTERNAL] Support of amendments to HAR Chapter 4-16: Cattle, Sheep, and Goats

From: Bill Dixon <bill.r.dixon@gmail.com>
Sent: Wednesday, May 18, 2022 8:41 AM
To: HDOA.BOARD.TESTIMONY <hdoa.board.testimony@hawaii.gov>
Subject: [EXTERNAL] Support of amendments to HAR Chapter 4-16: Cattle, Sheep, and Goats

I support the Agriculture Department's proposed amendments to HAR Chapter 4-16. I also join the Hawaiian Humane Society and the Animal Welfare Institute in supporting further amendments to implement fitness to transport standards and other protections for all animals.

Taken together, these proposed amendments will provide common-sense guidance for the treatment of agricultural animals in Hawaii. The result will be a reduction in animal suffering and mortality from preventable factors such as excess heat, noxious fumes, food and water deprivation, trampling, conflict and infirmity.

I urge the Board to approve the proposed rules along with the amendments recommended by the Humane Society and AWI.

--

Bill Dixon
45-031 Lilipuna Road, Kaneohe, HI 96744

From: HDOA.BOARD.TESTIMONY
Sent: Wednesday, May 18, 2022 9:28 AM
To: Maeda, Isaac M; Moniz, Jason D; Alvarado, Kristy S
Subject: FW: [EXTERNAL] Support of amendments to HAR Chapter 4-16: Cattle, Sheep, and Goats

From: Stacey Arnold <staceyjanearnold@gmail.com>
Sent: Wednesday, May 18, 2022 8:44 AM
To: HDOA.BOARD.TESTIMONY <hdoa.board.testimony@hawaii.gov>
Subject: [EXTERNAL] Support of amendments to HAR Chapter 4-16: Cattle, Sheep, and Goats

Please make the amendments to HAR Chapter 4-16 which are recommended by the Animal Welfare Institute and Hawaiian Humane Society. Animals are sentient beings who deserve to be treated as such. Thank you.

Jane Arnold
1763 Iwi Way
Honolulu, HI 96816

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of suyin@hawaii.edu
Sent: Wednesday, May 18, 2022 11:08 AM
To: HDOAAI
Subject: [EXTERNAL] Keep Cattle and Goats Safe During Transport

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

Animals are extremely vulnerable during transport due to stress and environmental factors that can exacerbate existing conditions. The proposed regulations rely on standards that have proved woefully inadequate in preventing animals from suffering and dying: In 2019, 21 cattle died on a barge that was traveling from Honolulu to Kauai. The only animal care standards in use at the time were the voluntary standards of the Hawaii Cattlemen's Council, which are what the proposal is largely based upon. These standards are inadequate, as they did not keep those cows safe then and will not keep them safe going forward.

The rules should be amended to incorporate provisions to protect animals from heat stress, including limitations on load density; improvements to loading practices; requiring carriers to provide animals with food, water, and access to shade; and restrictions on cow container locations on ships so that animals are not placed in areas with excessive heat.

The HDOA should also revise its proposal to disallow transportation of animals that are not fit to travel because they are (1) lame, weak, or fatigued, (2) blind in both eyes, (3) females traveling without young that have given birth within the previous 48 hours, (4) pregnant females within the final 10% of their gestation period at the planned time of unloading, (5) newborns with unhealed navels, making them prone to infection, or (6) animals with unhealed wounds from recent procedures such as dehorning, castration, tail docking, or branding.

Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

Suyin Phillips
4168 Huanui St.
Honolulu, HI 96816-4717

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of Michiyo Sato <mailagent@thesoftedge.com>
Sent: Wednesday, May 18, 2022 11:40 AM
To: HDOAAI
Subject: [EXTERNAL] Protect Animals at Sea

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

Animals are extremely vulnerable during transport due to stress and environmental factors that can exacerbate existing conditions. The proposed regulations rely on standards that have proved woefully inadequate in preventing animals from suffering and dying: In 2019, 21 cattle died on a barge that was traveling from Honolulu to Kauai. The only animal care standards in use at the time were the voluntary standards of the Hawaii Cattlemen's Council, which are what the proposal is largely based upon. These standards are inadequate, as they did not keep those cows safe then and will not keep them safe going forward.

The rules should be amended to incorporate provisions to protect animals from heat stress, including limitations on load density; improvements to loading practices; requiring carriers to provide animals with food, water, and access to shade; and restrictions on cow container locations on ships so that animals are not placed in areas with excessive heat.

The HDOA should also revise its proposal to disallow transportation of animals that are not fit to travel because they are (1) lame, weak, or fatigued, (2) blind in both eyes, (3) females traveling without young that have given birth within the previous 48 hours, (4) pregnant females within the final 10% of their gestation period at the planned time of unloading, (5) newborns with unhealed navels, making them prone to infection, or (6) animals with unhealed wounds from recent procedures such as dehorning, castration, tail docking, or branding.

Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

Michiyo Sato
2255 mahalo street
Honolulu , HI 96817

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of Shan Tanaka <mailagent@thesoftedge.com>
Sent: Wednesday, May 18, 2022 12:06 PM
To: HDOAAI
Subject: [EXTERNAL] Amend Proposed Transport Regulations to Protect Animals

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

Animals are extremely vulnerable during transport due to stress and environmental factors that can exacerbate existing conditions. The proposed regulations rely on standards that have proved woefully inadequate in preventing animals from suffering and dying: In 2019, 21 cattle died on a barge that was traveling from Honolulu to Kauai. The only animal care standards in use at the time were the voluntary standards of the Hawaii Cattlemen's Council, which are what the proposal is largely based upon. These standards are inadequate, as they did not keep those cows safe then and will not keep them safe going forward.

The rules should be amended to incorporate provisions to protect animals from heat stress, including limitations on load density; improvements to loading practices; requiring carriers to provide animals with food, water, and access to shade; and restrictions on cow container locations on ships so that animals are not placed in areas with excessive heat.

The HDOA should also revise its proposal to disallow transportation of animals that are not fit to travel because they are (1) lame, weak, or fatigued, (2) blind in both eyes, (3) females traveling without young that have given birth within the previous 48 hours, (4) pregnant females within the final 10% of their gestation period at the planned time of unloading, (5) newborns with unhealed navels, making them prone to infection, or (6) animals with unhealed wounds from recent procedures such as dehorning, castration, tail docking, or branding.

Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

Shan Tanaka
1257 Honokahua street
Honolulu, HI 96825

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of Jessica Palomino
<mailagent@thesoftedge.com>
Sent: Wednesday, May 18, 2022 12:16 PM
To: HDOAAI
Subject: [EXTERNAL] Protect Animals at Sea

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

I have personally watched the cows arrive to O'ahu's slaughterhouses in the shipping containers. It's horrific to see the fear in their eyes and hear their terrified cries. This is cruel and must stop.

Animals are extremely vulnerable during transport due to stress and environmental factors that can exacerbate existing conditions. The proposed regulations rely on standards that have proved woefully inadequate in preventing animals from suffering and dying: In 2019, 21 cattle died on a barge that was traveling from Honolulu to Kauai. The only animal care standards in use at the time were the voluntary standards of the Hawaii Cattlemen's Council, which are what the proposal is largely based upon. These standards are inadequate, as they did not keep those cows safe then and will not keep them safe going forward.

The rules should be amended to incorporate provisions to protect animals from heat stress, including limitations on load density; improvements to loading practices; requiring carriers to provide animals with food, water, and access to shade; and restrictions on cow container locations on ships so that animals are not placed in areas with excessive heat.

The HDOA should also revise its proposal to disallow transportation of animals that are not fit to travel because they are (1) lame, weak, or fatigued, (2) blind in both eyes, (3) females traveling without young that have given birth within the previous 48 hours, (4) pregnant females within the final 10% of their gestation period at the planned time of unloading, (5) newborns with unhealed navels, making them prone to infection, or (6) animals with unhealed wounds from recent procedures such as dehorning, castration, tail docking, or branding.

Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

Jessica Palomino
59-215 Ke nui rd apt f
Haleiwa , HI 96712

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of John Rang <mailagent@thesoftedge.com>
Sent: Wednesday, May 18, 2022 4:50 PM
To: HDOAAI
Subject: [EXTERNAL] Amend Proposed Transport Regulations to Protect Animals

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

Sending animals on transport ships is the most inhumane thing for animal welfare. This needs to end.

Animals are extremely vulnerable during transport due to stress and environmental factors that can exacerbate existing conditions. The proposed regulations rely on standards that have proved woefully inadequate in preventing animals from suffering and dying: In 2019, 21 cattle died on a barge that was traveling from Honolulu to Kauai. The only animal care standards in use at the time were the voluntary standards of the Hawaii Cattlemen's Council, which are what the proposal is largely based upon. These standards are inadequate, as they did not keep those cows safe then and will not keep them safe going forward.

The rules should be amended to incorporate provisions to protect animals from heat stress, including limitations on load density; improvements to loading practices; requiring carriers to provide animals with food, water, and access to shade; and restrictions on cow container locations on ships so that animals are not placed in areas with excessive heat.

The HDOA should also revise its proposal to disallow transportation of animals that are not fit to travel because they are (1) lame, weak, or fatigued, (2) blind in both eyes, (3) females traveling without young that have given birth within the previous 48 hours, (4) pregnant females within the final 10% of their gestation period at the planned time of unloading, (5) newborns with unhealed navels, making them prone to infection, or (6) animals with unhealed wounds from recent procedures such as dehorning, castration, tail docking, or branding.

Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

John Rang
2612 Kaaha St Apt 6
Honolulu , HI 96826

Alvarado, Kristy S

From: HDOA.BOARD.TESTIMONY
Sent: Wednesday, May 18, 2022 5:04 PM
To: Maeda, Isaac M; Moniz, Jason D; Alvarado, Kristy S
Subject: FW: [EXTERNAL] Support of amendments to HAR Chapter 4-16: Cattle, Sheep, and Goats

From: Stephanie McLaughlin <smclaughlin808@gmail.com>
Sent: Wednesday, May 18, 2022 2:21 PM
To: HDOA.BOARD.TESTIMONY <hdoa.board.testimony@hawaii.gov>
Subject: [EXTERNAL] Support of amendments to HAR Chapter 4-16: Cattle, Sheep, and Goats

I support this. I encourage the board to also support this important bill.

--

Stephanie McLaughlin

"Be the change you wish to see in the world."

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of Brittany Higa <mailagent@thesoftedge.com>
Sent: Wednesday, May 18, 2022 6:44 PM
To: HDOAAI
Subject: [EXTERNAL] Keep Cattle and Goats Safe During Transport

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

Animals are extremely vulnerable during transport due to stress and environmental factors that can exacerbate existing conditions. The proposed regulations rely on standards that have proved woefully inadequate in preventing animals from suffering and dying: In 2019, 21 cattle died on a barge that was traveling from Honolulu to Kauai. The only animal care standards in use at the time were the voluntary standards of the Hawaii Cattlemen's Council, which are what the proposal is largely based upon. These standards are inadequate, as they did not keep those cows safe then and will not keep them safe going forward.

The rules should be amended to incorporate provisions to protect animals from heat stress, including limitations on load density; improvements to loading practices; requiring carriers to provide animals with food, water, and access to shade; and restrictions on cow container locations on ships so that animals are not placed in areas with excessive heat.

The HDOA should also revise its proposal to disallow transportation of animals that are not fit to travel because they are (1) lame, weak, or fatigued, (2) blind in both eyes, (3) females traveling without young that have given birth within the previous 48 hours, (4) pregnant females within the final 10% of their gestation period at the planned time of unloading, (5) newborns with unhealed navels, making them prone to infection, or (6) animals with unhealed wounds from recent procedures such as dehorning, castration, tail docking, or branding.

Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

Brittany Higa
Po box 4265
Waianae , HI 96792

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of Tadashi Kishimoto
<mailagent@thesoftedge.com>
Sent: Wednesday, May 18, 2022 11:34 PM
To: HDOAAI
Subject: [EXTERNAL] Amend Proposed Transport Regulations to Protect Animals

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

Animals are extremely vulnerable during transport due to stress and environmental factors that can exacerbate existing conditions. The proposed regulations rely on standards that have proved woefully inadequate in preventing animals from suffering and dying: In 2019, 21 cattle died on a barge that was traveling from Honolulu to Kauai. The only animal care standards in use at the time were the voluntary standards of the Hawaii Cattlemen's Council, which are what the proposal is largely based upon. These standards are inadequate, as they did not keep those cows safe then and will not keep them safe going forward.

The rules should be amended to incorporate provisions to protect animals from heat stress, including limitations on load density; improvements to loading practices; requiring carriers to provide animals with food, water, and access to shade; and restrictions on cow container locations on ships so that animals are not placed in areas with excessive heat.

The HDOA should also revise its proposal to disallow transportation of animals that are not fit to travel because they are (1) lame, weak, or fatigued, (2) blind in both eyes, (3) females traveling without young that have given birth within the previous 48 hours, (4) pregnant females within the final 10% of their gestation period at the planned time of unloading, (5) newborns with unhealed navels, making them prone to infection, or (6) animals with unhealed wounds from recent procedures such as dehorning, castration, tail docking, or branding.

Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

Tadashi Kishimoto
1641 Young St.
Honolulu, HI 96826

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of Martha Bergner
<mailagent@thesoftedge.com>
Sent: Thursday, May 19, 2022 12:08 PM
To: HDOAAI
Subject: [EXTERNAL] Protect Animals at Sea

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

Animals are extremely vulnerable during transport due to stress and environmental factors that can exacerbate existing conditions. The proposed regulations rely on standards that have proved woefully inadequate in preventing animals from suffering and dying: In 2019, 21 cattle died on a barge that was traveling from Honolulu to Kauai. The only animal care standards in use at the time were the voluntary standards of the Hawaii Cattlemen's Council, which are what the proposal is largely based upon. These standards are inadequate, as they did not keep those cows safe then and will not keep them safe going forward.

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The HDOA should also revise its proposal to disallow transportation of animals that are not fit to travel because they are (1) lame, weak, or fatigued, (2) blind in both eyes, (3) females traveling without young that have given birth within the previous 48 hours, (4) pregnant females within the final 10% of their gestation period at the planned time of unloading, (5) newborns with unhealed navels, making them prone to infection, or (6) animals with unhealed wounds from recent procedures such as dehorning, castration, tail docking, or branding.

Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

Martha Bergner
6849 East Camino Del Dorado
Tucson, AZ 85715

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of Judy Sweatland
<mailagent@thesoftedge.com>
Sent: Thursday, May 19, 2022 6:26 PM
To: HDOAAI
Subject: [EXTERNAL] Amend Proposed Transport Regulations to Protect Animals

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

Animals are extremely vulnerable during transport due to stress and environmental factors that can exacerbate existing conditions. The proposed regulations rely on standards that have proved woefully inadequate in preventing animals from suffering and dying: In 2019, 21 cattle died on a barge that was traveling from Honolulu to Kauai. The only animal care standards in use at the time were the voluntary standards of the Hawaii Cattlemen's Council, which are what the proposal is largely based upon. These standards are inadequate, as they did not keep those cows safe then and will not keep them safe going forward.

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The HDOA should also revise its proposal to disallow transportation of animals that are not fit to travel because they are (1) lame, weak, or fatigued, (2) blind in both eyes, (3) females traveling without young that have given birth within the previous 48 hours, (4) pregnant females within the final 10% of their gestation period at the planned time of unloading, (5) newborns with unhealed navels, making them prone to infection, or (6) animals with unhealed wounds from recent procedures such as dehorning, castration, tail docking, or branding.

Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

Judy Sweatland
P. O. Box 977
Volcano, HI 96785-0977

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of Pat Borge <mailagent@thesoftedge.com>
Sent: Friday, May 20, 2022 2:32 PM
To: HDOAAI
Subject: [EXTERNAL] Amend Proposed Transport Regulations to Protect Animals

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

Animals are extremely vulnerable during transport due to stress and environmental factors that can exacerbate existing conditions. The proposed regulations rely on standards that have proved woefully inadequate in preventing animals from suffering and dying: In 2019, 21 cattle died on a barge that was traveling from Honolulu to Kauai. The only animal care standards in use at the time were the voluntary standards of the Hawaii Cattlemen's Council, which are what the proposal is largely based upon. These standards are inadequate, as they did not keep those cows safe then and will not keep them safe going forward.

The rules should be amended to incorporate provisions to protect animals from heat stress, including limitations on load density; improvements to loading practices; requiring carriers to provide animals with food, water, and access to shade; and restrictions on cow container locations on ships so that animals are not placed in areas with excessive heat.

The HDOA should also revise its proposal to disallow transportation of animals that are not fit to travel because they are (1) lame, weak, or fatigued, (2) blind in both eyes, (3) females traveling without young that have given birth within the previous 48 hours, (4) pregnant females within the final 10% of their gestation period at the planned time of unloading, (5) newborns with unhealed navels, making them prone to infection, or (6) animals with unhealed wounds from recent procedures such as dehorning, castration, tail docking, or branding.

Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

Pat Borge
Box 25096
Honolulu, HI 96825

Late

A-109

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of Tamara G <mailagent@thesoftedge.com>
Sent: Saturday, May 21, 2022 4:46 AM
To: HDOAAI
Subject: [EXTERNAL] Protect Animals at Sea

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

Animals are extremely vulnerable during transport due to stress and environmental factors that can exacerbate existing conditions. The proposed regulations rely on standards that have proved woefully inadequate in preventing animals from suffering and dying: In 2019, 21 cattle died on a barge that was traveling from Honolulu to Kauai. The only animal care standards in use at the time were the voluntary standards of the Hawaii Cattlemen's Council, which are what the proposal is largely based upon. These standards are inadequate, as they did not keep those cows safe then and will not keep them safe going forward.

The rules should be amended to incorporate provisions to protect animals from heat stress, including limitations on load density; improvements to loading practices; requiring carriers to provide animals with food, water, and access to shade; and restrictions on cow container locations on ships so that animals are not placed in areas with excessive heat.

The HDOA should also revise its proposal to disallow transportation of animals that are not fit to travel because they are (1) lame, weak, or fatigued, (2) blind in both eyes, (3) females traveling without young that have given birth within the previous 48 hours, (4) pregnant females within the final 10% of their gestation period at the planned time of unloading, (5) newborns with unhealed navels, making them prone to infection, or (6) animals with unhealed wounds from recent procedures such as dehorning, castration, tail docking, or branding.

Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

Tamara G
4011 Burma Spur
Fallbrook, CA 92028

Late

Alvarado, Kristy S

From: mailagent@thesoftedge.com on behalf of Kris Steinke <mailagent@thesoftedge.com>
Sent: Sunday, May 22, 2022 12:48 PM
To: HDOAAI
Subject: [EXTERNAL] Protect Animals at Sea

Dear Chairperson Shimabukuro-Geiser:

Thank you for the opportunity to comment on the proposed regulations for animal transport by sea vessel between the Hawaiian Islands. I urge you to amend the regulations to ensure that animals do not experience heat stress during their journeys, that they have adequate ventilation, and that they be fit for travel.

Animals are extremely vulnerable during transport due to stress and environmental factors that can exacerbate existing conditions. The proposed regulations rely on standards that have proved woefully inadequate in preventing animals from suffering and dying: In 2019, 21 cattle died on a barge that was traveling from Honolulu to Kauai. The only animal care standards in use at the time were the voluntary standards of the Hawaii Cattlemen's Council, which are what the proposal is largely based upon. These standards are inadequate, as they did not keep those cows safe then and will not keep them safe going forward.

The rules should be amended to incorporate provisions to protect animals from heat stress, including limitations on load density; improvements to loading practices; requiring carriers to provide animals with food, water, and access to shade; and restrictions on cow container locations on ships so that animals are not placed in areas with excessive heat.

The HDOA should also revise its proposal to disallow transportation of animals that are not fit to travel because they are (1) lame, weak, or fatigued, (2) blind in both eyes, (3) females traveling without young that have given birth within the previous 48 hours, (4) pregnant females within the final 10% of their gestation period at the planned time of unloading, (5) newborns with unhealed navels, making them prone to infection, or (6) animals with unhealed wounds from recent procedures such as dehorning, castration, tail docking, or branding.

Thank you for considering my comment and for working to improve the welfare of animals transported on ships in Hawaii.

Sincerely,

Kris Steinke
PO Box 218
Papaikou, HI 96781

APPENDIX III

Summary of Specific Changes Recommended to Chapter 4-16, HAR:

1. Chapter 4-16 title is amended by adding "Bison, Water Buffalo, Camelids." Subchapter 2 title is amended by adding "'Bison, Water Buffalo." Subchapter 4 title is amended by adding "Camel ids."
2. Section 4-16-1, Objective. 'Bison, Water Buffalo, Camelids" is added and section simplified.
3. Section 4-16-3, Subchapters is amended to add "bison, water buffalo, camelids."
4. Amending Section 4-29-2 "Definitions"
 - a. Expand definition of "Animals."
 - b. The definition "APHIS" is added
 - c. The definition "Board" is simplified.
 - d. The definition "Carrier" is clarified.
 - e. The definition "Certificate of Veterinary Inspection" or "CVI" is added.
 - f. The definition "Chairperson" is simplified.
 - g. The definition "Contact" is added.
 - h. The definition "Department" is simplified.
 - i. The definition "Division head" is simplified.
 - j. The definition "Domestic animals" is expanded
 - k. The definition "Entry" is added.
 - l. The definition "Hold order" is added.
 - m. The definition "Health Certificate" is clarified and relocated according to alphabetization.
 - n. The definition "Inspector" is expanded.
 - o. The definition "Official vaccinate" is updated.
 - p. The definition "Polymerase chain reaction" or "PCR" is added.
 - q. The definition "Premises" is replaced with "Premise".
 - r. The definition "Provisional quarantine" is deleted.
 - s. The definition "Quarantine" is clarified.
 - t. The definition "Shipmaster's declaration" is clarified.
 - u. The definition "State veterinarian" is updated.
 - v. The definition "Vaccine" is clarified.
5. Amending Section 4-16-5 Quarantine-general by adding "population of animals" and deleting "his."

APPENDIX III

6. Amending Section Section 4-16-6 Quarantine area-feedlot . Clarifies newborn management
7. Amending Section Section 4-16-7 Quarantine area-slaughterhouse by clarifying movement.
8. Amending Section 4-16-8 Regulatory jurisdiction on importations. Bison, Water Buffalo and Camelids are added.
9. Amending Section 4-16-9 Entry status on imports. Bison, Water Buffalo and Camelids are added and permitting requirement for Plant Quarantine branch added.
10. Amending Section 4-16-10 Ports of entry. Ports are clarified by species and Bison, Water Buffalo, Camelids species are added.
11. Amending Section 4-16-11 Carrier responsibility on importation.
 - a. Section title is simplified by eliminating "on importation"
 - b. Bison, Water Buffalo and Camelids are added.
 - c. Intrastate transport requirements are added for loading, unloading, ventilation, food and water, shipping container standards and density.
 - d. Correct an omission in a portion of the table for in Exhibit A for Interisland Livestock Shipping Standards for Sheep and Goats and is added back.
 - e. "Load densities shall not deviate by greater than 10% of the maximum load densities listed in interisland space requirements by species listed." is deleted.
12. Amending Section 4-16-12 Use of quarantine station facilities. Bison, Water Buffalo and Camelids are added and responsibilities of owner clarified.
13. Amending Section 4-16-13 Regulatory jurisdiction on exports. Livestock certificates of veterinary inspection issued in Hawaii is clarified.
14. Amending Subchapter 2 title "Cattle" is amended to add "'Bison, Water Buffalo"
15. Amending Section 4-16-14 Scope. Adding Bison and Water buffalo is proposed.
16. Amending Section 4-16-15 Pre-shipment entry requirements.
 - a. Import permitting is clarified.
 - b. Trichomoniasis requirements are added.
 - c. Certificate of veterinary inspection details are clarified.
17. Amending Section 4-16-16 Post-shipment entry requirements. Amendments are proposed to:

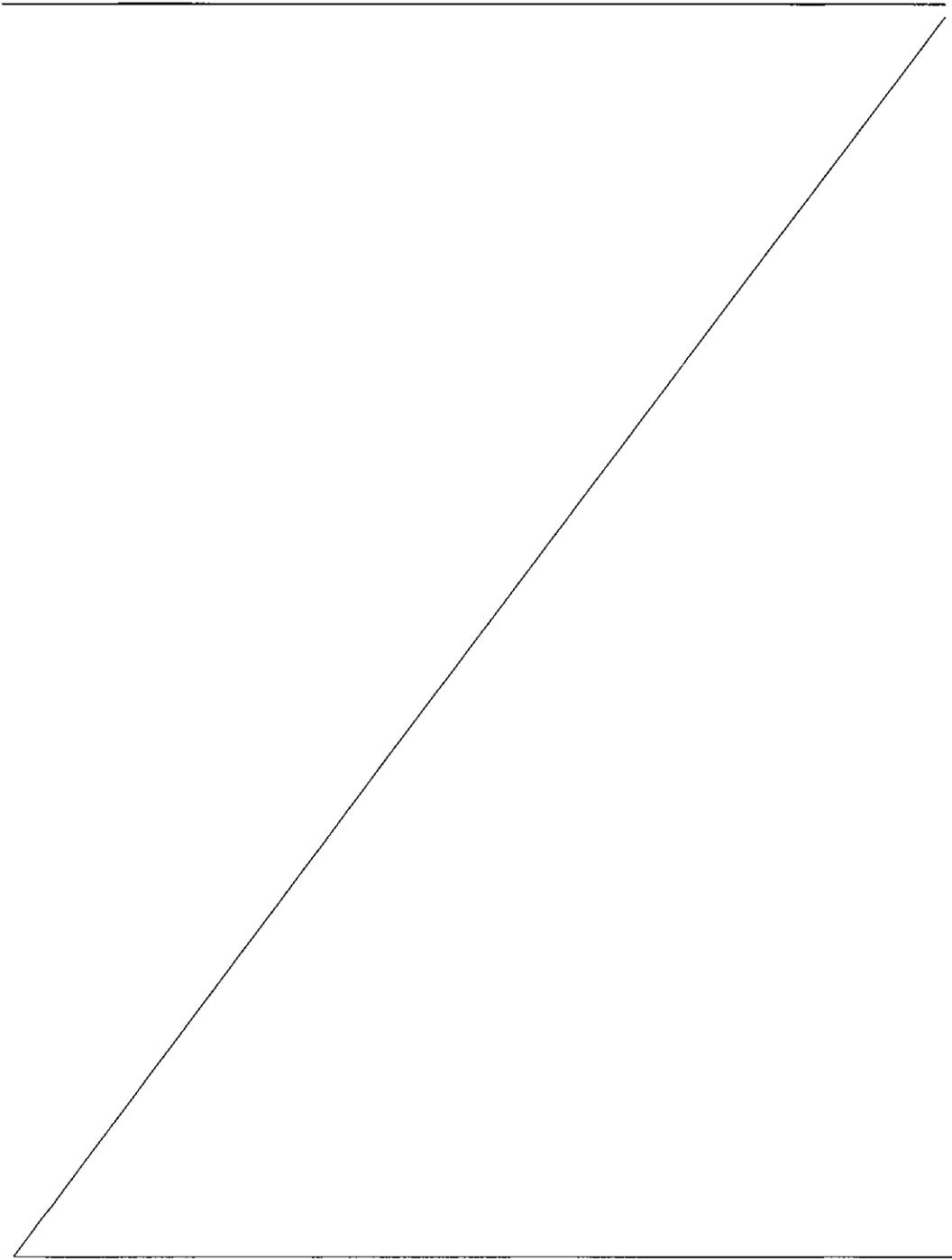
- a. Specify post-shipping testing.
 - b. Detail quarantine site.
 - c. Correct terminology changing "symptoms" to "signs".
18. Amending Section 4-16-17 Anaplasmosis surveillance, control and eradication is amended to clarify Anaplasmosis testing and management.
 19. Amending Section 4-16-18 Brucellosis surveillance, control, and eradication is amended to clarify testing and case management.
 20. Amending Section 4-16-19 Control of Vaccination for Brucellosis is clarified.
 21. Amending Section 4-16-20 Tuberculosis control and eradication procedures are clarified and test reactor management updated.
 22. A new Section 4-16-20.1 Trichomoniasis control and eradication is proposed to address import and management requirements for this disease.
 23. A new Section 4-16-20.2 Diseases and investigation is proposed to detail disease investigations and subsequent case management.
 24. Amending Section 4-16-22 Pre-shipment entry requirements is updated to add Scrapie and clarify entry requirements.
 25. Amending Section 4-16-23 Post-shipment entry requirements is corrected by replacing "they" with "animals".
 26. Amending Subchapter 4 title "Goats" is amended to add "Camelids".
 27. Amending Section 4-16-24 (a) Scope is amended to add "and Camelids".
 28. Amending Section 4-16-25 Pre-shipment entry requirements.
 - a. "Camelids" is added to "Goats" in the section.
 - b. "Health certificate" is replaced with "Certificate of Veterinary Inspection" for clarity.
 - c. "Scrapie" is added to the list of diseases an imported animal's herd of origin may not be under quarantine for.
 - d. "official USDA" is added to "eartag" to specify acceptable tags.
 - e. Ectoparasite treatment is specified.

APPENDIX III

29. Other changes are proposed throughout Chapter 4-16 for clarity, simplification or to correct format, grammar and punctuation.

DEPARTMENT OF AGRICULTURE
Amendment and Compilation of Chapter 4-16
Hawaii Administrative Rules
November 29, 2022
Summary

1. Chapter 4-16 title; is amended
2. §4-16-1 is amended
3. §§4-16-3 to 4-16-13 are amended
4. Subchapter 2 title is amended
5. §§4-16-14 to 4-16-20.2 are amended
6. §§4-16-22 to 4-16-23 are amended
7. Subchapter 4 title is amended
8. §§4-16-24 to 4-16-25 are amended
9. Chapter 4-16 is compiled.



1

TITLE 4

DEPARTMENT OF AGRICULTURE

SUBTITLE 3

DIVISION OF ANIMAL INDUSTRY

CHAPTER 16

CATTLE, BISON, WATER BUFFALO, CAMELIDS, SHEEP, AND
GOATS

Subchapter 1 General Provisions

- §4-16-1 Objective
- §4-16-2 Construction of rules
- §4-16-3 Subchapters
- §4-16-4 Definitions
- §4-16-5 Quarantine-general
- §4-16-6 Quarantine area-feedlot
- §4-16-7 Quarantine area-slaughterhouse
- §4-16-8 Regulatory jurisdiction on importations
- §4-16-9 Entry status on imports
- §4-16-10 Ports of entry
- §4-16-11 Carrier responsibility [~~on importations~~]
- §4-16-12 Use of quarantine station facilities
- §4-16-13 Regulatory jurisdiction on exports

Subchapter 2 Cattle, Bison, Water Buffalo

- §4-16-14 Scope
- §4-16-15 Pre-shipment entry requirements
- §4-16-16 Post-shipment entry requirements
- §4-16-17 Anaplasmosis surveillance, control, and eradication
- §4-16-18 Brucellosis surveillance, control, and eradication
- §4-16-19 Vaccination for brucellosis prohibited; exceptions
- §4-16-20 Tuberculosis control and eradication
- §4-16-20.1 Trichomoniasis control and eradication
- §4-16-20.2 Diseases and investigation

Subchapter 3 Sheep

§4-16-21 Scope

§4-16-22 Pre-shipment entry requirements

§4-16-23 Post-shipment entry requirements

Subchapter 4 Goats and Camelids

§4-16-24 Scope

§4-16-25 Pre-shipment entry requirements

§4-16-26 Post-shipment entry requirements

Historical Note: This chapter is based substantially upon Regulation 1 entitled "Definition of Terms, Etc."

[Eff. 9/26/49; am 9/29/55; am 7/25/57; am 6/26/58; am 8/15/68; am 5/19/72; am 10/31/74; am 8/16/77; am 8/21/80; R 10/5/81]; Regulation 2 entitled "Permits for Importation" [Eff. 9/26/49; am 9/29/55; am 7/24/70; am 10/31/74; am 8/21/80; R 10/5/81]; Regulation 3 entitled "Inspection and Quarantine" [Eff. 9/26/49; am 10/31/74; am 8/21/80; R 10/5/81]; Regulation 4 entitled "Landings and Entry into Territory" [Eff. 9/26/49; am 4/29/54; am 8/15/68; am 6/26/70; am 10/31/74; am 8/21/80; R 10/5/81]; Regulation 6 entitled "Importation of Cattle" [Eff. 9/26/49; am 8/26/54; am 10/28/54; am 9/29/55; am 8/15/68; am 7/30/73; am 10/31/74; am 8/21/80; R 10/5/81]; Regulation 105 entitled "Relating to Use of Facilities at the Animal Quarantine Station, Honolulu" [Eff. 9/26/49; am 6/26/70; am 2/18/72; am 7/30/73; am 2/26/76; am 8/16/77; 7/17/80; am 8/21/80; R 10/5/81]; Regulation 106 entitled "Quarantine of Premises, Animals and Effects" [Eff. 9/26/49; am 10/31/74; am 8/21/80; R 10/5/81]; Regulation 107 entitled "Official Vaccination of Calves with Brucella Vaccine,

Identification of Vaccinates and Record of Vaccination" [Eff. 11/10/55; am 10/31/74; am 8/21/80; R 10/5/81]; Regulation 108 entitled "Anaplasmosis Control and Eradication" [Eff. 10/24/55; am 9/29/55; am 10/31/74; am 8/21/80; R 10/5/81]; Regulation 109 entitled "Brucellosis Control and Eradication" [Eff. 8/31/57; am 6/26/58; am 10/31/74; am 8/21/80; R 10/5/81]; Regulation 110 entitled "Tuberculosis Control and Eradication" [Eff. 7/31/58; am 10/31/74; am 8/21/80; R 10/5/81] Regulation 107 entitled "Penalty" [Eff. 9/26/49; am and ren Regulation 200 9/29/55; am 7/25/57; am 6/26/58; am 10/31/74; am 8/21/80; R 10/5/81]

SUBCHAPTER 1

GENERAL PROVISIONS

§4-16-1 Objective. [~~This chapter shall govern the procedures of the department of agriculture pertaining to the prevention, control, and eradication of cattle, sheep, and goat diseases in the State.~~] The objective of this chapter is to prevent the introduction of pests and diseases of cattle, sheep, goats, bison, water buffalo and camelids into the State, and to control diseases of these species found in the state. [Eff. 10/5/81] (Auth: HRS §142-2) (Imp: HRS §142-3); [am and comp](Auth: HRS §142-2)(Imp: HRS §142-3)

§4-16-2 Construction of rules. This chapter shall be construed to effectuate the purposes of chapter 142, Hawaii Revised Statutes. [Eff. 10/5/81; comp](Auth: HRS §142-2)(Imp: HRS §142-3)

§4-16-3 Subchapters. (a) Each subchapter sets forth special rules applicable to the type of proceeding described in the caption.

(b) This subchapter sets forth general rules applicable to proceedings governing cattle, bison, water buffalo, camelids, sheep, and goats. [Eff. 10/5/81]; am and comp _____] (Auth: HRS §142-2) (Imp: HRS §142-3)

§4-16-4 Definitions. As used in this chapter, unless context otherwise requires:

"Accredited veterinarian" means a veterinarian certified by federal and state animal health authorities to participate in cooperative disease control activities, including execution of health certificates for the interstate and international movement of animals[+].

"Animals" includes wild animals, feral animals, domestic animals, aquaculture animals, poultry, birds, and hatching eggs[+].

"APHIS" means Animal and Plant Health Inspection Service of the United States Department of Agriculture.

"Approved disinfectant" means a germicidal agent approved for use in a specific state-federal animal disease control and eradication program[+].

"Approved pesticide" means a chemical agent approved for use against external parasites[+].

"Board" means [~~the board of agriculture, State of Hawaii;~~] the state board of agriculture.

"Carrier" means [~~any ship, vessel, airplane, or other conveyance used to transport animals; or its master, commanding officer, owner, local manager, or agent;~~] any person or company engaged in the activity of transporting animals, by land, sea, or air including any ship, vessel, airplane, or other conveyance used to transport animals; or its master,

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commanding officer, owner, local manager, broker or agent.

"Certificate of veterinary inspection" or "CVI" means an official state or federal certificate issued by an accredited veterinarian or state or federal veterinary officer providing all information and test results required for animals to enter Hawaii, to move interstate and certifying that the animals being transported are free of symptoms of transmissible disease.

"Chairperson" means the chairperson of the state board of agriculture. [~~the chairperson of the board of agriculture, department of agriculture, State of Hawaii~~] [+].

"Contact" means any physical union or touching between animals.

"Department" means the [~~department of agriculture, State of Hawaii,~~] state department of agriculture.

[~~"Health certificate" means an official document issued by an accredited veterinarian certifying that the animals being shipped are free from external parasites and symptoms of transmissible disease and providing all other information and test results required for acceptance by the State,~~]

"Division" means the division of animal industry, department of agriculture[+].

"Division head" means the [~~chief or senior officer~~] administrator of the division of animal industry[+].

"Domestic animals" includes horses, mules, asses, cattle, sheep, goats, swine, dogs, cats, poultry, rabbits, llamas and alpacas, [~~and other animals~~] including camelid, maintained in the domestic state; includes poultry and hatching eggs[+].

"Effects" includes ropes, halters, harnesses, buckets, stalls, crates, pens, stables, feed, feed bags, and other equipment used to handle, confine, maintain, or transport animals[+].

"Entry" means the release of animals into the State after completion of all requirements set forth in this chapter.

"Health certificate" means an official document in English, issued by an accredited veterinarian certifying that the animals being shipped are free from external parasites and symptoms of transmissible disease and providing all other information and test results required for acceptance by the State, also known as "Certificate of Veterinary Inspection".

"Hold order" means an order issued by the state veterinarian restricting the movement of all animals, effects, and implements at a premise undergoing a disease investigation, for a maximum period of ninety days for each hold order issued.

"Inspector" means [~~a veterinarian or livestock inspector in the division of animal industry or United States Department of Agriculture,~~] a veterinarian, livestock inspector, or any officer or employee of the department of agriculture or USDA, authorized or designated by the state veterinarian to enforce the provisions of this chapter.

"Official vaccinate" means a female bovine animal that has been vaccinated with an approved brucellosis vaccine and identified with the required tattoo and official identification [~~or "V" brand,~~].

"Polymerase Chain Reaction" or "PCR" means a laboratory test to detect genetic material from a specific organism, such as a virus and protozoa.

"Premise" means [~~"Premises" means a piece of real property, including any structure on it,~~] a property, including any structure on it.

[~~"Provisional quarantine" means temporary or conditional quarantine,~~]

"Quarantine" means [~~the isolation of an animal or animals on premises or areas specified by the division,~~ the designation given such premises or areas,~~]~~ the secure isolation and confinement of animals on a premise or premises, or in an area

designated by the state veterinarian. No animal may be removed from or added to these premises or areas except as permitted by the state veterinarian.

"Shipmaster's declaration" [~~means an official state form which shall be completed and submitted by a carrier providing information on animals and birds transported,~~] means an official state form that shall be completed and submitted by a carrier and provides information on animals transported including the name of the importer.

"State veterinarian" means [~~a qualified veterinarian in the division of animal industry, department of agriculture, designated by the board of agriculture,~~] the veterinary program administrator of animal industry division, department of agriculture.

"Transmissible disease" means any contagious, infectious, or communicable disease of animals [~~and~~].

"Vaccine" means [~~a suspension of live, attenuated, or killed microorganisms such as bacteria and viruses used for the prevention or treatment of infectious diseases~~] a biological agent composed of live, attenuated, genetically modified, or killed microorganisms such as bacteria and viruses, or their DNA or RNA used for the prevention or treatment of diseases. [Eff. 10/5/81; am and comp]
(Auth: HRS §142-2) (Imp: HRS §142-3)

§4-16-5 Quarantine-general. (a) The department is authorized to place a quarantine on any [~~animal,~~] herd, population of animals, premises, district, or island whenever in its opinion such action is necessary to prevent the spread of a transmissible disease.

(b) No animals shall be removed from or be added to such herds, premises, or areas except by permit from the department.

(c) This quarantine shall remain in effect until rescinded by the chairperson or [~~his~~] authorized representative. [Eff. 10/5/81];
am and comp] Auth: HRS §142-2)
(Imp: HRS §§142-6 and 142-9)

§4-16-6 Quarantine area-feedlot. (a) All commercial feed yards which receive and feed animals from more than one herd are hereby declared quarantine zones.

(b) No animals shall be moved from these quarantine areas except to a licensed slaughterhouse or another commercial feedlot.

(c) Newborn animals [~~are exempt and~~] may be moved to other premises only when under permit from the division. [Eff. 10/5/81]; am and comp]
(Auth: HRS §142-2) (Imp: HRS §142-3)

§4-16-7 Quarantine area-slaughterhouse. (a) All pens on slaughterhouse premises are hereby declared quarantine zones.

(b) Animals taken to these pens shall remain there until slaughtered, except that they may be removed [~~for slaughter at another slaughterhouse~~] only when under permit issued by the division. [Eff. 10/5/81]; am and comp] (Auth: HRS §142-2) Imp: HRS §142-3)

§4-16-8 Regulatory jurisdiction on importations.

(a) Importations of cattle, bison, water buffalo, camelids, sheep, and goats from areas under the jurisdiction and control of the United States are subject to the rules of the department.

(b) Importations of cattle, bison, water buffalo, camelids, sheep, and goats from foreign countries, besides complying with department

requirements, shall not violate any federal regulations. [Eff. 10/5/81]; am and comp]
 (Auth: HRS §142-2)(Imp: HRS §§142-4, 142-5, and 142-8)

§4-16-9 Entry status on imports. [~~No cattle, sheep, or goats shall be allowed entry into the State unless accompanied by a health certificate and all entry requirements have been met.~~] No cattle, bison, camelids, water buffalo, sheep, or goats shall be transported to the State or allowed entry into the State unless accompanied by a valid import permit issued by the division before arrival, a valid certificate of veterinary inspection and all pre-entry and entry requirements have been met. Bison and water buffalo in addition to being issued a pre-arrival import permit by the division shall also be required to obtain a permit to possess issued by the Hawaii Board of Agriculture through the department's Plant Quarantine Branch prior to importation. Landing or removal of animals from a carrier for purposes of inspection or quarantine shall not constitute entry into the State for any purpose whatsoever. No effects of animals, likewise, shall be brought into the State unless so authorized by an inspector of the division of animal industry or USDA. [Eff. 10/5/81];
 am and comp](Auth: HRS §142-2)
 (Imp: HRS §§142-4 and 142-5)

§4-16-10 Ports of entry. (a) Cattle, bison, and water buffalo shall [be entered] enter through a port or airport [in Hilo or Honolulu] on the islands of Oahu, Hawaii or Maui where permanent state livestock quarantine facilities are provided. [~~They may, however, be entered~~] Cattle, bison, and water buffalo may also enter through other ports in the State if adequate temporary quarantine facilities are made available by the importer and approved in writing by the [department] division.

(b) ~~[Sheep and goats may be entered]~~ Sheep, goats, and camelids shall enter through any official port or airport in the State with prior approval from the division. [Eff. 10/5/81]; am and comp]
(Auth: HRS§142-2) Imp: HRS §§142-3, 142-4, and 142-5)

§4-16-11 Carrier responsibility [on importations]. (a) Carriers transporting cattle, bison, water buffalo, camelids, sheep, or goats interstate or intrastate through or from any port or airport in the State or landing these animals at any port or airport within the State shall, immediately on arrival, submit a shipmaster's declaration to the department providing the following information:

- (1) Name and address of owner, importer, consignor, consignee, and port of origin of the animals;
- (2) Number of animals on board, including those born en route; and
- (3) Number of animals which have died or have been injured en route, with the circumstances of the deaths or injuries.

(b) Carriers shall be responsible for securely confining cattle, bison, water buffalo, camelids, sheep, or goats for entry into the State at the pier or airport until movement is authorized by an inspector. Cattle, bison, water buffalo, camelids, sheep, or goats in transit to ports beyond Hawaii shall not be off-loaded for any purpose unless authorized by the state veterinarian or [an] designated agent.

(c) Carriers shall ensure that cattle, bison, water buffalo, camelids, sheep, and goats are provided adequate ventilation. Animals shall not be stowed during transportation or staged prior or subsequent to transportation in a manner that prevents natural ventilation.

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[e](d) Carriers transporting animals into the state shall not off-load and dispose of manure except under the supervision of an inspector. [Eff. 10/5/81; am and comp] (Auth: HRS §142-2) (Imp: HRS §§142-3, 142-4, 142-5 and 142-8)

(e) Ocean carriers for the intrastate movement of livestock shall ensure that the Interisland Livestock Shipping Standards by species, attached as Exhibit A are followed. [Load densities shall not deviate by greater than 10% of the maximum load densities listed in interisland space requirements by species listed.]

(f) It shall be the responsibility of the carrier, owner, or stock tender of livestock being transported interstate and intrastate to ~~[(1)]~~ provide provisions for the livestock during transport and not allow livestock to go without feed or water for more than ~~[a period exceeding]~~ 24 hours while in ~~[at any time during]~~ transport.

~~(g) [Carriers of animals shall within reasonable operational practices load them last and unload them first to reduce the duration of their stowage on the transportation vessel. Carriers shall restrict animals from being stowed in locations that produce heat, restrict ventilation or are prone to receive ocean water. Carrier practices shall strive to minimize staging time in loading and off-loading areas. Carriers shall ensure that staging areas have access to clean water and adequate ventilation.]~~

Ocean carriers, barring harbor logistical limitations, shall implement loading and unloading practices that strive to ensure animals are the last on and first off a docked vessel. Carriers shall restrict animals from being loaded into locations that produce excessive heat, have restricted ventilation or are placed in locations that may flood containers with ocean water. Carriers shall ensure that livestock staging areas within harbors have access to clean water and adequate ventilation.

~~(h) [Carriers shall not transport animals that are non-ambulatory, or ambulatory animals that are blind in both eyes, have visible open wounds, are ill, are not weight bearing on four limbs, are likely to give birth during transport, have distended udders that cause pain or ambulatory issues and young animals with unhealed umbilicus.]~~ No animal shall be transported via ocean vessel that is injured, ill, has unhealed wounds or is unable to bear weight on all four limbs; is blind in both eyes; is likely to give birth during transport or has given birth in the past 48 hours and traveling without their offspring; or is not weaned and traveling separate from the mother. Aggressive animals shall be transported separately. [Eff. 10/5/81; am and comp] (Auth: HRS §142-2) (Imp: HRS §§142-3, 142-4, 142-5 and 142-8)

§4-16-12 Use of quarantine station facilities.

(a) Owners of cattle, bison, water buffalo, camelids, sheep, or goats held at an official or authorized quarantine [station] facility for any reason shall:

- (1) Provide feed and care for stock;
- (2) Clean pens after removal of the animals; and
- (3) Promptly remove any dead animals from the quarantine station grounds when directed to do so by the state veterinarian.

(b) If, for any reason, the owners fail to fulfill the requirements in subsection (a), the ~~[quarantine station]~~ state ~~{shall}~~ may assume these responsibilities, and all costs involved shall be charged to the owner. [Eff. 10/5/81; am and comp] (Auth: HRS §142-2) (Imp: HRS §§142-3 and 142-6)

§4-16-13 Regulatory jurisdiction on exports.

(a) Shipments to other U.S. areas shall comply with entry requirements of the state of destination.

(b) Shipments outside the U.S. ~~[same]~~ are under federal jurisdiction.

(c) Hawaii certificates of veterinary inspection, issued by accredited veterinarians for the interstate movement of livestock, shall be submitted to the division for review within seven (7) days of being issued. [Eff. 10/5/81; am and comp]
(Auth: HRS §142-2) (Imp: HRS §142-3)

SUBCHAPTER 2

CATTLE, BISON, WATER BUFFALO

§4-16-14 Scope. (a) This subchapter governs special rules pertaining to importation of cattle, bison, or water buffalo into the State.

(b) Applicable general provision rules in subchapter 1 should be read in conjunction with this subchapter.

(c) In any conflict between a special rule in this subchapter and a general provision rule in subchapter 1, the special rule shall govern. [Eff. 10/5/81]; am comp] (Auth: HRS §142-2) (Imp: HRS §142-3)

§4-16-15 Pre-shipment entry requirements. (a) [~~Cattle for entry shall be accompanied by a health certificate issued by an accredited veterinarian, or a state or federal veterinary officer, within seven days before shipment. The health certificate shall give a description of each animal, including age, sex, breed, and either a national uniform eartag number,~~

~~individual tattoo, or brand number, and shall certify that the animals described:}~~

Cattle, bison, and water buffalo for entry shall possess a valid import permit issued by the division prior to importation.

(b) Cattle, bison, and water buffalo for entry shall possess a certificate of veterinary inspection issued by an accredited veterinarian, or a state or federal veterinary officer, within ten days before shipping to the state. The certificate of veterinary inspection shall contain a description of each animal, including age, sex, breed, and either an official eartag number, or official identification and shall certify that the animals described:

- (1) Are free from external parasites and symptoms of transmissible diseases and have not had recent exposure to these diseases;
- (2) Have originated in a herd that is not under quarantine for any reason; ~~[for tuberculosis and have been found negative to an intradermal tuberculin test conducted by a state, federal, or accredited veterinarian within thirty days before shipment,]~~
- (3) ~~[Have originated in a herd that is not under quarantine for brucellosis and have been tested by a state, federal, or accredited veterinarian and found to be negative to an official test for brucellosis performed in a USDA-approved laboratory within thirty days before shipment,]~~ Are negative to an intradermal tuberculin test conducted by a state, federal, or accredited veterinarian within thirty days before shipment;
- (4) Have been tested by a state, federal, or accredited veterinarian and found to be ~~[free of anaplasmosis by a complement-fixation test performed in a state or federal laboratory within thirty days before shipment, and~~ negative to an official test

for brucellosis performed in a USDA-approved laboratory within thirty days before shipment;

- (5) ~~[Have been dipped or completely sprayed under the supervision of a state, federal or accredited veterinarian with one-half of one percent water solution of malathion within seven days before shipment, or one-half of one percent emulsion concentrate of Ciodrin within forty-eight hours before shipment, or any other USDA-approved pesticide.]~~ Have been tested by a state, federal, or accredited veterinarian and found to be free of anaplasmosis by an ELISA test performed in a state or federal approved laboratory within thirty days before shipment;
- (6) All non-virgin bulls and all bulls eighteen months of age and older shall be tested negative to a PCR test for trichomoniasis within thirty days before shipment. Pooled samples from up to five bulls may be tested at diagnostic laboratories that approve pooled PCR testing. Tested bulls shall remain separate from female cattle over [6] six months of age prior to ten days before testing and until arrival in Hawaii; and
- (7) Have been dipped or completely sprayed under the supervision of a state, federal, or accredited veterinarian with an EPA approved pesticide to kill ticks on cattle within seven days before shipping to Hawaii.

(c) Official laboratory test charts for all required pre-entry testing shall be attached to the certificate of veterinary inspection. [Eff. 10/5/81; am and comp](Auth: HRS §142-2) (Imp: §§142-3 and 142-4)

§4-16-16 Post-shipment entry requirements. (a)

Cattle for entry shall be transported to and held in the quarantine station or a quarantine site approved by the division to be inspected and tested for [~~tuberculosis, brucellosis, anaplasmosis, and~~] any [~~other~~] transmissible disease that the state veterinarian may require. While in quarantine, [~~they~~] animals shall be sprayed or dipped with [a USDA-approved] an EPA approved pesticide approved by the state veterinarian. The cattle, bison, and water buffalo may be refused entry or quarantined for any deficiency in the [health certificate covering] certificate of veterinary inspection for the shipment or signs of disease.

(b) Cattle, bison, and water buffalo found to be negative to [the testing procedures] test requirements, [are] free of external parasites, and show no [symptoms] signs of transmissible diseases may be released from the quarantine station or approved quarantine site under [provisional] quarantine at premises approved by the state veterinarian, during which time they shall be retested for [anaplasmosis.] tuberculosis, brucellosis, anaplasmosis and other diseases required by the state veterinarian sixty to ninety days after arriving in the State. The owner, importer, or consignee shall furnish the inspector with information on where each animal in the shipment will be held.

(c) All expenses in connection with the examination, testing, treating, or destruction and disposal of cattle, bison, and water buffalo while in quarantine, shall be borne by the owner, importer, or consignee.

(d) No indemnity shall be paid for reactors found on entry testing. [Eff. 10/5/81];
[am and comp](Auth: HRS §142-2)
(Imp:HRS §142-4)

§4-16-17 Anaplasmosis surveillance, control and eradication.

(a) ~~[Blood]~~ Upon direction of the state veterinarian, blood samples shall be collected at slaughter from all cattle ~~[three]~~ two years of age and older and shall be forwarded to the veterinary laboratory of the division for anaplasmosis testing.

(b) When reactors are found in tests conducted under subsection (a), the entire herd shall be quarantined and retested for anaplasmosis. The herd shall remain under quarantine and be retested at sixty[-] to ninety-day intervals until two consecutive negative tests have been obtained.

(c) All testing of cattle in compliance with requirements shall be done in a safe manner. Cattle shall be stanchioned or otherwise securely restrained to the satisfaction of the veterinarian conducting the test.

(d) All positive reactors to the anaplasmosis test shall be ~~[branded on the left jaw with the letter "A" and]~~ identified with a reactor tag affixed to the left ear by the state veterinarian or ~~[his deputy.]~~ designee. All reactors shall be slaughtered under permit issued by the state veterinarian within thirty days after official notification in writing of the reaction. The owner shall give advance notice to the state veterinarian of the time and place of slaughter of the reactors.

(e) All cattle slaughtered as identified positive reactors to the anaplasmosis test shall be appraised prior to slaughter and the owner ~~[shall be]~~ indemnified in accordance with the provisions of section 142-22, Hawaii Revised Statutes.

(f) No indemnity shall be paid ~~[unless]~~ when the owner [has complied] does not comply with all rules and instructions issued by the division pertaining to the control and eradication of anaplasmosis. [Eff. 10/5/81; am and comp] (Auth: HRS §142-2) (Imp: HRS §§142-3, 142-6, 142-9 and 142-22)

§4-16-18 Brucellosis surveillance, control, and eradication. (a) ~~[Blood]~~ Upon direction of the state veterinarian, blood samples shall be collected at slaughter from all cattle [three] two years age and older and forwarded to the veterinary laboratory of the department for brucellosis testing.

(b) ~~[Samples]~~ Upon direction of the state veterinarian, samples of milk produced in licensed dairies shall be collected and forwarded to the veterinary laboratory for brucellosis testing as often as deemed necessary by the state or federal veterinarian to maintain surveillance of brucella infection within the herd.

(c) Whenever laboratory test results indicate infection, the herd of origin shall be quarantined and tested within thirty days following official notification of the infection.

(d) When reactors are found in tests conducted under subsection (a), the entire herd shall be quarantined and ~~[be tested for brucellosis. The herd shall remain under quarantine and be retested, as]~~ subject to the conditions required in the current USDA APHIS Uniform Methods and Rules for the Eradication of Brucellosis, until eligible for release from quarantine.

(e) All testing of cattle in compliance with requirements of this section shall be done in a safe manner. Cattle shall be stanchioned or otherwise securely restrained to the satisfaction of the veterinarian conducting the test.

(f) All reactors to the brucellosis test shall be ~~[branded on the left jaw with the letter "B" and]~~ identified with a reactor tag affixed to the left ear by the state veterinarian or ~~[his deputy]~~ designee. All reactors shall be slaughtered under direction of the state veterinarian within fifteen days after official notification in writing of the reaction. The owner shall give advance notice to the state

veterinarian of the time and place of slaughter of the reactors.

(g) All cattle slaughtered as [branded,] identified reactors to the brucellosis test shall be appraised prior to slaughter and the owner shall be indemnified in accordance with the provisions of Title 9 of the code of Federal Regulations [section 142-23, Hawaii Revised Statutes.]

(h) No indemnity shall be paid unless the owner has complied with all rules and instructions issued by the division pertaining to the control and eradication of brucellosis.

~~[(i) Following removal of reactor animals, the premises shall be disinfected with an approved disinfectant under the supervision of the state veterinarian or his agent.]~~ [Eff. 10/5/81; am and comp](Auth: HRS §142-2) (Imp: HRS §§142-3, 142-6, 142-9, and 142-23)

§4-16-19 Control of vaccination for Brucellosis.

(a) ~~[A permit]~~ Approval from the division is required for ~~[vaccinating cattle with any]~~ sale and distribution of [live] brucellosis vaccine.

(b) Each animal vaccinated ~~[under permit issued by the division]~~ shall be permanently identified as [a vaccinate required by the USDA APHIS Uniform Methods and Rules for the Eradication of Brucellosis.] ~~[by one of the two following methods:~~

- ~~(1) A tattoo, which shall be applied in the right ear, shall include the "U.S. Registered Shield and V. "The Shield and V shall be preceded by a number indicating the quarter of the year in which the vaccination is made and followed by the last number of the year of vaccination; or~~
- ~~(2) A "V" brand shall be applied to the right jaw with the open end facing either up, forward, down, or toward the back, depending~~

~~on the year in which the vaccination is conducted. In 1979, the "V" should be placed with the open end facing up and, in succeeding years, should proceed clockwise. The fifth year repeats the first year.~~

~~(e) It shall be unlawful for any person other than the permittee to so tattoo or brand cattle.~~

~~(d) Herds in which vaccination for brucellosis is permitted under subsection (a) shall be quarantined, and no animals shall be moved from the premises, except on permit issued by the division~~

~~[(e)] (c) The division is authorized to rescind [permits] approval issued under subsection (a) whenever in its judgment such action is warranted.~~

~~[Eff. 10/5/81]; am and comp](Auth: HRS §142-2)(Imp: HRS §§142-3 and 142-6)~~

§4-16-20 Tuberculosis control and eradication.

(a) All herds of cattle in which reactors to the tuberculin test have been found and all herds from which tuberculous animals have been found at slaughter shall be designated as infected herds and shall be quarantined.

(b) All herds of cattle that have been in contact with herds in which tuberculin test reactors or tuberculous animals have been found shall be designated as exposed herds and shall be quarantined.

(c) Owners of herds quarantined under subsection (a) and (b) shall, within thirty days after official notification in writing, implement a program to lift the quarantine through either complete herd depopulation via slaughter or through testing procedures, as prescribed by the state veterinarian.

(d) All testing of cattle for tuberculosis shall be done in a safe manner. Cattle shall be stanchioned or otherwise securely restrained to the satisfaction of the veterinarian conducting the test. The owner of

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the cattle shall provide all facilities necessary for the safe restraint of the cattle for testing.

(e) All positive reactors to the tuberculosis test shall be [~~branded on the left jaw with the letter "T" and~~] identified with an official [state] reactor tag affixed to the left ear by the state veterinarian or [~~his agent~~] designee. All reactors shall be slaughtered within fifteen days after official notification in writing of the reaction. The owner shall give advance notice to the state veterinarian of the time and place of slaughter of the reactors. A Permit for the Movement of Restricted Animals (VS FORM 1-27) shall be issued prior to movement by the State or Federal Veterinarian.

(f) All cattle identified as positive reactors to the tuberculosis test shall be appraised prior to slaughter and the owner shall be indemnified in accordance with the provisions of 9 CFR § 50.3 [section 142-19, Hawaii Revised Statutes].

(g) No indemnity shall be paid unless the owner has complied with all rules and instructions issued by the division pertaining to the control and eradication of tuberculosis.

(h) Following removal of reactors or depopulation of the herd, the premises shall be cleaned and disinfected within fifteen days, as prescribed in the USDA APHIS Uniform Methods and Rules. [Eff. 10/5/81; am and comp]
(Auth: HRS §142-2)(Imp: HRS §§142-3, 142-6, 142-9, 142-17, 142-18, 142-19, 142-20 and 142-21)

§4-16-20.1 Trichomoniasis control and eradication. (a) All herds of cattle in which reactors to the PCR trichomoniasis test have been found shall be designated as infected herds and shall be quarantined.

(b) All herds of cattle that have been in contact, comingled, or had fence contact with infected

herds shall be designated as exposed herds and placed under a hold order until all bulls twelve months and older have been tested negative for Trichomoniasis and any positive bulls are removed under permit from the division for slaughter.

(c) Within sixty days after official notification in writing, owners of herds quarantined or placed on hold orders under subsections (a) and (b) shall test their entire bull battery or slaughter all bulls under permit issued by the State Veterinarian.

(d) All testing of bulls for trichomoniasis shall be done after bulls have been isolated for ten days from female cattle and shall be tested by veterinarians accredited at the II level in Hawaii that have undergone training for trichomoniasis testing of bulls. The owner of the bulls for testing shall be responsible for gathering the bulls and providing all facilities necessary for the safe restraint of the bulls for testing.

(e) All positive reactors to the PCR trichomoniasis test shall be reported by the accredited veterinarian to the state veterinarian within seventy-two hours of receiving test results.

(f) All bulls that test positive shall remain under quarantine and remain isolated from all cattle until slaughtered within ~~[30]~~thirty days of testing positive under permit issued by the state veterinarian.

(g) All bulls tested for trichomoniasis shall be identified at the time of testing with an official 840 USDA identification tag. The tag number shall correspond to the bull's test sample and listed on the test submission and result forms.

(h) Samples for trichomoniasis PCR testing shall be tested at an ISO/IES 17025 or AAVDL approved laboratory and may be pooled in accordance with the diagnostic laboratory's testing protocol.

(i) Herds placed under quarantine for trichomoniasis shall be tested annually and remain

quarantined until passing a complete negative test of the herd's bull battery one year after removal of the last infected bull from the herd.

[Eff. _____];(Auth: HRS §142-2)

§4-16-20.2 Diseases and investigation. The State Veterinarian is authorized to investigate the disease status of cattle in the State showing clinical signs of disease or poor health.

(a) When an investigation by the State Veterinarian determines that a regulated or reportable disease or disease of high economic consequence is suspected or diagnosed, the State Veterinarian is authorized to take actions as provided in HRS §142-6.

(b) When no infectious disease is suspected or diagnosed and adverse physical state is determined to involve animal husbandry related causes, the division may advise the owner or refer the owner to university extension agents or private veterinarians for assistance. In the event that the owner refuses to take recommended corrective actions, the State Veterinarian may refer the case to the humane agencies for the county. [Eff. _____];(Auth: HRS §142-2)

SUBCHAPTER 3

SHEEP

§4-16-21 Scope. (a) This subchapter governs special rules pertaining to importation of sheep into the State.

(b) Applicable general provision rules in sections 4-16-1 through 13 should be read in conjunction with this subchapter.

(c) In any conflict between a special rule in this subchapter and a general provision rule in

sections 4-16-1 through 13, the special rule shall govern. [Eff. 10/5/81; comp] (Auth: HRS §142-2) (Imp: HRS §142-3)

§4-16-22 Pre-shipment entry requirements. Sheep for entry shall be accompanied by a ~~[health]~~ certificate of veterinary inspection issued by an accredited veterinarian or a state or federal veterinary officer in the state of origin, within seven days before shipment. The ~~[health]~~ certificate of veterinary inspection shall give a description of each animal, including age, sex, breed, and official USDA eartag number, and shall certify that the animals described:

- (1) Are free from external parasites and symptoms of transmissible diseases and have not had recent exposure to these diseases;
- (2) Have originated in a ~~[state or area officially declared to be free of scabies for the twelve-month period preceding date of shipment]~~ herd that is not under quarantine for Scrapie; and
- (3) Have been dipped or completely sprayed under the supervision of a state, federal, or accredited veterinarian with a pesticide approved for killing ticks on sheep ~~[one-half of one percent water solution of malathion, or other USDA-approved pesticide,]~~ within seven days before shipment.
- (4) Is officially identified with an USDA-APHIS approved method for identification of sheep. [Eff. 10/5/81; am and comp]; (Auth: HRS §142-2)(Auth: HRS §142-2) (Imp: HRS §§142-3 and 142-4)

§4-16-23 Post-shipment entry requirements.(a) Imported sheep shall be inspected by a state

veterinarian or an agent before being granted entry into the State. Any indication of transmissible disease at the time of inspection shall be sufficient reason to quarantine any or all of the sheep in the shipment at premises approved by the state veterinarian. [~~They~~] Animals shall not be released [~~and be~~] or permitted entry into the State until the state veterinarian is satisfied that they are free of symptoms of transmissible diseases and external parasites.

(b) All expenses in connection with the segregation and treatment or destruction and disposal of the quarantined animals shall be borne by the owner, importer, or consignee. [Eff. 10/5/81; am and comp] (Auth: HRS §142-2)
(Auth: HRS §142-2) (Imp: HRS §142-4)

SUBCHAPTER 4

GOATS and CAMELIDS

§4-16-24 Scope. (a) This subchapter governs special rules pertaining to importation of goats and camelids into the State.

(b) Applicable general provision rules in sections 4-16-1 through 13 should be read in conjunction with this subchapter.

In any conflict between a special rule in this subchapter and a general provision rule in sections 4-16-1 through 13, the special rule shall govern. [Eff. 10/5/81; am and comp] (Auth: HRS §142-2) (Imp: HRS §142-3)

§4-16-25 Pre-shipment entry requirements. (a) Goats and camelids for entry shall be accompanied by a

[health] certificate of veterinary inspection issued by an accredited veterinarian or a state or federal veterinary officer within seven days before shipment. The [health] certificate of veterinary inspection shall give a description of each animal, including age, sex, breed, and official USDA eartag number, and shall certify that the animals described:

- (1) Are free from external parasites and symptoms of transmissible diseases and have not had recent exposure to these diseases;
- (2) Have originated in a herd that is not under quarantine for scrapie or tuberculosis and have been found negative to an intradermal tuberculin test by a state, federal, or accredited veterinarian within thirty days before shipment; and
- (3) [~~Have originated in a herd that is not under quarantine for brucellosis and have been tested by a state, federal, or accredited veterinarian and found to be negative to a USDA-approved test for brucellosis performed in an official laboratory within thirty days before shipment; and~~] Have been treated under the supervision of a state, federal, or accredited veterinarian with an approved pesticide for killing ticks on goats or camelids, within seven days before shipment.
- [~~(4) Have been dipped or completely sprayed under the supervision of a state, federal, or accredited veterinarian with one-half of one percent water solution of malathion, or other APHIS-approved pesticide, within seven days before shipment.~~]

(b) Goats have originated in a herd that is not under quarantine for Scrapie. [Eff. 10/5/81;

am and comp

](Auth: HRS §142-

2)(Imp: HRS §§142-3 and 142-4)

§4-16-26 Post-shipment entry requirements.

(a) Imported goats shall be inspected by ~~[the]~~a state veterinarian before being granted entry into the State. Any indication of transmissible disease at the time of inspection shall be sufficient reason to quarantine any or all of the goats in the shipment at premises approved by the state veterinarian. They shall not be released and be permitted entry into the State until the state veterinarian is satisfied that they are free from symptoms of transmissible diseases and external parasites.

(b) All expenses in connection with the segregation and treatment or destruction and disposal of the quarantined goats shall be borne by the owner, importer, or consignee. [Eff. 10/5/81; am comp](Auth: HRS §142-2)(Imp: HRS §142-4)

EXHIBIT A

Required Interisland Livestock Shipping Standards | CATTLE

SHIPPING METHOD	Trailers, 20' containers, 40' containers, shipping pens. Must be 4-sided, structurally sound and without protruding objects that could injure animals. Must have four sided forklift pockets to ensure container cannot shift or tip off the fork lift during lifting.
LEAK PROOF	All shipping trailers/containers shall be watertight up to a level of 2" and nonslip flooring is required.
SIDES	Sides shall be solid up to the level of the animals' backs or window guards should be indented to prevent discharge.
WINDOWS	Escape proof. Must contain entire animal. Tall enough to be above the backs of the animals or with 6" indented bars to prevent fecal discharge and allow proper airflow* *Window openings should be at least 7% of the area of the side panel surface to ensure proper ventilation
ROOF	Must have a solid roof to protect from the sun, rain, and contain the animal entirely.
WATER	Not required for trips < 24hrs; must have some form of watering system in case of transit delay. Please bring your own water when possible.
FEED	Not required for trips < 24hrs.
SPACE	*See table.
TRAILERS DELIVERING LIVESTOCK	All livestock trailers entering into the harbor must be constructed to contain animal fecal matter and urine.
TRANSFER AREA & STAGING AREA	In secured DOT designated area only. Water should be available nearby.
TRANSFER PROCESS (TRAILER TO CONTAINER)	Trailer with slide or inward opening gate abut flush to container with slide or inward opening gates.
OR TRANSFER PROCESS (DOT CHUTE)	Secure chute gates to trailer and container, if DOT chute is available.
SPILLAGE	All spillage must be cleaned up and removed from harbor. To comply with EPA, no water should be used to clean, the shipper must bring shovel, broom, etc to clean area. All shipping containers that remain in the harbor must be cleaned out and material hauled away. A fine/fee will be imposed if spillage is not cleaned.

~~[Interisland Transportation Space Requirements* | CATTLE]~~ *These space requirements only pertain to Hawaii interisland transportation and do not pertain to interstate shipping.

AVG. BODYWEIGHT (lbs)	AREA PER ANIMAL (ft ²)	HEIGHT (ALL SPECIES)	20' CONTAINER (max number to load)	40' CONTAINER (max number to load)	40'X2 DOUBLEDECKER (w/ feeders and water units) (max number to load)
400	[7] 6.5	Stand comfortably, ensure head clearance	23	46	70
500	[8] 7.5		20	40	61
600	[9] 8.5		[18] 17	36	54
800	[11] 10.4		[15] 14	29	Over height limit
1,000	[14] 13		11	23	Over height limit
1,200	[15.5] 14.7		10	21	Over height limit
[1,500] 1400	[19] 18		8	17	Over height limit

A-145

Required Interisland Livestock Shipping Standards | Sheep/ Goats

SHIPPING METHOD	Trailers, 20' containers, 40' containers, shipping pens. Must be structurally sound and without protruding objects that could injure animals. Must have four sided forklift pockets to ensure container cannot shift or tip off the fork lift during lifting.
LEAK PROOF	All shipping trailers/containers shall be watertight up to a level of 2" minimum absorptive bedding and nonslip flooring is required.
SIDES	Sides shall be solid up to the level of the animals' backs.
WINDOWS	Escape proof. Must contain entire animal. Tall enough to be above the backs of the animals or with 3" indented bars to prevent fecal discharge.
ROOF	Must have a solid roof to protect from the sun, rain, and contain the animal entirely.
WATER	Not required for trips < 24hrs; must have some form of watering system in case of transit delay. Please bring your own water when possible.
FEED	Not required for trips < 24hrs.
SPACE	*See table.
TRAILERS DELIVERING LIVESTOCK	All livestock trailers entering into the harbor must be constructed to contain animal's fecal matter and urine. and contain bedding material.
TRANSFER AREA & STAGING AREA	In DOT designated area only. Water should be available nearby.
TRANSFER PROCESS (TRAILER TO CONTAINER)	Trailer with slide or inward opening gate abut flush to container with slide or inward opening gates
OR TRANSFER PROCESS (DOT CHUTE)	Secure chute gates to trailer and container, if DOT chute is available. Block space between trailer back gate floor and ground.
SPILLAGE	All spillage must be cleaned up and removed from harbor. To comply with EPA, no water should be use to clean, the shipper must bring shovel, broom, etc to clean area. All shipping containers that remain in the harbor must be cleaned out and material hauled away. A fine/fee will be imposed if spillage is not cleaned.

*These space requirements only pertain to Hawaii interisland transportation and do not pertain to interstate shipping.

AVG. BODY WEIGHT (lbs)	AREA PER ANIMAL (ft ²)	HEIGHT (ALL SPECIES)	20' CONTAINER (max number to load)	40' CONTAINER (max number to load)	40X2 DOUBLEDECKER (w/o feeders and water units) (max number to load)
60	[2.4] 2.2	Stand comfortably, ensure head clearance	67	[133] 137	2[03]40
80	[2.7] 2.5		59	[119] 121	[181]211
100	[3] 2.8		53	107	[163] 189
120	[3.6] 3.4		44	89	[136] 156

**LOAN REQUEST
& PURPOSE:**

<u>Amount</u>	<u>Class</u>
\$250,000	Direct Class F(A) New Farmer (Real Estate)
\$ 330,000	Purchase Price
\$ <u>80,000</u>	Down Payment
\$ 250,000	Total Loan Request

This loan request will enable the applicants to purchase the 3.7 acres Kamehameha School leasehold property that they have resided on since 2000. The lease expires February 2051. The applicants are contributing \$80,000 to the down payment. Sufficing the minimum equity requirement.

TERMS:

Amount: \$250,000
 Term: 26 years
 Interest rate: 3.25% per annum
 Repayment: Annual principal and interest payments of \$14,470.00 per annum. Repayment is based on an annual payment as the crop is seasonal.

SECURITY:

The Class F(A) will be secured as follows:

1) First position leasehold mortgage on the 3.7 acre parcel located at 83-5475 Middle Keei Road in Captain Cook identified as TMK (3) 8-3-008-021. The property is mostly mature coffee orchards. There is a house, a disused mill, and extra storage building that at one time according to tax records was once a home.

2) First lien Financing Statement covering:

A) On all crops, annual and perennial, and other farm products now planted, growing, or grown or which are hereafter planted, otherwise becoming growing crops, or other farm products produce or to be produced from and after the date of this agreement situated on TMK (3) 8-3-008-021.

B) On all farm equipment, machinery, tools, inventory, or other farm personal property now owned or which may hereafter acquired by debtor and all additions or accessions thereto, whether acquired by way of

replacement substitution or otherwise and whether attached or affixed to or installed in said collateral.

- C) All monies, accounts, contracts rights or general intangibles due or to become due or payable on the debtor under the provisions of any processing, agency, or other agreement entered unto with respect to the collateral hereby pledged and all proceeds from sale or disposition if the collateral hereby pledged.

Shown below is the loan – to-value (LTV) ratio for the prosed loan:

$$\text{Loan to value Ratio} = \frac{\$250,000 \text{ (SALD proposed)}}{\$345,000 \text{ (Real Estate)}} = 72.46\%$$

Leila Duim Appraisals, CRA appraised the property on November 15th 2022 at \$345,000. The appraisal is lower than indicated in county tax records at \$387,000. Leaseholds are difficult to assess with though this is based on comps in the area. The LTV ratio of 72.46% meets the program’s requirements for a Class A Loan.

GUARANTORS:
FINANCIAL

None

CONDITION:

SEE EXHIBIT A (CONFIDENTIAL)

REPAYMENT
ABILITY:

SEE EXHIBIT A (CONFIDENTIAL)

INSURANCE:

Lability

BACKGROUND/
MANAGEMENT
ABILITY:

Mr. Ramos and his wife Mrs. Ortiz are both from Michoacán Mexico. They received the equivalence of a 6th grade education before beginning to work in corn fields in Mexico. Mr. Ramos first came to Hawaii in 1991 as a seasonal laborer for coffee. He

married Mrs. Ortiz in 1995. In 2000 they moved onto the Keei Farm. They have two boys, ages 14 and 8.

In that time, they have made improvements on the farm. The main home was built in 1940s, has been gradually repaired and updated by Mr. Ramos and Mrs. Ortiz. There is an out of service mill and storage building on site as well. They have replanted some of the coffee orchard as well removing weaker trees. They added fencing along the boundary. Throughout this time they continued to work in the coffee industry performing all manners of farm service from spraying, picking, maintenance, milling, and roasting.

The agreement between Mr. Ramos and Mr. Tui was that Mr. Ramos maintained the property, picked the coffee, and sold the cherry. The revenue would go to Mr. Tui in exchange for rent. His management includes routine fertilizing, spraying, and general maintenance. Mr. Ramos has kept paper records of his input cost in his home budget. He also would roast batches of coffee from the smaller picks for Mr. Tui or personal consumption.

Mr. Ramos was encouraged by a farm supervisor where he works to save for a deposit in the event the owner sold. He managed to save \$40,000 for a deposit. He and Mrs. Ortiz received another \$40,000 in gifts from friends and family. The farm was originally listed at \$395,000. Mr. Tui accepted \$330,000, recognizing the efforts Mr. Ramos and Mrs. Ortiz already expended.

SUMMARY:

Mr. Ramos and Mrs. Ortiz are very hardworking and experienced farmers. They have an extensive history in the Kona Coffee industry with a hands-on understanding of the changing demands. Starting as seasonal workers, now as independent contractor with the opportunity to further invest as farm owners. As farm owners, we can expect the same dedication to self-improvement. A loan would ensure that they secure housing and provide an opportunity to double their income.

TURNDOWNS:

Bank of Hawaii declined the subject's loan request for the following reasons:

- No credit File
- Insufficient number of credit references.

RECOMMENDATIONS:

This loan request is recommended for approval based on the applicants farming experience, the farms historical performance, projected cashflow, and the strength of the collateral.

Date

Recommended by:

11/15/2022

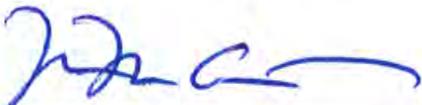


Jillian C. Scheibe
Agricultural Loan Officer I

Date

Reviewed and concurred by:

11/21/22



Morris Atta
Deputy Chairperson, Acting Division Administrator

Date

Approved for submission:

11/21/2022



Phyllis Shimabukuro-Geiser
Chairperson, Board of Agriculture

EXHIBIT A
CONFIDENTIAL

CREDIT HISTORY:

The TransUnion Credit Report shows no credit records for both Mr. Ramos and Mrs. Ortiz. This substantiates that they do not borrow money and pay cash for their purchases. This is consistent with their financial statement which shows that they have no debts.

**FINANCIAL
CONDITION:**

Mr. Ramos and Mrs. Ortiz financial statement dated 8/22/2022 and is summarized below.

ASSETS		LIABILITIES	
Cash	\$70,000		
Accounts	\$18,588		
Farm equipment	\$2,500		
Vehicles	\$11,600		
Coffee Equipment	\$2,500	TOTAL LIABILITIES	\$0
TOTAL ASSETS	\$105,188	NETWORTH	\$105,188

The applicants' major assets are \$70,000 in cash, \$40,000 which were gifts, and \$18,588 in bank accounts. The applicants are holding the bulk of the down payment in cash saved over their time working in Hawaii.

The applicants have 3 vehicles, 2 Nissan Trucks and a Mazda truck Kelly Blue Book valued at \$11,600. They also have various farm equipment that includes backpack sprayers, weedwhackers, and chainsaw at \$2,500. In addition, the coffee equipment includes a generator, wet mill, dry mill, and roaster.

The subjects have no liabilities.

Their combined income is stated below:

2019 - \$34,100

2020 - \$35,200

2021 - \$25,745

They live frugally and maintain their low expenses with a strict cash budget that is subsidized through bartering and their labor. It is not uncommon for families to share extra produce in exchange for help around the farm.

**REPAYMENT
ABILITY:**

Repayment is based on the projected cash flow prepared by the applicant as follows:

Year	Year 1	Year 2	Year 3
Type	Proj.	Proj.	Proj.
Farm	33,200	37,200	39,000
Farm Service	<u>32,000</u>	<u>32,000</u>	<u>32,000</u>
Gross Total Income	65,200	69,200	71,000
Expenses			
Vehicle expense	1500	1500	1500
Chemicals.	3000	3200	3200
Insurance	2000	2000	2000
Lease	1400	1400	1400
Repairs & Maintenance	5000	6000	6000
Supplies	3500	3000	3000
Utilities	2650	2700	2750
Professional Fees	175	175	175
Other	5,000	5,000	5,000
Total Expenses	24,225	24,975	25,025
Net profit:	40,975	44,225	45,975
Available cash:	40,975	44,225	45,975
SALD Loan Proposed	14,470	14,470	14,470
After Loan	26,505	29,755	31,505

The projections are based off averages from reported historical farm and farm service income. The average yield for the farm is 13,000 pounds and farm service income \$32,000. The total projected income is substantially more than subject's historical income as the applicants will report all income received from the coffee cherry off the farm. Mr. Ramos and Mrs. Ortiz plan to

continue working as they have in the coffee industry providing a second revenue stream further reducing risk.

The projected income increases from Year 1 to Year 2 due to increasing coffee cherry pricing. By the third year he expects a yield from seedlings already planted and did not increase cherry prices. The coffee cherry is sold to Mr. Cancino with Kona Super Coffee \$2.55-\$2.65 per pound.

Coffee buyers pay higher prices for quality coffee cherries which show limited damage from the Coffee Borer Beetle (CBB) and with a limited amount of unripen cherry in the bags. Mr. Ramos controls the CBB with routine spraying and mechanical management. The farm receives regular maintenance to also control Coffee Leaf Rust.

Expenses are expected to increase compared to previous years. Specifically, utilities and chemicals are on inflationary paths. Another expense that will increase is repairs as Mr. Ramos has plans to service the old mill. The operation has good margins as Mr. Ramos and Mrs. Ortiz do the labor cutting costs on employees. The projections show sufficient cash flow to repay the proposed loan and their living expenses.

The 3.7 acre farm is located in Honaunau off of Middle Keeki about 900 feet elevation with a slight grade. This parcel has approximately 3 acres established of Kona Typica orchard. The farm has moderately deep soil. These conditions suggest we may expect similar above average performances.

Mr. Tui provided Mr. Ramos his state income tax forms (see supplemental) as further historical evidence of the farms production. Below is a table that shows USDA's National Agricultural Statistics average coffee cherry yield per acre compared the Keeki Farm Production per the past season.

	2018	2019	2020	2021
USDA-NASS	3,845	3,952	3,510	3,820
Keeki	3,770	5,190	No Data	4,500

There was a drop in yield in 2018 due to CBB damage that resulted in portion of the harvest going unsold. Mr. Ramos has since refined his mitigation techniques. The data set further demonstrates the productivity of the farm. The 2020 data was not provided.

**SUPPLEMENTAL
INFORMATION:**

Mr. Tui provided his G45 filed for 2018, 2019, and 2021. This historical performance data supports Mr. Ramos projections.

Below is a summary of the Keei Farms Historical Income from the sellers, Mr. Tui's G45.

Year	Income
2018	\$21,492
2019	\$31,470
2020	Was not Provided
2021	\$32,645

BD



C.F.F. LLC
PO Box 2589
Kealahou, HI 96750
www.konasupercoffee.com

November 14, 2022

Rainoldo Cancino
84-4970 Mamalahoa Hwy.
Captain Cook, HI 96704
Tel: (808) 557-9905

Hawaii Department of Agriculture
1428 S. King St.
Honolulu, HI 96814

Re: Letter of Recommendation for Sigifrido Valdovinos and Angela Magana

My name is Rainoldo Cancino, my family and I have been farming in Hawaii since the 1990's. I am the owner of Cancino Family Farm.

Currently we grow and oversee over 500 acres of coffee in Kona which includes year around maintenance of over 57 coffee farms. Over the years we have become very successful commercial growers, buyers, and processors of Kona Coffee with over 300 farmers bringing their coffee to us every year. We also sell green bean internationally. Today we custom roast coffee for our clients and we sell our own roasted coffee label, Kona Super Coffee.

I am pleased to write this letter of recommendation for Sigifrido Valdovinos and his wife Angela Magana. Sigifrido and his wife immigrated to Hawaii in the early 90's, I have known them for a very long time. They are long term clients of ours bringing their coffee cherry to us for many years. They have a strong work ethic and are very trustworthy people. They have been living in a farm and doing year around maintenance for that farm for 22 years. That farmer is also our client and a friend of ours, and they are very happy with their work. Angela and Sigifrido's experience in farming includes planting, fertilizing, pruning, irrigation, weeding and picking coffee.

Sigifrido and Angela have my support, I strongly recommend them as very good farmers. Please contact me should you have additional questions whatsoever.

Sincerely,

Rainoldo Cancino
Owner
CFF LLC

TERMS:

Amount: \$100,000
 Term: Ten (10) years
 Interest rate: 3.00% per annum, fixed.
 Repayment: No payments for six (6) months, then interest payments of \$500 per month for six (6) months. Followed by monthly principal and interest of \$1,058.00 until maturity.

SECURITY:

This loan will be secured as follows:

- First position lien on farm equipment special interest in the Ford 5600 Tractor, Ford 1900 Tractor, and John Deere 350 with a total evaluation of \$37,000. Above ground irrigation system including approximately 10,560 feet of 2" aluminum pipe, 350 sprinklers, and valves estimated in its condition at \$30,000.
- First Position Financing statement on all crops, inventory, and accounts receivable.

GUARANTORS:

None

**FINANCIAL
CONDITION:**

SEE EXHIBIT A (CONFIDENTIAL)

**REPAYMENT
ABILITY:**

SEE EXHIBIT A (CONFIDENTIAL)

INSURANCE:

Liability

**BACKGROUND/
MANAGEMENT
ABILITY:**

Mr. Jamie Shishido operates a 3rd generation farm in lower Kula. He grows various crops, kai choy, green onions, and radishes. He earned his BS in Agricultural Science from Manoa in 1977. The family farm was first registered in 1953. Through the years the farm has continued to be a provider of vegetables for Maui. Mr. Shishido took over in 1997 and is still operating closely with his

dad and sister. In 2014, the Shishido Family received an award from the Maui County Farm Bureau for their contributions.

Mr. Shishido is involved in his community. He has held several positions over the years which included the president of Maui Produce Processing Cooperative and member with the Kula Ag Park. Today, he is a member of the Maui Farm Bureau.

He states the deer have progressively become a nuisance over the last 20 years with a major influx with the recent droughts. The deer have become more bold jumping previously good fences and the standard deterrent methods are ineffective. Mr. Shishido has worked with hunters in the past to manage the herd size but even the hunters are being outnumbered. He states the deer population eats his crops and damages his irrigation lines.

SUMMARY:

Mr. Shishido is an experienced farmer who provides quality vegetables to Hawaii consumers. The farm is established in a sustainable manner with rotational cropping and overhead irrigation.

The farm has suffered from significant damage from the over population of Axis deer. The proposed loan will provide assistance to install deer fencing and repair the irrigation.

The loan will be secured with a first position lien on farm equipment, accounts, and inventory. The farm has sufficient historical cash flow to service the proposed debt.

TURNDOWNS:

Turndowns for emergency loans \$100,000 and under have been waived by the board of Agriculture.

RECOMMENDATIONS:

Approval of this request is recommended based on Mr. Shishido's farming experience, the historical performance of the farm, collateral offered, and good credit rating.

Date

Recommended by:

11/14/2022



Jillian C. Scheibe
Agricultural Loan Officer I

Date

Reviewed and concurred by:

11/21/22



Morris Atta
Deputy Chairperson, Acting Division Administrator

Date

Approved for submission:

11/21/2022



Phyllis Shimabukuro-Geiser
Chairperson, Board of Agriculture

- TMK: (2) 2-3-003-012 situated on 5 Piliwale Rd, Kula HI 96790, consists of 15.231-acre fee simple farmland owned by Oko'a Farms.
- TMK: (2) 2-3-003-086 situated at 2710 Kula Hwy, Kula HI 96790 consists of 10.618-acres of land leased from Apollo Property Management with an initial 2-year lease with the option for five (5) extensions of 2-years.

TERMS:

Amount Class D – Emergency Operating Loan
Amount: \$150,000
Term: 10 years
Interest: 3.0%

Repayment: Monthly principal, and interest payments of \$1,450 will be required till maturity.

SECURITY:

This request will be secured by the following:

- First Position UCC blanket security interest and financing statement in accounts receivable, livestock, inventory, and farm equipment.

GUARANTORS:

Ryan A. Earehart
5 Piliwale Rd
Kula HI 96790

Salvador Gil Coca
2710 Kula Hwy
Kula, HI 96790

**FINANCIAL
CONDITION:**

SEE EXHIBIT A (CONFIDENTIAL)

**REPAYMENT
ABILITY:**

SEE EXHIBIT A (CONFIDENTIAL)

INSURANCE:

Liability Insurance.

BACKGROUND:

Oko'a Farms members Ryan Earehart and Salvador Gil Coca have been growing over 100 varieties of vegetables, herbs, fruit trees, and berries on their organic farms for more than 15 years. They harvest produce several days a week and sell their produce at Maui farmer's markets and to produce distributors to support Maui communities including locals, tourists, and small businesses.

In 1997, Ryan Earehart completed his Business Marketing and Computer Science courses at Mohave Community College. From 2001 to 2003, Ryan started a small retail produce distribution business in Lake Havasu City in Arizona and managed all aspects of the business. In 2004 Ryan moved to Maui and worked as a produce department manager for Mana Foods, a large independent health food store in Paia. Ryan said as a manager, he learned an immense amount of knowledge about product quality, pricing points, marketing, social media public relation, customer service and compliance with local agricultural protocols. In 2011, Ryan continued his studies at the University of Hawaii (CTHAR) and completed his Master Gardener certificate training. In 2011, he completed his Permaculture Training online from the Permaculture Research Institute of Australia. In 2014, Ryan partnered with Salvador Gil Coca to create Oko'a Farms.

Salvador Gil Coca grew up in El Salvador Central America watching his father plant broccoli, tomato, beets, radishes, bell peppers, cucumbers, and okra. His family also raised livestock including chickens, ducks, cows, pigs, and goats. From an early age, he was expected to help with the farm's crops and animals. Looking back, Salvador said his upbringing was instrumental in making him farmer he is today. He learned so much from his father who always had a trick or special knack for everything he did to ensure a beautiful crop each season. Salvador said he loves what he does and loves to feed his family with true "farm to table" meals every day.

Salvador first farmed on Maui at his brother's farm in 2008. He later partnered with Ryan Earehart to start Oko'a Farms in 2014 and focused on growing totally organic produce. Ryan manages sales, marketing, and customer service while Salvador manages roughly 20-acre of produce crops while overseeing several workers in planting, weeding, harvesting, and tilling. They each work between 60 – 70 hours a week to grow, harvest and market the produce. From season to season, the two partners will select which seeds to purchase, how much to plant and the location of the crops. Oko'a Farms produces over 80 items including sugar cane, citrus, avocados, banana, berries, carrots, spinach, broccoli as well as

several kinds of lettuce, kale, radishes, beets, cauliflower, and organic chicken eggs.

The farm grow produce on two (2) parcels located in Kula. The 5 Piliwale Rd farm is 15.231-acre of fee simple farmland owned by Oko'a Farms. The 2710 Kula Hwy farm is 10.618-acres of land leased from Apollo Property Management for 2-years with options to extend for ten (10) additional years. Both farms are surrounded by open fields which makes their crops an enticing target for axis deer. Unfortunately, their current process to prevent deer from entering the farm is sub-optimal at best and the recent drought has intensified the deer's desire to feed on the crops.

Over the course of 2021, herds of deer have been encroaching onto the farm and destroying several fully planted fields of leaf lettuce and green bean crops. They also damage fruiting trees like citrus, jackfruit, and olive trees by rubbing and stripping off the bark that has killed some of the trees. Last year the farm lost more than \$150,000 in just produce alone, not to mention all the wasted labor for planting, fertilizing, cultivation, and irrigation costs that were also incurred.

Ryan estimates there are 50 deer on the south side of the farm and another herd of 30 deer on the north side that attempt to enter the farm every night. They have installed low fencing to 70% of the perimeter but due to the hungry herds, the fence is constantly being attacked by the deer and in constant need of repairs that takes more time away from their intended work of farming. Without sufficient funds the farm cannot afford to complete the fence work quickly to prevent further damage. Recently, a massive buck took a whole section of fencing down after 3 ramming attempts.

Ryan said he and Salvador try and keep the deer at bay that enter the farm through the front entrance, unfenced area, and downed fencing. Ryan said they are patrolling the area nightly at 10 pm, 3 am and 5 am every day using airhorns and other loud sounds to scare the deer away. The struggle has a significant impacted the quality of life for everyone living on the farm along with the surrounding neighbors. The nightly patrols are also causing wear and tear to the vehicles and already heavily used on farm dirt roads rough fields. It is a never-ending battle as the deer are constantly waiting for the right moment to get across the fence lines to gain access to the farm's crops.

Having access to funding to complete our fencing is of utmost importance in continuing to consistently provide fresh organic produce for Maui's local island communities.

SUMMARY:

Oko'a Farm's members Ryan Earehart and Salvador Gil Coca are experienced and well qualified farmers. Mr. Earehart is an experienced organic farmer and produce store manager with several college degrees including business management, master gardening and permaculture training. Salvadore Gil Coca is a lifetime farmer that grew up in El Salvador on his family's farm and supervised by his father. They have engaged the deer by doing nightly patrols, but the deer are increasing and becoming more desperate due to drought conditions. Oko'a Farms is constantly growing its business and deer problem is consuming their limited time and farming resources. They believe a robust fence is an important investment that will allow them to bring more food to market.

TURNDOWNS:

This Axis Deer Emergency Loan Program request for \$150,000 require only one (1) commercial loan denial.

A commercial term loan request was denied on September 21, 2022, by Bank of Hawaii on Maui Commercial Banking Center.

B32

RECOMMENDATIONS: Approval of this request is recommended due to the farm's management that possess proven knowledge and experience in marketing and retailing of organic food, and strong farm management ability to supervise crop production, harvesting and processing of produce for marketing. Strong secondary source of repayment collateral through a first position UCC blanket security offered and strong credit history of farm membership partners.

Date

11/21/22

Recommended by:



Wayne S. Takamine
Business Loan Officer I

Date

11/21/22

Reviewed and concurred by:



Morris Atta
Acting Division Administrator

Date

11/21/2022

Approved for Submission



Phyllis Shimabukuro-Geiser
Chairperson, Board of Agriculture

STATE OF HAWAII
DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESOURCE MANAGEMENT DIVISION
HONOLULU, HAWAII 96814

November 29, 2022

Board of Agriculture
Honolulu, Hawaii

Subject: REQUEST FOR ACCEPTANCE OF ANNUAL LEASE RENTS AS DETERMINED BY INDEPENDENT APPRAISAL FOR RENT REOPENINGS AND VACANT LAND FOR VARIOUS LOTS LOCATED STATEWIDE; TMK NOS.: (1) 4-1-010:005, 008, 030, 037, 038, 039, 044; (1) 4-1-018:047, 051; (1) 4-1-026:015; (1) 4-1-027:011, 014; (1) 4-1-035:007, 014; (1) 5-6-006:032; (1) 8-5-005:009; (1) 9-1-031:025; (2) 5-2-001:011, 012, 014, 017, 023, 027, 028; (4) 1-9-001:011; (4) 4-1-002:012, 018; (4) 4-3-004:001, 014, 017; (4) 4-4-004:004, 051; (4) 4-5-015:008; (3) 1-5-116:001, 003, 005, 007, 012, 013, 015, 017, 018, 020, 028, 029, 030, 032, 033, 036, 037, 038, 039, 040, 041, 043, 044, 046, 047, 048, 051, 053, 054, 056, 057, 058, 059, 060, 062; (3) 1-9-001:018; (3) 2-2-056:033, 046, 047, 048, 049, 050, 051, 052, 053, 054; (3) 2-4-049:004, 006, 017; (3) 4-6-002:001; (3) 5-5-007:011; (3) 5-9-002:006; (3) 6-6-005:028; (3) 7-3-049:017, 018, 019, 020, 021, 022, 023, 024, 025, 026, 027, 028, 029, 031, 032, 033; 034, 035

Authority: Sections 166-9 and 166E-6, Hawaii Revised Statutes (HRS), and Sections 4-153-3(b)(10) and 18, and Sections 4-158-2(a)(11) and 21, Hawaii Administrative Rules (HAR)

Lease: Various listed in Exhibit "A"

Lessee: Various

Land Status: Properties set aside to the Department of Agriculture by various Governor's Executive Orders

Character of Use: Various

REMARKS:

Pursuant to the provisions of Sections 4-153-3(b)(10) and 18, 4-158-2(a)(11) and 21, and 4-158-8(b)(1), HAR, the Board of Agriculture (Board) is required to establish and approve annual lease rentals by independent appraisal for issuance of new leases, extensions of leases, and re-openings of base and additional rentals for existing leases in the Agricultural Park and Non-Agricultural Lands programs.

C-1

The Department of Agriculture contracted ACM Consultants, Inc. to determine the fair market rents of various Agricultural Park and Non-Agricultural Park Lands leases for rents reopened on various dates, lease conversions, and dispositions of new leases. ACM Consultants, Inc. recently completed the appraisal reports and the new lease rents are presented in the table attached as Exhibit "A." A location map of the parcels is attached as Exhibit "B".

Staff believes the new rental rates are fair and reflect the current market conditions for the agricultural leases. Accordingly, staff recommends that the Board accept the new rental values as determined by ACM Consultants, Inc.

RECOMMENDATION:

That the Board accept the fair market rentals for the various Agricultural Park and Non-Agricultural Park Lands leases as listed in Exhibit "A." The new rental rates will take effect upon the stated rent reopening dates or upon issuance of a new lease, as may be appropriate for each lease. Any reopened rental for which the current rate exceeds the appraised rate shall remain at the current rate.

Respectfully submitted,



BRIAN KAU, P.E.
Administrator & Chief Engineer
Agricultural Resource Management Division

Attachments: Exhibits "A" and "B"

APPROVED FOR SUBMISSION:



PHYLLIS SHIMABUKURO-GEISER
Chairperson, Board of Agriculture

Exhibit "A"

SUMMARY OF VALUE CONCLUSIONS

Board of Agriculture
 November 29, 2022

Parcel TMK	Lease No.	Gross Acres	Appraised Fair Market Rental	% Rent on Gross Proceeds	Purpose	Character of Use
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ISLAND OF OAHU

(1) 4-1-010:005	S-3100	5.744	\$12,090.00	1.5%	Reopening	Special Equestrian Activities
(1) 4-1-010:008	S-3764	3.228	\$6,923.00	1.5%	Reopening	Diversified Agriculture
(1) 4-1-010:030	S-5312	11.092	\$10,935.00	1.5%	Reopening	General Agriculture
(1) 4-1-010:037	S-5657	4.630	\$10,208.00	1.5%	Reopening	Diversified Agriculture
(1) 4-1-010:038	S-3104	3.536	\$8,730.00	1.5%	Reopening	Diversified Agriculture
(1) 4-1-010:039	S-3103	3.662	\$9,023.00	1.5%	Reopening	Diversified Agriculture
(1) 4-1-010:044	S-3101	4.014	\$8,513.00	1.5%	Reopening	Diversified Agriculture
(1) 4-1-018:047	S-5328	3.087	\$8,033.00	1.5%	Reopening	Diversified Agriculture
(1) 4-1-018:051	S-5643	2.200	\$6,660.00	1.5%	Reopening	Diversified Agriculture
(1) 4-1-026:015	S-3106	8.450	\$9,240.00	1.5%	Reopening	Special Equestrian Activities
(1) 4-1-027:011	S-5658	9.565	\$14,828.00	1.5%	Reopening	Diversified Agriculture
(1) 4-1-027:014	S-4008	20.395	\$13,470.00	1.5%	Extension	Diversified Agriculture
(1) 4-1-035:007		9.983	\$11,790.00	1.5%	Disposition	Diversified Agriculture
(1) 4-1-035:014		4.665	\$6,923.00	1.5%	Disposition	Diversified Agriculture
(1) 5-6-006:032	S-6004	10.596	\$6,533.00	1.5%	Reopening	Diversified Agriculture
(1) 8-5-005:009	S-4877	36.048	\$13,560.00	1.5%	Reopening	Diversified Agriculture
(1) 9-1-031:025	S-8500	6.685	\$16,320.00	0-2%	Reopening	Slaughtering/Processing

ISLAND OF MOLOKAI

(2) 5-2-001:011	S-9001	25.304	\$1,385.00	1.5%	Reopening	Diversified Agriculture
(2) 5-2-001:012	S-9004	28.155	\$1,335.00	1.5%	Reopening	Diversified Agriculture
(2) 5-2-001:014	S-9006	38.005	\$1,280.00	1.5%	Reopening	Diversified Agriculture
(2) 5-2-001:017		30.715	\$1,635.00	1.5%	Disposition	Diversified Agriculture
(2) 5-2-001:023	S-9015	45.596	\$1,095.00	1.5%	Reopening	Diversified Agriculture
(2) 5-2-001:027	S-9019	32.523	\$1,565.00	1.5%	Reopening	Diversified Agriculture
(2) 5-2-001:028	S-9020	49.147	\$2,355.00	1.5%	Reopening	Diversified Agriculture

C-3

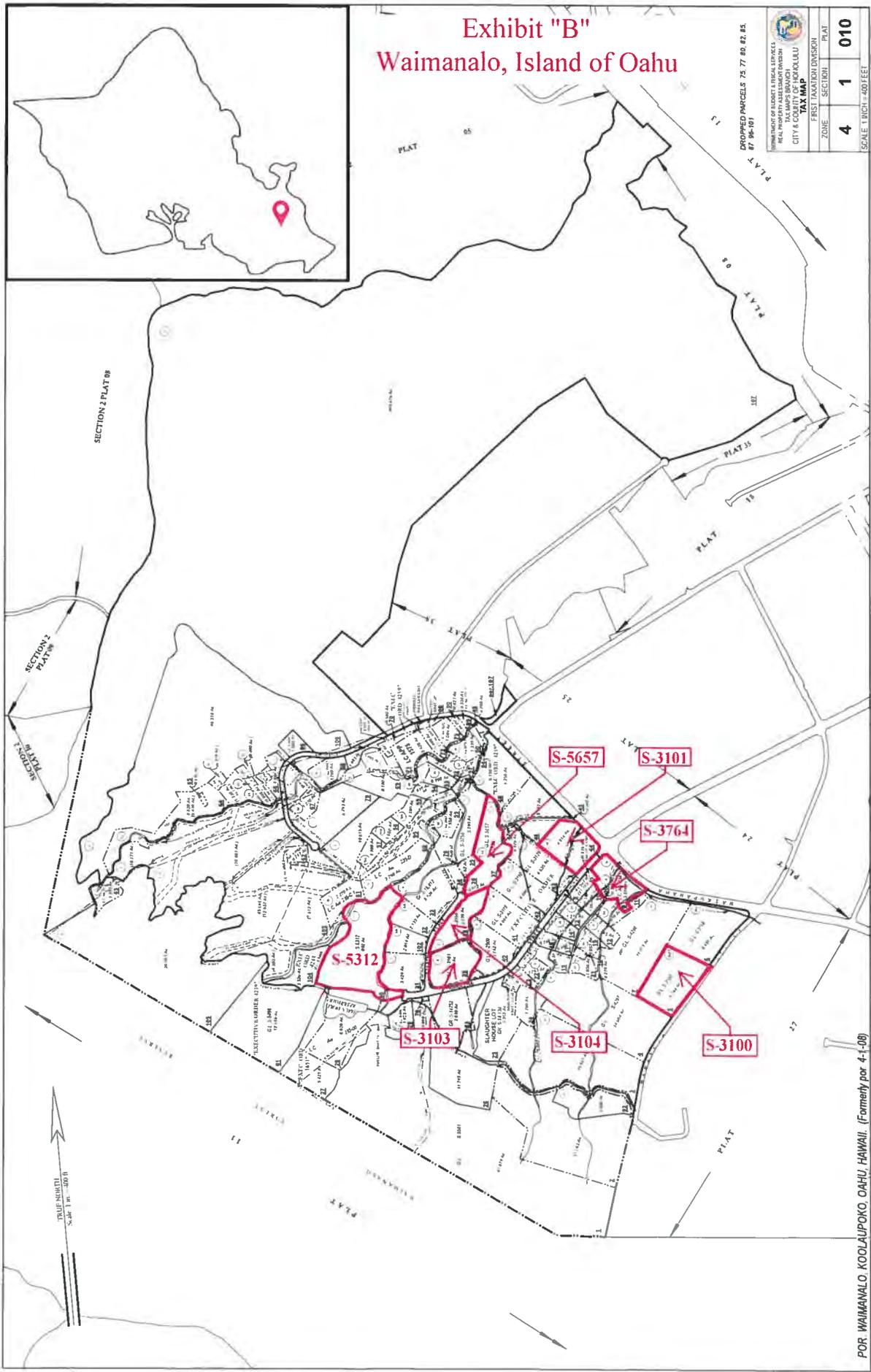
C-4

Parcel TMK	Lease No.	Gross Acres	Appraised Fair Market Rental	% Rent on Gross Proceeds	Purpose	Character of Use
ISLAND OF HAWAII						
(3) 1-5-116:001		10.193	\$1,170.00	1.5%	Disposition	Pasture
(3) 1-5-116:003		10.000	\$1,150.00	1.5%	Disposition	Pasture
(3) 1-5-116:005	S-4824	10.000	\$1,130.00	1.5%	Reopening	Diversified Agriculture
(3) 1-5-116:007		10.000	\$1,150.00	1.5%	Disposition	Pasture
(3) 1-5-116:012		29.166	\$2,590.00	1.5%	Disposition	Diversified Agriculture
(3) 1-5-116:013		25.000	\$2,270.00	1.5%	Disposition	Diversified Agriculture
(3) 1-5-116:015		19.596	\$1,850.00	1.5%	Disposition	Diversified Agriculture
(3) 1-5-116:017		15.000	\$1,470.00	1.5%	Disposition	Diversified Agriculture
(3) 1-5-116:018		5.371	\$680.00	1.5%	Disposition	Diversified Agriculture
(3) 1-5-116:020		10.000	\$1,150.00	1.5%	Disposition	Diversified Agriculture
(3) 1-5-116:028	S-4791	5.002	\$670.00	1.5%	Reopening	Diversified Agriculture
(3) 1-5-116:029	S-4792	5.002	\$670.00	1.5%	Reopening	Diversified Agriculture
(3) 1-5-116:030	S-4793	5.002	\$670.00	1.5%	Reopening	Diversified Agriculture
(3) 1-5-116:032	S-4795	5.000	\$670.00	1.5%	Reopening	Diversified Agriculture
(3) 1-5-116:033	S-4796	5.002	\$670.00	1.5%	Reopening	Diversified Agriculture
(3) 1-5-116:036	S-4799	5.002	\$670.00	1.5%	Reopening	Diversified Agriculture
(3) 1-5-116:037	S-4801	5.000	\$670.00	1.5%	Reopening	Diversified Agriculture
(3) 1-5-116:038	S-4802	5.000	\$670.00	1.5%	Reopening	Diversified Agriculture
(3) 1-5-116:039	S-4803	5.002	\$670.00	1.5%	Reopening	Diversified Agriculture
(3) 1-5-116:040	S-4804	5.002	\$670.00	1.5%	Reopening	Diversified Agriculture
(3) 1-5-116:041	S-4805	5.002	\$670.00	1.5%	Reopening	Diversified Agriculture
(3) 1-5-116:043	S-4807	5.335	\$700.00	1.5%	Reopening	Diversified Agriculture
(3) 1-5-116:044	S-4808	5.511	\$720.00	1.5%	Reopening	Diversified Agriculture
(3) 1-5-116:046	S-4800	5.009	\$600.00	1.5%	Reopening	Diversified Agriculture
(3) 1-5-116:047	S-4810	5.200	\$690.00	1.5%	Reopening	Diversified Agriculture
(3) 1-5-116:048	S-4811	5.656	\$730.00	1.5%	Reopening	Diversified Agriculture
(3) 1-5-116:051	S-4830	5.000	\$670.00	1.5%	Reopening	Diversified Agriculture
(3) 1-5-116:053	S-4816	6.132	\$780.00	1.5%	Reopening	Diversified Agriculture
(3) 1-5-116:054	S-4817	6.392	\$800.00	1.5%	Reopening	Diversified Agriculture
(3) 1-5-116:056	S-4819	6.046	\$770.00	1.5%	Reopening	Diversified Agriculture
(3) 1-5-116:057	S-4820	5.064	\$670.00	1.5%	Reopening	Diversified Agriculture
(3) 1-5-116:058	S-4821	5.017	\$670.00	1.5%	Reopening	Diversified Agriculture
(3) 1-5-116:059	S-4822	5.005	\$670.00	1.5%	Reopening	Diversified Agriculture
(3) 1-5-116:060	S-4823	5.770	\$740.00	1.5%	Reopening	Diversified Agriculture
(3) 1-5-116:062		13.428	\$1,340.00	1.5%	Disposition	Diversified Agriculture
(3) 1-9-001:018		29.880	\$2,213.00	1.5%	Disposition	Diversified Agriculture
(3) 2-2-056:033		10.170	\$3,440.00	1.5%	Disposition	Diversified Agriculture
(3) 2-2-056:046	S-4767	10.146	\$3,140.00	1.5%	Reopening	Diversified Agriculture
(3) 2-2-056:047	S-4768	10.011	\$3,110.00	1.5%	Reopening	Diversified Agriculture
(3) 2-2-056:048	S-4769	10.070	\$3,120.00	1.5%	Reopening	Diversified Agriculture
(3) 2-2-056:049	S-4770	10.024	\$3,110.00	1.5%	Reopening	Diversified Agriculture
(3) 2-2-056:050	S-4771	10.059	\$3,120.00	1.5%	Reopening	Diversified Agriculture

Parcel TMK	Lease No.	Gross Acres	Appraised Fair Market Rental	% Rent on Gross Proceeds	Purpose	Character of Use
(3) 2-2-056:051	S-4772	10.011	\$3,110.00	1.5%	Reopening	Diversified Agriculture
(3) 2-2-056:052	S-4773	10.010	\$3,110.00	1.5%	Reopening	Diversified Agriculture
(3) 2-2-056:053	S-4774	10.203	\$3,160.00	1.5%	Reopening	Diversified Agriculture
(3) 2-2-056:054	S-4775	10.119	\$3,140.00	1.5%	Reopening	Diversified Agriculture
(3) 2-4-049:004		10.021	\$3,490.00	1.5%	Disposition	Diversified Agriculture
(3) 2-4-049:006		10.008	\$3,490.00	1.5%	Disposition	Diversified Agriculture
(3) 2-4-049:017	S-4364	12.683	\$4,240.00	1.5%	Reopening	Diversified Agriculture
(3) 4-6-002:001	RP-2001	90.800	\$1,114.00	n/a	Conversion	Diversified Agriculture
(3) 5-5-007:011	RP-7732	77.400	\$1,337.00	n/a	Conversion	Diversified Agriculture
(3) 5-9-002:006	S-5655	138.000	\$1,470.00	n/a	Reopening	Diversified Agriculture
(3) 6-6-005:028	S-3002	3.675	\$2,835.00	1.5%	Reopening	Diversified Agriculture
(3) 7-3-049:017	S-4834	5.110	\$4,170.00	1.5%	Reopening	Diversified Agriculture
(3) 7-3-049:018	S-4835	5.906	\$4,370.00	1.5%	Reopening	Diversified Agriculture
(3) 7-3-049:019	S-4836	5.015	\$4,140.00	1.5%	Reopening	Diversified Agriculture
(3) 7-3-049:020	S-4837	5.015	\$4,140.00	1.5%	Reopening	Diversified Agriculture
(3) 7-3-049:021	S-4838	5.015	\$4,140.00	1.5%	Reopening	Diversified Agriculture
(3) 7-3-049:022	S-4839	5.015	\$4,140.00	1.5%	Reopening	Diversified Agriculture
(3) 7-3-049:023	S-4840	5.027	\$4,150.00	1.5%	Reopening	Diversified Agriculture
(3) 7-3-049:024	S-4841	5.027	\$4,150.00	1.5%	Reopening	Diversified Agriculture
(3) 7-3-049:025	S-4842	5.027	\$4,150.00	1.5%	Reopening	Diversified Agriculture
(3) 7-3-049:026	S-4843	5.055	\$4,150.00	1.5%	Reopening	Diversified Agriculture
(3) 7-3-049:027	S-4860	5.534	\$4,270.00	1.5%	Reopening	Diversified Agriculture
(3) 7-3-049:028	S-4845	6.697	\$4,550.00	1.5%	Reopening	Diversified Agriculture
(3) 7-3-049:029	S-4846	5.027	\$4,150.00	1.5%	Reopening	Diversified Agriculture
(3) 7-3-049:031	S-4848	5.027	\$4,150.00	1.5%	Reopening	Diversified Agriculture
(3) 7-3-049:032	S-4849	5.013	\$4,140.00	1.5%	Reopening	Diversified Agriculture
(3) 7-3-049:033	S-4850	5.013	\$4,140.00	1.5%	Reopening	Diversified Agriculture
(3) 7-3-049:034	S-4851	5.013	\$4,140.00	1.5%	Reopening	Diversified Agriculture
(3) 7-3-049:035	S-4852	5.452	\$4,260.00	1.5%	Reopening	Diversified Agriculture

CS

Exhibit "B" Waimanalo, Island of Oahu



DROPPED PARCELS 75, 77, 80, 82, 85,
87, 96-101

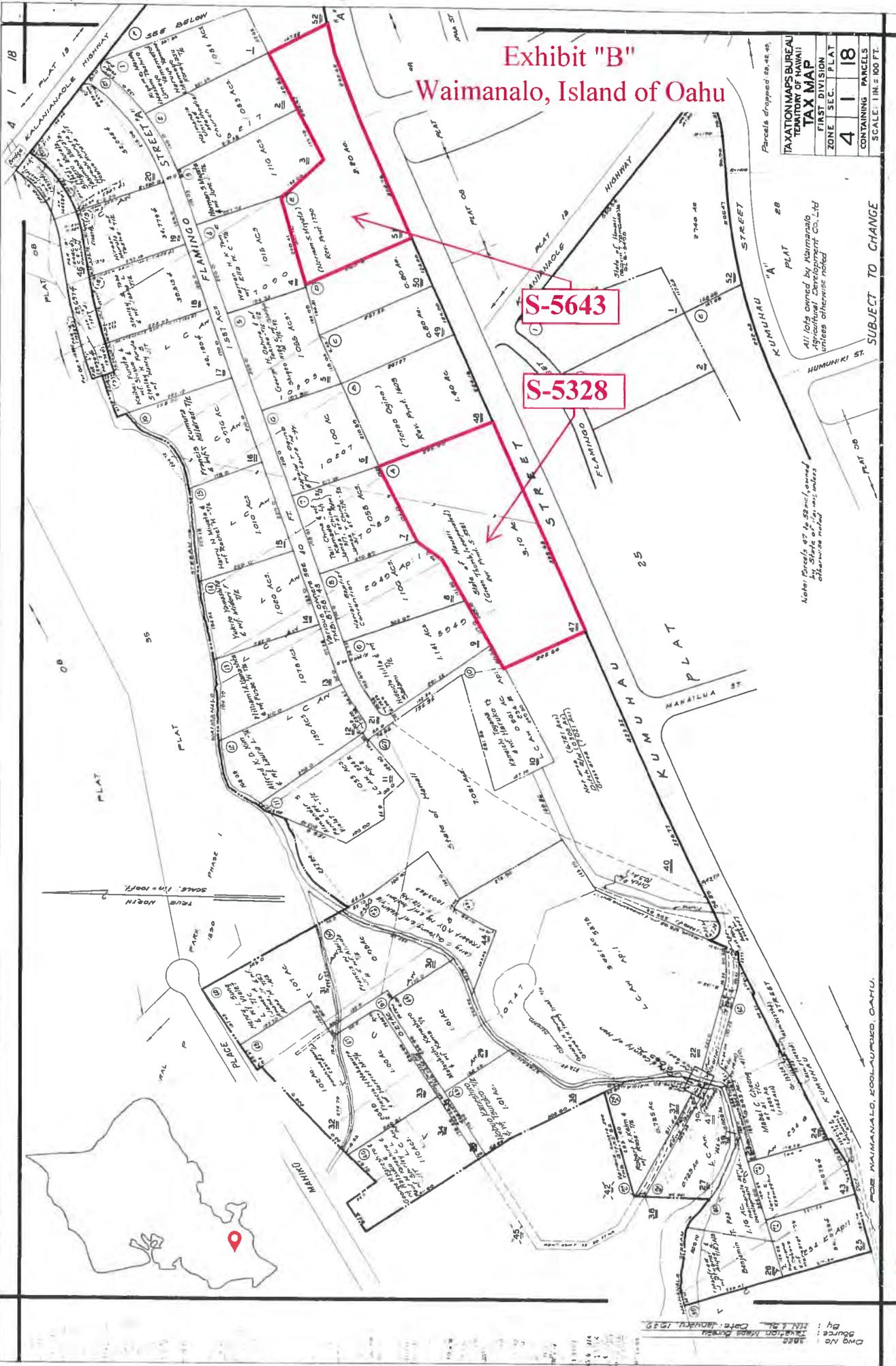
DEPARTMENT OF LAND AND NATURAL RESOURCES
1405 KALANIANA'OLUHUI DRIVE, SUITE 200
HONOLULU, HAWAII 96813
CITY & COUNTY TAX MAP
FIRST TAXATION DIVISION

ZONE	SECTION	PLAT
4	1	010

SCALE: 1 INCH = 400 FEET

Exhibit "B"

Waimanalo, Island of Oahu



TAXATION MAPS BUREAU	
TERMINUS OF HAWAII	
TAX MAP	
FIRST DIVISION	PLAT
ZONE SEC.	4 1 18
CONTAINING PARCELS	
SCALE: 1 IN. = 100 FT.	

Note: Parcels 97 to 99 not shown
 by State of Hawaii unless
 otherwise noted

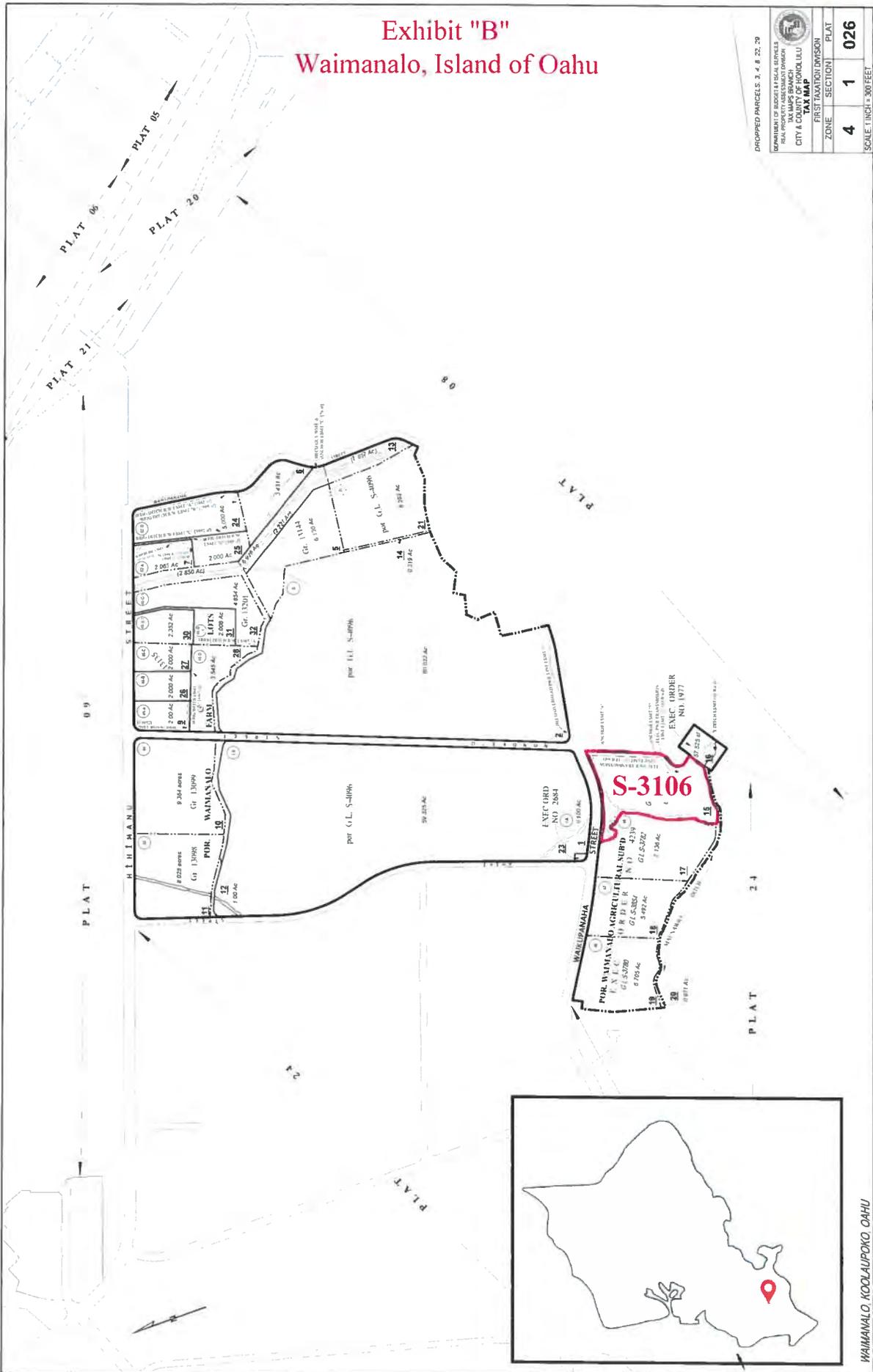
SUBJECT TO CHANGE

DWG No. 1885
 Source: Taxation Maps Bureau
 Date: January, 1959

L-7

C-8

Exhibit "B" Waimanalo, Island of Oahu



DROPPED PARCELS 3, 4, 8, 22, 29

DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND MANAGEMENT DIVISION
LAND INFORMATION SYSTEMS BRANCH
CITY & COUNTY OF HONOLULU
TAX MAP

ZONE	SECTION	PLAT
4	1	026

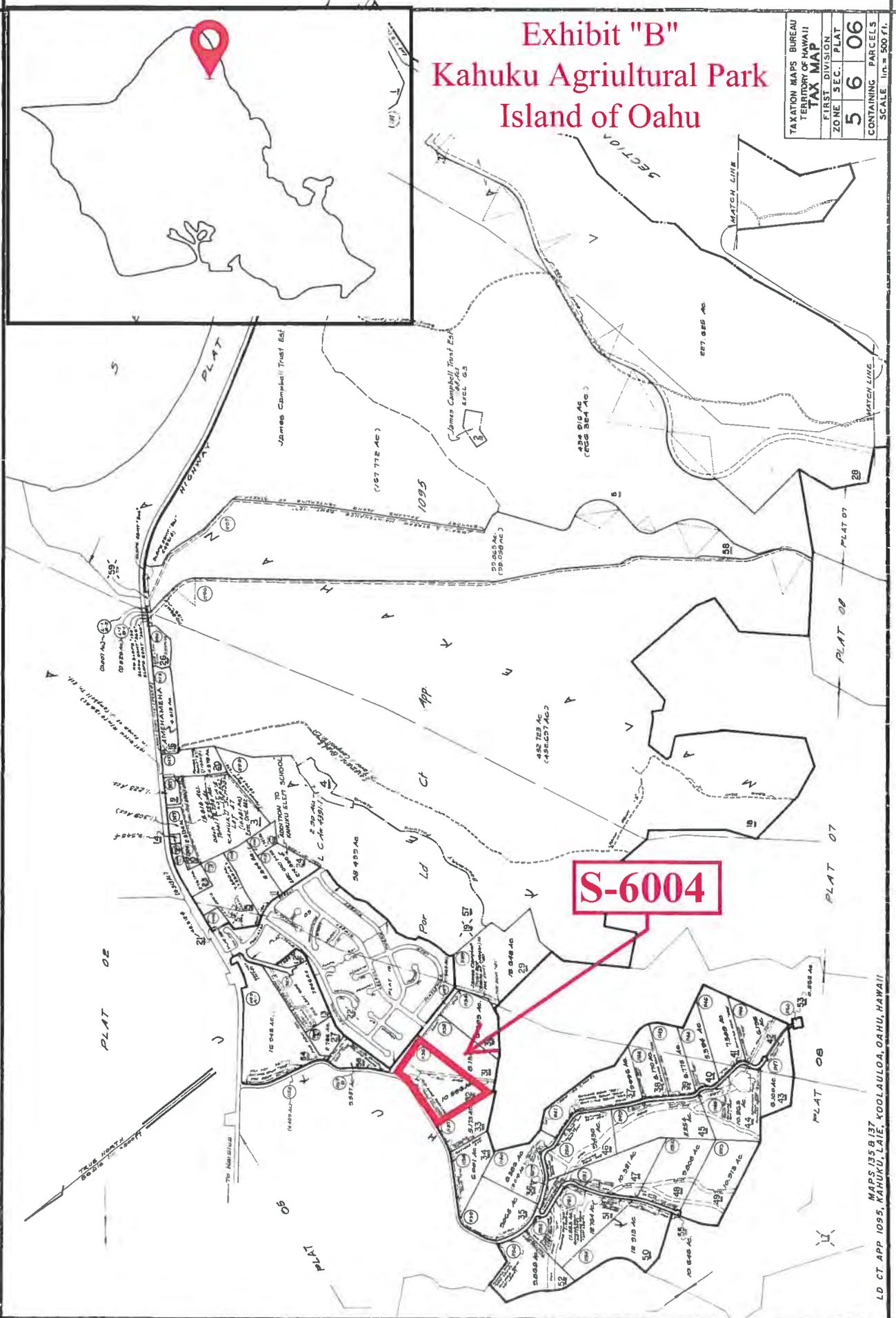
SCALE: 1 INCH = 300 FEET

WAIMANALO, KOOLAUPOKO OAHU

5 6 06

Exhibit "B" Kahuku Agricultural Park Island of Oahu

TAXATION MAPS BUREAU
TERRITORY OF HAWAII
TAX MAP
FIRST DIVISION
ZONE SEC. PLAT
5 6 06
CONTAINING PARCELS
SCALE 1"=500 FT.



S-6004

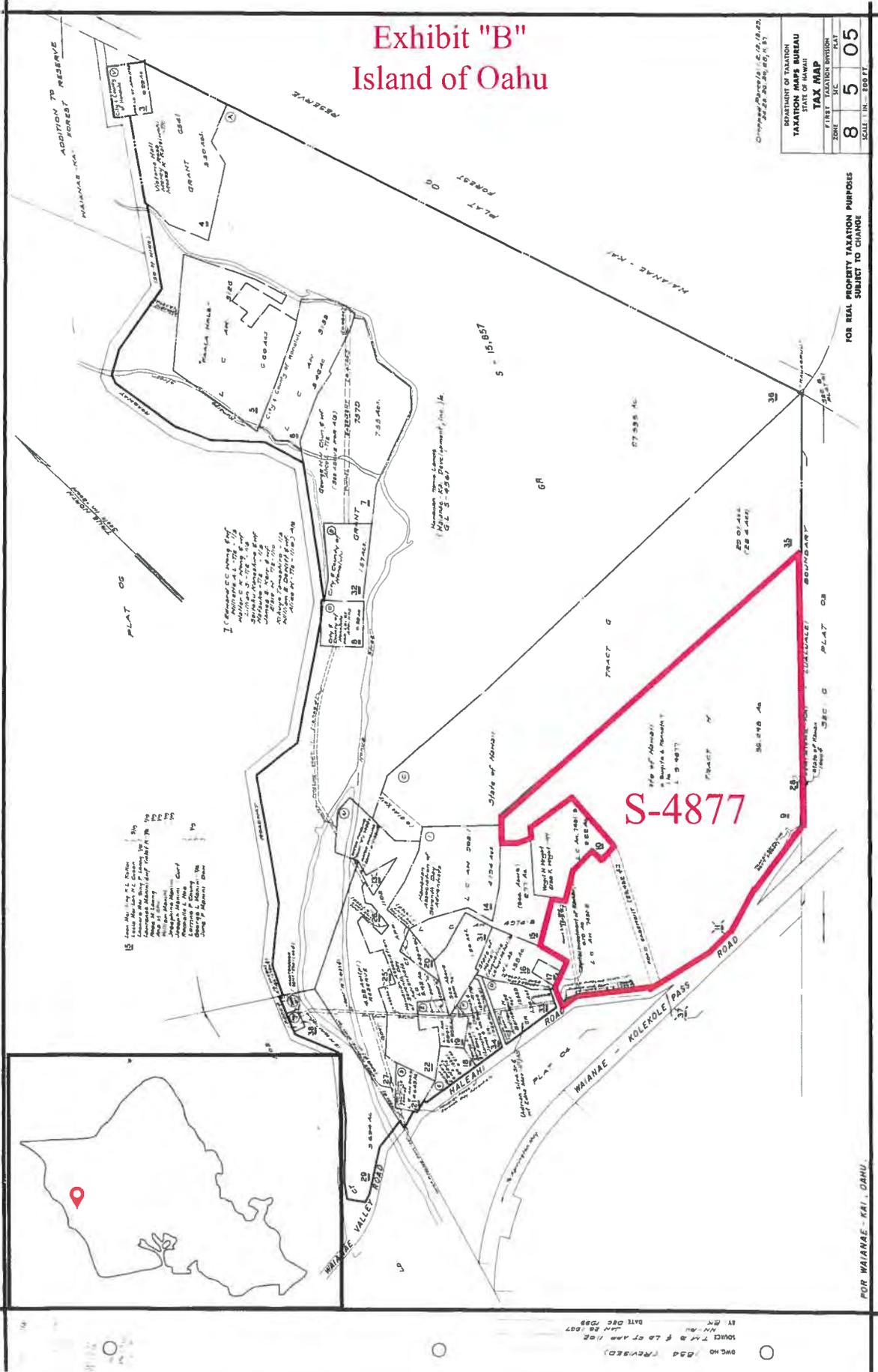
Dwg No 2441
Source Tax Maps Bureau (Ld Ct App 1095)
By P.K.H.N. Aug 1999

MAPS 135 B 137
LD CT APP 1095, KAHUKU, LAIE, KOOLAULOA, OAHU, HAWAII

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C-12

Exhibit "B" Island of Oahu

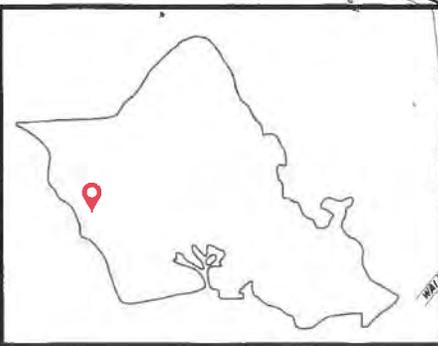


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2022, by the State of Hawaii

DEPARTMENT OF TAXATION TAXATION MAPS BUREAU STATE OF HAWAII	
TAX MAP	
ZONE	PLAT
8	5 05
SCALE: 1" = 500 FT.	

FOR REAL PROPERTY TAXATION PURPOSES
SUBJECT TO CHANGE

S-4877



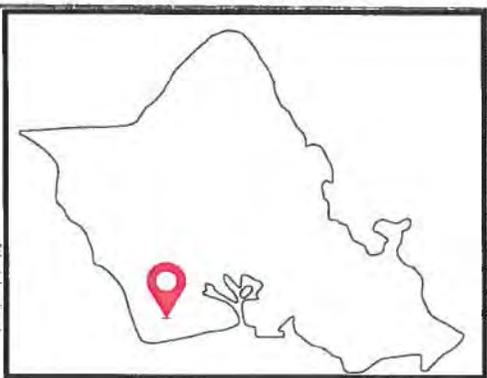
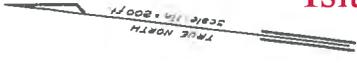
DWG NO. 1004 (REVISED)
 SOURCE: T.M.B. & L.B. STAFF, 11/21/19/22
 BY: M.M. DATE: DEC 17, 2022

FOR WAIANA'E - KAI, DANU

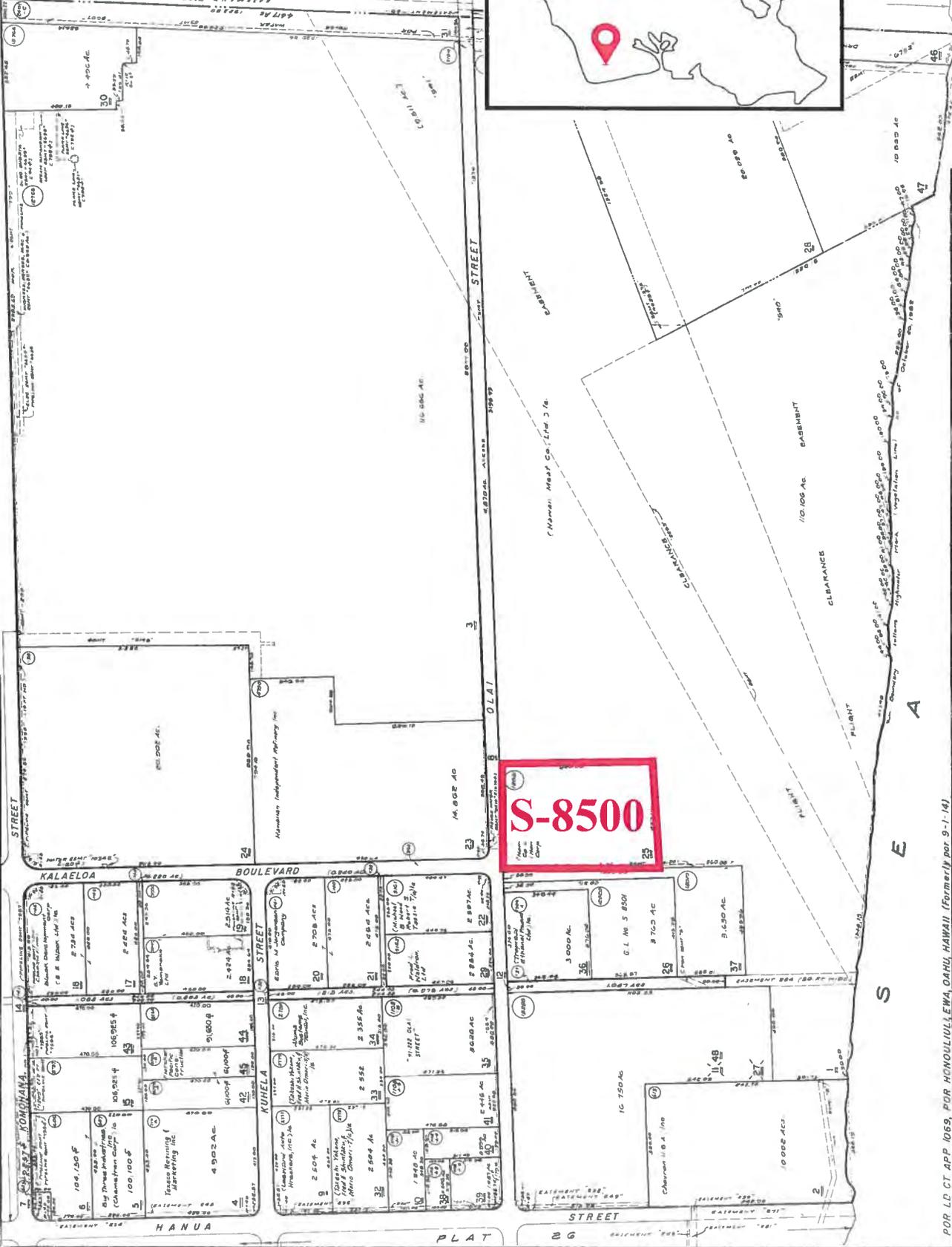
Exhibit "B" Island of Oahu

9 - 1 31 IST DIV

PLAT 32



DEPARTMENT OF THE TAX COMMISSIONERS			
TAXATION MAPS BUREAU			
STATE OF HAWAII			
TAX MAP			
FIRST	SEC.	DIVISION	PLOT
9	1	31	
CONTAINING			PARCELS
SCALE 1 IN. = 200 FT.			



S-8500

S E A

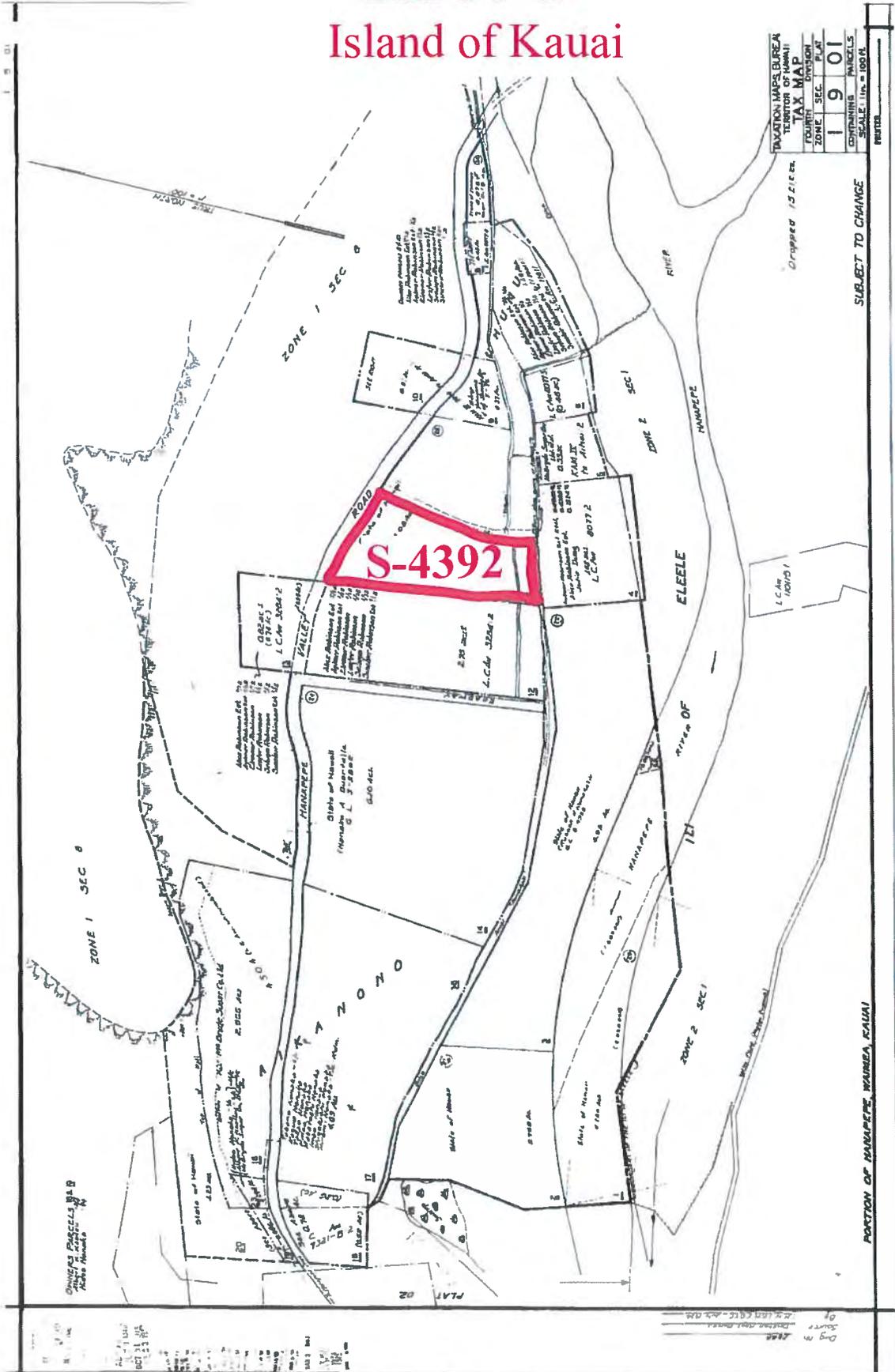
FOR L.C. APP. 1069, FOR HONOLULU, LEWA, OAHU, HAWAII (Formerly par 9-1-14)

C-13

Exhibit "B"

Island of Kauai

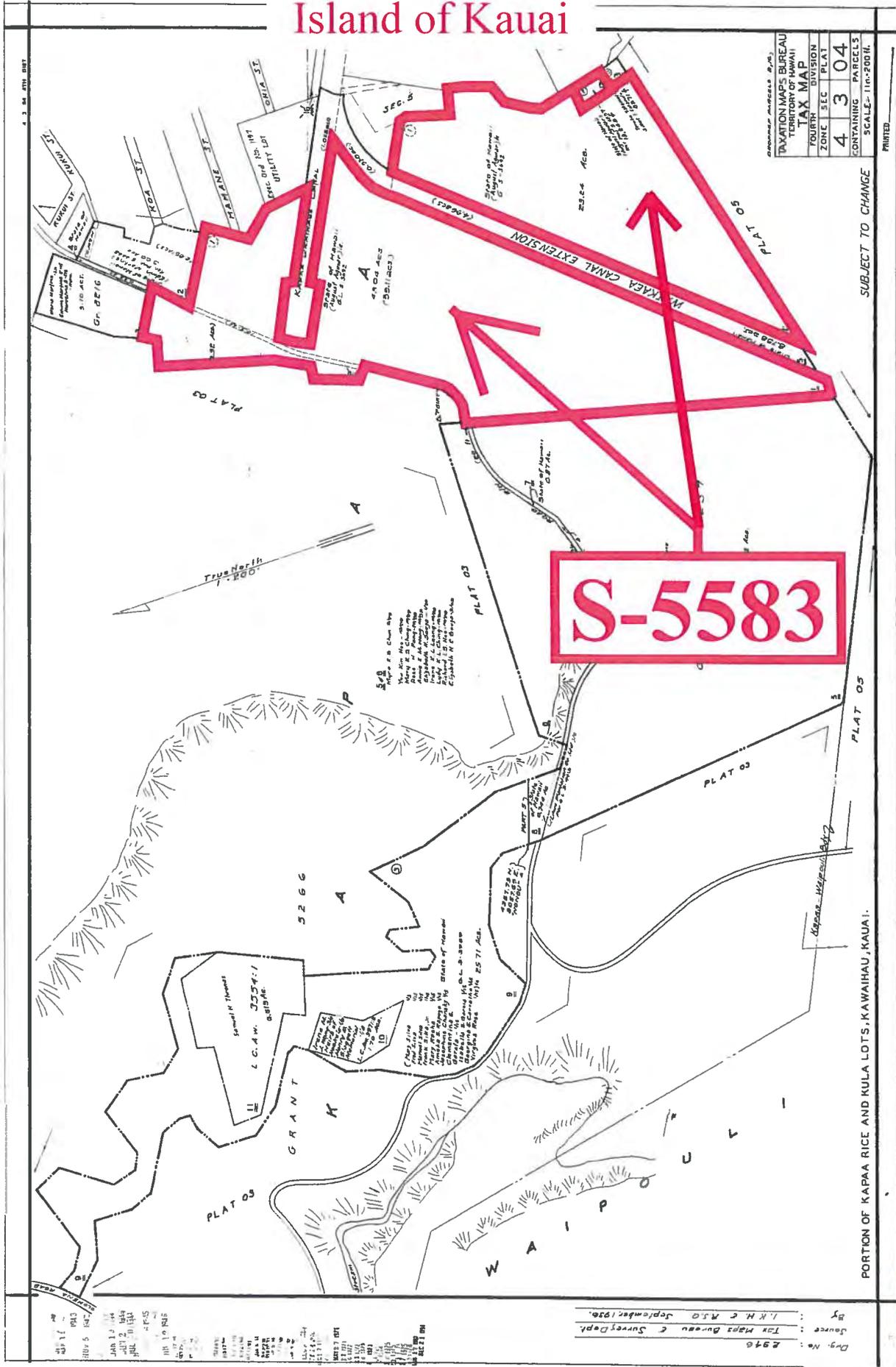
A.25.



C-15

Exhibit "B"

Island of Kauai



TERRITORY OF HAWAII			
TAX MAP			
FOURTH DIVISION	PLAT	4 3 04	
ZONE	SEC	CONTAINING PARCELS	
SCALE - 1/10"=200' H.			

SUBJECT TO CHANGE

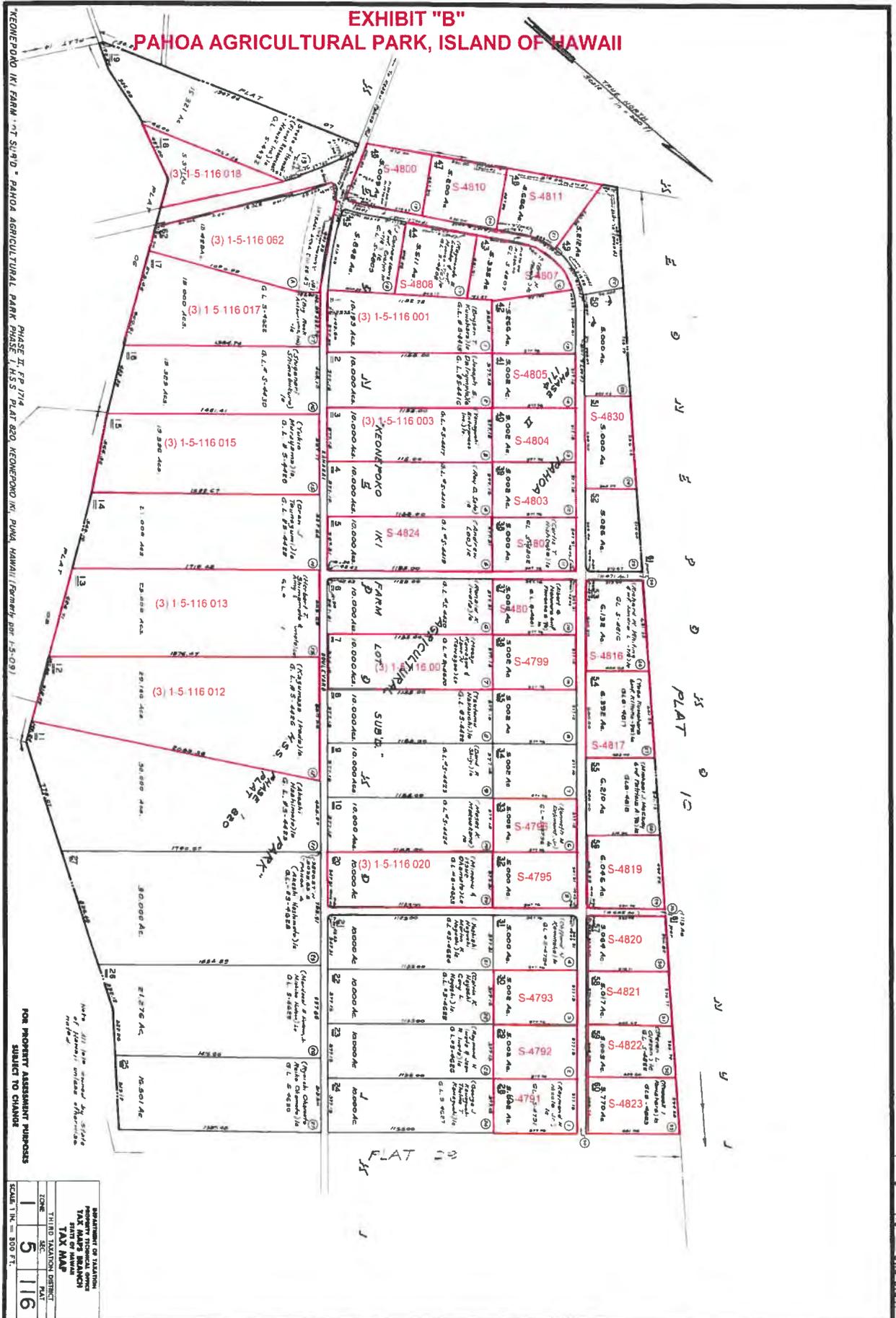
S-5583

Dwg. No.: 2946
 Source: Tax Maps Bureau C Surveys Dept.
 By: L.H.C. & A.O. September 1950.
 PRINTED

L12

020

EXHIBIT "B"
PAHOA AGRICULTURAL PARK, ISLAND OF HAWAII



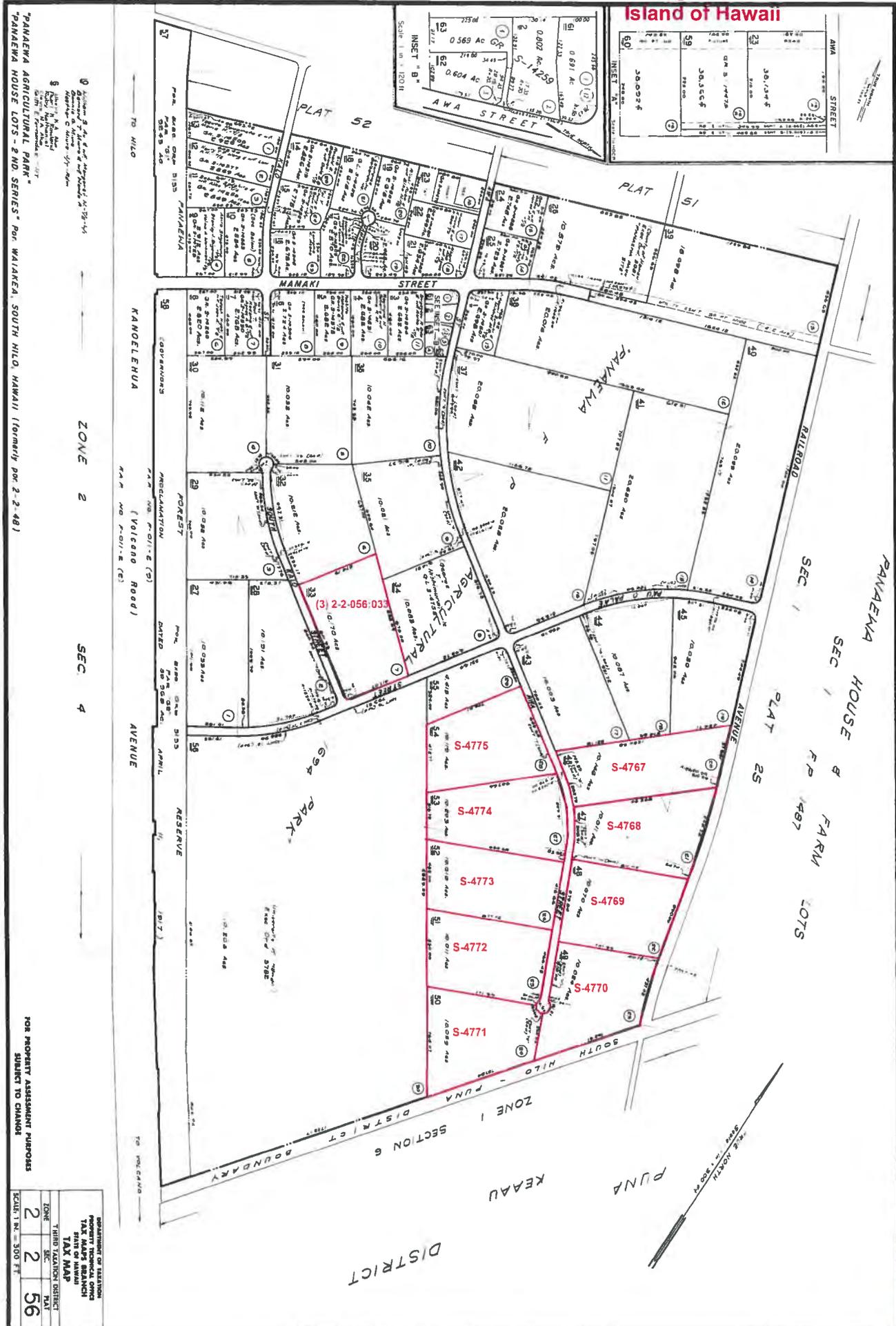
KEONEPONO IKI FARM - P.P. 174 - PHASE II, P.P. 174
 PAHOA AGRICULTURAL PARK - PHASE I, H.S.S. PLAT #20, KEONEPONO IKI, PUNA, HAWAII (FORMERLY P.P. 1-5-09)

FOR PROPERTY ASSESSMENT PURPOSES
 SUBJECT TO CHANGE

DEPARTMENT OF TAXATION	
THIRD TAXATION DISTRICT	
TAX MAP	
STATE OF HAWAII	
TAX MAP	
SCALE: 1 IN. = 500 FT.	5 116

Exhibit "B"
Panaewa Agricultural Park
Island of Hawaii

REVISED October 6, 1960 Revised: JY-G.S.-M.H.
 DATE April 9, 1964 BY JY-SY SOURCE TM B



"PANAENA AGRICULTURAL PARK"
 "PANAENA HOUSE LOTS - 2ND SERIES" Per WAIAKEA, SOUTH HILO, HAWAII (formerly par. 2-2-481)

ZONE 2
 SEC 4

FOR PROPERTY ASSESSMENT PURPOSES
 SUBJECT TO CHANGE

DEPARTMENT OF TAXATION	2
PROPERTY RECORDS BRANCH	2
TAX MAP	56
SCALE 1" = 300 FT	

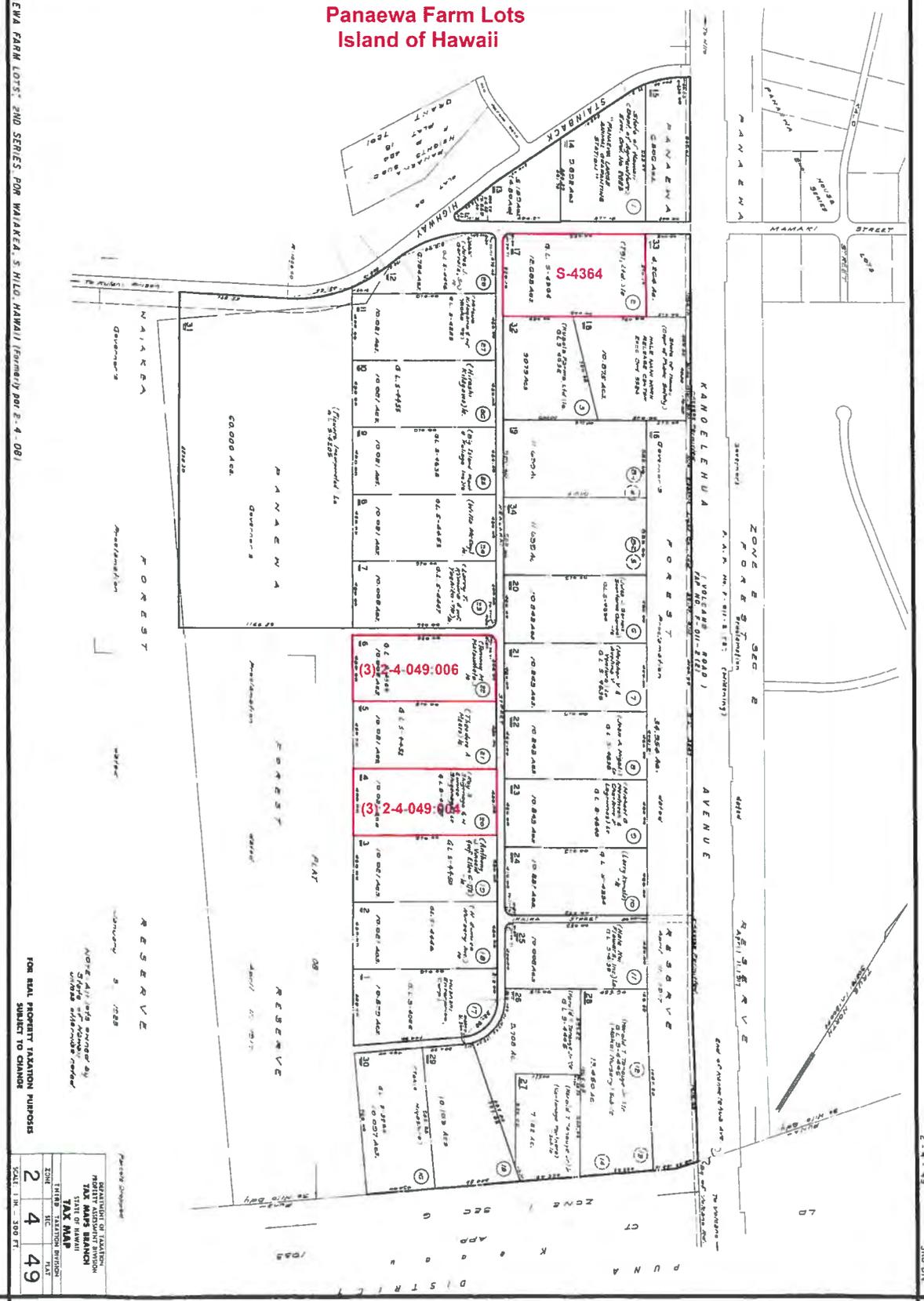
12-2

C-22

DWG NO. 5210
SURVEY DIVISION - NS3 PLAT 5814
BY M.M. 10/11 DATE APRIL 18, 1958

Exhibit "B" Panaewa Farm Lots Island of Hawaii

PANAWEA FARM LOTS - 2ND SERIES FOR WAIKAEA, S. HILLO, HAWAII (Formerly Plat E-4-081)

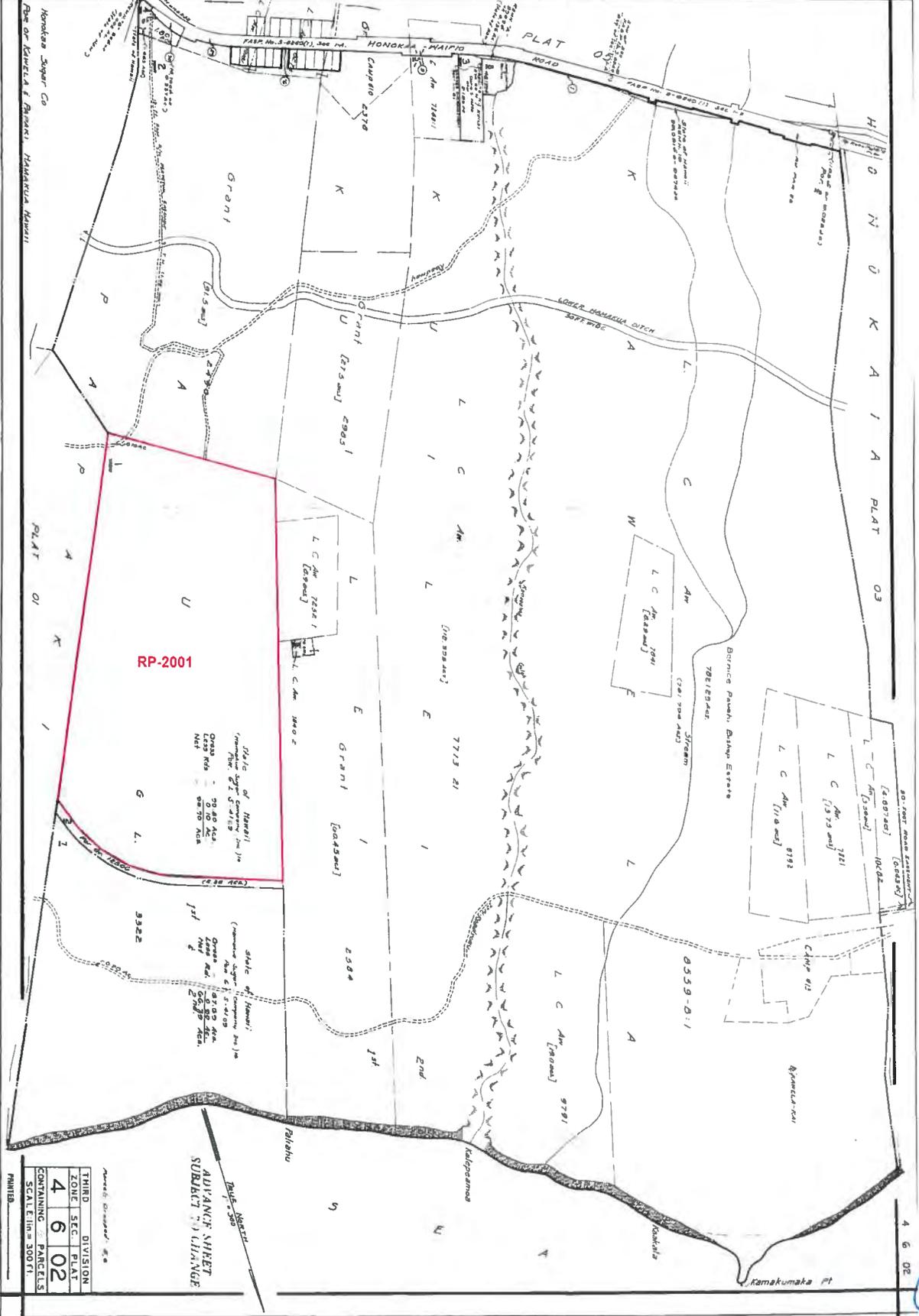


FOR REAL PROPERTY TAXATION PURPOSES
SUBJECT TO CHANGE

ZONE	TAXATION DIVISION
2	4
4	49

Dwg No. 2450
 Source: Tax Maps Bureau & Survey Dept.
 By: H.M.L.P.K. June 1955

Exhibit "B"
 Hamakua, Island of Hawaii



RP-2001

State of Hawaii
 Honokaa Sugar Company, Inc.
 (Honokaa Sugar Company, Inc.)
 Tax No. 21-57115
 Gross Acreage 29.66 Acs
 Less Fee 0.00 Acs
 Net 29.66 Acs

State of Hawaii
 Honokaa Sugar Company, Inc.
 (Honokaa Sugar Company, Inc.)
 Tax No. 21-57115
 Gross Acreage 29.66 Acs
 Less Fee 0.00 Acs
 Net 29.66 Acs

THIRD	DIVISION
ZONE	PLAT
4	6
02	

CONTAINING PARCELS
 SCALE: 1 in. = 300 ft.
 PRINTED

PLAT 01
 ADVANCE SHEET
 SUBJECT TO CHANGE

C-23

9/12/06
3/10/08
3/28/10
9/28/10
9/17/12
7/18/18

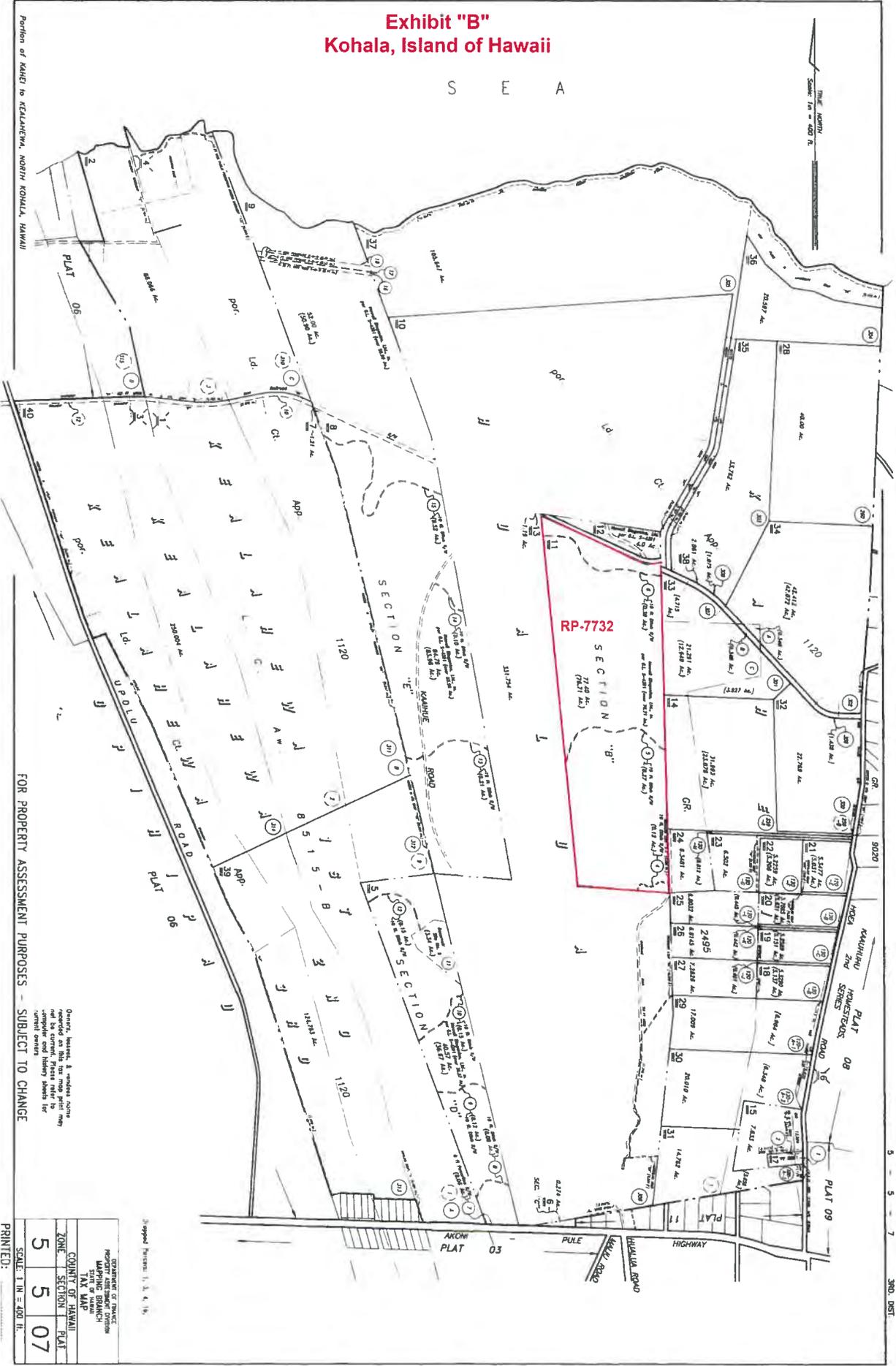
C-21

DWG NO. DATE Sept 2, 2004 BY HI SOURCE F.A.B. Sub 7643

Exhibit "B" Kohala, Island of Hawaii

S E A

Portion of MAHEI to KEALAEWA, NORTH KOHALA, HAWAII



FOR PROPERTY ASSESSMENT PURPOSES - SUBJECT TO CHANGE

Owner, Heald, & Wendler, Agents
and by consent, these maps refer to
applicant and Heald's plans for
current owners

GOVERNMENT OF HAWAII
PLANNING BRANCH
STATE OF HAWAII
TAX MAPS

ZONE	5
SECTION	5
PLAT	07

SCALE: 1 IN = 400 FT.

PRINTED:

Shaded Areas: L.A. & R.

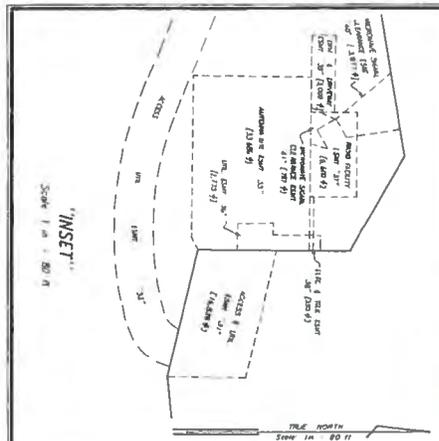
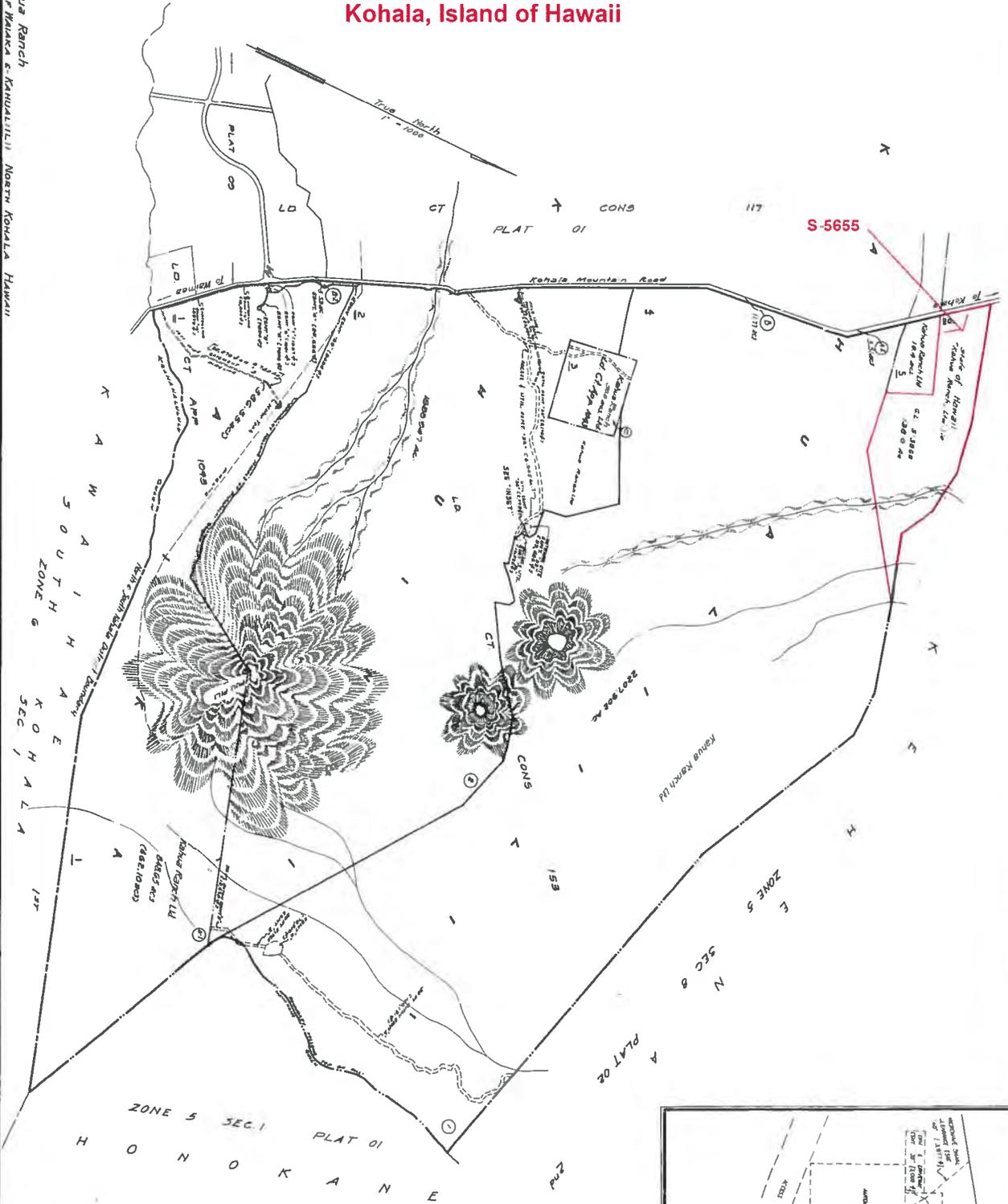
300. DIST

Dwg No 2492
 Source: Tax Maps Bureau
 By: H.N. Aug. 1994

1/2" = 100'
 1/4" = 25'
 1/8" = 12.5'

Exhibit "B" Kohala, Island of Hawaii

Kahua Ranch
 Pae of Maaka e-Kahualili, North Kohala, Hawaii



ADVANCE SHEET
 SUBJECT TO CHANGE

THIRD	DIVISION
ZONE	PLAT
5	9
02	

SCALE: 1 in. = 1000 FT

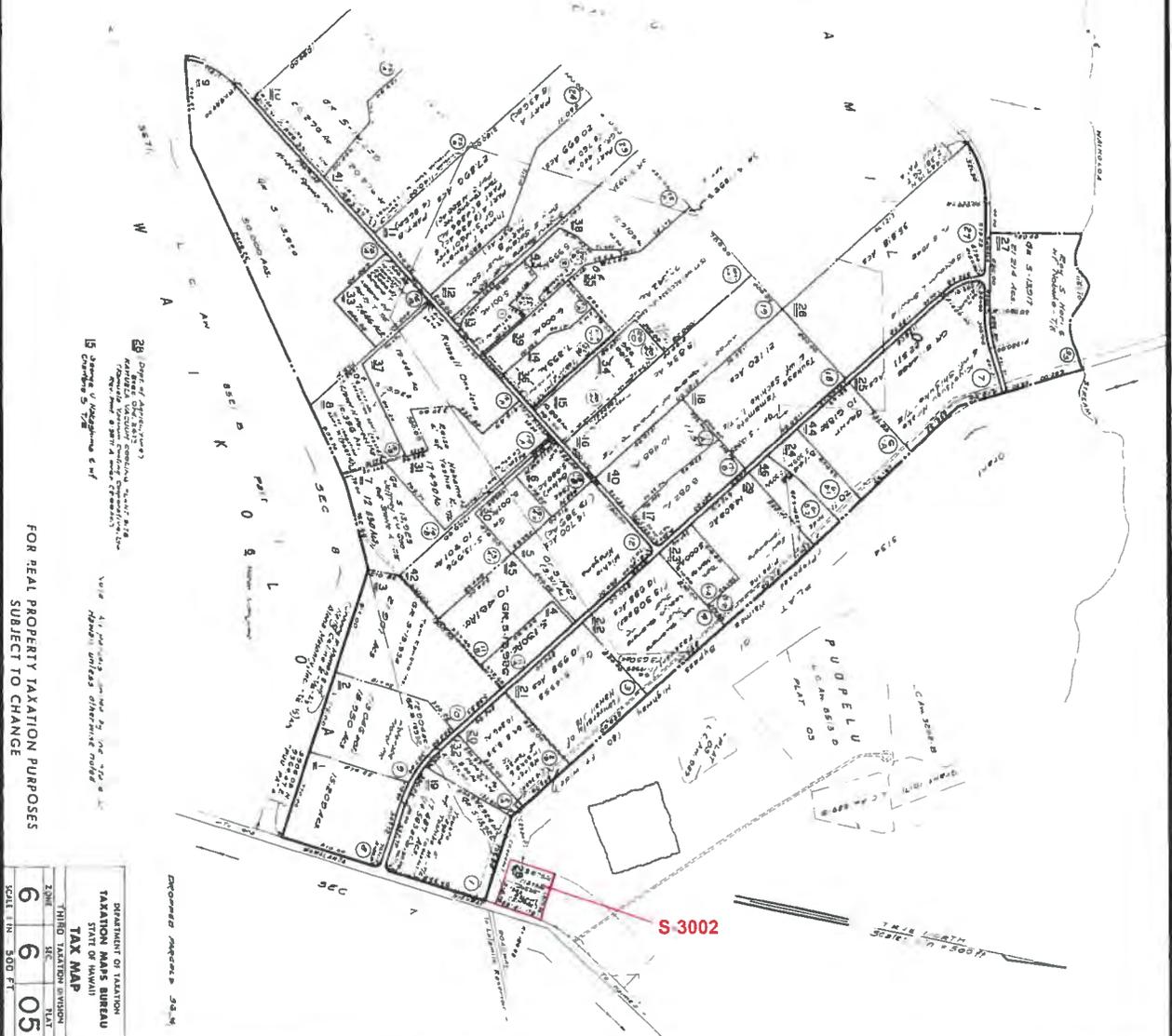
PRINTED

5902

DWL NO. 4000
SOURCE: HSS Plat #20, S.H. SURVEY DIVISION
BY J. L. S. DATE MAY 8, 1961

Exhibit "B" South Kohala, Island of Hawaii

FOR LALAMULO FARM LOTS, LALAMULO & MAIKOLOA, MAIKEA, SOUTH KOHOLA, HAWAII



FOR REAL PROPERTY TAXATION PURPOSES
SUBJECT TO CHANGE

DEPARTMENT OF TAXATION TAXATION MAPS BUREAU STATE OF HAWAII	
TAX MAP	
2ND	1ST
6	6
05	05
SCALE 1 IN = 500 FT	

STATE OF HAWAII
DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESOURCE MANAGEMENT DIVISION
HONOLULU, HAWAII 96814

November 29, 2022

Board of Agriculture
Honolulu, Hawaii

Subject: REQUEST FOR APPROVAL TO WITHDRAW THREE
ENCUMBERED LAND PARCELS FROM GOVERNOR'S
EXECUTIVE ORDER NO. 4535 AND RE-SET ASIDE TO THE
DEPARTMENT OF LAND AND NATURAL RESOURCES
PURSUANT TO ACT 90, SLH 2003, CODIFIED AS CHAPTER 166E,
HAWAII REVISED STATUTES, TMK NOS. (1) 4-1-008:054 and 059,
AND (1) 4-1-010:004, ISLAND OF OAHU

Authority: Section 166E-3, Hawaii Revised Statutes (HRS)

Land Area: 46.421 gross acres, more or less

Tax Map Keys: (1) 4-1-008:054 and 059, and (1) 4-1-010:004

Land Status: Encumbered by Governor's Executive Order No. 4535

REMARKS:

Act 90, Session Laws of Hawaii (SLH 2003), established the Non-Agricultural Park Lands Program to which certain public lands classified for agricultural use by DLNR should be transferred to Department of Agriculture (DOA) in a manner consistent with article XI, section 10 of the State Constitution. Therefore, Hawaii Revised Statutes, Chapter 166E entitled Non-Agricultural Park Lands was established. Under section HRS 166-E transfer and management of Non-Agricultural Park Lands and related facilities to the DOA, "Upon mutual agreement and approval of the Board (of Agriculture) and the Board of Land and Natural Resources, the DOA may accept the transfer of and manage certain qualifying non-agricultural park lands..." Further, the program shall include the following conditions pertaining to encumbered Non-Agricultural Park Lands:

- (1) The lessee or permittee shall perform in full compliance with the existing lease or permit;
- (2) The lessee or permittee shall not be in arrears in the payment of taxes, rents, or other obligations owed to the State or any county;
- (3) The lessee's or permittee's agricultural operations shall be economically viable...

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C-29

Governor's Executive Order No. 4535 dated August 29, 2017 transferred a total of 25 leases and revocable permits without the approval of the Board of Agriculture. DOA declined to formally accept certain leases for transfer until additional due diligence was completed. When DOA staff reviewed the lease files and performed site visits to each of the corresponding premises, it was determined that certain of the leases and revocable permits were not in compliance with lease provisions or not suitable for farming activities, and therefore, are unacceptable for transfer. DOA is requesting that the following leases be reset aside to DLNR.

Doc No.	TMK	Leased Area (Acres)
g15489	(1) 4-1-008:054	10.739
g15488	(1) 4-1-008:059	21.628
g14297	(1) 4-1-010:004	14.054

RECOMMENDATION:

That the Board of Agriculture approve staff's request to have the lands identified and listed above and delineated on the attached maps as Exhibits "A" be withdrawn from the respective Governor's Executive Order No. 4535 and re-set aside to DLNR.

Respectfully submitted,



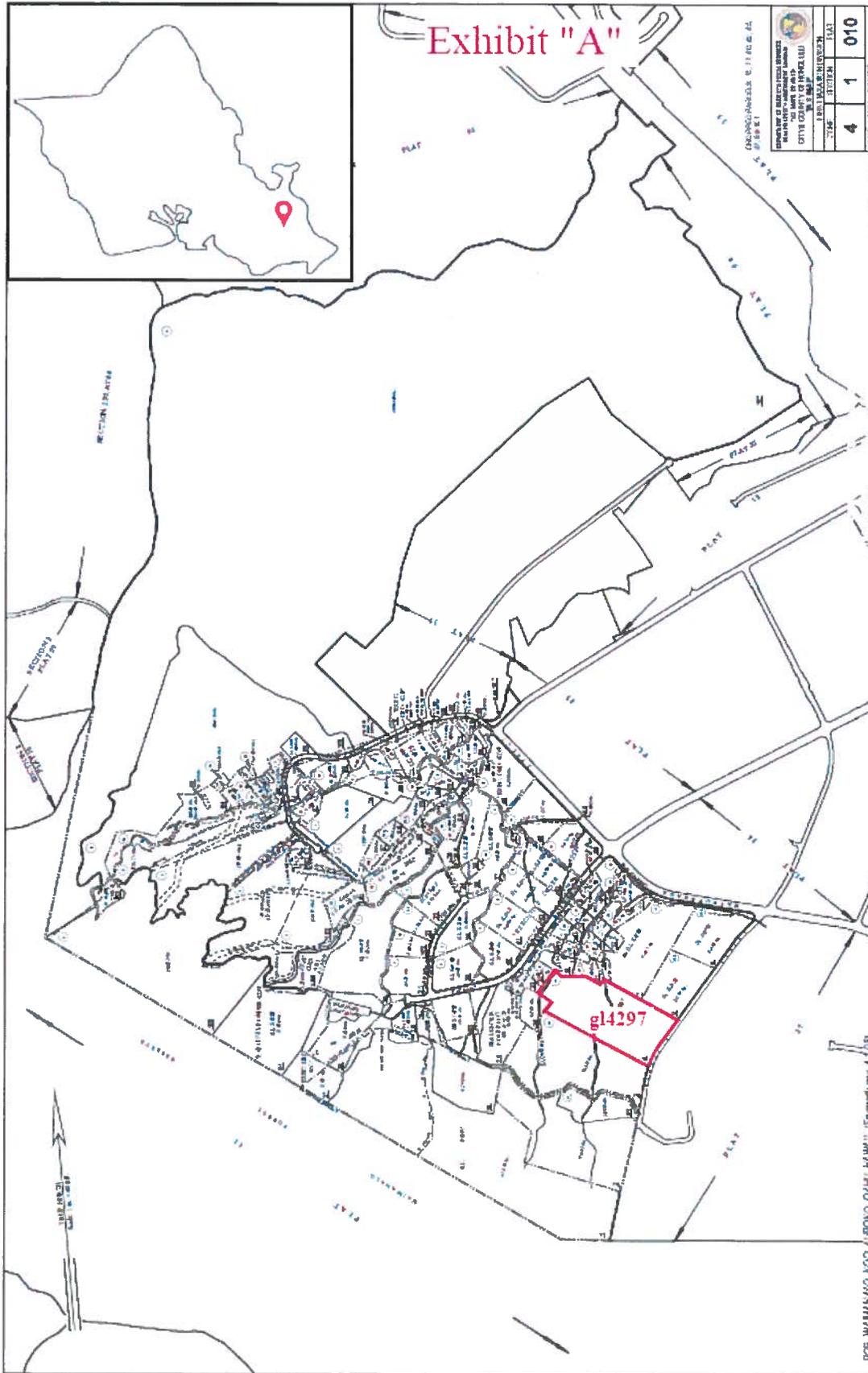
BRIAN KAU, P.E.
Administrator and Chief Engineer
Agricultural Resource Management Division

Attachment – Exhibit "A"

APPROVED FOR SUBMISSION:


PHYLLIS SHIMABUKURO-GEISER
Chairperson, Board of Agriculture

C-31



STATE OF HAWAII
DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESOURCE MANAGEMENT DIVISION
HONOLULU, HAWAII

November 29, 2022

Board of Agriculture
Honolulu, Hawaii

Subject: REQUEST APPROVAL FOR CONVERSION OF REVOCABLE PERMIT NO. S-6814 TO A NEW GENERAL LEASE FOR RONALD P. WEIDENBACH DBA HAWAII FISH COMPANY; TMKS: (1) 6-9-001:002, 003 AND 036; KAENA, WAIALUA, ISLAND OF OAHU, HAWAII

Authority: Section 166E-4 and 11, Hawaii Revised Statutes (HRS), and Section 4-158-8, Hawaii Administrative Rules (HAR)

Permittee: Ronald P. Weidenbach DBA Hawaii Fish Company

Land Area: 147.977 Acres

Tax Map Key: (1) 6-9-001:002, 003 and 036 (Exhibit "A")

Land Status: Management Jurisdiction transferred by Governor's Executive Order No. 4682 to the Department of Agriculture for Non-Agricultural Park Lands purposes in 2022; encumbered by Revocable Permit No. S-6814 to Ronald P. Weidenbach DBA Hawaii Fish Company, by the Board of Land and Natural Resources

Revocable
Permit: Month-to-Month

Current Rent: \$996.00 per year

Character of
Use: Aquaculture

REMARKS:

Ronald P. Weidenbach DBA Hawaii Fish Company was issued Revocable Permit No. S-6814 by the Board of Land and Natural Resources (BLNR) in 1999. On November 24, 2014, the BLNR set aside the subject parcels to the Agribusiness Development Corporation for agriculture purposes via Governor's Executive Order No. 4474. On September 14, 2022, Revocable Permit

C-32

No. S-6814 was set aside to the Department of Agriculture for management purposes via Governor’s Executive Order No. 4682.

Since 1978, Hawaii Fish Company (HFC) has been in the industry of freshwater aquaculture development and production in Hawaii. HFC began in-house research and development of Chinese catfish spawning and culture at Manoa in 1980 and initiated commercial production and sales in 1982 at Waimanalo. In 1986, in Punaluu Valley they diversified production and live sales to include freshwater prawns, tilapia, grass carp, silver carp and bighead carp. For the past 30 years, HFC has been located at the former U.S. Army/Hawaii Bitumuls & Paving Company quarry and asphalt mixing plant site at Laena-Mokuleia, operating under a revocable permit. HFC has developed a small-scale, self-sustaining, multigenerational family aquaculture operation, and researched and developed innovative aquaculture and aquaponics production technologies through local and federal research grants. HFC has gained a reputation within the local seafood and restaurant trades as a consistent and reliable supplier of premium quality farm-raised fish. The farm has provided weekly sales to Honolulu’s Chinatown live seafood markets since 1993.

The Department of Land and Natural Resources, Division of Forestry and Wildlife (“DOFAW”), has identified a portion of the land subject to the set aside, estimated to be 61.5 acres more or less, and requested that area to be withdrawn and re-set aside to DOFAW at a later date, as a Game Management Area for public use for hunting, hiking and other recreational purposes. HDOA agreed with DOFAW’s request and seeks authorization to enter into a Memorandum of Understanding (MOU) with DOFAW regarding the subsequent withdrawal and set aside to include without limitation, DOFAW’s commitment to seek federal or other funding for surveying and mapping to establish the Game Management Area and any access which may be required or appropriate.

Pursuant to Section 4-158-8, HAR, Mr. Weidenbach is requesting a conversion of the revocable permit to a new lease with a thirty-five (35) year term with the character of use as Diversified Agriculture, including without limitation, aquaculture. The approval of conversion to a new lease is subject to the Department:

- Requiring an appraisal of the parcels in accordance with Section 4-158-21, HAR to determine the annual base rental for the initial fifteen (15) years of the new lease;
- Imposing other lease terms, provisions, restrictions, and conditions as provided in this chapter as may be required to protect the State’s interest;
- Requiring the payment of annual lease rent by appraisal and a premium computed at twenty-five (25) percent of the annual base rent for each year of the lease equal to the number of years the lessee has occupied the land, not to exceed seven (7) years; and
- Requiring those qualifying to meet the bona fide farmer criteria as defined in Section 4-158-1.

An appraisal has been ordered by the Lessor for the purpose of determining the fair market annual base rental and additional rents for the initial fifteen (15) year term of the new lease, subject to approval of the Board. Upon the commencement date of the new lease, the Lessee shall pay an annual premium equal to 25% of the annual base rental for a period not to exceed seven (7) years.

RECOMMENDATION:

The Board of Agriculture:

1. Find by allowing the conversion of this Revocable Permit to a new long-term lease, the State would realize greater returns and reduce disruptions to current ongoing farming operations and is, therefore, in the public interest; and
2. Approve Permittee's request to convert Revocable Permit No. S-6814 held by Ronald P. Weidenbach DBA Hawaii Fish Company to a new Non-Agricultural Park Lands lease of not more than thirty-five (35) years with the character of use as Diversified Agriculture, including without limitation, aquaculture.

All documents are subject to the approval as to form by the Department of the Attorney General, and such other terms and conditions as may be prescribed by the Chairperson to best serve the interests of the State.

Respectfully submitted,



BRIAN KAU, P.E.
Administrator and Chief Engineer
Agricultural Resource Management Division

Attachments - Exhibits "A" and "B"

APPROVED FOR SUBMISSION:



PHYLLIS SHIMABUKURO-GEISER
Chairperson, Board of Agriculture

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EXHIBIT "B"



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STATE OF HAWAII
DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESOURCE MANAGEMENT DIVISION
HONOLULU, HAWAII

November 29, 2022

Board of Agriculture
Honolulu, Hawaii

Subject: REQUEST TO TERMINATE GENERAL LEASE NO. S-3109, MILTON COLEMAN, JR., LESSEE; ISSUE CANCELLATION DOCUMENT, AND DISPOSITION OF LOT; TMK: (1) 4-1-018:048, KOOLAUPOKO, WAIMANALO, ISLAND OF OAHU, HAWAII

Authority: Sections 166E-5 and 8, Hawaii Revised Statutes (HRS), and Sections 4-158-2(a)(8) and 33, Hawaii Administrative Rules (HAR)

Lessee: Milton Coleman, Jr.

Land Area: 1.4 acres

Tax Map Key: (1) 4-1-018:048 (see Exhibit "A")

Land Status: Encumbered by Governor's Executive Order No. 4408 to the Department of Agriculture for non-agricultural park land purposes in 2012

Lease Term: 35 years, 5/1/2014 to 4/30/2049

Current Rent: \$12,340.00 per year until reopening on 5/1/2024

Additional Rent: 1.5 % of the gross revenue

Permitted Use: Diversified agriculture purposes

BACKGROUND:

The subject lease was awarded to Milton Coleman, Jr. effective May 1, 2014 by way of public auction. The lessee had planned to farm native Hawaiian crops and establish an aquaculture system. The Department has not received payment on the lease rent since March of 2021 nor has he paid real property taxes since 2016, according to City and County of Honolulu records. Various personal family issues contributed to financial and stressful situations prohibiting development of the farm and delinquencies of financial obligations.

C-38

The Lessee currently is in default with a lease rent balance due of \$98,617.00 as well as owing delinquent property taxes of \$20,150.44 as of this date. Numerous invoice notices have been sent to the Lessee demanding payment to remedy the delinquencies including issuance of monthly invoices showing accumulating balances due with interest fees. Letters demanding remedy of various lease violations have been sent. All efforts to work with the Lessee to remedy defaults have been exhausted.

The Lessee has failed to remedy the various violations of the lease within the given times allowed or such additional periods allowed for good cause, to correct the violations.

RECOMMENDATION:

Staff recommends that the Board of Agriculture:

1. Approve the cancellation of General Lease No. S-3109 pursuant to section 4-158-2(a)(8), HAR, and terminate all right, title, and interest granted to the Lessee therein effective as of the date of approval of this submittal;
2. Authorize issuance of a lease cancellation document to be executed by the chairperson and recorded at the Bureau of Conveyances; and
3. Authorize staff to prepare TMK: (1) 4-1-018:048 for disposition to the public, pursuant to Subchapter 4-158-24 and 29, HAR.

All related documents are subject to approval as to form by the Office of the Attorney General, and such other terms and conditions as may be prescribed by the Chairperson to best serve the interests of the State.

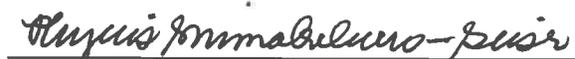
Respectfully submitted,



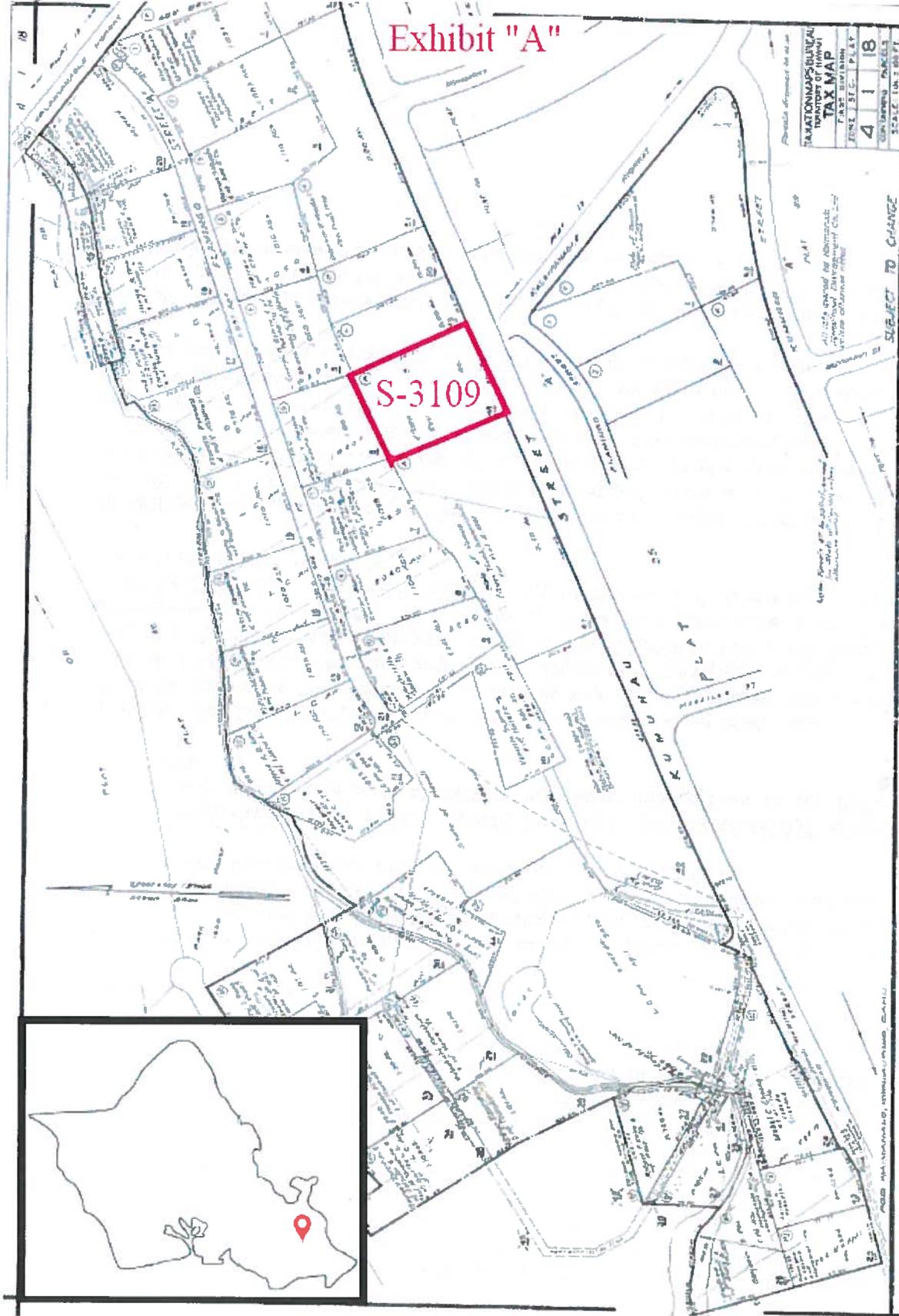
BRIAN KAU, P.E.
Administrator and Chief Engineer
Agricultural Resource Management Division

Attachment – Exhibit “A”

APPROVED FOR SUBMISSION:

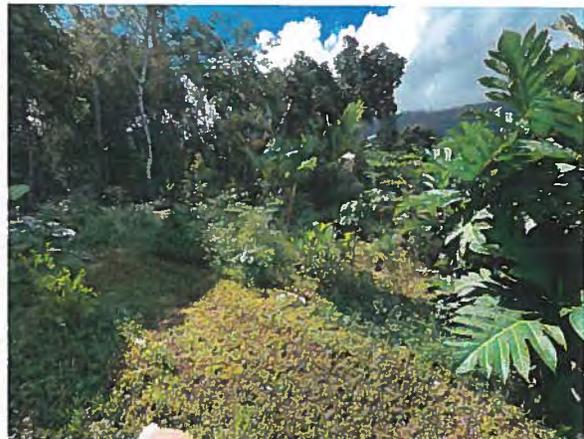


PHYLLIS SHIMABUKURO-GEISER
Chairperson, Board of Agriculture



C-40

Photos taken on 9/21/2022



STATE OF HAWAII
DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESOURCE MANAGEMENT DIVISION
HONOLULU, HAWAII

November 29, 2022

Board of Agriculture
Honolulu, Hawaii

Subject: RESUBMITTAL - REQUEST FOR CONSENT TO
ASSIGNMENT OF GENERAL LEASE NO. S-9013; LAUNNIE
L. GINN, LESSEE/ASSIGNOR, KUMU FARMS, LLC,
ASSIGNEE; TMK: (2) 5-2-001:021; MOLOKAI
AGRICULTURAL PARK, LOT 12, ISLAND OF MOLOKAI,
MAUI COUNTY, HAWAII

Authority: Section 166-6, Hawaii Revised Statutes (HRS), and
Sections 4-153-33(a)(6)(C), and 4-153-1 and 13, Hawaii
Administrative Rules (HAR)

Lessee/Assignor: Launnie L. Ginn

Assignee: Kumu Farms, LLC

Land Area: 42.422 Acres

Tax Map Key: (2) 5-2-001:021, Lot No. 12 (see Exhibit "A")

Land Status: Encumbered by Governor's Executive Order No. 3696 to the
Department of Agriculture for Agricultural Park purposes in 1996

Annual
Base Rental: \$ 2,757.43 per year

Lease Term: June 1, 1999 through May 31, 2034

Character of Use: Diversified agriculture

Consideration: \$16,000.00

BACKGROUND:

In 1975, BLNR awarded General Lease No. S-4433 to the County of Maui for agricultural lands now known as the Molokai Agricultural Park. Under Maui County's management Launnie Ginn was awarded a sublease in 1987. In 1996, BLNR cancelled Maui County's lease and authorized the County to cancel the subleases and issue revocable permits

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Board of Agriculture
November 29, 2022
Page 2

pending the set aside of the land to DOA. Maui County then issued a revocable permit to Mr. Ginn. In 1996, Governor's Executive Order No. 3696 was issued setting aside Molokai Agricultural Park to DOA in 1997, including the revocable permit issued Mr. Ginn.

General Lease No. S-9013 dated April 4, 2003 was issued to Launnie L. Ginn by DOA. Subsequently, due to family related issues, Mr. Ginn relocated to the mainland, with the intention of returning to his Molokai farm to continue operations. To keep the land in active farming status, Mr. Ginn entered into a license agreement with Agrigenetics Molokai, LLC to operate a seed farm on the premises. In 2018, Agrigenetics Molokai closed down its seed production operations at the Molokai Agricultural Park and the license with Mr. Ginn was cancelled. Mr. Ginn then contacted Kumu Farms, LLC owner, Grant Schule, to commence management of farming operations in his absence to continue active farming on the land. Mr. Grant Schule planted the entire farmable area with organic papaya, interspersed with truck crops (see Exhibit "B"). Mr. Ginn is unable to resume farming as he has significant physical disabilities, and he requests that the lease be assigned to Kumu Farms, LLC, pursuant to 4-153-33(a)(6)(C), HAR, which states the following:

"(6) With the approval of the board, and subject to the provisions of section 4-153-29, the assignment of transfer of a lease or any interest therein....may be made if:(B) the lessee becomes mentally or physically disabled;....."

Consequently, an agreement to assign General Lease No. S-9013 to Kumu Farms, LLC was executed between the parties. Mr. Grant Schule is the sole member of Kumu Farms, LLC and owns and operates a successful farming business on Molokai and Maui. Mr. Schule holds title to five leases at the Molokai Agricultural Park and primarily produces organic Sunrise papaya, a variety of vegetable crops, herbs, kale, beets, beans, bananas, fennel, etc. which he sells locally on Molokai and exports to the neighbor islands. Mr. Schule will expand his papaya production on Lot 12.

Kumu Farms, LLC qualifies as an agricultural company with 75 percent of the interest in the company owned by members individually qualified as bona fide farmers. The sole member of the company, Grant Schule, has more than two years of farming experience, qualifies as a bona fide farmer and meets eligibility requirements pursuant to 4-153-1 and 13, HAR.

There is a consideration of \$16,000.00 for the assignment of the lease which includes the existing 8' tall fence surrounding the premises protecting the crops from devastation by the invasive deer population and an irrigation system for the crops. In accordance with Paragraph 16 of the lease, there is no premium due to the Lessor and staff does not recommend an adjustment of the base annual rent. The next rental reopening is set for June 1, 2024.

RECOMMENDATION:

The Board of Agriculture consent to the assignment of General Lease No. S-9013 from Mr. Launnie L. Ginn, Lessee/Assignor, to Kumu Farms, LLC, Assignee. All documents shall be subject to review and approval as to form by the Department of the Attorney General, and such other terms and conditions as may be prescribed by the Chairperson to best serve the interests of the State.

Respectfully Submitted,



BRIAN KAU, P.E.
Administrator and Chief Engineer
Agricultural Resource Management Division

Attachments – Exhibits “A” and “B”

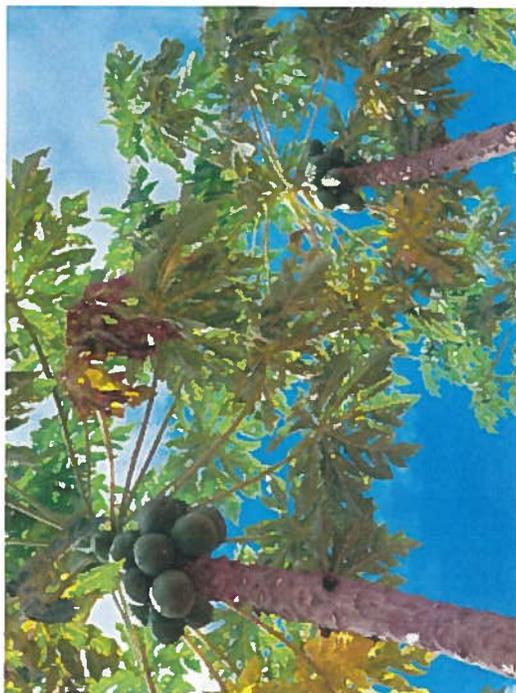
APPROVED FOR SUBMISSION:



PHYLLIS SHIMABUKURO-GEISER
Chairperson, Board of Agriculture

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Exhibit "B"



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Board of Agriculture
November 29, 2022
Page 6



STATE OF HAWAII
DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESOURCE MANAGEMENT DIVISION
HONOLULU, HAWAII

November 29, 2022

Board of Agriculture
Honolulu, Hawaii

Subject: REQUEST TO 1) TERMINATE GENERAL LEASE NO. S-9001, JANE KELLY LAVOIE, LESSEE; ISSUE CANCELLATION DOCUMENT, AND DISPOSITION OF LOT; AND (2) RESCIND APPROVAL OF FARM DWELLING; TMK: (2) 5-2-001:011, LOT NO. 2, MOLOKAI AGRICULTURAL PARK, HOOLEHUA, ISLAND OF MOLOKAI, HAWAII

Authority: Section 166-6(b), Hawaii Revised Statutes (HRS), and Sections 4-153-3(b)(3) and 34, Hawaii Administrative Rules (HAR)

Lessee: Jane Kelly Lavoie

Land Area: Approximately 25.304 acres

Tax Map Key: (2) 5-2-001:011 (Exhibit "A")

Land Status: Encumbered by Governor's Executive Order No. 3696 to the Department of Agriculture for agricultural park land purposes in 1996

Lease Term: 35 years, October 1, 1998 to September 3, 2033

Current Rent: \$1,900.00 per year

Character of Use: Diversified Agriculture

BACKGROUND:

General Lease No. S-9001 (the Lease) was originally awarded to Jerome J. Kennedy aka Joe Kennedy in 1998. At a meeting held on August 27, 2019, the Board approved an assignment of lease to Jane Lavoie who planned to produce lilikoi and asparagus. Lilikoi is used in her value-added product called Passion Pudding for which she has a patent.

The Lessee currently is in default with a lease rent balance due of \$4,378.00, owing delinquent real property taxes of \$4,466.85, as of this date, and expired general liability insurance coverage. Numerous notices have been sent to the Lessee demanding payment to remedy the delinquencies including issuance of monthly invoices showing accumulating balances due with interest fees. Letters demanding remedy of various lease violations have been sent. All efforts to work with the Lessee have been exhausted and no lease rent payments have been received from Ms. LaVoie since January 2021.

C-48

Staff deems the Lessee to be in breach and default of this lease due to numerous violations of the lease. The account is uneconomical and impractical to remedy and collect and recommends referral of the account to the Office of the AG to expedite resolution of the outstanding lease rent balance due.

Staff recommends rescinding prior Board approval of a farm dwelling on the premises that was granted at a meeting held on August 12, 2020. The lessee was to repair and renovate an existing and County permitted farm dwelling on the premises. It was reported by the Lessee’s representative that, over time, illegal trespassers stripped the dwelling of all its exterior and interior doors, all windows including any frames, kitchen and bathroom fixtures, plumbing, etc. and anything that could be removed from the dwelling rendering it a safety hazard.

RECOMMENDATIONS:

That the Board of Agriculture:

1. Approve the cancellation of General Lease S-9001, pursuant to Sections 4-153-3(b)(3) and 34, HAR, and cancellation of all right, title, and interest granted to the Lessee therein effective as of the date of approval of this submittal.
2. Authorize issuance of a lease cancellation document to be executed by the chairperson and recorded at the Bureau of Conveyances;
3. Rescind the prior Board approval of the farm dwelling at a meeting held on August 12, 2020;
4. Authorize staff to prepare TMK: (2) 5-2-001:011 for disposition by public notice, pursuant to Sections 4-153-19 and 22, HAR; and
5. Approve the request to refer General Lease No. S-9001 as a delinquent account to the Office of the Attorney General for review and disposition in accordance with Section 40-82, Hawaii Revised Statutes.

All documents are subject to the approval as to form by the Office of the Attorney General, and such other terms and conditions as may be prescribed by the Chairperson to best serve the interests of the State.

Respectfully submitted,



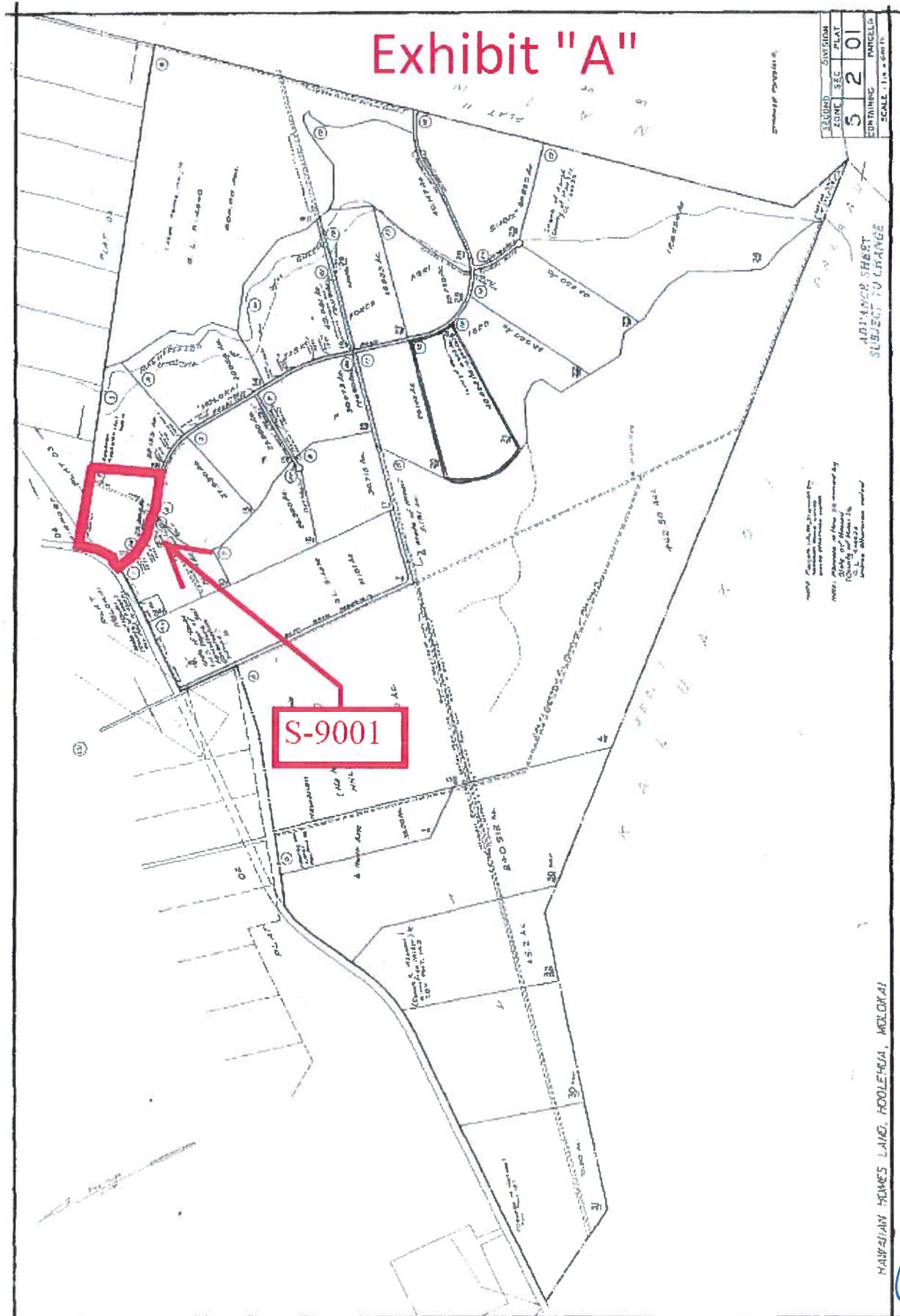
BRIAN KAU, P.E.
Administrator and Chief Engineer
Agricultural Resource Management Division

Attachment - Exhibits “A” and “B”

APPROVED FOR SUBMISSION:


PHYLLIS SHIMABUKURO-GEISER
Chairperson, Board of Agriculture

Exhibit "A"



C-50

C-51

Exhibit "B"



STATE OF HAWAII
DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESOURCE MANAGEMENT DIVISION
HONOLULU, HAWAII

November 29, 2022

Board of Agriculture
Honolulu, Hawaii

Subject: REQUEST TO TERMINATE GENERAL LEASE NO. S-1008, CREIGHTON MOW AND ELTON MOW, LESSEE; ISSUE CANCELLATION DOCUMENT, AND DISPOSITION OF LOT; TMK: (1) 8-5-034:008, WAIANAE AGRICULTURAL PARK, LOT 8, WAIANAE, ISLAND OF OAHU, HAWAII

Authority: Section 166-6(b) Hawaii Revised Statutes (HRS), and Sections 4-153-3(b)(3) and 34, Hawaii Administrative Rules (HAR)

Lessee: Creighton Mow and Elton Mow

Land Area: 9.668 acres

Tax Map Key: (1) 8-5-034:008 (see Exhibit "A")

Land Status: Encumbered by Governor's Executive Order No. 3481 to the Department of Agriculture for agricultural park land purposes

Lease Term: 45 years, 6/1/1994 to 5/31/2039

Current Rent: \$3,360.00 per year until reopening on 6/1/2029

Additional Rent: 1.5 % of the gross proceeds from the sale of commodities produced on the demised premises which exceed the base rental

Permitted Use: Diversified agriculture purposes

BACKGROUND:

The subject lease was awarded to A. James Wriston, III, effective June 1, 1994. The lease was assigned to Creighton Mow and Elton Mow in 1997. The Lessee established an orchid nursery operation on the farm lot, however brush fires and personal family issues contributed to situations prohibiting development of the nursery and delinquencies of financial obligations. The Department of Agriculture has received lease rent payments totaling \$1,000.00 in 2022 and \$2,500.00 in 2021.

C-52

The Lessee currently is in default with a lease rent balance due of \$14,986.88 as of this date and is not conducting any farming activity. Numerous invoice notices have been sent to the Lessee demanding payment to remedy the delinquencies including issuance of monthly invoices showing accumulating balances due with interest fees. Letters demanding remedy of various lease violations have been sent. All efforts to work with the Lessee to remedy the defaults have been exhausted.

The Lessee has failed to remedy the various violations of the lease within the given times allowed or such additional periods allowed for good cause, to correct the violations.

RECOMMENDATION:

Staff recommends that the Board of Agriculture:

1. Approve the cancellation of General Lease No. S-1008 pursuant to Section 4-153-3(b)(3), HAR, and terminate all right, title, and interest granted to the Lessee therein effective as of the date of approval of this submittal;
2. Authorize issuance of a lease cancellation document to be executed by the chairperson and recorded at the Bureau of Conveyances;
3. Authorize staff to prepare TMK: (1) 8-5-034:008 for disposition to the public, pursuant to Sections 4-153-21 and 22, HAR; and
4. Approve the request to refer General Lease No. S-1008 as a delinquent account to the Office of the Attorney General for review and disposition in accordance with Section 40-82, Hawaii Revised Statutes.

All related documents are subject to approval as to form by the Office of the Attorney General, and such other terms and conditions as may be prescribed by the Chairperson to best serve the interests of the State.

Respectfully submitted,



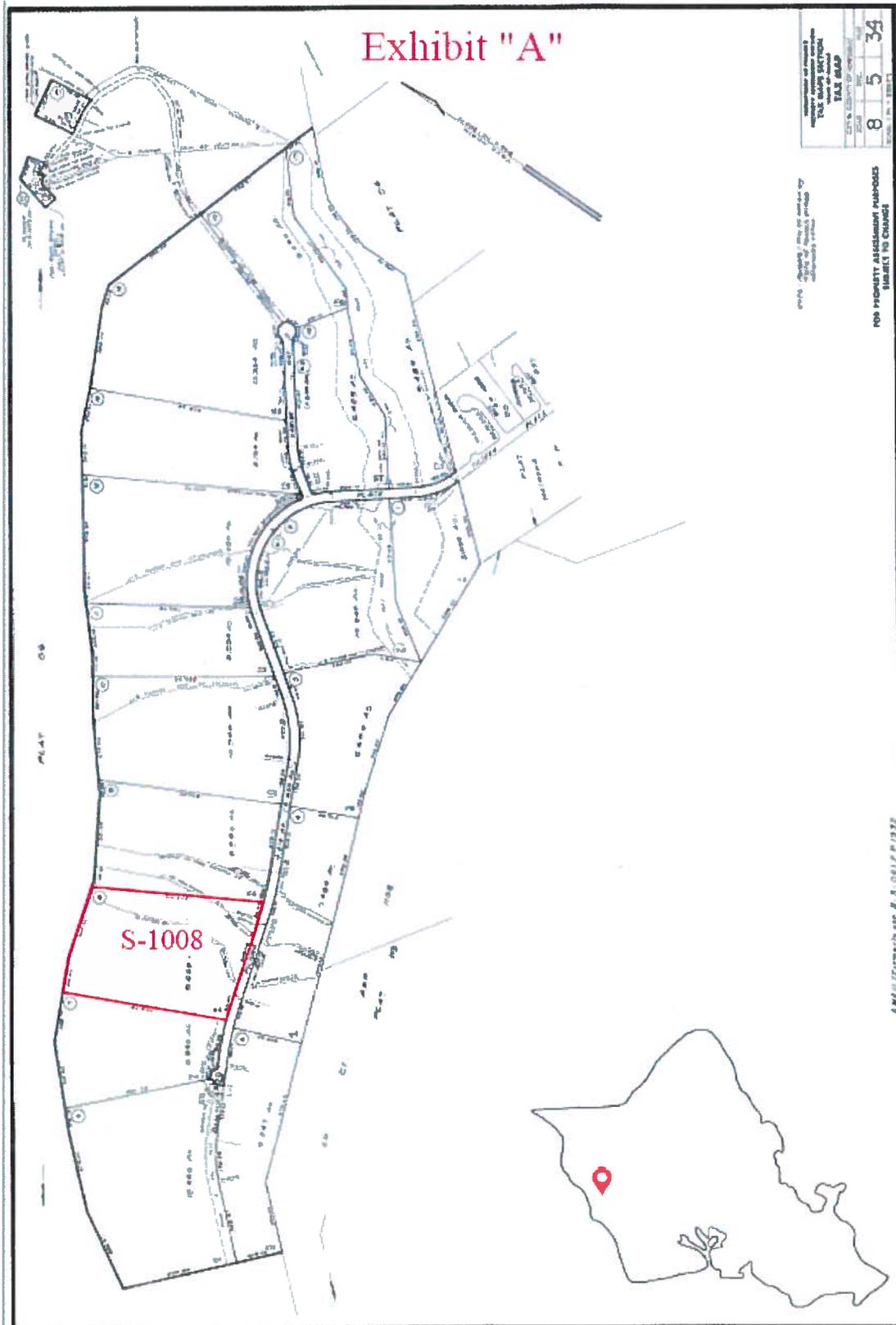
BRIAN KAU, P.E.
Administrator and Chief Engineer
Agricultural Resource Management Division

Attachment – Exhibit “A”

APPROVED FOR SUBMISSION:

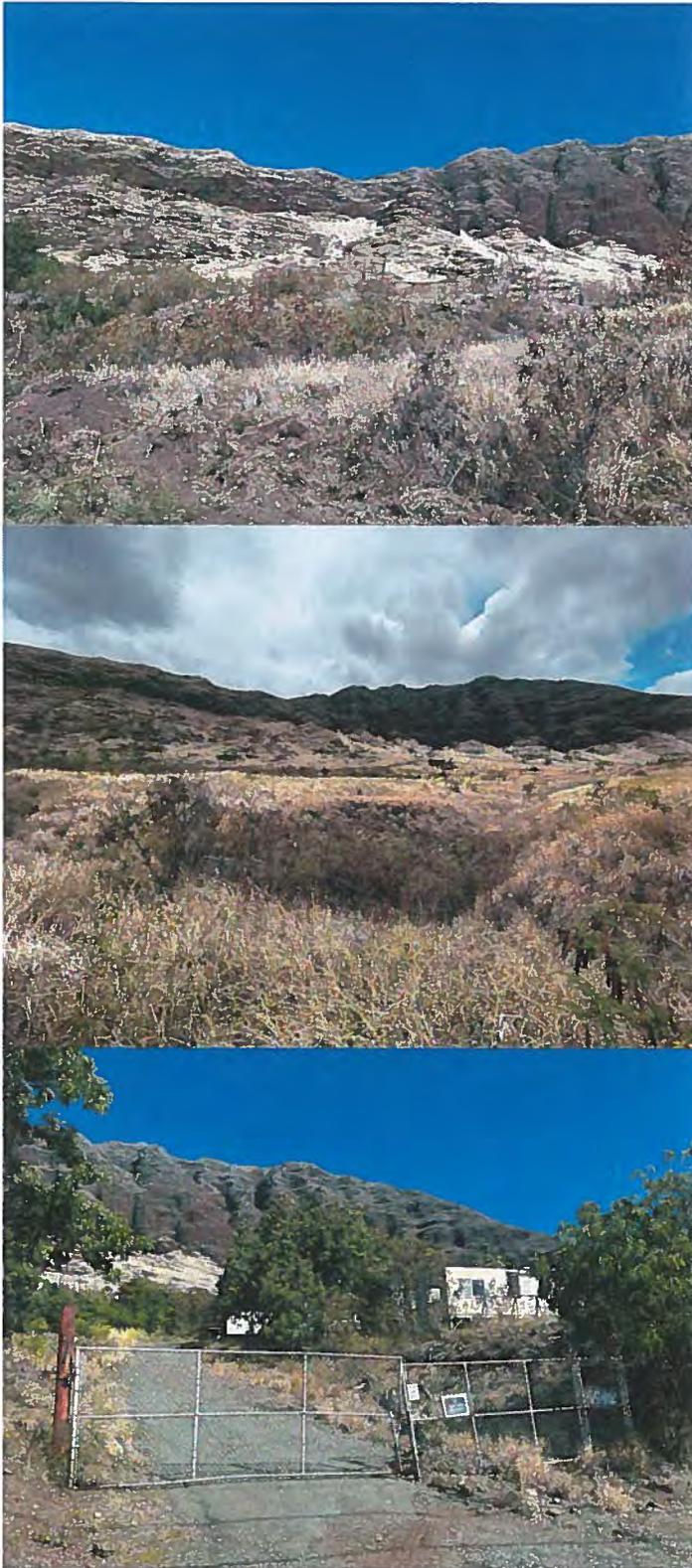


PHYLLIS SHIMABUKURO-GEISER



C-54

Photos taken on 11/15/2022



STATE OF HAWAII
DEPARTMENT OF AGRICULTURE
AGRICULTURAL DEVELOPMENT DIVISION
1428 SOUTH KING STREET
HONOLULU, HAWAII 96814

November 29, 2022

Board of Agriculture
Honolulu, Hawaii

Subject: Request for (1) Preliminary Approval of Proposed Adoption of Chapter 4-61, Hawaii Administrative Rules, entitled “Food Hub Grant Program” Concerning: Rules of General Applicability, and Eligibility and Selection Process; Subchapter 1 Purpose, Definitions, Purpose of program, Grant; purpose; use of; and Subchapter 2 Eligibility requirements, Application procedure, Consideration and review of applications, Preferences and priorities in making grants, Maximum grant amount; disbursement, and Acknowledgement and (2) Authorization of the Chairperson to Schedule Public Hearings and to Appoint One Hearing Officer.

The primary reason for proposed adoption of Chapter 4-61, Hawaii Administrative Rules, is to provide rules governing implementation of the Food Hub Grant Program authorized by Act 313, SLH 2022. This new chapter includes two subchapters to address the program’s Rules of General Applicability, and Eligibility and Selection Process.

Proposed Adoption Sections:

Subchapter 1, which addresses the rules and general applicability of the Chapter to adopt four (4) sections.

Section 4-61-1 Purpose is to provide rules governing program implementation.

Section 4-61-2 Definitions to provide clear guidance on how certain words or phrases are to be understood in the chapter.

Section 4-61-3 Purpose of program is to provide funds to support the establishment of food hubs.

Section 4-61-4 Grants; purpose; use of. The department may provide grants for the purposes as follows:

- 1) Construction of critical infrastructure to establish and expand food hubs in each of the counties.
- 2) Coordination and marketing of match-making activities in local or regional markets.

Subchapter 2, which addresses the eligibility and selection process to adopt six (6) sections.

Section 4-61-5 Eligibility requirements. Qualifying applicants shall include corporations, limited liability companies, partnerships, sole proprietorships, non-profit organizations, and agricultural cooperatives.

Section 4-61-6 Application procedure outlines responsibilities and requirements expected of qualifying applicants.

Section 4-61-7 Consideration and review of applications addresses the review and resolution process of grant applications.

Section 4-61-8 Preferences and priorities in making grants provide guidance in awards to organizations having demonstrated experience in aggregation, washing, minimal processing, packaging, cold storage, and other value-additions for delivering local produce to local markets.

Section 4-61-9 Maximum grant amount; disbursement shall be aligned with the department's Request for Proposal.

Section 4-61-10 Acknowledgement outlines recipient responsibilities in acknowledging the department in a proper and appropriate manner as a funder in all promotional publications, press releases, and other informational materials relating to the awards.

Board of Agriculture
Honolulu, Hawaii
November 29, 2022
Page 3

It is recommended that the Board give (1) Preliminary Approval of Proposed Adoption of Chapter 4-61, Hawaii Administrative Rules, entitled "Food Hub Grant Program" Concerning: Rules of General Applicability, and Eligibility and Selection Process; Subchapter 1 Purpose, Definitions, Purpose of program, Grant; purpose; use of; and Subchapter 2 Eligibility requirements, Application procedure, Consideration and review of applications, Preferences and priorities in making grants, Maximum grant amount; disbursement, and Acknowledgement and (2) Authorization of the Chairperson to Schedule Public Hearings and to Appoint One Hearing Officer.

Respectfully submitted,



MATTHEW K. LOKE, Ph.D.
Administrator
Agricultural Development Division

APPROVED FOR SUBMISSION:



PHYLLIS SHIMABUKURO-GEISER
Chairperson, Board of Agriculture

Board of Agriculture
Honolulu, Hawaii
November 29, 2022
Page 4

EXHIBIT A

Draft of Chapter 4-61, Hawaii Administrative Rules
Food Hub Grant Program

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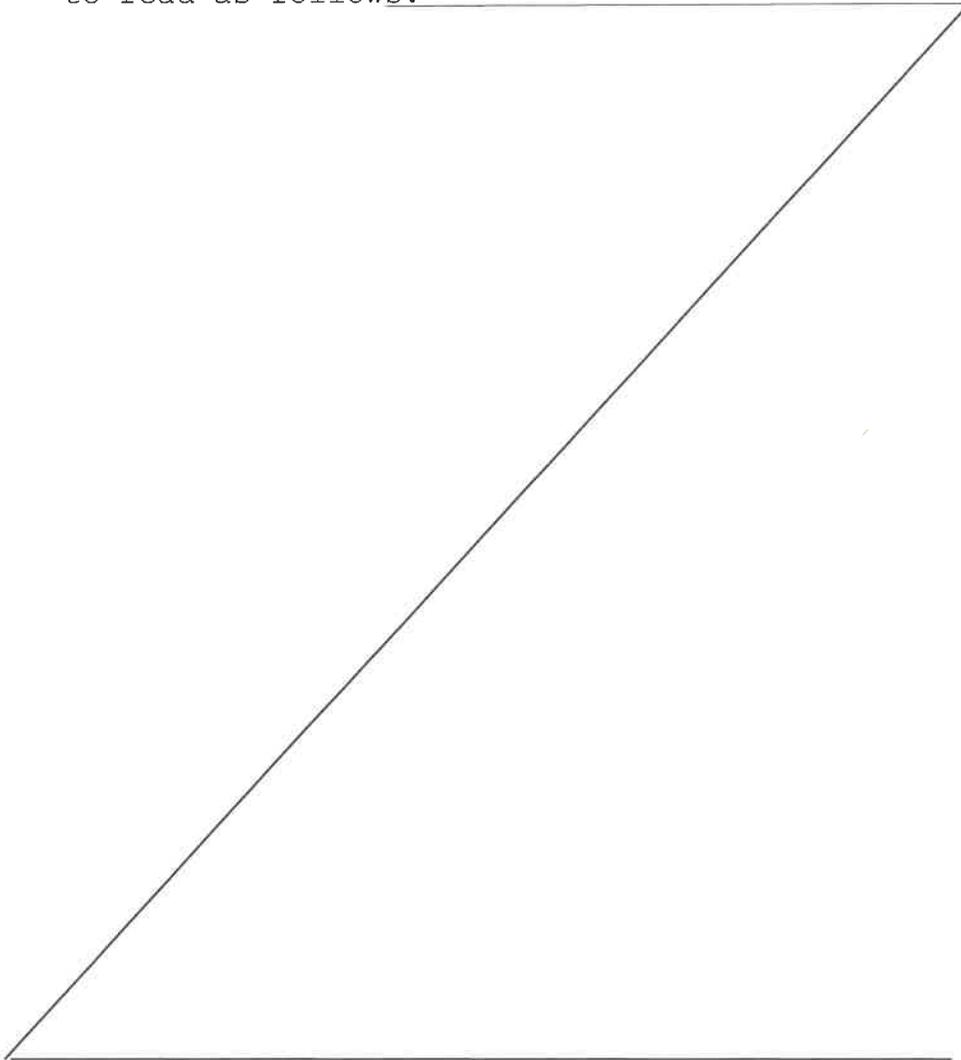
DEPARTMENT OF AGRICULTURE

Proposed Adoption of Chapter 4-61
Hawaii Administrative Rules

November 29, 2022

SUMMARY

1. Chapter 4-61, Hawaii Administrative Rules, entitled "Food Hub Grant Program", as proposed to read as follows:



DRAFT

HAWAII ADMINISTRATIVE RULES

TITLE 4

DEPARTMENT OF AGRICULTURE

SUBTITLE 4

DIVISION OF MARKETING AND CONSUMER SERVICES

CHAPTER 61

FOOD HUB GRANT PROGRAM

Subchapter 1 Rules of General Applicability

- §4-61-1 Purpose
- §4-61-2 Definitions
- §4-61-3 Purpose of program
- §4-61-4 Grant; purpose; use of

Subchapter 2 Eligibility and Selection Process

- §4-61-5 Eligibility requirements
- §4-61-6 Application procedure
- §4-61-7 Consideration and review of applications
- §4-61-8 Preferences and priorities in making grants
- §4-61-9 Maximum grant amount; disbursement
- §4-61-10 Acknowledgement

SUBCHAPTER 1

RULES OF GENERAL APPLICABILITY

§4-61-1 Purpose. The purpose of this chapter is to provide rules governing implementation of the Food Hub Grant Program authorized by Act 313, SLH 2022. [Eff. _____] (Auth: HRS §§XXX-XX) (Imp: HRS §§XXX-XX)

§4-61-2 Definitions. As used in this chapter, unless a different meaning clearly appears in context:

“Agricultural development division” means the division within the department responsible for this program;

“Auditor” means the state Office of the Auditor;

“Board” means the state Board of Agriculture;

“Chairperson” means the chairperson of the state Board of Agriculture;

“Department” means the state department of agriculture;

“Food hub” means the United States Department of Agriculture’s working definition of food hub, which means a centrally located facility with a business management structure facilitating the aggregation, storage, processing, distribution, and/or marketing of locally/regionally produced food products;

“Grant” means financial assistance provided to awardees under the terms and conditions provided in this chapter;

“HRS” means the Hawaii Revised Statutes;

“Locally produced food” means food grown, raised or sourced within the state of Hawaii;

“Program” means the food hub grant program;

“Recipient” means any awardee receiving a grant under this chapter;

“Small- to very small-sized” means producers with less than \$500,000 and \$250,000 respectively in annual farm sales;

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"SLH" means Session Laws of Hawaii;

"State" means the State of Hawaii; and

"USDA" means the United States Department of Agriculture;

"USFDA" means the United States Food and Drug Administration. [Eff.]

(Auth: HRS §§) (Imp: HRS §§)

§4-61-3 Purpose of program. The purpose of the food hub grant program is to provide funds to support the establishment of food hubs. By actively coordinating these activities along the value chain, food hubs may provide wider access to institutional and retail markets for small- to very small-sized producers and increase consumer access to fresh healthy food, including those consumers in underserved areas and food deserts. [Eff.] (Auth: HRS §§) (Imp: HRS §§)

§4-61-4 Grants; purpose; use of. (a) The department may provide grants in accordance with §141-2, HRS.

(b) Grants may be used by any recipient for any of the following purposes:

- (1) For the construction of critical infrastructure to establish and expand food hubs in each of the counties, including:
 - (A) Construction or improvement of facilities for aggregation, washing, processing, packaging, cold storage, and other value-additions; and
 - (B) Provision of technical assistance to develop in-state capacity to supply state institutions and other markets.
- (2) For the coordination and marketing of match-making activities in local or regional markets.

(c) Grant moneys shall not be used where the direct or indirect purpose or result of the grant would be for any of the following purposes:

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- (1) Repay a creditor or creditors of the recipient for any reason; or
- (2) Provide funds as a loan to owners, partners, or shareholders of the recipient;
- (3) Effect a change in ownership of the recipient;
- (4) Provide or make funds available for the acquisition of any kind of real property that is not related to a food hub;
- (5) Travel that is not related to a food hub;
- (6) Costs related to the general operation of the recipient's business that are not related to a food hub;
- (7) Wages, compensation, benefits or allowances for employees of the recipient that are not related to a food hub;
- (8) Insurance costs that are not related to a food hub;
- (9) Costs of vehicles and related vehicle expenses that are not related to a food hub;
- (10) Entertainment or lobbying activities; or
- (11) Payment for goods or services for which moneys were granted under another state or federal program. [Eff. _____] (Auth: HRS §§ _____) (Imp: HRS §§ _____)

SUBCHAPTER 2

ELIGIBILITY AND SELECTION PROCESS

§4-61-5 Eligibility requirements. Qualifying applicants shall include corporations, limited liability companies, partnerships, sole proprietorships, non-profit organizations, and agricultural cooperatives. Any applicant shall meet all of the following qualifications:

(a) Meet necessary insurance requirements as determined by the state, including commercial general liability insurance and automobile liability insurance at specified levels, and provide along with

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the application or as specified by the department, a certificate of vendor compliance with Hawaii Compliance Express (HCE), or other similar requirements;

(b) Agree that if selected as a recipient, it will maintain its principal place of business and conduct a majority portion of its operations in the State;

(c) Either be incorporated under the laws of the State, or be registered to do business in the State, if applicable;

(d) Have bylaws or policies that describe the manner in which the activities or services for which the grant is awarded shall be conducted or provided;

(e) Be licensed or accredited, in accordance with federal, state, or county statutes, rules, or ordinances, to conduct the activities or provide the services for which the grant is awarded;

(f) If seeking to establish a new food hub where none currently exist, shall first secure a physical location for the food hub and draft a detailed plan for the food hub's operation, including activities in which the applicant intends to engage, such as serving as a marketplace for buying and selling, or providing certified kitchen space in which multiple farmers may share use of facilities for value-added product development;

(g) Explain the applicant's intended actions to increase access to locally produced food;

(h) Comply with all applicable federal, state, and county laws, rules, regulations, and ordinances, including the USFDA Food Safety Modernization Act, P.L. 111-353, and the Act's provisions on supplier verification, and any applicable tax laws;

(i) Comply with all applicable federal and state laws prohibiting discrimination against any person on the basis of race, color, national origin, religion, creed, sex, age, sexual orientation, or disability; and

(j) Allow the division, department and the auditor full access to its records, reports, files, and other related documents and information for

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purposes of monitoring, measuring the effectiveness, and ensuring the proper expenditures of the grant. [Eff.] (Auth: HRS §§) (Imp: HRS §§)

§4-61-6 Application procedure. Any entity applying for a grant shall, as applicable:

(a) Submit its response to the department's Request for Proposal;

(b) Provide an Internal Revenue Service EIN number, if applicable;

(c) Certify that all information and documents submitted in support of the application are correct and complete to the best of the applicant's knowledge;

(d) For the purchase of new manufacturing equipment, provide cost justification, proof of purchase, and financing documentation;

(e) For the purchase of used manufacturing equipment, provide cost justification, proof of purchase, and financing documentation;

(f) For the training of employees on the use of manufacturing equipment, provide cost justification, training curriculum details, hours, number of employees, third party instructors' biography, resume, or curriculum vitae, and proof of purchase;

(g) For the improvement of existing energy efficiency manufacturing equipment or the purchase of improved energy efficiency equipment in the manufacturing process, provide cost justification, analysis from a third party consultant proving the foregoing, and proof of purchase; or (h) For studying or planning the implementation of a new manufacturing facility, provide cost justification, contract for services of third party consultant, and proof of purchase; or

(i) Agree to and abide by any cap or maximum amount for equipment purchases required by the Request for Proposals. [Eff.

] (Auth: HRS §§) (Imp: HRS §§)

§4-61-7 Consideration and review of applications.

(a) The department shall cause the review of the application and resolution of any questions relating to the application through contact with the primary grant applicant.

(b) Following such review and resolution, the evaluation committee appointed by the chairperson shall consider and make a recommendation on qualified applications.

(c) The department may submit the proposed awardees to the board for informational purposes, only. [Eff. _____] (Auth: HRS §§ _____)
) (Imp: HRS §§ _____)

§4-61-8 Preferences and priorities in making grants.

(a) Preference shall be given to:

- (1) Organizations having demonstrated experience in aggregation, washing, minimal processing, packaging, cold storage, and other value-additions for delivering local produce to local markets;
- (2) Qualified applicants receiving their first award from the department, over multiple award grantees;
- (3) The department shall not grant more than one award in this program to any applicant in a fiscal year unless funding remains available in the last quarter of the fiscal year; and
- (4) The department shall be guided by the nature and economic significance of the activity of each grant application, the importance of the grant to the activity's success, and the potential economic advantage or job creation prospects offered to the State in determining the distribution of funds.

[Eff. _____]
(Auth: HRS §§ _____) (Imp: HRS §§ _____)

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§4-61-9 Maximum grant amount; disbursement.

(a) Maximum grant amounts shall be in accordance with the department's Request for Proposal.

(b) For awards greater than \$100,000, the grant amount shall be disbursed as payments based on milestones approved by the chairperson.

[Eff. _____] (Auth: HRS §§ _____)
(Imp: HRS §§ _____)

§4-61-10 Acknowledgement.

(a) Recipients shall acknowledge the department in a proper and appropriate manner as a funder in all promotional publications, press releases, and other informational materials relating to the awards for a period of two years following the award. Recipients shall provide such materials to the department prior to their release to the public. [Eff.

] (Auth: HRS §§ _____) (Imp: HRS §§ _____)

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DEPARTMENT OF AGRICULTURE

Adoption of chapter 61, title 4, Hawaii Administrative Rules, was adopted on _____, following public hearings held on _____, 2023, _____, 2023, and after public notice was given in the Honolulu Star Advertiser on _____, 2023.

It shall take effect ten days after filing with the Office of Lieutenant Governor.

Chairperson
Board of Agriculture

JOSH GREEN
Governor
State of Hawaii

Dated: _____

APPROVED AS TO FORM:

Deputy Attorney General

FILED

State of Hawaii
Department of Agriculture
Plant Industry Division
Plant Quarantine Branch
Honolulu, Hawaii

November 29, 2022

Board of Agriculture
Honolulu, Hawaii

- Subject: Request to: (1) Preliminarily Review the Currently Unlisted Moth, *Euselasia chrysippe* (Lepidoptera: Riodinidae) for Future Placement on the List of Restricted Animals (Part A) As a Biocontrol Agent of *Miconia calvescens* by the United States Department of Agriculture Forest Service (USDA FS);
- (2) Provided the Moth, *Euselasia chrysippe* is Placed on the List of Restricted Animals (Part A), Allow the Release from Laboratory Quarantine of the Moth, *Euselasia chrysippe*, by Permit, For Biocontrol of *Miconia calvescens* by USDA FS;
- (3) Provided the Moth *Euselasia chrysippe* is Placed on the List of Restricted Animals (Part A), Allow the Importation, Possession, and Release of *Euselasia chrysippe*, by Permit, For Biocontrol of *Miconia calvescens*, by the USDA FS; and
- (4) Provided the Moth *Euselasia chrysippe* is Placed on the List of Restricted Animals (Part A), Establish Permit Conditions for the Importation and Release of *Euselasia chrysippe* As a Biocontrol Agent of *Miconia calvescens*, by the USDA FS.
- (5) Authorize the Chairperson to Schedule a Public Hearing and Appoint a Hearing Officer in Connection with the Proposed Amendments to Chapter 4-71, HAR to Place the Unlisted Moth, *Euselasia chrysippe* on the List of Restricted Animals (Part A).

I. **Summary Description of the Request.**

PQB NOTES: The Plant Quarantine Branch (PQB) submittal for requests for import or possession permits, as revised, distinguishes information provided by the applicant, Dr. Matthew Tracy Johnson, from procedural information and advisory comment and evaluation presented by PQB. With the exception of PQB notes, hereafter "PQB NOTES," the text shown below in section III from page 4 through page 11 of the

ES3

submittal was taken directly from the applicant's application and subsequent written communications provided by the applicant. For instance, the statements on pages 7 through 9 regarding effects on the environment are the applicant's statements in response to standard PQB questions and are not PQB's statements. This approach for PQB submittals aims for greater applicant participation in presenting import requests in order to move these requests to the Board of Agriculture (Board) more quickly, while distinguishing applicant provided information from PQB information. The portion of the submittal prepared by PQB, including the procedural background, environmental assessment, advisory review, and proposed permit conditions, are identified as sections II, IV, V, and VI of the submittal, which starts at pages 3, 11, 12, and 23 respectively.

COMMODITY Various shipments of the moth *Euselasia chrysippe* (Lepidoptera: Riodinidae)

SHIPPER Dr. Paul Hanson
Universidad de Costa Rica
Montes de Oca
San Pedro, San Jose
Costa Rica

IMPORTER Dr. Matthew Tracy Johnson
Institute of Pacific Island Forestry
USDA Forest Service, Pacific Southwest Research Station
P.O. Box 236
Volcano, HI 96785

CATEGORY: *Euselasia chrysippe* is currently an unlisted animal. Animals not found on any list are considered prohibited until placed on a list. Additionally, Chapter 4-71, Hawaii Administrative Rules (HAR), allows importation of unlisted animals into Hawaii under special permit for the purpose of remediating medical emergencies or ecological disasters, or conducting scientific research that is not detrimental to agriculture, the environment, or humans by special permit on a case-by-case basis as approved by the Board.

PQB NOTES: *The applicant is requesting that the Board place Euselasia chrysippe on the List of Restricted Animals (Part A) for import and release as biological control of Miconia calvescens, a state listed, noxious weed.*

Euselasia chrysippe was originally brought into the Hawaii Volcanoes National Park Quarantine Facility from Costa Rica in 2012 for biocontrol research and host range testing.

In April 2020, a draft environmental assessment was submitted to the Office of Environmental Quality Control (OEQC) with an Anticipated Finding of No Significant Impact. The draft was published in OEQC's Environmental Notice on April 23, 2020. A final environmental assessment with a Finding of No Significant Impact (FONSI) was published in the Environmental Notice on September 23, 2022 (See Attachment 2).

II. Procedural Background

USDA FS has requested that one of the lists in Chapter 4-71, Hawaii Administrative Rules (HAR), be amended to include the moth, *Euselasia chrysippe*. The species may be placed on the List of Conditionally Approved Animals, List of Restricted Animals (Part A or B), or the Prohibited List. Species on the Restricted and Conditionally Approved Lists may enter the State of Hawaii under permit with conditions approved by the Board. Until placement on a list, species are considered prohibited except as provided by Section 150A-6.2(c), Hawaii Revised Statutes (HRS).

Species on the List of Restricted Animals (Part A) are available for research by universities and government agencies, exhibition in municipal zoos and government-affiliated aquariums, and for other institutions for medical and scientific purposes as determined by the Board. All species listed for import require a permit for entry into the State. Based on the Board's decision, species preliminarily reviewed for future list placement on a specific list will be compiled in-house for a future rule amendment. The Board's action to preliminarily list a species for future placement on a list has no legal effect in terms of allowing importation. This procedure is solely for administrative ease in preparation for amendments to the various lists.

Provided the Board acts favorably on this request for future list placement, at a future date, the proposed amendments will be brought to the Board for preliminary approval to go to public hearings. A species is listed in the rules only after: (1) following Chapter 91, HRS, rulemaking procedures, which include the public hearing process, Board adoption, and Governor's approval; or (2) alternatively, the expedited amendment procedure through Board orders, which involves an abbreviated process available in certain circumstances. Generally speaking, once a species has been placed on a respective list, it is eligible for import and/or possession. PQB can then process a permit application by having the Board approve the future importation and establishment of appropriate permit conditions for the organism and proposed purpose.

III. Information Provided by the Applicant in Support of the Application

PURPOSE:

The Hawai'i Department of Agriculture and the Hawai'i Department of Land and Natural Resources propose the field release on State lands in Hawai'i of *Euselasia chrysippe* (Lepidoptera: Riodinidae), the golden sombermark butterfly, for biological control of miconia, *Miconia calvescens* (Melastomataceae), a state listed noxious weed. Miconia is considered one of Hawai'i's most invasive plants, whose exceptionally large leaves shade and outcompete other species, effectively forming a monoculture. Uncontrolled growth can overwhelm highly diverse native wet forest ecosystems that are home to critically endangered species and essential to our freshwater resources. Despite major efforts using chemical control, this species continues to proliferate, particularly on Maui and Hawai'i Islands. *E. chrysippe* is a natural herbivore of miconia in its native range, whose larvae feed in large numbers on miconia leaves. Extensive testing has shown *E. chrysippe* to be host-specific to miconia and other closely related members of the Melastomataceae family, all of which are non-native weeds in Hawai'i. Because *E. chrysippe* is limited to feeding on a small pool of closely related non-native weeds, and with its potential to provide control on miconia, its release is expected to be beneficial to the state's forests and hydrology, and adverse effects are expected to be negligible.

DISCUSSION:

1. Person Responsible:

Dr. Matthew Tracy Johnson, Institute of Pacific Island Forestry, USDA FS, Pacific Southwest Research Station, Mailing address: P.O. Box 236, Volcano, HI 96785.

2. Safeguard Facility and Practices:

Initial quarantine will be at the USDA Forest Service, Hawaii Volcanoes National Park Quarantine Facility, Kilauea Research Station, Building 34. The *Euselasia chrysippe* colony will originate from insects collected from Costa Rica and shipped under USDA Plant Protection and Quarantine permit P526P-20-02009 to the Volcano quarantine facility, for rearing and screening to eliminate associated natural enemies. Dr. Tracy Johnson will positively identify the insects and determine them to be free of natural enemies in preparation for release. Screening for possible disease infections will be conducted with the assistance of USDA's Agricultural Research Service and the United States Geological Survey.

Due to the difficulty of getting adult butterflies to successfully reproduce in the laboratory, adults will be transferred to outdoor rearing cages in an area not accessible to the public.

Continuous monitoring for potential natural enemies will occur during all life stages of *E. chrysippe* (Attachment 4).

3. Method of Disposition:

Roughly 300 insects at a time will be removed from quarantine as mature pupae ready to emerge as adult butterflies, independent of host plant material and other potential contaminants. Any unused material from the quarantine facility will be autoclaved on site. Butterflies will be released into patches of miconia where their behavior, survival and reproduction can be monitored. Offspring from initial environmental releases will be collected and screened, then used for further releases statewide.

4. Abstract of Organism:

The proposed biocontrol agent is *Euselasia chrysippe* (Lepidoptera: Riodinidae), the golden sombermark butterfly. The insect is native to Central America, where larvae form large cohorts on leaves and are herbivores of a narrow group of plants.

Taxonomy: *Euselasia chrysippe* (Bates 1866) is classified under the family Riodinidae, or metalmark butterflies, in the subfamily Euselasiinae. Euselasiinae is restricted to the subtropics and contains five genera; all except *Euselasia* contain few taxa. *Euselasia*, by contrast, contains around 170 described species.

Description of Adults: Males of this species have a reddish-orange discal area on the upper surface of wings, whereas females are yellowish-orange. Both sexes have 5–7 black spots along the margins on the underside of the hindwings (Nishida 2010).

Description of Larvae:

The caterpillars of each cohort develop through six instars. Description of sixth instar from Nishida (2010): The sixth instar *Euselasia chrysippe* is greenish-dark-gray to greenish-dull black; the head capsule width is ca. 1.65 mm; the color of the head is bright orange, black, or a mixture of these two; arrowhead setae are cone-shaped (not flattened), ridged, and spiraled apically; the curvature of the ventral margin of the labrum is narrowly angled (ca. 110°); the mandible is small (0.38 mm wide), with the dentation less distinct than in *E. bettina*, and the extension of the fifth tooth is somewhat widened at edge; the T1 shield is orange to bright orange and without iridescence; the pinacula on the dorsum have a pale-gray oval line; the iridescence on structural color plates is faint metallic-blue; a proleg on A10 has 11–13 crochets in mesoserries.

Distribution: The native range of *E. chrysippe* extends from southern Mexico to Colombia (DeVries 1997) and its elevational range starts at sea level and extends up to 1,500 meters (Nishida 2010). In Costa Rica, it is found on the Caribbean and Pacific slopes in primary and secondary rain forests (Allen 2012; Nishida 2010). Caterpillars and eggs of *E. chrysippe* have been collected only from plants in the family Melastomataceae, specifically several species within the genus *Miconia* and *Conostegia rufescens* (Nishida 2010).

Life History: In captive rearing conditions, the duration of the *E. chrysippe* life cycle from egg to emergence of the adult butterfly from the pupa is approximately 8 weeks. Both male and female adults have been shown to live for longer than a month (Nishida 2010). The caterpillars have six instars that feed and rest as a group, primarily on the undersides of fully opened leaves of their host, moving from leaf to leaf, ultimately consuming the equivalent of one whole leaf (Johnson 2010). As with all known members of the tribe Euselasiini, *E. chrysippe* caterpillars hatch, feed, rest, molt, and pupate together in a single sibling cohort of up to 100 individuals (Allen 2010; Nishida 2010). This gregarious behavior is thought to assist the species with feeding on tough leaves, which optimizes foraging. In addition, traveling as a large group provides a defense against predation and may contribute to the low parasitism rates on this species observed in their home range (Allen 2010).

Recorded host plants for the genus *Euselasia* include members of Euphorbiaceae, Clusiaceae, Myrtaceae, Melastomataceae, Sapotaceae, and Vochysiaceae; however, caterpillars and eggs of *E. chrysippe* have only been collected from the family Melastomataceae, specifically *Miconia calvescens*, *M. impetiolaris*, *M. trinervia*, *M. elata*, *M. appendiculata*, *M. donaena*, *M. longifolia*, and *Conostegia rufescens* (Nishida 2010). Preliminary no-choice host tests conducted by Nishida (2010) found that larvae collected from *M. impetiolaris* would feed on *Conostegia xalapensis* and *M. calvescens* (Melastomataceae) but exhibited no feeding on two *Eucalyptus* spp., *Eugenia truncata*, and *Psidium guajava* (Myrtaceae) or *Clusia flava* (Clusiaceae).

Natural Enemies: A factor commonly affecting lepidopteran insects introduced for weed biocontrol in Hawai'i is parasitism by various insects previously introduced accidentally, or purposefully for biocontrol of lepidopteran pests. Reported parasitoids of the genus *Euselasia* include species of Chalcididae, Ichneumonidae, Trichogrammatidae (all in Hymenoptera), and Tachinidae (Diptera) (Nishida 2010). Fortunately, the known parasites of *E. chrysippe* do not occur in Hawaii: one egg parasitoid (*Encarsia* cf. *porteri* (Hymenoptera: Ahelinidae)) and two genera of solitary tachinid parasitoids that attack large larvae and emerge from pupae have been recorded in Costa Rica (Nishida 2010). Species in the subfamily Riodininae do not share the usual parasitoids of Lepidoptera (Hanson et al. 2010), and no

members of this family are native or have been introduced to Hawai'i (Nishida 2002), which further reduces the chance that a specialized parasite of *E. chrysippe* currently exists here.

Generalist predators, however, might significantly impact the immature stages of *E. chrysippe*, which remain exposed on plants throughout their development. In particular, the long development time for eggs means that stage is vulnerable for an extended period. In Costa Rica, *E. chrysippe* eggs were preyed upon by ants, and larvae by hemipteran predators and vespid wasps (Allen 2012).

Effect on Target Weed: *Euselasia chrysippe* was selected as a biocontrol for miconia in Hawai'i because its gregariously feeding larvae can cause substantial damage to leaves. In Costa Rica its eggs and larvae are found on a wide range of sizes of miconia trees, from saplings less than 1m tall to large mature trees. When reared on potted plants, a cohort of 60–80 larvae will consume several hundred square centimeters of leaf tissue – equivalent to the area of one average-sized leaf (Puliafico et al. 2015). Damage is typically distributed across several leaves because larvae move to new feeding areas between meals. Small larvae feed on the under surface of leaves, creating windowing damage, while the later stages feed through the whole leaf lamina. Damage also includes removal of portions of uneaten leaves, presumably to reduce detection by natural enemies.

Although extensive defoliation by *E. chrysippe* is not observed in Costa Rica, its populations are presumed to be limited by natural enemies there. If introduced to Hawai'i, population growth is expected to be less constrained by enemies, allowing numbers of *E. chrysippe* to increase to levels sufficiently high to cause substantial defoliation. Damage is unlikely to be severe enough to kill miconia trees, but repeated partial defoliations may reduce growth and reproduction of trees and enhance light levels for plants competing with miconia.

5. Potential Effects on the Environment and Health Effects:

The effect of the release of *E. chrysippe* is predicted to be positive on the environment and health of Hawai'i. Host specificity tests and observations in the insect's native range clearly demonstrate that *E. chrysippe* is host-specific to a narrow subset of plants in the family Melastomataceae, all of which are invasive to Hawai'i. Feeding by *E. chrysippe* is expected to reduce foliage and suppress vigor of miconia trees, allowing other species to persist and compete, to the long-term benefit of Hawai'i's forests and watersheds. Release of *E. chrysippe* is proposed on all islands where miconia has established. Spread of the insect from initial release sites will occur both through natural dispersal and via artificial redistribution by land managers. It is expected that *E. chrysippe* will range statewide in all areas

where miconia exists within a few years of release.

Observations in Native Range: In their native range, caterpillars and eggs of *E. chrysippe* have been collected only from the family Melastomataceae, specifically *Miconia calvenscens*, *M. impetiolaris*, *M. trinervia*, *M. elata*, *M. appendiculata*, *M. donaena*, *M. longifolia*, and *Conostegia rufescens* (DeVries 1997; DeVries et al. 1992; Janzen and Hallwachs 2009; Nishida 2010). No-choice host tests conducted by Nishida (2010) found that larvae collected from *M. impetiolaris* would feed on *Conostegia xalapensis* and *M. calvenscens* (Melastomataceae) but exhibited no feeding on two *Eucalyptus* spp., *Eugenia truncata*, and *Psidium guajava* (all Myrtaceae), or *Clusia flava* (Clusiaceae).

Host Specificity Testing: Host specificity tests with larvae of *E. chrysippe* were conducted from 2012-2014 in laboratories in Hawai'i, at the Hawai'i Volcanoes National Park Quarantine Facility, and in Costa Rica, at La Selva Biological Station. Larvae for tests were collected as eggs from several sites in Costa Rica on two of its host plants, *Miconia calvenscens* and *Miconia impetiolaris*. An emphasis was placed on testing plants in the order Myrtales, specifically on species within the families Melastomataceae, Myrtaceae, Combretaceae, Lythraceae, and Onagraceae. Relationships within the Melastomataceae were based on Clausen and Renner (2001). In addition, species from more distantly related taxa but with economic, cultural, and/or ecological significance in Hawai'i were selected based on input from the U.S. Fish and Wildlife Service, consultations with members of the agricultural community, and expert sources on native Hawaiian plants. In total, 73 species of plants from 19 families were examined for suitability as hosts for *E. chrysippe* (see attached summary of host specificity testing). No-choice tests, with cohorts of 5-10 larvae exposed to leaves of each plant species for 3 days in 90-mm petri dishes, were replicated 4-5 times. Further tests of a subset of melastomes were conducted over longer periods, on potted plants and in petri dishes with leaves replaced every few days, to determine if any are suitable for complete development of *E. chrysippe*.

Results of host specificity studies showed that among the 73 species tested, *E. chrysippe* larvae feed and survive primarily on *Miconia calvenscens* and a few close relatives within the tribe Miconieae (see attached summary of host specificity testing). Very low levels of feeding occurred on a few plants in families outside of Melastomataceae, but in all cases, survival of the larvae past the 3-day mark on species in these families was extremely low, and none developed into larger larvae. Among plants occurring in Hawai'i, only two species other than *M. calvenscens* experienced substantial levels of feeding: the melastomes *Clidemia hirta* and *Tetrazygia bicolor*, which have recently been found through genetic analyses to be better placed within the genus *Miconia* (Michelangeli et al. 2020).

No Melastomataceae are native to Hawai'i, and nine of the 15 species naturalized in Hawai'i have been declared state noxious weeds (Medeiros et al. 1997).

Studies have clearly demonstrated that *E. chrysippe* is host-specific to a narrow subset of Melastomataceae. Results of the host specificity studies are summarized below (Figures 5-7). Laboratory tests are consistent with field observations of *E. chrysippe* in Costa Rica, where eggs and larvae have been collected only from species of miconia and *Conostegia rufescens*, a plant in the same tribe (Nishida 2010). A similar pattern of specificity holds for other species within the genus *Euselasia*. Across numerous studies in various parts of tropical America, *Euselasia* have been found to be narrowly host-specific, with each species specializing within a family of plants (Nishida 2010).

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IV. Environmental Assessment (EA):

Pursuant to a May 2008 Hawai'i Intermediate Court of Appeals decision ([‘Ohana Pale Ke Ao v. Board of Agriculture, 118 Haw. 247 \(Haw. App. 2008\)](#)), the Department of Agriculture's (Department's) import permit process is subject to the requirements of the Hawai'i Environmental Protection Act, chapter 343, Hawai'i Revised Statutes (HRS). Under this decision, the requirement for an EA as a condition of the import permit or related authorization applies in those circumstances where the underlying permit activity for the importation initiates a "program or project" and where the use of state or county funds or state or county lands is involved. When those circumstances are present, as they appear to be when a new organism is used in a new program or project located or taking place on state lands, an EA is required to determine whether the proposed project or program is likely to have a significant impact on the environment. However, certain activities may be eligible for "exemption" under provisions established through the Environmental Advisory Council, provided that the project or program is determined to have little or no impact on the environment.

Analysis of Application re EA: Under the above-cited court decision, the EA requirement is triggered under certain circumstances, including when an applicant proposes an action on state lands that requires agency approval and is not specifically exempted under Chapter 343, HRS. That is the case here. The applicant's request in this instance involves importation of *Euselasia chrysippe* for field-release research and biocontrol of *Miconia calvescens* in the environment. So, agency approval is required for the applicant's proposed action/activity on state lands or sensitive habitats. As PQB understands the court's analysis in the 'Ohana Pale decision, the activity proposed under this permit application would initiate a project that may use state lands and/or sensitive habitats, initially triggering the EA requirement.

In fulfillment of this requirement, Dr. Johnson has submitted a final EA prepared by the Department of Land and Natural Resources with a Finding of No Significant Impact, published in the Environmental Review Program's Environmental Notice on September 23, 2022 (See Attachment 2).

V. Advisory Review

ADVISORY SUBCOMMITTEE REVIEW: This request was submitted to the Advisory Subcommittee on Entomology for its review and recommendation. Advisory Subcommittee recommendations and comments are as follows:

1. I recommend Approval ___/___ Disapproval of future placement of the unlisted beetle, *Euselasia chrysippe* (Lepidoptera: Riodinidae) on the List

**of Restricted Animals (Part A) as a biocontrol agent for the noxious weed
Miconia calvescens.**

Dr. Peter Follett: Recommends Approval

Comments: "Miconia is a serious weed pest in Hawaii which can form monocultures on invaded land. This weed produces large numbers of seeds which can be dispersed by birds. Larvae of the lepidopteran biocontrol agent *Euselasia chrysippe* feed on miconia leaves. Results of host specificity testing in Hawaii and Costa Rica indicate that *E. chrysippe* is host specific to miconia and a few other melastomes, including *clidemia*, another significant weed pest in Hawaii. There are no native melastomes and thus this biocontrol agent should pose no risk to native Hawaiian plants or the environment."

Dr. Daniel Rubinoff: Recommends Approval

Comments: "It shows great promise for being host specific and may help reduce miconia fecundity."

Dr. Jesse Eiben: Recommends Approval

Comments: "Host specificity and lack of biocontrol agents specific to the family in Hawaii leads to probable successful establishment and control of Melastome weeds."

Dr. Mark Wright: Recommends Approval

Comments: "The submitted materials show that this species is host specific on Melastomataceae, strongly preferring miconia. While the larvae are not likely to cause miconia plant death, they will reduce plant fitness and reduce leaf area, and thus reduce competitive impacts in forests."

Mr. Darcy Oishi:

Comments: "*Euselasia chrysippe* for the control of miconia is a partner project between the Hawaii Department of Agriculture Plant Pest Control Branch (PPC) and the US Forest Service per existing MOUs between the two agencies. As such, comments to the subcommittee, Advisory Committee on Plants and Animals, and the Board of Agriculture by myself or the entomologists of the PPC should be viewed as full partners on the project.

I recommend approval or future placement of *E. chrysippe* on the list of Restricted Animals Part A. Evaluations done in the native range and in

containment indicate placement on the Restricted A list is both prudent and warranted to add to our tools for the management of miconia in Hawaii.”

2. **I Agree ___/___ Disagree that the release of *Euselasia chrysippe* as a biocontrol agent of *Miconia calvenscens* by the USDA FS poses no significant impact on the environment.**

Dr. Peter Follett: Agree

Comments: “Studies indicate that release of *E. chrysippe* will be safe. Low risk was determined by host range testing in quarantine in Hawaii and host testing, literature, and observations in Costa Rica.”

Dr. Daniel Rubinoff: Agree

Comments: “This is a VERY low risk release. There are very few butterflies that make significant host shifts, and out of the host plant family would be of negligible probability. The host range testing was more than adequate.”

Dr. Jesse Eiben: Agree

Dr. Mark Wright: Agree

Comments: “The non-target screening data shows that no negative environmental impacts are expected.”

Mr. Darcy Oishi:

Comments: “Upon review of the material supplied by the applicant, there are no significant negative impacts on the environment once this insect becomes established in the environment.”

3. **Provided *Euselasia chrysippe* is placed on the List of Restricted Animals (Part A), I recommend Approval ___/___ Disapproval to Allow the importation and release of *Euselasia chrysippe*, by permit, for biological control of *Miconia calvenscens* by USDA FS.**

Dr. Peter Follett: Recommends Approval

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Comments: "*E. chrysippe* will be collected in Costa Rica and shipped into quarantine in Hawaii. Paul Hanson, the cooperater in Costa Rica, is a taxonomist which reduces the chance of importation of contaminated material into Hawaii."

Dr. Daniel Rubinoff: Recommends Approval

Dr. Jesse Eiben: Recommends Approval

Comments: "This should be expedited, the butterfly is an excellent candidate and as long as the stock imported is shown to be free of diseases and parasitoids – as the applicant has agreed, it poses no threat to the Hawaiian ecosystem."

Dr. Mark Wright: Recommends Approval

Mr. Darcy Oishi:

Comments: "As a partner project, I recommend this species for importation and release. Testing and evaluation has been very complete and well thought out. Dr. Johnson has a well-established track-record for biological control."

4. **Provided *Euselasia chrysippe* is placed on the List of Restricted Animals (Part A), I recommend Approval ___/___ Disapproval to establish permit conditions for the import and release of *Euselasia chrysippe* as a biocontrol agent of *Miconia calvescens* by USDA FS.**

Dr. Peter Follett: Recommends Approval

Comments: "Handling of the biocontrol agent in quarantine and during field releases has been well thought out. I see negligible risk in this biocontrol project."

Dr. Daniel Rubinoff: Recommends Approval

Comments: "As stated above, this butterfly provides an excellent opportunity to try and control noxious weeds. It doesn't pose a threat to native Hawaiian ecosystems or agriculture."

Dr. Jesse Eiben: Recommends Approval

Dr. Mark Wright: Recommends Approval

Comments: "Also see above comments; this species is very likely to be an environmentally safe and useful biological control agent of *M. calvescens*."

Mr. Darcy Oishi:

Comments: "The permit conditions presented here are consistent with permit conditions for a restricted article that is being imported and shipped from a source outside of Hawaii not with how biological control agents for classical biological control exist within the quarantine framework of Hawaii. Per 150A-5.5b, addresses what constitutes importation. The language states that importation of "articles quarantined in the biocontrol containment facilities of the department or other government agencies engaged in joint projects... may be released upon issuance of a permit approved by the board." This statement therefore states IMPORTATION occurs when articles are removed from the biocontrol containment facilities with a permit from the Board of Agriculture. As such, this creates a conflict with permit conditions 5 which states screening will occur after importation. This means the insect will be outside of the bounds of the containment facility therefore negating the protection these facilities inherently offer to prevent unintentional impacts. This permit condition should be changed and reflect the need for screening prior to importation or release from the containment facility. Suggested language is "Upon entry into the state, the restricted article(s) shall be screened for other species, predators, parasites, parasitoids, or hyperparasitoids for a minimum of two generations in the USDA approved Insect Containment Facility, USDA FS, Hawaii Volcanoes National Park Quarantine Facility, Kilauea Research Station, Building 34, Volcano, HI 96718 prior to release from containment. A report shall be submitted to PQB detailing the discovery of any organisms found other than the restricted article(s)" Note: as written, this will only allow screening to occur at the Volcano facility and does not include the potential to use the King St. Facility for screening and ultimately release.

Similarly, permit condition 11 is fraught with issues. HRS 150A-5.10 refers to specific ports by which entry into the state can be made. From a regulatory standpoint, biological control agents are inspected by APHIS PPQ as the first port of entry in the United States. Material is inspected by USDA at a Plant Inspection Station under permit. For Hawaii, this port of entry is at the Port of Honolulu. There can be exceptions if the first port of US entry is NOT Honolulu. However, permit condition 11, requires importation to be in the port of Honolulu. Entrance into the state and importation are two separate issues. Importation of a biocontrol agent could be removal from an approved containment facility or importation of material from other sources under permit which would mean importation and entrance would be the same. Limiting importation to the port of Honolulu creates a situation that is impractical and does not reflect reality.

Requiring all shipments to ENTER through the port of Honolulu is do-able. The permit condition should be reframed to state: "All parcels containing the restricted article(s) shall be subject to inspection by the PQB prior to entering the State. Entry should be through the port of Honolulu as designated by the Board. Entry into Hawaii through another port is prohibited". This permit condition should also be listed as permit condition 5 as entrance occurs prior to importation and release."

PQB NOTES: PQB has consulted with legal counsel and it has been determined that there is no requirement for *Euselasia chrysippe* to be transported back to Honolulu after the issuance of a permit.

Permit condition #11 has been amended to comply with Chap. 150A-5.5(b).

ADVISORY COMMITTEE REVIEW: This request was submitted to the Advisory Committee on Plants and Animals (Advisory Committee) at its meeting on May 20, 2022, held online via Zoom.

PQB Entomologist Christopher Kishimoto provided a synopsis of the request.

Chairperson Darcy Oishi stated that he was notified of being Committee Chair after already providing comments as a Sub-Committee member and would rescue himself from voting. He also noted that this is a joint project between HDOA's Plant Pest Control Branch (PPC) and USDA FS. He then asked for comments from the general public.

Ms. Christy Martin from the Coordinating Group on Alien Pest Species voiced strong support for this proposal. She said she loved visiting the facility to see the work going on there. She said she was able to see the miconia butterfly in captivity and is excited to see the biocontrol agent on the landscape. She said invasive species are one of greatest threats to our economy, environment, health and lifestyle of Hawaii residents, and are greatest driver of biodiversity loss in Hawaii. She said this is a great step in addressing one of our big invaders of Hawaii's wet forests – miconia. She appreciated the Committee's support for this proposal.

Chairperson Oishi asked the applicant, Dr. Tracy Johnson, if he had anything he would like to tell the Committee. Dr. Johnson said he did not and would respond to any questions from the Committee.

Committee member Kenneth Matsui asked how plants are selected for testing, noting that *Catappa* was used for testing with the beetle *Syphraea uberabensis tibouchina*

biocontrol from the prior request, but not tested on *Euselasia chrysippe*. Dr. Johnson responded that they try to get representative samples of diverse plants species. He said the target plants and how diverse its relatives are factor in selecting the kinds of representative non-related species. Dr. Johnson said he thought catappa was selected. Committee Member Robert Hauff said he saw it on the list. Mr. Matsui apologized for not seeing it. Dr. Johnson noted that they can't test every plant species because it is not realistic to test all plants occurring in Hawaii.

Committee member Hauff asked Dr. Johnson if he was OK with the permit conditions as they stand, as far as being able to be in compliance with all of the conditions. Dr. Johnson said he did not have the conditions in front of him so couldn't say if he could comply with all of the conditions. However, he noted this insect is more difficult to rear saying that it is not easily reared through its complete life cycle inside their quarantine facility. He said the plan is to import eggs from Costa Rica, grow them up as larvae, get them to maturity, and then introduce them into the environment as adults. He said screening and examination for disease infection or parasitism along all life stages would occur.

Chairperson Oishi asked how this impacts the permit conditions for screening of the predators, parasites, and parasitoids on permit condition #5, since Dr. Johnson determined he would not be able to execute rearing for two generations in USDA's containment facility. Mr. Kishimoto said this is something that can be amended if it's okay with the Committee and PQB can indicate that for the Board as well, to include a notation that it is very difficult to rear through its whole life cycle.

Chairperson Oishi asked if it is possible to carry out two generations in containment. Dr. Johnson said he has been unable to do so in his current facility, at least under the techniques he has tried so far. He said his plan was basically to release it into the environment inside a very large field cage. He noted that would be outside of the containment facility.

Committee member Hauff asked if Dr. Johnson he was confident in monitoring the parasites and parasitoids in the different life cycles, as he reared them out from eggs. Dr. Johnson said he was confident he could properly monitor *E. chrysippe* at each stage of development for parasitoids and diseases. He was familiar with the organisms and natural enemies of *E. chrysippe* from Costa Rica, noting there were some in the eggs, some in the larvae, and some in the pupae. He said monitoring for those parasites and diseases along every stage of the life cycle would not be a problem.

Chairperson Oishi asked if a large field cage could be an approved PQB containment facility. Mr. Kishimoto said assuming that Dr. Johnson can adequately ensure that containment doesn't get breached and there is proper safeguarding protocols in place, it would be agreeable with PQB. Chairperson Oishi said modifications could be made to

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the permit condition #5 because the USDA approved insect containment facility would be referencing the actual brick and mortar containment facilities included in our USDA permits for both PPC and USDA FS. He said if HDOA could allow screening in an outdoor facility that would facilitate HDOA and USDA FS being able to meet the permit conditions while still allowing for screening of parasites, predators, and hyperparasitoids. Mr. Kishimoto said PQB can agree with that as long as it is understood that this is not a consistent practice and is based on a case-by-case basis on the organism and its biology. He also requested that it is specifically laid out what the changes are going to be so those changes can be adequately reflected in the permit conditions.

Chairperson Oishi asked Dr. Johnson if he has found any predators, parasites, or hyperparasitoids in the testing and evaluation process he uses here. Dr. Johnson said yes, eggs are brought in and sometimes natural enemies are found in the eggs, so they are screened out immediately. He said they have only identified the natural enemies of the larvae and the pupae from Costa Rica when the larvae are exposed in the environment. He said when he brings in the eggs there has not been a chance for those natural enemies to attack the larvae. He said the parasite would need to lay their eggs inside the host egg and the parasites would have to emerge from the larvae and he has not identified any egg-larval parasitoids from *E. chrysippe*, but would be watching for that. He said he would definitely screen for that inside their maximum containment facility first before release into a large outdoor containment cage.

Committee member Matsui asked regarding the large outdoor cage, would Dr. Johnson be looking for other plants that may complete the life cycle of the butterfly and if one is found, would he reconsider its release? Or would political pressure be so great that release occurs anyway? Dr. Johnson said that host range testing has already been completed and the screening of *E. chrysippe* being discussed at this time is examining for parasites and diseases on the butterfly prior to its release. He said there is no additional testing of host plants beyond what has already been completed because all the testing done so far indicates there is only two species in Hawaii that they expect it to feed and reproduce on - *Miconia calvescens* and *Tetrazygia bicolor*, and due to *Tetrazygia* now being called *Miconia*, only *Miconia* species are going to be fed upon.

Committee member Matsui asked about the need for a larger enclosure if Dr. Johnson wanted to look for parasites and diseases on the butterflies. It would seem harder to spot the butterfly and offspring in a larger enclosure or enclosure with multiple hosts. Dr. Johnson said the large enclosure is not needed to screen for natural enemies, but would be needed if he is going to mass produce the insect in containment within the state. He said the reason for having a big cage area so we can have it lays its eggs in miconia trees under a big cage and collect those eggs and propagate them and transfer them from the Big Island to Maui. He said the butterflies need large spaces to reproduce and their behavior requires a very large space and particular lighting.

Committee member Hauff asked if PQB would be able to amend permit condition #5 to remove the 'rearing for two generations requirement' in favor of opting to inspect through the various life stages and continued inspection in the outdoor containment cage? Would that solve the issue of Dr. Johnson's difficulty in rearing *E. chrysippe* in containment? Mr. Kishimoto said it can be done as long as the Committee explains how they want the language in permit condition #5 to read.

Mr. Kishimoto asked Dr. Johnson if allowing only the import of eggs and no other life stages would be acceptable to Dr. Johnson since the eggs seem to be the least risky of the life stages to import. Dr. Johnson said it was fine because realistically that is what is already being done. Mr. Hauff said that sounds like a good idea and would any condition have to be changed.

Mr. Kishimoto said that requirement can either be put in permit condition #1 as "the restricted articles, eggs of *E. chrysippe*.....", or PQB could make that requirement into an entirely new permit condition, maybe into permit condition #2. Committee member Hauff said maybe just simply saying only eggs will be permitted in an additional permit condition would be the clearest and easiest way to do that and asked if the other Committee members were thinking the same thing. Chairperson Oishi said he agreed. Mr. Kishimoto said PQB could put that into permit condition #2.

PQB NOTES: *Permit Condition #2 has been created to require that only eggs of E. chrysippe be imported by the permittee.*

Committee member Hauff asked if PQB wanted help in language for #5 beyond what was previously suggested. Mr. Kishimoto said that would be helpful. Mr. Hauff suggested, "Upon entering into a PQB-approved containment facility, the restricted articles shall be screened for other species, predators, parasites and parasitoids and hyperparasitoids throughout the various stages of its life cycle. Further monitoring for the organisms will occur when the butterfly has been taken to an outdoor containment to be mass reared."

PQB Compliance Section Chief Jonathan Ho said for that particular permit condition, the requirement that *E. chrysippe* be reared for a minimum of two generations needed to be removed. If the two generation requirement is removed and the permit condition is written to say that *E. chrysippe* shall be reared entirely within the containment facility up until butterfly emergence, another permit condition may be added to say "Should no other species, parasites, predators or diseases be found, the restricted articles may be transferred to a PQB approved rearing facility located at....." Provided there are no pests or parasitoids found adult *E. chrysippe* can then be transferred into a PQB approved rearing site for production.

Mr. Ho also said permit condition #6 needed to be addressed because it basically says if *E. chrysippe* is parasitized, The entire shipment of *E. chrysippe* would have to be destroyed. Dr. Johnson's ability to screen for pests throughout the rearing process is good. Perhaps HDOA should require Dr. Johnson to just destroy the infested individuals or colonies; not the entire shipment. Should the adults potentially be infested, maybe then destruction should be required. Currently, permit condition #6 contradicts the process that he has been provided.

PQB NOTES: *Permit condition #6 has been amended to reflect the Committee's suggestions about Dr. Johnson's need to rear E. chrysippe adults in a larger area for egg production.*

Committee member Robert Hauff asked Dr. Johnson if he had any comments.

Dr. Johnson said that sounded reasonable. He said the insects are sub-contained in little containers within the containment facility. Each egg mass is in its separate container. Any natural enemies found in one egg mass would not be associated with another egg mass. He sub-divides everything carefully with each life stage of the insect. The same procedure would be implemented for the larvae. They would be on separate plants. If it came to the adults being infested or infected, they would not use those at all. Dr. Johnson said that he knew of no natural enemies of adult *E. chrysippe*.

PQB NOTES: *Permit condition #7 has been amended to reflect Dr. Johnson's comments about separating egg masses upon arrival into the containment facility.*

Chairperson Oishi wanted to streamline permit condition #6 to reflect something that basically requires *E. chrysippe* to undergo PQB approved standard operating procedures for screening, then go into a PQB approved facility. In this case containment of some sort is important. Chairperson Oishi felt the process by which Dr. Johnson is following is more important in terms of ensuring that everything is not parasitized or hyper parasitized.

Jonathan Ho said PQB does not want to prevent Dr. Johnson from doing what he needs to do and making the permit condition so restrictive that he cannot deviate from it. But at the same time, PQB wants *E. chrysippe* to be safeguarded. Mr. Ho felt the Committee wants to ensure that there are no associated natural enemies of *E. chrysippe* in the containment facility. Mr. Ho thought what Dr. Johnson provided is acceptable.

Chairperson Oishi stated he wanted to see that there is a standard operating procedure process that is clearly spelled out that can accommodate both the safety and needs of

this committee and the Board of Agriculture while still allowing for Dr. Johnson to execute field release of *E. chrysippe* in a safe productive manner.

Mr. Ho replied that permit condition #18 says that Dr. Johnson has to provide a biosecurity manual.

Chairperson Oishi felt that a biosecurity manual was different than a standard operating procedure.

Mr. Ho replied that a biosecurity manual talks about introduction of pests, accidental escape, and spread of diseases or pests that are associated with the biocontrol agent. "Biosecurity manual" is a general term that's really designed to be applicable to each request. PQB does not want to have to keep re-writing the request for every single import that happens. PQB can work with those applicants based off their particular scenario and situation to manage the manual. This is something that everybody agrees upon that needs to be done.

Committee member Hauff asked the Committee if they would like him to try say how permit condition #6 should read. He said he understood what Dr. Johnson is going to do and was comfortable with the protocols that were discussed. But if some Committee members felt like there was a need to articulate that more, he would be happy to give it a try.

Mr. Ho said he didn't think he or Mr. Kishimoto had any misconception in terms of what the Committee would look like to see the conditions look like. In the motion amending permit condition #5 to insert language to allow for the importation of eggs to adults in the containment facility and accommodating an outdoor containment cage for adult butterflies and adjust permit condition #6 to meet Dr. Johnson's current screening process. PQB can work on the actual conditions and that will meet the intent of what Dr. Johnson is trying to accomplish. But if the Committee wanted to have specific language for the amended permit conditions, Mr. Ho said he could try to work on something and put that language in the text on the computer screen where all the meeting attendees could see it and read it off.

Committee member Hauff asked if something needed to be amended before the request went to Board, will there be the ability to make amendments without having this request come back to this Committee if there was a minor detail where the Board wanted to further clarify.

Mr. Ho replied that it was possible and this is the intent of this process. The conditions may be amended until the Board ultimately approves them and that is when the permit conditions become finalized.

Chairperson Oishi asked the Committee if they could take a quick recess before calling for a vote to allow for drafting of comments for the amended permit conditions and a motion before the vote.

Committee members Matsui and Hauff agreed.

Chairperson Oishi called for a 5-minute recess. The time was 10:27 A.M. so the Committee would reconvene at 10:34 A.M.

Chairperson Oishi asked PQB if they were able to make any modifications for the permit conditions or if there was a motion for the Committee to proceed to a vote.

Committee member Hauff asked Mr. Kishimoto if PQB wanted to present the amended permit conditions, or if he should proceed to making the motion?

Mr. Kishimoto replied he was unable to draft the amendments but that Mr. Ho was currently working on that. He might post it right in the comments or the chat section. Mr. Kishimoto said the Committee could make a motion on the request if they wanted and that PQB could finalize the changes to the permit conditions later.

Committee member Hauff made a motion to recommend the Board of Agriculture approve items #1 – #5 on the application from USDA for biocontrol of miconia with amendments to the permit conditions including the addition of a permit condition to require only eggs will be imported, to modify permit condition #5 by removing the requirement of rearing two generations and inserting that all life stages will be inspected for hyperparasitoids, predators etc., and an amendment to permit condition #6 that specifies egg masses will be screened individually and any infected egg masses will be discarded and destroyed while uninfected ones will be acceptable to rear out to adults with any predators or parasitoids found in later life stages will result in the destruction of the colony.

Committee member Maria Haws seconded the motion.

Chairperson Oishi asked for any discussion on the motion. He had a question about permit condition #5. He requested that PQB specify “imported” eggs to distinguish the imported eggs from eggs that Dr. Johnson is able to produce within the Hilo containment facility, field cages, etc.

Mr. Kishimoto replied that Chairperson Oishi’s request could be accommodated.

Chairperson Oishi asked for any other discussion by the members or any questions for the applicant or concerns from the audience.

Hearing none, he called for a vote. As stated earlier, he would be abstaining.

Vote: Approved 5-0, with 1 Abstention (Darcy Oishi)

Motion carries.

IV. Proposed Permit Conditions

1. The restricted article(s), *Euselasia chrysippe*, which includes progeny, shall be used for field release and research, a purpose approved by the Board of Agriculture (Board), and shall not be sold, given away, or transferred in Hawaii, except as approved by the Board.
2. Only eggs of the restricted article(s) shall be imported.
3. The permittee, Dr. Matthew Tracy Johnson, United States Department of Agriculture (USDA) Forest Service (FS), Hawaii Volcanoes National Park Quarantine Facility, Kilauea Research Station, Building 34, Volcano, HI 96718, shall be responsible and accountable for all restricted article(s) imported, from the time of their arrival until their disposition.
4. The restricted article(s) shall be safeguarded and maintained at the USDA approved Insect Containment Facility, USDA FS, Hawaii Volcanoes National Park Quarantine Facility, Kilauea Research Station, Building 34, Volcano, HI 96718 or the Hawaii Department of Agriculture Plant Pest Control Branch Containment Facility, 1428 South King Street, Honolulu, Hawaii 96814, sites approved by the Plant Quarantine Branch (PQB), by trained or certified personnel designated by the permittee.
5. Upon request by the PQB, the permittee shall submit samples of the restricted article(s) prior to importation to the PQB.
6. Upon entry into a PQB approved containment facility, imported restricted article(s) shall undergo the following:
 - a. Screened for other species, predators, parasites, parasitoids, hyperparasitoids, and diseases during all stages of development including adults, in the USDA approved Insect Containment Facility, USDA FS, Hawaii Volcanoes National Park Quarantine Facility, Kilauea Research Station, Building 34, Volcano, HI 96718 or the Hawaii Department of Agriculture Plant Pest Control Branch, 1428 South King Street, Honolulu,

Hawaii 96814. A report shall be submitted to PQB detailing the discovery of any organisms found other than the restricted article(s).

- b. Individual egg masses shall be placed in separate containers for screening. Should no other species, predators, parasites, parasitoids, hyperparasitoids, or diseases be found infesting the adult stage of the restricted article(s), they may be transferred to a safeguarded PQB approved containment area for production purposes.
7. In the event the restricted article(s) become parasitized or infected by disease, the permittee shall:
- a. Devitalize each infested or infected container of the restricted article(s) by freezing;
 - b. Autoclave all infested or infected insects, dietary and ovipositional media; and
 - c. Subject all infected or infested containers, cages, and other equipment to autoclaving, sterilization treatment with a bleach solution containing at least 0.5% sodium hypochlorite concentration, or other PQB approved sterilization treatment.
8. At least 48 hours prior to shipping any parcel containing the restricted article(s), the permittee shall notify the PQB chief in writing and provide the following information:
- a. Expected arrival date;
 - b. Waybill, bill of lading, or tracking number;
 - c. Name and address of the shipper;
 - d. Name and address of the importer or importer's agent in the State of Hawaii;
 - e. Number of packages;
 - f. Description of contents of each package (including scientific name); and
 - g. Port of entry into the State.

9. At least four sides of all parcels containing the restricted article(s) imported into the State shall be clearly and legibly marked: "**This parcel may be opened and delayed for agricultural inspection in Hawaii.**" In 1/2-inch minimum sized font.
10. The restricted article(s) shall be shipped in sturdy PQB-approved containers designed to be escape-proof and leak-proof.
11. Each shipment of the restricted article(s) shall be accompanied by a complete copy of the PQB permit for the restricted article(s) and an invoice, packing list or other similar PQB approved document listing the scientific and common names of the restricted article(s), the quantity of the restricted article(s), the shipper, and the permittee(s) for the restricted article(s).
12. All parcels containing the restricted article(s) shall be subject to inspection by the PQB prior to entering the State and shall be imported through the port of Honolulu except as designated by the Board. Entry into Hawaii through another port is prohibited unless designated by the Board.
13. The approved site, restricted article(s), progeny, records, and any other documents pertaining to the restricted article(s) and progeny under this permit, may be subject to post-entry inspections by the HDOA PQB. The permittee shall make the site, restricted article(s), progeny, and records pertaining to the restricted article(s) available for inspection upon request by a PQB inspector.
13. It is the responsibility of the permittee to comply with any applicable requirements of municipal, state, or federal law pertaining to the restricted article(s).
14. The permittee(s) shall submit to the PQB chief a copy of all valid licenses, permits, certificates or their equivalent required for the restricted article(s) or for their import, possession, movement, or transfer. The permit issued by the PQB chief may be cancelled upon revocation, suspension, or termination of any of the aforementioned documents.
15. The permittee shall submit an annual report to the PQB no later than January 31st of the following year, of the results of post release monitoring programs, that shall include the following:
 - a. Amount of the restricted article(s) released and number of releases;
 - b. Establishment and current field populations of the restricted article(s);
 - c. Effect of the restricted article(s) on *Miconia calvescens*; and

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- d. Effect of the restricted article(s) on native plant and animal species.
16. The permittee shall adhere to the use, facility, equipment, procedures, and safeguards described in the permit application, and as approved by the Board and the PQB Chief.
 17. The permittee shall have a biosecurity manual available for review and approval by the PQB, at the time of the initial site inspection and any subsequent post-entry inspection(s), which identifies the practices and procedures to be adhered to by the permittee to minimize or eliminate the risk of theft, escape, or accidental release of the restricted article(s), including the risk of introduction and spread of diseases and pests associated with the restricted article(s) to the environment. The permittee shall adhere to all practices and procedures as stated in this biosecurity manual.
 18. The permittee shall immediately notify the PQB Chief verbally and in writing under the following circumstances:
 - a. If any escape, theft, accidental release, parasitoid, hyperparasitoid, or other pest or disease outbreaks involving the restricted article(s) under this permit occurs.
 - b. Prior to any changes to the approved site, facility and/or procedures regarding the restricted article(s) are made, the permittee shall also submit a written report documenting the specific changes to the PQB Chief for approval.
 - c. If a shipment of the restricted article(s) is delivered to the permittee without a PQB "Passed" stamp, tag or label affixed to the article, container, or delivery order that indicates that the shipment has passed inspection and is allowed entry into the State, then the permittee shall not open or tamper with the shipment and shall secure, as evidence, all restricted article(s), shipping container(s), shipping document(s) and packing material(s) for PQB inspection.
 - d. If the permittee will no longer import or possess the restricted article(s) authorized under this permit.
 19. The permittee shall be responsible for all costs, charges, or expenses incident to the inspection, treatment, or destruction of the restricted article(s) under this permit, as provided in Act 173, Session Laws of Hawaii 2010, section 13, including, if applicable, charges for overtime wages, fixed charges for personnel services, and meals.

20. Any violation of the permit conditions may result in citation, permit cancelation, and enforcement of any or all of the penalties set forth in HRS §150A-14.
21. A cancelled permit is invalid and upon written notification from the PQB Chief, all restricted article(s) listed on the permit shall not be imported. In the event of permit cancelation, any restricted article(s) imported under permit may be moved, seized, treated, quarantined, destroyed, or sent out of State at the discretion of the PQB Chief. Any expense or loss in connection therewith shall be borne by the permittee.
22. This permit or conditions of this permit are subject to cancellation or amendment at any time due to changes in administrative rules restricting or disallowing import of the restricted article(s) or due to Board of Agriculture action disallowing a previously permitted use of the restricted article(s).
23. These permit conditions are subject to amendment by the PQB Chief in the following circumstances:
 - a. To require disease screening, quarantine measures, and/or to place restrictions on the intrastate movement of the restricted article(s), as appropriate, based on scientifically validated risks associated with the restricted article(s), as determined by the PQB Chief, to prevent the introduction or spread of disease(s) and/or pests associated with the restricted article(s); or
 - b. To conform to more recent Board approved permit conditions for the restricted article(s), as necessary to address scientifically validated risks associated with the restricted article(s).
24. The permittee shall agree in advance to defend and indemnify the State of Hawaii, its officers, agents and employees for any and all claims against the State of Hawaii, its officers, agents, employees, or Board of Agriculture members that may arise from or be attributable to any of the restricted article(s) that are introduced under this permit. This permit condition shall not apply to a permittee that is a federal or State of Hawaii entity or employee, provided that the State or federal employee is a permittee in the employee's official capacity.

STAFF RECOMMENDATION: Based on the recommendations and comments of the Advisory Subcommittee on Entomology and the Advisory Committee's (5-0) recommendation to approve this request, the Plant Quarantine Branch recommends approval of this request.

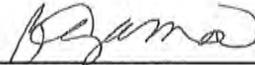
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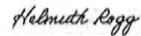
Board

Respectfully Submitted,



BECKY AZAMA
Acting Manager, Plant Quarantine Branch

CONCURRED:



HELMUTH W. ROGG
Administrator, Plant Industry Division

APPROVED FOR SUBMISSION:



PHYLLIS SHIMABUKURO-GEISER
Chairperson, Board of Agriculture

PLEASE COMPLETE THE FOLLOWING INFORMATION (attach extra sheet if necessary)

1. State in detail the reasons for introduction (include use or purpose).

Euselasia chrysippe from Costa Rica has been evaluated as a biological control for managing invasive miconia in Hawaii. It is a narrowly host-specific leaf-feeding butterfly whose caterpillars are expected to reduce miconia foliage without affecting any native or otherwise valued plants. Suppression of miconia will benefit forest watersheds statewide. See attached biological summary.

2. Person responsible for the organism (include name, address and phone number).

Dr. M. Tracy Johnson
Institute of Pacific Islands Forestry
USDA Forest Service, Pacific Southwest Research Station
P.O. Box 236
Volcano, HI 96785
tel: 808-967-7122

3. Location(s) where the organism will be kept and used (include address, contact and phone number).

USDA Forest Service, Hawaii Volcanoes National Park, Magma House, Bldg 34
M. Tracy Johnson 808-967-7122

Hawaii Dept of Agriculture, Plant Pest Control Branch, Biocontrol Section
16 E. Lanikaula Street, Hilo; 1428 S. King Street, Honolulu
Stacey Chun 808-974-4140; Darcy Oishi 808-973-9524

4. Method of disposition.

Euselasia chrysippe shipped as eggs from San Jose, Costa Rica, will be released into the environment as adults after screening to eliminate associated natural enemies at the Hawaii Volcanoes National Park Quarantine Facility. Roughly 300 insects at a time will be removed from quarantine as mature pupae ready to emerge as adult butterflies, independent of host plant material and other potential contaminants. Butterflies will be released into patches of miconia where their behavior, survival and reproduction can be monitored. Offspring from initial environmental releases will be collected and screened, then used for further releases statewide.

5. Give an abstract of the organism with particular reference to potential impact on the environment of Hawaii (include impact to plants, animals and humans).

Euselasia chrysippe is a butterfly native to Costa Rica, where its caterpillars feed gregariously on leaves of several species of Miconia. Extensive testing has shown E. chrysippe to be host-specific to miconia and other closely related members of the melastome family, all of which are non-native weeds in Hawai'i. Because E. chrysippe is limited to feeding on a small pool of closely related species, all of which are invasive, its release is expected to be beneficial to Hawai'i's forests and hydrology, and adverse effects are expected to be negligible.

I request permission to import the articles as listed on the permit application and further, request that the articles be examined by an authorized agent of the Department of Agriculture upon arrival in Hawaii.

I agree that I, as the importer, will be responsible for all costs, charges or expenses incident to the inspection or treatment of the imported articles.

I further agree that damages or losses incident to the inspection or the fumigation, disinfection, quarantine, or destruction of the articles, by an authorized agent of the Department of Agriculture, shall not be the basis of a claim against the department or the inspectors for the damage or loss incurred.

Signature



(Applicant)

Date

6/22/21

Final Environmental Assessment

Field Release of *Euselasia chrysippe*
(Lepidoptera: Riodinidae) for Biological Control of
Miconia, *Miconia calvescens* (Melastomataceae), in
Hawai‘i

Prepared For:

Department of Land and Natural Resources
Division of Forestry and Wildlife
1151 Punchbowl St., Room 325
Honolulu, Hawai‘i 96813



Prepared By:

SWCA Environmental Consultants



August 2022

This Final Environmental Assessment (FEA) and Finding of No Significant Impact (FONSI) was prepared by the DLNR Division of Forestry and Wildlife and submitted to the Environmental Review Program, State of Hawaii Office of Planning and Sustainable Development, to comply with the provisions of Hawaii Revised Statutes, Chapter 343, Environmental Impact Statements. Appendix C of this FEA contains public comment in the form of twenty-three letters of correspondence, all of which were supportive of the field release of *Euselasia chrysippe*. As a result, this FEA is unchanged from the draft EA.

PROJECT SUMMARY

Project Name: Field Release of *Euselasia chrysippe* (Lepidoptera: Riodinidae) for Biological Control of *Miconia*, *Miconia calvescens* (Melastomataceae), in Hawai‘i

Proposing Agency: Department of Land and Natural Resources, Division of Forestry and Wildlife
State of Hawai‘i

Project Location: Statewide

Property Owner: State of Hawai‘i

State Land Use Classification: Not Applicable

Agency Determination: Finding of No Significant Impact (FONSI)

Agencies, Organizations, and Other Stakeholders Consulted:

FEDERAL AGENCIES

- U.S. House of Representatives, Representative Tulsi Gabbard
- U.S. House of Representatives, Representative Colleen Hanabusa
- U.S. Senate, Senator Mazie Hirono
- U.S. Senate, Senator Brian Schatz
- National Park Service, Hawai‘i Volcanoes National Park
- National Park Service, Haleakalā National Park
- Natural Resources Conservation Service, Pacific Islands Area
- U.S. Army Garrison, Commander Col. Stephen E. Dawson
- U.S. Army Garrison, Environmental Division
- U.S. Army Garrison, Natural Resource Section
- U.S. Fish and Wildlife Service
- U.S. Fish and Wildlife Service, O‘ahu National Wildlife Refuge Complex
- U.S. Geological Survey, Pacific Island Ecosystems Research Center

STATE AGENCIES

- Aha Moku Councils
- Department of Business, Economic Development & Tourism
- Department of Hawaiian Homelands
- Department of Health
- Department of Health, Office of Environmental Quality Control
- DLNR Division of State Parks
- DLNR Land Division
- DLNR Office of Conservation and Coastal Lands
- DLNR State Historic Preservation Administration
- HDOA Plant Pest Control

- HDOA Plant Quarantine
- Land Use Commission
- Office of the Governor
- Office of Hawaiian Affairs
- University of Hawai‘i, College of Tropical Agriculture and Human Resources
- University of Hawai‘i, Environmental Center
- University of Hawai‘i, Pacific Cooperative Studies Unit

CITY AND COUNTY AGENCIES

- Honolulu City Council
- City and County of Honolulu, Office of the Mayor
- City and County of Honolulu, Board of Water Supply
- City and County of Honolulu, Department of Planning and Permitting
- Hawai‘i County Council
- Hawai‘i County, Office of the Mayor
- Hawai‘i County, Department of Water Supply
- Hawai‘i County, Department of Planning
- Kaua‘i County Council
- Kaua‘i County, Office of the Mayor
- Kaua‘i County, Department of Planning
- Kaua‘i County, Department of Water Supply
- Maui County Council
- Maui County Office of the Mayor
- Maui County, Department of Planning
- Maui County, Department of Water Supply

ORGANIZATIONS

- Big Island Invasive Species Committee
- Bishop Museum
- Conservation Council of Hawai‘i
- Environment Hawai‘i Inc.
- Hawai‘i Audubon Society
- Hawai‘i Cattlemen’s Council
- Hawai‘i Conservation Alliance
- Hawai‘i Forest and Trail
- Hawai‘i Forest Industry Association
- Hawaiian Botanical Society
- Hawaiian Trail and Mountain Club
- KAHEA
- Kamehameha Schools

- Kaua'i Invasive Species Committee
- Ko'olau Mountains Watershed Partnership
- Maui Invasive Species Committee
- Moloka'i Invasive Species Committee
- Native Hawaiian Advisory Council
- Native Hawaiian Legal Corporation
- O'ahu Invasive Species Committee
- Pig Hunters Association of O'ahu
- Plant Extinction Prevention Program
- Sierra Club, O'ahu Chapter
- The Nature Conservancy of Hawai'i

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Acronyms and Abbreviations

FONSI	Finding of No Significant Impact
FEA	Final Environmental Assessment
DLNR	State of Hawai‘i Department of Land and Natural Resources
DOFAW	Division of Forestry and Wildlife
FAP	Forest Action Plan
HDOA	State of Hawai‘i Department of Agriculture
HIBP	Hawai‘i Interagency Biosecurity Plan
HRS	Hawai‘i Revised Statutes
SWAP	State Wildlife Action Plan
USDA	U.S. Department of Agriculture

PROJECT SUMMARY DESCRIPTION

The Hawai'i Department of Agriculture and the Hawai'i Department of Land and Natural Resources propose the field release on State lands in Hawai'i of a butterfly with gregarious larvae, *Euselasia chrysippe* (Lepidoptera: Riodinidae), for biological control of miconia, *Miconia calvescens* (Melastomataceae).

Miconia is a Hawai'i State noxious weed native to Central and South America, from Mexico down to Argentina. In Hawai'i, large infestations exist on the islands of Hawai'i and Maui, and populations can also be found on Kaua'i and O'ahu. Miconia is shade-tolerant, growing and establishing in the understory of other species in mesic to wet forests. With its exceptionally large leaves, it shades and outcompetes other species, effectively forming a monoculture.

Euselasia chrysippe is a natural herbivore of miconia in the plant's native range in Costa Rica. *E. chrysippe* was found to be the most promising leaf-feeding biocontrol for miconia, because of the gregarious behavior of its larvae, which enables it to inflict more damage to miconia leaves and potentially avoid parasitoids of lepidopteran species already present in Hawai'i. Extensive testing has shown *E. chrysippe* to be host-specific to miconia and other closely related members of the Melastomataceae family, all of which are non-native weeds in Hawai'i.

Release of *E. chrysippe* is currently proposed for State lands on all islands where miconia has established. Spread of the insect from the initial release sites will occur both through natural dispersal and via artificial redistribution by managers between sites. It is expected that *E. chrysippe* will range statewide within a few years of release. State and federal land management agencies will closely monitor the effectiveness of the biocontrol release.

The proposed action requires Plant Protection and Quarantine permits from the U.S. Department of Agriculture, Animal and Plant Health Inspection Service; a permit for import and liberation of restricted organisms from the Hawai'i Department of Agriculture, Plant Quarantine Branch; and a permit for release and monitoring of the insect on State forest land from the Hawai'i Department of Land and Natural Resources, Division of Forestry and Wildlife.

An alternative to the proposed action considered in this assessment is no action. Under this alternative, *E. chrysippe* would not be released on State forest land, and management of miconia would be limited to currently existing mechanical and chemical controls, which serve to limit spread to high value sites, but are economically and ecologically unviable at the landscape scale.

Because *E. chrysippe* is limited to feeding on a small pool of closely related species, all of which are invasive, its release is expected to be beneficial to Hawai'i's forests and hydrology, and adverse effects are expected to be negligible. Therefore, the determination from this Final Environmental Assessment is a Finding of No Significant Impact (FONSI).

1.0 INTRODUCTION

This Final Environmental Assessment (FEA) supports a proposed field release of a gregarious defoliating caterpillar, *Euselasia chrysippe*, which will be used to control miconia, *Miconia calvescens* (Melastomataceae), a Hawai'i state noxious weed. The proposing agency for this program is the State of Hawai'i Department of Land and Natural Resources, Division of Forestry and Wildlife (DLNR DOFAW).

The proposed action of releasing a biological control agent has the potential to impact the local environment and involves the use of state and federal funds and approval of permits. Therefore, in accordance with Hawai'i

Revised Statutes (HRS) Chapter 343, the Hawai‘i Environmental Policy Act, and the National Environmental Policy Act, the proposing agencies have conducted an Environmental Assessment (EA) of the proposed project.

This EA identifies proposed and alternative actions of the project, describes the affected physical and biological environments, and analyzes potential environmental impacts to the existing environment resulting from the proposed action.

1.1 Purpose and Need

Under Hawai‘i State Law (HRS Chapter 152), a “noxious weed” is defined as “any plant species which is, or which may be likely to become, injurious, harmful, or deleterious to the agricultural, horticultural, aquacultural, or livestock industry of the State and to forest and recreational areas and conservation districts of the State, as determined and designated by the department from time to time.” The HDOA’s Plant Pest Control Branch is responsible for limiting plant pest populations that have the potential to cause significant economic damage in the state.

Miconia, a fast-growing tree in the Melastomataceae family, is a major threat to forest ecosystems in Hawai‘i. Miconia was first introduced to Hawai‘i in 1961 as an ornamental and quickly invaded Hawai‘i’s forests. It was declared a noxious weed in 1992 (Kaiser 2006) and continues to be one of Hawai‘i’s most threatening and invasive plants (Figure 1).

Mechanical and chemical methods of control have been underway to attempt to keep the species from spreading; however, long-term management of miconia relies on biocontrol as a critical tool. Release of this proposed biocontrol agent will help to reduce tree vigor and growth, while future agents may aim to reduce seed production, population densities, and seedling establishment and survival.

1.1.1 Biocontrol

When a pest species is introduced to a novel habitat, either intentionally or accidentally, it often arrives without the species (pathogens, herbivores, or parasites) that keep its populations in check in its native range. The Enemy Release Hypothesis states that one of the reasons for the unusually high success of an invasive species in its new habitat is because of this lack of top-down control from a species’ natural enemies (Keane and Crawley 2002). One tool for controlling a species’ population is reintroducing the species’ natural enemy into the novel habitat in which it has become a pest. This process is called biological control, or biocontrol.

The use of biocontrol agents for invasive weeds in natural areas has some advantages over mechanical or chemical control. In particular, when a pest has spread to large swaths of area and/or to remote locations, biocontrol can provide an enduring, cost-effective, and environmentally friendly solution (Howarth 1991). One concern about the introduction to a new habitat of a new species for biocontrol is the potential for adverse effects on species it was not intended to suppress, or what are termed “non-target impacts”. A candidate biocontrol species undergoes intensive testing in order to minimize risk of non-target impacts and maximize effectiveness.

1.2 Target Species: *Miconia calvescens* - Miconia



Figure 1. Miconia (*Miconia calvescens*); Photo by Forest and Kim Starr.

Taxonomy: *Miconia calvescens* DC. (Synonyms: *Cyanophyllum magnificum* Groenland, *Melastoma arborea* Velloso, *Melastoma mandioccana* Raddi, *Miconia arborea* Pav. ex Triana, *Miconia magnifica* Triana, *Miconia velutina* L. Linden & Rodigas) belongs to the pantropical Melastomataceae family. The genus *Miconia* Ruiz & Pavón is the largest genus of new world plants and contains more than 1,500 species ranging from Mexico to the Caribbean to Uruguay and northern Argentina (Mabberley 2017). *Miconia calvescens* is the main species in the genus to be popularized as an ornamental; uses for other species in the genus include lumber (*M. longistyla*), edible berries (*M. macrophylla*), dyeing (*M. cinnamomifolia*), and medicinal (*M. agrestis*, *M. fothergilla*) (Meyer 2009).

Description: *Miconia calvescens* can grow up to 16 meters tall, but usually reaches closer to 4–12 meters. Its oblong-elliptical to elliptical-ovate leaves are glabrous, 20–80 cm long and 8–30 cm wide, with acuminate tips and an obtuse or rounded base. The bicolored form seen in Hawai‘i has dark green leaves with purple undersides with entire or slightly toothed margins. Inflorescences are panicles 20–35 centimeters long. Sessile flowers are 5-merous and have oblong caducous bracteoles 2–3 mm in length. Hypanthium is 2–2.7 mm long; calyx tube is 0.6–0.7 mm long. Petals are white and glabrous on the surfaces but sometimes sparsely glandular around the edges, 2–3 mm long, 1–2 mm wide, oblong-obovate. Stamens slightly dimorphic; filaments 3–4 mm, glabrous or very sparsely glandular. Stigma slightly expanded; style glabrous or sparsely glandular, slightly immersed in the ovary apex; ovary 3-celled and 1/2–2/3 inferior, the apex granulose or sparsely glandular. Fruits are globose, purplish-black, 3.5–4.5 mm in diameter, containing ovoid to pyramidal seeds around 0.5 mm long (Weber 2003).

Distribution: *Miconia* is native to Central and South America, from Mexico down to Argentina. In Hawai‘i, it was introduced to Wahiawa Botanical Garden by Joseph Rock in 1961, was subsequently introduced to other botanical gardens on Oahu, and had reached the island of Hawai‘i by 1964, Maui in the early 1970s, and Kauai by the early 1980s. Large infestations exist on the islands of Hawai‘i and Maui, and populations

can also be found on Kaua‘i and O‘ahu. Efforts to control miconia were first initiated in 1991 on the island of Maui, near Hana. By that time, it had already spread widely. More than 20,000 plants were removed from Hana between 1991 and 1993 (Thomas 1997).

Habitat: *Miconia* is rarely seen in its native range, which extends from southern Mexico to northern Argentina. The bicolored form with purple undersides to the leaves found in invaded regions is restricted to Central America. *Miconia* is found in tropical or wet forests where the mean annual rainfall is greater than 2,000 mm and mean temperature is over 22 degrees Celsius. It has a broad elevational range from the lowlands up to 1,800 meters in elevation and grows in disturbed or second-growth forests, in semi-open areas. *Miconia* is an early successional species, colonizing small gaps, forest edges, streambanks, and trailsides, and only rarely grows in the understory of dense primary forest. This species’ invaded range is very similar to its native range (Meyer 2009).

Impact: *Miconia* is a major threat to forest ecosystems in Hawai‘i. It was declared a Hawai‘i state noxious weed in 1992 and continues to be one of Hawai‘i’s most invasive plants. *Miconia* trees form dense stands (Figure 2) and their large leaves shade out native forest trees. Over time, *miconia* can come to dominate a forest. Each plant can produce over 20,000 seeds per fruiting season, and each seed may remain viable for more than 16 years. Seeds are dispersed long distances by animals such as birds and rats and can be spread by wind, water, or humans (CABI 2019, Hawaii Invasive Species Council 2019).



Figure 2. *Miconia calvenscens* infestation in Onomea, Big Island; Photo by Forest and Kim Starr.

Management: Early efforts to contain *miconia*’s rampant spread formed the basis of Hawai‘i’s invasive species management. Mechanical and chemical methods of control have been underway in Hawai‘i to attempt to keep the species from spreading, including the use of triclopyr herbicide and the use of Herbicide Ballistic Technology, which targets *miconia* plants from a helicopter. Despite many successes in using chemical control, this species continues to proliferate, particularly on Maui and Hawai‘i Islands, and long-term management of *M. calvenscens* will depend on the use of biocontrol agents (Ashe 2017). To date only one biocontrol agent has

been released against miconia, the leaf spot pathogen *Colletotrichum gloeosporioides*, with only minor impacts in Hawaii (Seixas et al. 2007).

Natural Enemies: The first exploration for natural enemies of miconia within its native range was conducted in Costa Rica, Brazil, and Trinidad in 1993–1995 by Robert Burkhart, exploratory entomologist for the Hawai'i Department of Agriculture. Further exploratory work by plant pathologists in Brazil resulted in the 1997 introduction of a fungal pathogen for biocontrol in Hawaii (Seixas et al. 2007). Beginning in 2000, additional surveys and detailed studies of enemies of miconia were conducted by students at the University of Costa Rica (Hanson et al. 2009) and the Federal University of Vicosa, Brazil (Picanço et al. 2005). Collections have identified a wide variety of natural enemies feeding on miconia, including dozens of Lepidoptera species, many species of Coleoptera, some Hemiptera, and several plant pathogens. Some of these enemies have been prioritized for development as biocontrol agents (Johnson 2009).

1.3 Biocontrol Agent: *Euselasia chrysippe*

The proposed biocontrol agent is *Euselasia chrysippe*, a gregarious defoliating caterpillar. The native range of this species extends from southern Mexico to Colombia and its elevational range starts at sea level and extends up to 1,500 meters (Nishida 2010). In Costa Rica, it is found on the Caribbean and Pacific slopes in both primary and secondary rain forests (Allen 2012; Nishida 2010). Caterpillars and eggs of *E. chrysippe* have only been collected from taxa in the Melastomataceae family, specifically *Miconia calvescens*, *M. impetiolaris*, *M. trinervia*, *M. elata*, *M. appendiculata*, *M. donaena*, *M. longifolia*, and *Conostegia rufescens* (DeVries 1997; DeVries et al. 1992; Janzen and Hallwachs 2009; Nishida 2010). Release of this candidate leaf-eating biocontrol will help to reduce tree vigor and growth. Other candidate agents for future release will aim to impact seed production, population densities, and/or seedling establishment and survival (Johnson 2009).

Taxonomy: *Euselasia chrysippe* (Bates 1866) is classified under the family Riodinidae, or metalmark butterflies, in the subfamily Euselasiinae. Euselasiinae is restricted to the subtropics and contains five genera; all except *Euselasia* contain few taxa. *Euselasia*, by contrast, contains around 170 described species. Despite the relative abundance of this genus, little is known about its members outside of a few pest species of *Eucalyptus* (Nishida 2010).

Description of Adults: Males of this species have a reddish-orange discal area of the upper surface wings, whereas females are yellowish-orange. Both sexes have 5–7 black spots along the margins on the underside of the hindwings (Nishida 2010).

Description of Larvae: Sixth instar description from Nishida (2010):

The sixth instar *Euselasia chrysippe* is greenish-dark-gray to greenish-dull black; the head capsule width is ca. 1.65 mm; the color of the head is bright orange, black, or a mixture of these two; arrowhead setae are cone-shaped (not flattened), ridged, and spiraled apically; the curvature of the ventral margin of the labrum is narrowly angled (ca. 110°); the mandible is small (0.38 mm wide), with the dentation less distinct than in *E. bettina*, and the extension of the fifth tooth is somewhat widened at edge; the T1 shield is orange to bright orange and without iridescence; the pinacula on the dorsum have a pale-gray oval line; the iridescence on structural color plates is faint metallic-blue; a proleg on A10 has 11–13 crochets in mesoserries.

Distribution: The native range of *Euselasia chrysippe* extends from southern Mexico to Colombia (DeVries 1997) and its elevational range starts at sea level and extends up to 1,500 meters (Nishida 2010). Studies reported here involve *E. chrysippe* collected from a few different sites on the Caribbean side of Costa Rica, from two of its host plants, *Miconia calvescens* and *Miconia impetiolaris*.

Life History:

In captive rearing conditions, the duration of the *E. chrysippe* life cycle from egg to emergence of the adult butterfly from the pupa is approximately 8 weeks. Both male and female adults have been shown to live for longer than a month (Nishida 2010). The caterpillars have six instars that feed primarily on the undersides of young fully opened leaves of their host, consuming the whole leaf (Johnson 2009). As with all known members of the tribe Euselasiini, *E. chrysippe* caterpillars hatch, feed, rest, molt, and pupate together in a single sibling cohort of up to 100 individuals (Allen 2010; Nishida 2010). This gregarious behavior is thought to assist the species with feeding on tough leaves, which optimizes foraging. In addition, traveling as a large group provides a defense against predation and may contribute to the low parasitism rates on this species observed in their home range (Allen 2010).

Recorded host plants for the genus *Euselasia* include members of Euphorbiaceae, Clusiaceae, Myrtaceae, Melastomataceae, Sapotaceae, and Vochysiaceae; however, caterpillars and eggs of *E. chrysippe* have only been collected from the family Melastomataceae, specifically *Miconia calvescens*, *M. impetiolaris*, *M. trinervia*, *M. elata*, *M. appendiculata*, *M. donaena*, *M. longifolia*, and *Conostegia rufescens* (Nishida 2010). Preliminary no-choice host tests conducted by Nishida (2010) found that larvae collected from *M. impetiolaris* would feed on *Conostegia xalapensis* and *M. calvescens* (Melastomataceae) but exhibited no feeding on two *Eucalyptus* spp., *Eugenia truncata*, and *Psidium guajava* (Myrtaceae) or *Clusia flava* (Clusiaceae).

Natural Enemies: One of the biggest issues of concern when introducing a biocontrol and ensuring its success is parasitism by insects previously introduced either for the control of other arthropods, or through accidental means. Previously reported parasitoids of the genus *Euselasia* include taxa in Chalcididae, Ichneumonidae, Trichogrammatidae (all in Hymenoptera), and Tachinidae (Diptera) (Johnson 2009; Nishida 2010). One egg parasitoid (*Encarsia* cf. *porteri* (Hymenoptera: Ahelinidae)) and two genera of solitary tachinid parasitoids that attack late instar larvae and emerge from the host once it has begun to pupate have been recorded from *E. chrysippe* (Nishida 2010). Species in the subfamily Riodininae do not share the usual parasitoids of Lepidoptera (Johnson 2009) and no members of this family are native or have been introduced to Hawai'i (Nishida 2002) which further reduces the risk that a specialized parasite of *E. chrysippe* currently exists here.

Effect on Target Weed:

Euselasia chrysippe was selected as a leaf-feeding biocontrol of miconia in Hawai'i because its gregariously feeding larvae can cause substantial damage to leaves. When reared on potted plants, a cohort of 60–80 larvae will consume several hundred square centimeters of leaf tissue – equivalent to the area of one average-sized leaf. Damage is typically distributed across several leaves because larvae move to new feeding areas between meals. Damage also includes removal of portions of uneaten leaves, presumably to reduce detection by natural enemies (Figure 3) (Puliafico et al. 2015).

Although extensive defoliation by *E. chrysippe* is not observed in Costa Rica, its populations are presumed to be limited by natural enemies there. If introduced to Hawai'i, population growth is expected to be less constrained by enemies, allowing numbers of *E. chrysippe* to increase to levels sufficiently high to cause substantial defoliation. Damage is unlikely to be severe enough to kill miconia trees, but repeated partial defoliations may reduce growth and reproduction of trees and enhance light levels for plants competing with miconia (Johnson, T. pers. comm).



Figure 3. *Euselasia chrysippe* larvae defoliating *Miconia calvescens*.

1.3.1 Host Specificity

Understanding host specificity, or the ability of a candidate biocontrol agent to carry out its life cycle on both the target and any possible non-target organisms is an important step in evaluating potential effects of the candidate agent on non-target species. Potential non-target hosts of *E. chrysippe* were selected by employing the Centrifugal Phylogenetic Method. This method is based on the hypothesis that a candidate biocontrol is more likely to feed upon plant species that are closely related phylogenetically to the preferred host species. The pool of non-target species is chosen by initially testing species within the same genus as the known host, then expanding out to include species in higher taxonomic ranks (family, then order, and so on).

Host specificity tests with larvae of *E. chrysippe* were conducted from 2012-2014 in laboratories in Hawaii, at the USDA Forest Service Insect Containment Facility, and in Costa Rica, at La Selva Biological Station. An emphasis was placed on plants in the order Myrtales, specifically on species within the Melastomataceae, Myrtaceae, Combretaceae, Lythraceae, and Onagraceae families. Relationships within the Melastomataceae were based on Clausing and Renner (2001). In addition, species from more distantly related taxa but with economic, cultural, and/or ecological significance in Hawai'i were selected based on input from the U.S. Fish and Wildlife Service, consultations with members of the agricultural community, and expert sources on native Hawaiian plants. In total, 73 species of plants from 19 families were examined for suitability as hosts for *E. chrysippe* (Table 1). No-choice tests of each species (larvae exposed to only one plant species for 3 days) were conducted with leaves in 90-mm petri dishes and replicated 4-5 times.

Results of host specificity studies showed that among the 73 species tested, *E. chrysippe* larvae overwhelmingly prefer feeding and only survive on *Miconia calvescens* and a few close relatives within the tribe Miconieae (Table 1). Interestingly, two species, *Miconia crenata* (prev. *Clidemia hirta*) and *Miconia bicolor* (prev. *Tetrazygia bicolor*), which have recently been found through phylogenetic analyses to be better placed within the genus *Miconia* (Judd et al. 2014; Mabblerley 2017), experienced the highest level of non-target feeding by *Euselasia* of all the species tested that are currently naturalized in Hawai'i. No Melastomataceae are native to Hawai'i, and nine of the 15 species naturalized in Hawai'i have been declared state noxious weeds (Medeiros et al. 1997). Very low levels of feeding occurred on a few plants in families outside of Melastomataceae (Figures

4-5), but in all cases, survival of the larvae past the 3-day mark on species in these families was extremely low, and none developed into larger larvae.

Studies have clearly demonstrated that *E. chrysippe* is host-specific to a subset of Melastomataceae. Results of the host specificity studies are summarized below (Figures 4-6); additional information can be found in the cited literature (DeVries 1997; DeVries et al. 1992; Janzen and Hallwachs 2009; Nishida 2010). Laboratory tests are consistent with field observations of host range of *E. chrysippe* in Costa Rica, where eggs and larvae have been collected only from species of *Miconia*, specifically *M. calvescens*, *M. donaeana*, *M. impetolaris*, *M. appendiculata*, *M. longifolia*, *M. elata*, *M. trinervia*, and *Conostegia rufescens*, a plant in the same tribe (Nishida 2010). A similar pattern of specificity holds for other species within the genus *Euselasia*. Across numerous studies in various parts of tropical America, *Euselasia* have been found to be narrowly host-specific, with each species specializing within a family of plants (Nishida 2010).

Table 1. Plant species tested for the *Euselasia chrysippe* larval feeding in 3-day no-choice trials

Order	Family Tribe	Test Plant Species	Common Name(s)	Native Range*	Present in Hawai'i?
Myrtales	Melastomataceae Miconieae	<i>Clidemia dentata</i>		SCA	
		<i>Clidemia discolor</i>		SCA	
		<i>Clidemia epiphytica</i>		SCA	
		<i>Clidemia hirta</i>	clidemia, Koster's curse	SCA	yes
		<i>Conostegia subcrustulata</i>		SCA	
		<i>Conostegia xalapensis</i>		SCA	
		<i>Henriettea turberculosa</i>		SCA	
		<i>Leandra granatensis</i>		SCA	
		<i>Leandra longicoma</i>		SCA	
		<i>Miconia affinis</i>		SCA	
		<i>Miconia argentea</i>		SCA	
		<i>Miconia barbinervis</i>		SCA	
		<i>Miconia calvescens</i>	miconia	SCA	yes
		<i>Miconia cremadena</i>		SCA	
		<i>Miconia elata</i>		SCA	
		<i>Miconia gracilis</i>		SCA	
		<i>Miconia impetolaris</i>		SCA	
		<i>Miconia longifolia</i>		SCA	
		<i>Miconia multispicata</i>		SCA	
		<i>Miconia nervosa</i>		SCA	
		<i>Miconia prasina</i>		SCA	
		<i>Miconia theizans</i>		SCA	
				<i>Tetrazygia bicolor</i>	
	Bertoloniaeae	<i>Triolena hirsuta</i>		SCA	

Order	Family Tribe	Test Plant Species	Common Name(s)	Native Range*	Present in Hawai'i?
	Blakeeae	<i>Blakea litoralis</i>		SCA	
		<i>Topobea maurofernandeziana</i>		SCA	
	Dissochaeteae	<i>Medinilla cummingii</i>		IM	yes
		<i>Medinilla magnifica</i>	showy medinilla	AU/IM	yes
	Melastomeae	<i>Arthrostemma ciliatum</i>	pinkfringe	SCA	yes
		<i>Dissotis rotundifolia</i>	pink lady, rockrose	AF	yes
		<i>Heterocentron subtriplinervium</i>	pearlflower	SCA	yes
		<i>Melastoma sanguineum</i>	fox-tongued melastome	IM	yes
		<i>Melastoma septemnervium</i>	Asian melastome	IM	yes
		<i>Pterolepis glomerata</i>	false meadowbeauty	SCA	yes
		<i>Tibouchina herbacea</i>	cane tibouchina	SCA	yes
		<i>Tibouchina longifolia</i>	long leaf glory tree	SCA	yes
		<i>Tibouchina urvilleana</i>	princess flower, glorybush	SCA	yes
	Combretaceae	<i>Terminalia catappa</i>	false kamani	AU/IM	yes
	Lythraceae	<i>Cuphea ignea</i>	cigar flower	SCA	yes
		<i>Lythrum maritimum</i>	pukamole	SCA	yes
	Myrtaceae	<i>Eucalyptus deglupta</i>	rainbow eucalyptus	IM	yes
		<i>Eucalyptus globulus</i>	blue gum	AU	yes
		<i>Eugenia uniflora</i>	Surinam cherry, pitanga	SCA	yes
		<i>Lophostemon confertus</i>	brushbox, Brisbane box	AU	yes
		<i>Melaleuca leucadendra</i>	weeping paperbark	AU/IM	yes
		<i>Metrosideros macropus</i>	lehua mamō	HI	yes
		<i>Metrosideros polymorpha</i>	'ohi'a lehua	HI	yes
		<i>Plinia cauliflora</i>	jaboticaba	SCA	yes
		<i>Psidium cattleianum</i>	strawberry guava	SCA	yes
		<i>Psidium friedrichsthalianum</i>	Costa Rican guava	SCA	yes
		<i>Psidium guajava</i>	common guava	SCA	yes
		<i>Rhodomyrtus tomentosa</i>	downy myrtle, rose myrtle	IM	yes
		<i>Syzygium cumini</i>	Java plum	IM	yes
		<i>Syzygium malaccense</i>	mountain apple,	AU/IM	yes
	Onagraceae	<i>Epilobium ciliatum</i>	willowherb	NA/SCA/IM	yes
		<i>Fuchsia magellanica</i>	hardy fuchsia	SCA	yes
		<i>Oenothera laciniata</i>	cutleaf evening primrose	NA	yes
Geraniales	Geraniaceae	<i>Geranium homeanum</i>	Australasian geranium	AU	yes
Brassicales	Caricaceae	<i>Carica papaya</i>	papaya	SCA	yes

Order Family Tribe	Test Plant Species	Common Name(s)	Native Range*	Present in Hawai'i?
Malvales Malvaceae	<i>Hibiscus rosa-sinensis</i>	hibiscus	IM	yes
	<i>Theobroma cacao</i>	cacao	SCA	yes
Sapindales Anacardiaceae	<i>Mangifera indica</i>	mango	IM	yes
	Rutaceae <i>Citrus x sinensis</i>	lemon	IM	yes
	Sapindaceae <i>Dodonaea viscosa</i>	a'ali'i	COS/HI	yes
Rosales Moraceae	<i>Artocarpus altilis</i>	ulu, breadfruit	IM	yes
Fabales Fabaceae	<i>Acacia koa</i>	koa	HI	yes
	<i>Sophora chrysophylla</i>	mamane	HI	yes
Gentianales Rubiaceae	<i>Coffea arabica</i>	coffee	AF	yes
Lamiales Scrophulariaceae	<i>Myoporum sandwicense</i>	naio	HI	yes
Proteales Proteaceae	<i>Macadamia integrifolia</i>	macadamia	AU	yes
Alismatales Araceae	<i>Anthurium</i>	anthurium	SCA	yes
Laurales Lauraceae	<i>Persea americana</i>	avocado	SCA	yes
Cyatheales Dicksoniaceae	<i>Cibotium glaucum</i>	hapu'u	HI	yes

*Native ranges: HI = Hawaiian native, SCA = Neotropical (South and Central America), NA = Nearctic (North America), AU = Australian, AF = Afrotropical, IM = Indomalayan, COS = Cosmopolitan

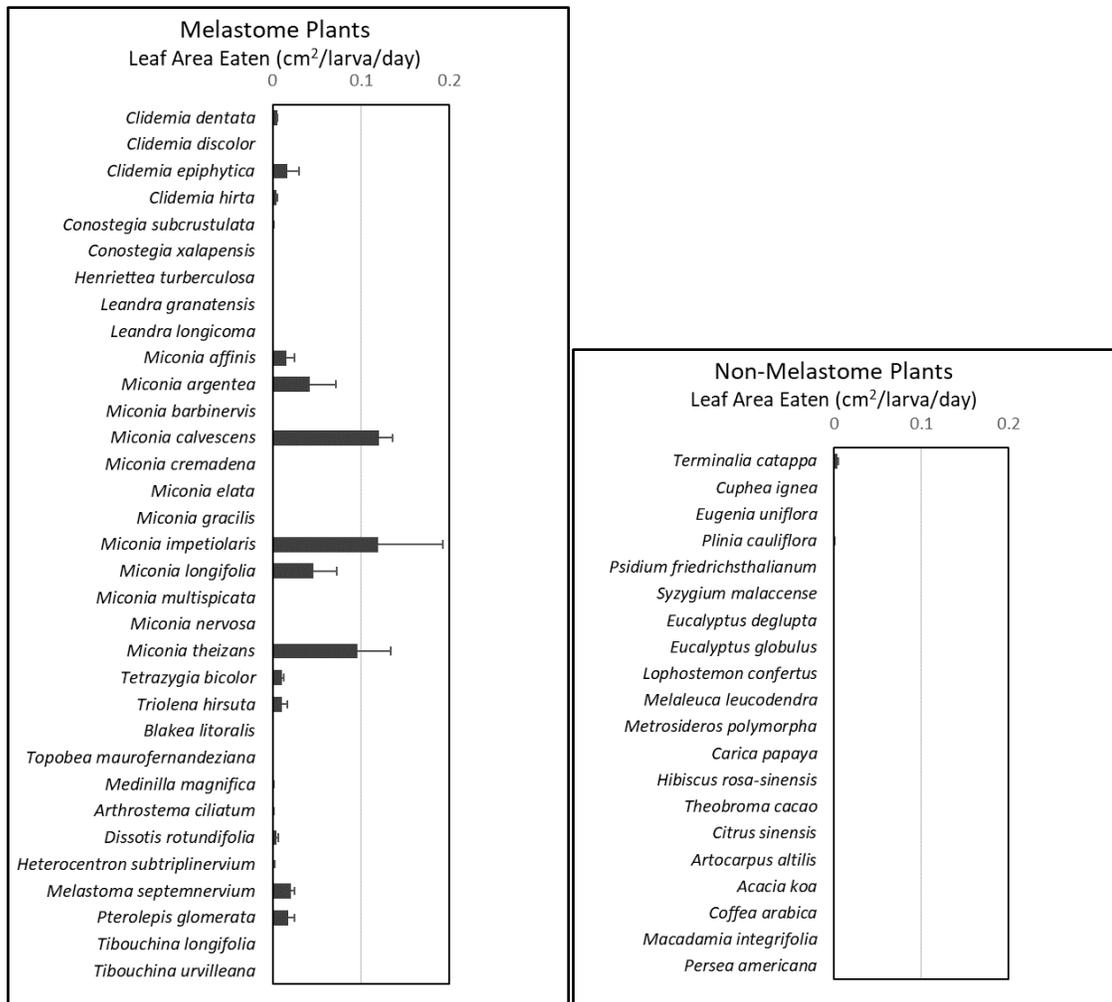


Figure 4. Average feeding damage by small larvae (instars 1–2) of *Euselasia chrysippe* on plant species in Costa Rica and Hawai‘i exposed as fresh leaves for 3 days in 90-mm petri dishes in 2012–2014, measured from photos before and after testing (bar = standard error). Species in Melastomataceae on left are grouped according to genetic relatedness, and non-melastomes on right are listed in order of genetic distance from Melastomataceae.

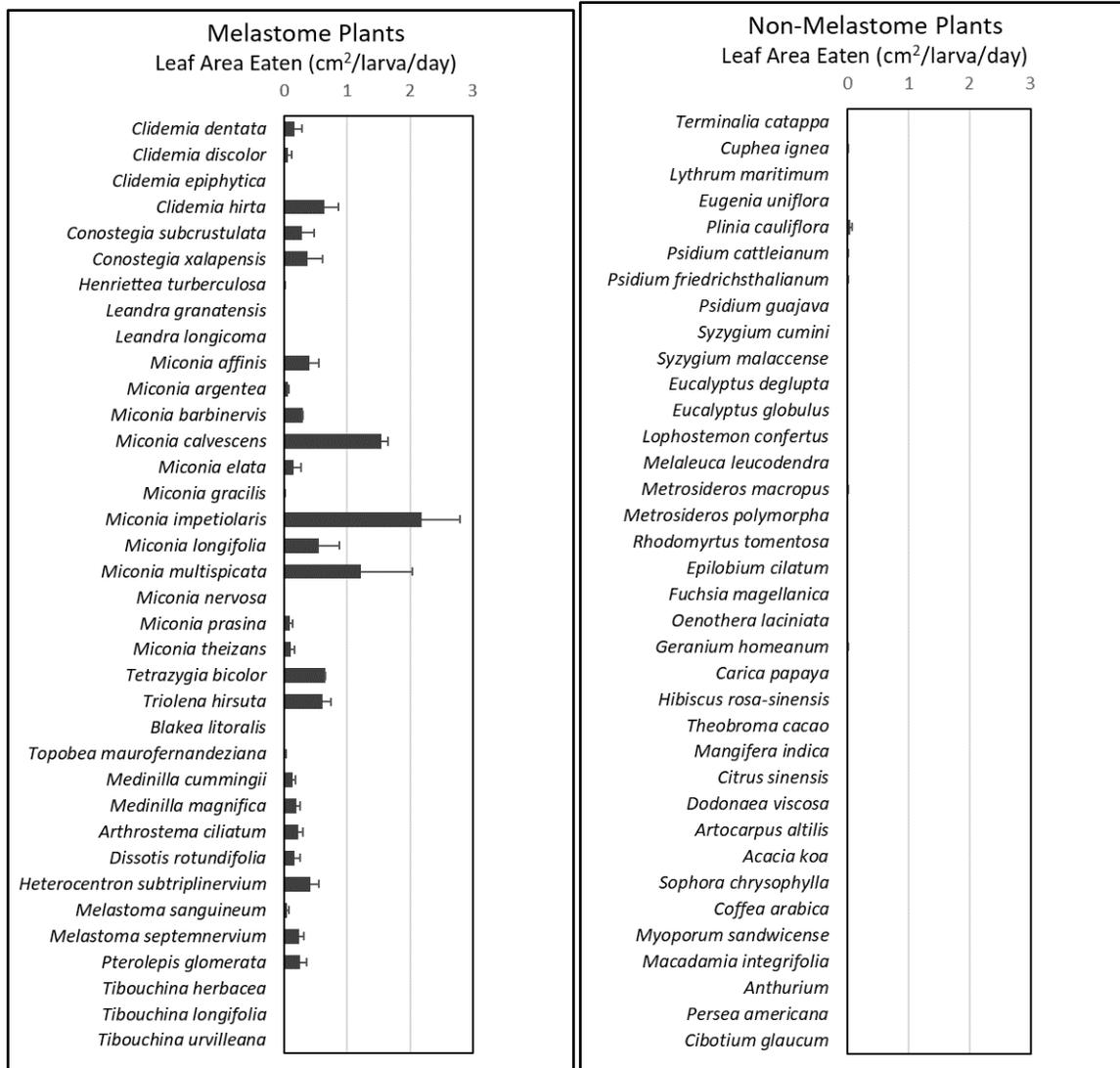


Figure 5. Average feeding damage by mid-sized larvae (instars 3–5) of *Euselasia chrysippe* on plant species in Costa Rica and Hawai‘i exposed as fresh leaves for 3 days in 90-mm petri dishes in 2012–2014, measured from photos before and after exposure (bar = standard error). Species on left, in the family Melastomataceae, are grouped according to genetic relatedness, and non-melastomes on right are listed in order of genetic distance from Melastomataceae.

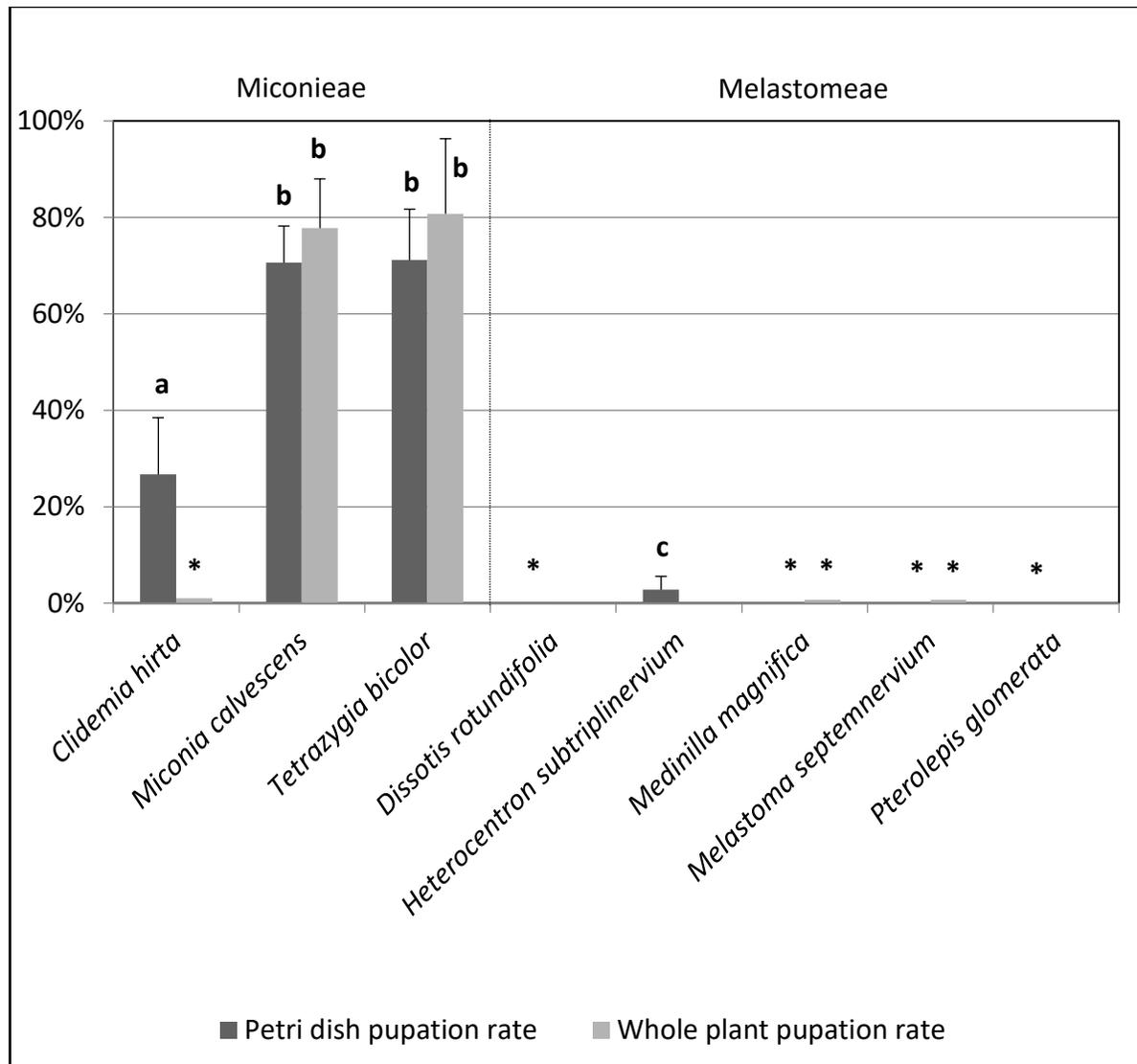


Figure 6. Average percent (\pm standard error) of *E. chrysippe* larvae surviving to pupation when exposed continuously in Petri dishes (dark gray) and whole plants (light gray) of test plant species in the tribes Miconieae and Melastomeae (family: Melastomataceae). Results with different letters (a,b,c) are statistically different. Results with an asterisk (*) had negligible survival and were not tested in the statistical model.

1.4 Proposed Action

An application was submitted by the HDOA Plant Pest Control Branch to the HDOA Plant Quarantine Branch, 1849 Auiki Street, Honolulu, HI 96819, for a permit to introduce *Euselasia chrysippe* (Lepidoptera: Riodinidae), a gregarious defoliating caterpillar, into the State of Hawai'i under the provisions of HRS Chapter 141, Department of Agriculture, and Chapter 150A, Plant and Non-Domestic Animal Quarantine. *Euselasia chrysippe* will be released to help control miconia (*Miconia calvescens* (Melastomataceae), which is considered one of the world's worst weeds.

The U.S. Department of Agriculture (USDA) Forest Service plans on monitoring the impacts of the biocontrol after establishment, focusing on selected sites.

1.4.1 Project Cost

Although rearing of *E. chrysippe* requires specialized knowledge, the costs for distributing the insect for management will be relatively low after it is approved for release. Facilities, equipment, and personnel needed for rearing the insect are relatively simple; however, the process will require importation and careful screening of insects from Costa Rica. Establishing self-sustaining populations in field sites statewide likely can be accomplished within 1 year with a few staff working only part-time (estimate: \$60,000 for technical support in Costa Rica and Hawai‘i). Additional funding (\$60–100K) would support an organized effort to monitor establishment and impacts over the first 2 years following release. Agencies contributing to these efforts are expected to include the USDA Forest Service, HDOA, and State of Hawai‘i Department of Land and Natural Resources (DLNR). Invasive species committees, watershed partnerships, and others involved in weed management are expected to be active partners in identifying release sites and assisting in monitoring initial establishment.

Post-release monitoring, to determine whether the biocontrol is ultimately successful, will likely require a partnership of researchers and managers over a period of many years. Although specific methods have not yet been developed for the purpose of remote monitoring of insect feeding on miconia, it is likely possible to modify aerial detection techniques already in development.

1.5 Affected Area

The proposed release of *E. chrysippe* will be statewide. The first stage of release will focus on Miconia infestations on east Maui and east Hawai‘i, where the host species is most abundant. Many areas where miconia is known to occur are under some level of active management, and it would be a waste of effort to release biocontrol on plants that will soon be killed with herbicide. This sort of interference might present a challenge in the short-term for release and monitoring of effectiveness of *E. chrysippe*. However, in the long term, suppression of miconia through biocontrol is expected to be compatible with other control methods. In areas where active management focuses on containing the spread of miconia, *E. chrysippe* would ideally work by rapidly colonizing new miconia plants, even plants located at distances from established populations. A balance between use of biocontrol and other management tools will be established depending on the effectiveness of the *E. chrysippe* release and the availability of resources for other control methods (Johnson 2009).

Once successfully established, the butterfly may expand its range to other locations or islands both naturally and by additional releases. Actual dispersal rates are not known at this time but will be tracked and monitored following release.

1.6 Sources of Primary Environmental Impact

Primary impacts are defined in Hawaii Administrative Rule (HAR) §11-200-1 as “effects which are caused by the action and occur at the same time and place.” Primary impacts from the release of a biocontrol agent are the damages directly caused by the biocontrol agent; for example, feeding damage on non-target species. The potential impacts of this action are analyzed in Chapter 2.

1.7 Sources of Secondary Environmental Impact

Secondary impacts are defined in HAR §11-200-1 as “effects which are caused by the action and are later in time or farther removed in distance but are still reasonably foreseeable.” For example, one possible secondary impact could be a change in vegetation composition after successful suppression of miconia.

1.8 Agency Identification

The HDOA is the proposing agency responsible for the proposed action in accordance with HRS Chapter 343 and the National Environmental Policy Act.

1.9 Required Permits

The proposed action requires the following permits:

- Plant Protection and Quarantine permit from the USDA, Animal and Plant Health Inspection Service
- a permit for import and liberation of restricted organisms from the HDOA Plant Quarantine Branch upon review and approval by the Hawai'i Board of Agriculture
- a permit for access for release and monitoring of the insect on State forest land from the DLNR Division of Forestry and Wildlife (DOFAW)

1.10 Alternatives Considered

The No Action Alternative and Preferred Alternative (proposed action) are discussed below. Table 2 summarizes the advantages and disadvantages of each alternative.

1.10.1 No Action Alternative

Under the No Action Alternative, *E. chrysippe* will not be released for biocontrol of miconia. Under this alternative, control of miconia will be limited to the current options of using mechanical and chemical control methods. For incipient infestations of miconia that are easily accessible and limited in size, mechanical or chemical control may be preferred, since these methods have the advantage of a relatively short response time and minimal initial investment in staff time and resources. However, for large infestations or remote locations (as is the case on most infested islands), mechanical and chemical controls can be much less cost-effective, often requiring access by helicopter, and increase use of herbicides and staff time. Given the current extent of infestation, the environmental and economic impacts required to eradicate the target weed will be unacceptable, and, given this species' propensity to disperse and proliferate, the likelihood of it continuing to invade currently uncolonized suitable habitats and islands despite best efforts is high.

1.10.2 Proposed Action (Preferred Alternative)

The proposed action is to issue permits for the release of a gregarious defoliating caterpillar, *Euselasia chrysippe*, in the State of Hawai'i for biocontrol of *Miconia calvescens*.

The Preferred Alternative has the advantage of providing long-term control of miconia at a landscape scale. Although the cost of research and development for biological control is relatively high compared to conventional mechanical and chemical controls, the benefits of a successful biocontrol release would accumulate over time, saving amounts of money that far surpass the up-front cost (Wright et al. 2012).

Although field release will be permanent and there is a possibility of non-target effects, extensive host-specificity trials have shown that the candidate biocontrol agent has a very limited host range within the Melastomataceae family, which contains no native species, and nine of the 15 species in this family naturalized in Hawai'i are classified as noxious weeds.

Table 2. Summary of Alternatives Considered and Their Associated Advantages/Disadvantages Compared to the Proposed Action

	ACTIONS	ADVANTAGES	DISADVANTAGES
NO ACTION	NOT RELEASING <i>E. CHRYSIPPE</i> ; MANAGEMENT OF <i>M. CALVESCENS</i> WILL RELY ON MECHANICAL AND CHEMICAL CONTROLS.	<ol style="list-style-type: none"> 1. EFFECTIVE FOR INCIPIENT INFESTATIONS IF RESPONSE IS WELL-TIMED. 2. LOW INITIAL INVESTMENT REQUIRED. 3. SHORT-TERM NEGATIVE EFFECTS ARE LIKELY REVERSIBLE. 	<ol style="list-style-type: none"> 1. ONLY PROVIDES SHORT-TERM CONTROL; CONTINUAL EFFORTS REQUIRED. 2. ECONOMICALLY PROHIBITIVE FOR WIDESPREAD INFESTATION. 3. INCREASED USE OF HERBICIDES AND STAFF TIME. 4. GIVEN THE RESOURCES AVAILABLE, THE ENVIRONMENTAL IMPACT OF THE INVASIVE PLANTS WILL WORSEN.
PROPOSED ACTION	FIELD RELEASE OF A GREGARIOUS DEFOLIATING CATERPILLAR SPECIES, <i>E. CHRYSIPPE</i> , IN THE STATE OF HAWAII FOR BIOCONTROL OF <i>M. CALVESCENS</i>	<ol style="list-style-type: none"> 1. PROVIDES LONG-TERM, SUSTAINABLE CONTROL. 2. ECOLOGICAL AND ECONOMIC BENEFITS ACCRUE PERMANENTLY. 3. ABLE TO REACH AREAS THAT ARE INFEASIBLE BY MECHANICAL AND CHEMICAL CONTROLS. 	<ol style="list-style-type: none"> 1. REQUIRES SIGNIFICANT INVESTMENT IN RESEARCH AND MONITORING. 2. IRREVERSIBLE ONCE ESTABLISHED. 3. POSSIBLE NON-TARGET EFFECTS.

2.0 AFFECTED ENVIRONMENT AND IMPACT ASSESSMENT

This section presents an overview of baseline, biological, physical, socio-economic, and cultural environments that the project may affect and the assessment of potential impacts and mitigation measures, when negative impacts are anticipated.

2.1 Biological Environment

Field observations in Costa Rica of *E. chrysippe* and quarantine studies in Hawai'i strongly indicate that the proposed release of this biocontrol agent will not have any undesirable, negative, non-target effects on the biological environment of the Hawaiian Islands. Environmental impacts associated with the No Action Alternative of not issuing permits for release of *E. chrysippe* are those resulting from continued damage to the environment caused by miconia and those caused by other methods employed to control miconia infestations, both of which are now occurring. The proposed release and establishment of *E. chrysippe* is intended to reduce these impacts. In the absence of effective natural enemies of miconia, possible negative environmental impacts caused by repeated use of herbicides to control infestations add to the existing negative impacts caused by the displacement of desirable plants by the pest. Use of chemical herbicides to control miconia would be reduced if the proposed biological control agent becomes permanently established in the environment and is able to sufficiently impact population densities of miconia. The probability of establishment of the biocontrol and degree of control can only be determined after the proposed releases are made, but the outcome would fall between no effect (if the biological control agent fails to establish) and widespread suppression of the target species. There is risk for a biological agent to affect non-target species; however, rigorous tests on the host range can minimize this risk.

2.1.1 Direct Effect on the Target Species

The direct effect on the target species is the reduction in fitness and abundance through herbivory. Feeding by *Euselasia chrysippe* will reduce the fitness of miconia wherever the insect and the plants interact. The degree of control will likely vary by location.

2.1.2 Direct Effect on Non-Target Species

Extensive studies have demonstrated that *E. chrysippe* overwhelmingly prefers feeding and that larvae only survive on *Miconia calvescens* and a few close relatives within the tribe Miconieae (see Figure 5). No Melastomataceae are native to Hawai‘i, and nine of the 15 species naturalized in Hawai‘i have been declared state noxious weeds (Medeiros et al. 1997).

2.1.3 Indirect Effect on Flora

If the biocontrol release and establishment is successful, the sites previously occupied by miconia will become available to other plants. In less-degraded wet forest, native plants may benefit from the natural resources previously occupied by miconia. In more degraded plant communities, the target species are more likely to be replaced by nearby non-native species. These impacts are likely to progress slowly over a period of several years, which will allow time for appropriate management responses.

2.1.4 Indirect Effect on Fauna

Native fauna is expected to benefit from the successful control of miconia, which poses a threat to native forests. Although miconia is a bird-dispersed species, there is no evidence that native birds use this species as a food source. A small number of native fauna might be indirectly affected by the proposed action if the target weeds are used for shelter; however, the effect is expected to be insignificant, as the native fauna that adapted to use the introduced species would be generalists, capable of using alternative plant species once the target species is removed.

2.1.5 Uncertainty of Non-Target Effect

There is no action that has consequences that are completely predictable, and thus there is uncertainty associated with any proposed action, including this one. This uncertainty must be weighed against potential benefits of an action and the adverse impacts that are likely to continue to occur if an action is not undertaken. There is a consensus among biologists in Hawai‘i that miconia has a detrimental effect on native forests and that the severity of ecosystem damage is continually increasing. Uncertainty in the case of the proposed biocontrol release has been significantly reduced through decades of rigorous testing of the biocontrol agent. When weighed against the certainty of continued threat miconia poses to Hawaiian forests and resources, the level of uncertainty associated with the proposed action is found to be acceptable.

2.2 Physical Environment

The following assesses potential impacts on the elements of the physical environment that may be affected by the proposed action.

2.2.1 Climate

The proposed action will have no to very little effect on long-term or regional climate patterns. The proposed action may affect microclimates that are influenced by the invasive vegetation. Successful control of the invasive weeds is expected to enable the native vegetation to recolonize the invaded area, which will reduce the negative effect of the invasive weeds on the microclimates and should be beneficial to native biota.

2.2.2 Hydrology

Although the proposed action will not directly affect hydrology, the successful suppression of miconia has the potential to indirectly affect hydrology in a positive direction. A study by Giambelluca et al. (2010) postulated that miconia, with its large leaves that both shade out other species and produce large drops off their tips, has the potential to impact hydrology by increasing erosion and flooding. This plausible hypothesis remains to be thoroughly tested. In addition, miconia's shallow root system can cause erosion and landslides when the trees are taken down by heavy rainfall. Once miconia is suppressed, it is expected that hydrological function of the invaded forest would improve due to decreased erosion and landslides.

2.2.3 Soils

The proposed action of suppressing miconia through the release of a natural enemy of this species is expected to decrease miconia's negative impacts on soil processes, including erosion and landslides.

2.2.4 Wildland Fires

The proposed action is expected to have negligible effects on wildland fire. Although the biocontrol has the potential to create small amounts of dead biomass of miconia, the range of this species is in mesic to wet forests, where the risk of wildland fire is low.

2.3 Cultural Resources

ASM Affiliates Hawai'i, a Heritage and Cultural Resource Management firm, prepared a Cultural Impact Assessment (CIA) for the proposed action, summarized below and attached as Appendix B. The CIA was prepared in adherence with the Office of Environmental Quality Control (OEQC) *Guidelines for Assessing Cultural Impacts*, adopted by the Environmental Council, State of Hawai'i.

In general, a CIA is intended to inform environmental studies that are conducted in compliance with HRS Chapter 343. The purpose of a CIA is to gather information about the practices and beliefs of a cultural or ethnic group or groups that may be affected by the actions subject to HRS Chapter 343.

The primary focus of the CIA is to elucidate the cultural and historical context of miconia in Hawai'i. It includes a cultural-historical context of the settlement of the Hawaiian Islands by early Polynesian settlers and the transformation of their beliefs and practices associated with the land following western contact, an overview of the history of biocontrol in Hawai'i, and a discussion of the introduction of miconia to the Hawaiian Islands. It also includes a discussion of potential impacts as well as appropriate actions and strategies to mitigate those impacts.

2.3.1 Location

Normally, a CIA assesses the potential impacts on cultural practices and features within a geographically defined "project area," which is usually defined by an established Tax Map Key number or numbers. However, CIAs conducted for biocontrol projects differ in that the assessment must consider statewide impacts with an emphasis on those areas where the target species is most abundant.

2.3.2 Consultation

The goal of conducting interviews for the CIA was to identify potential cultural resources, practices, and beliefs associated with miconia and its invaded habitat. Gathering input from community members with genealogical ties and/or long-standing residency or relationships to the anticipated areas of impact or target species is vital to the process of assessing potential impacts to resources, cultural practices, and belief systems.

In an effort to identify individuals knowledgeable about traditional cultural practices and/or uses associated with miconia or the habitat in which it thrives, a public notice was submitted to the Office of Hawaiian Affairs (OHA) for publication in their monthly newspaper, Ka Wai Ola, and was published in the May 2019 issue. No responses were received as a result of the Ka Wai Ola publication, so 45 individuals were contacted directly. These individuals were selected because they were either recognized cultural practitioners, plant experts, or Native Hawaiian organizations who utilize Hawai‘i’s forest resources for cultural purposes or were believed to have cultural knowledge about the target species or other plants found within the target species habitat. Of the forty-five individuals contacted, twenty individuals responded to our request with either brief comments, referrals, or accepting the interview request. The names and affiliations of these twenty individuals are listed in Table 3 below. Of the twenty respondents, ASM staff successfully conducted interviews with nine individuals (see summaries in Table 3). A complete list of all people contacted for consultation is available upon request.

The interviewees were asked a series of questions regarding their background and experience and their knowledge of the target species and its habitat. Additional questions focused on any known cultural uses, traditions, or beliefs associated with miconia. The interviewees were also asked their opinions on the cultural appropriateness of using biocontrol control agents and any potential cultural impacts that could result from the use of biocontrol control, as well as any recommendations to mitigate any identified cultural impacts.

Table 3. Persons contacted for consultation.

<i>Name</i>	<i>Affiliation, Island</i>	<i>Initial Contact Date</i>	<i>Comments</i>
Shalan Crysdale	The Nature Conservancy, Ka‘ū Preserve, Hawai‘i	3/6/2019	See summary in Appendix B
John Repogle	Retired from The Nature Conservancy, Ka‘ū Preserve, Hawai‘i	3/6/2019	See summary in Appendix B
Nohealani Ka‘awa	The Nature Conservancy, Ka‘ū Preserve, Hawai‘i	3/6/2019	See summary in Appendix B
Arthur Medeiros	Auwahi Forest Restoration Project, Maui	3/7/2019	Responded via email on March 11, 2019, stating “Thank you for your valuable work supporting this essential action to attempt to slow the loss of Hawaiian biota.”
Jen Lawson	Waikōloa Dry Forest Initiative, Hawai‘i	4/3/2019	See summary in Appendix B
Robert Yagi	Waikōloa Dry Forest Initiative, Hawai‘i	4/3/2019	See summary in Appendix B
Wilds Brawner	Ho‘ola Ka Manaka‘ā at Ka‘ūpūlehu, Hawai‘i	4/9/2019	See summary in Appendix B
Sam ‘Ohu Gon III	The Nature Conservancy, O‘ahu	4/22/2019	Responded to interview request but was unable to provide input on this project.
Mike DeMotta	National Tropical Botanical Gardens, Kaula‘i	4/22/2019	See summary in Appendix B
Wili Garnett	Cultural practitioner, Moloka‘i	5/7/2019	Responded via email, but response did not include comments about <i>Miconia calvescens</i> biocontrol.
Emily Grave	Laukahi Network, O‘ahu	5/7/2019	Responded via email stating that she was not aware of cultural uses of this plant.

<i>Name</i>	<i>Affiliation, Island</i>	<i>Initial Contact Date</i>	<i>Comments</i>
Kim Starr	Starr Environmental, Maui	5/9/2019	See summary in Appendix B
Forest Starr	Starr Environmental, Maui	5/9/2019	See summary in Appendix B
Manaiakalani Kalua	Cultural practitioner, Hawai'i	5/30/2019	See summary in Appendix B
Robert Keano Ka'upu	Cultural practitioner, O'ahu	6/16/2019	Responded via phone that he has been interested in learning about the cultural uses of <i>wiliwili</i> but was not aware of any uses or of anyone else who used this wood for cultural purposes.
Hinaleimoana Wong-Kalu	Cultural practitioner, O'ahu	7/16/2019	Responded to interview request but was unable to secure an interview.
Pelehonuamea Harman	Cultural practitioner, Hawai'i	7/31/2019	Referred ASM staff to Dennis Kana'e Keawe
Dennis Kana'e Keawe	Cultural practitioner, Hawai'i	8/12/2019	See summary in Appendix B
Iliahi Anthony	Cultural practitioner, Hawai'i	8/30/2019	See summary in Appendix B
Talia Portner	Honolulu Botanical Gardens, O'ahu	6/3/2019	Responded to interview request but was unable to secure an interview.

2.3.2 Summary of Findings, Identification of Cultural Impacts, and Proposed Mitigative Measures

There is no evidence to suggest that miconia is important in any ethnic groups' cultural history, identity, cultural practices, or beliefs, nor does it meet the significance criteria outlined in the CIA. On the other hand, the mesic to wet forests this species invades could be considered significant as a traditional cultural property under Criterion E, since they are home to many culturally important indigenous and endemic taxa which are still used in Hawaiian cultural practices.

Based on background research and the interviews conducted for the CIA, it is the assessment of this study that the release of the proposed biocontrol agent, *Euselasia chrysippe*, will not result in impacts to any valued cultural, historical, or natural resources. On the other hand, if no action is taken to further reduce remaining populations of miconia from claiming more of Hawai'i's mesic to wet forest habitat, impacts to this valuable habitat would be anticipated.

2.4 Socio-economic Environment

The action is not expected to negatively affect the socio-economic environment. The successful control of miconia will benefit the environment and may release the effort and resources expended by using chemical and mechanical control for other purposes.

2.4.1 Population

The proposed action is expected to have negligible effect on population. Miconia has no economic value and the locations of the biocontrol release are uninhabited natural areas.

2.4.2 Existing Land Use

The proposed locations of the biocontrol release will largely consist of conservation areas that are mainly used for watershed protection, conservation of native flora and fauna, and public recreation. The successful control of miconia is expected to benefit these intended uses by improving the integrity of the native forest, which is crucial to the conservation of biodiversity as well as recreational and watershed value.

2.4.3 Recreation

Recreational use of the affected area is expected to benefit from the proposed action. The target species is a noxious weed that can degrade the recreational value of natural areas. Therefore, the control of miconia is expected to benefit recreation.

2.4.4 Scenic and Visual Resources

The proposed action is expected to have negligible effect on scenic and visual resources. The effect of successful biocontrol will take place gradually over the span of years to decades. The change in scenic or visual value of the invaded area, therefore, will not dramatically change in a short time period. The areas of infestation are expected to be replaced by other vegetation and have minimal visual change at landscape level. The proposed action will have insignificant effect in scenic value and visual resources.

2.4.5 Household Nuisance

Euselasia chrysippe is expected to remain localized on and near miconia, which grows mainly in uninhabited forested areas. Because of this, it is unlikely that *E. chrysippe* would become a nuisance to residents and visitors.

2.5 Consistency with Government Plans and Policies

The proposed action is consistent with all government plans and policies, especially those that call for conservation of natural resources.

2.5.1 Hawai'i State Plan

The *Hawai'i State Plan* was adopted in 1978. It was revised in 1986 and again in 1991 (HRS Chapter 226, as amended). The Plan establishes a set of goals, objectives, and policies that are meant to guide the State's long-term growth and development activities. The proposed project is consistent with State goals and objectives that call for increases in employment, income and job choices, and a growing, diversified economic base extending to the neighbor islands.

HRS Chapter 226-4 sets forth goals associated with the *Hawai'i State Plan*:

1. A strong, viable economy characterized by stability, diversity, and growth, that enables the fulfillment of the needs and expectations of Hawai'i's present and future generations.
2. A desired physical environment, characterized by beauty, cleanliness, quiet, stable natural systems, and uniqueness, that enhances the mental and physical well-being of the people.
3. Physical, social, and economic well-being, for individuals and families in Hawai'i, that nourishes a sense of community responsibility, of caring, and of participation in community life.

The aspects of the plan most pertinent to the proposed classification are the following:

HRS Chapter 226-11 *Objectives and policies for the physical environment—land-based, shoreline, and marine resources*. Planning for the State's physical environment with regard to land-based, shoreline, and marine resources shall be directed towards achievement of prudent use of Hawai'i's land-based, shoreline, and marine resources and effective protection of Hawai'i's unique and fragile environmental resources. To achieve the land-based, shoreline, and marine resource objectives, it shall be the policy of the State to:

- Exercise an overall conservation ethic in the use of Hawai'i's natural resources.
- Ensure compatibility between land-based and water-based activities and natural resources and ecological systems.
- Take into account the physical attributes of areas when planning and designing activities and facilities.
- Manage natural resources and environs to encourage their beneficial and multiple uses without generating costly or irreparable environmental damage.
- Consider multiple uses in watershed areas, provided such uses do not detrimentally affect water quality and recharge functions.
- Encourage the protection of rare or endangered plant and animal species and habitats native to Hawai'i.
- Pursue compatible relationships among activities, facilities, and natural resources.
- Promote increased accessibility and prudent use of inland and shoreline areas for public recreational, educational, and scientific purposes.

The proposed action is consistent with the goals, objectives and policies of the *Hawai'i State Plan*. Specifically, it will encourage the protection of rare or endangered plant and animal species and habitats through the control of the invasive weeds.

2.5.2 Hawai'i County General Plan

The County of Hawai'i's General Plan is the policy document expressing the broad goals and policies for the long-range development of the Island of Hawai'i. The plan was adopted by ordinance in 1989 and amended in 2005. The chapter on Natural Resources and Shoreline is the most relevant to the proposed project and include the following goals and policies:

Natural Resources and Shoreline – Goals:

- Protect and conserve the natural resources from undue exploitation, encroachment, and damage.
- Protect rare or endangered species and habitats native to Hawai'i.
- Protect and effectively manage Hawai'i's open space, watersheds, shoreline, and natural areas.

Natural Resources and Shoreline – Policies:

- Coordinate programs to protect natural resources with other government agencies.
- Encourage public and private agencies to manage the natural resources in a manner that avoids or minimizes adverse effects on the environment and depletion of energy and natural resources to the fullest extent.
- Encourage an overall conservation ethic in the use of Hawai'i's resources by protecting, preserving, and conserving the critical and significant natural resources of the County of Hawai'i.
- Encourage the protection of watersheds, forest, brush, and grassland from destructive agents and uses.
- Work with the appropriate State and federal agencies, as well as private landowners, to establish a program to manage and protect identified watersheds.

The proposed action would help to protect and conserve native species and habitats and is consistent with the policies for encouraging conservation ethics, watershed protection, and interagency coordination for the management of natural resources.

2.5.3 Kaua'i County General Plan

The General Plan for the County of Kaua'i is the document expressing the broad goals and policies for the long-range development and resource management for the Island of Kaua'i. First adopted in 1971, the Plan was revised in 1984 and 2000. The General Plan is thematically arranged, discussing issues including management of public facilities, preservation of rural character, and caring for land, water, and culture, among others. The General Plan also includes a chapter entitled "*Vision for Kaua'i 2020*", which states:

In 2020, management of development, agriculture, and other activities on Kaua'i is based on the related principles of ahupua'a and watershed. Land is developed and used in ways that conserve natural streams and streamflows; conserve habitat for native species of plants and animals, both on land and in the ocean; and preserve sandy beaches and coral reefs. Best management practices used by government agencies, agricultural companies, other businesses, and individuals are effective in avoiding increases in floodwaters downstream; preventing beach loss; and minimizing pollution of ocean waters. All of Kaua'i's waters are fishable and swimmable.

The proposed action is consistent with the vision of the Kaua'i County General Plan, specifically the successful control of miconia, and would contribute to conserving habitat for native plants and animals.

2.5.4 Maui County General Plan

The Maui County General Plan is a long-term, comprehensive blueprint for the physical, economic, environmental development, and cultural identity of the county. The plan, adopted on March 24, 2010, provides broad goals, objectives, policies, and implementing actions that portray the desired direction of the County's future. Furthermore, this Countywide Policy Plan provides the policy framework for the development of the Maui Island Plan and nine Community Plans. The Countywide Policy Plan is the outgrowth of and includes the elements of the earlier General Plans of 1980 and 1990. The portions of the plan pertaining to the Protection of the Natural Environment are the most relevant to the proposed project and include the following goals and objectives.

Goals: Maui County's natural environment and distinctive open spaces will be preserved, managed, and cared for in perpetuity.

Objective: Improve the opportunity to experience the natural beauty and native biodiversity of the islands for present and future generations. Policies to achieve the objective include the following:

- Perpetuate native Hawaiian biodiversity by preventing the introduction of invasive species, containing or eliminating existing noxious pests, and protecting critical habitat areas.
- Preserve and reestablish indigenous and endemic species' habitats and their connectivity.
- Restore and protect forests, wetlands, watersheds, and stream flows, and guard against wildfires, flooding, and erosion.
- Expand coordination with the State and nonprofit agencies and their volunteers to reduce invasive species, replant indigenous species, and identify critical habitat.

The proposed action is consistent with the goals, objectives, and policies of the Maui County General Plan to protect the natural environment through the control of miconia in order to conserve and restore native ecosystems and watersheds.

2.5.5 City and County of Honolulu General Plan

The City and County of Honolulu General Plan (1992 edition, amended in 2002) is a statement of objectives and policies that sets forth the long-range goals of O'ahu's residents and the policies to achieve them. It is the focal point of a comprehensive planning process that addresses the physical, social, economic, and environmental concerns affecting the City and County of Honolulu.

The policies most relevant to the proposed action are in the Natural Environment section:

- Seek the restoration of environmentally damaged areas and natural resources.
- Protect plants, birds, and other animals that are unique to the State of Hawai'i and the Island of O'ahu.
- Increase public awareness and appreciation of O'ahu's land, air, and water resources.

The proposed action is consistent with the objectives and policies of the plan concerning the natural environment. Specifically, the proposed action would contribute to the restoration of the natural environment and protection of native plants and animals through the control of the invasive weeds.

2.5.6 Hawai'i's State Wildlife Action Plan

The 2015 edition of Hawai'i's State Wildlife Action Plan (SWAP) details the strategy and plans of the DLNR and its partners to address the conservation needs of more than 10,000 species native to Hawai'i. This document is an update to the Comprehensive Wildlife Conservation Strategy 2005 plan and outlines a statewide strategy for conserving native wildlife species.

The SWAP identified the major threats to Hawai‘i’s native wildlife, which include the following:

- Loss and degradation of habitat resulting from human development, alteration of hydrology, wildfire, recreational overuse, natural disaster, and other factors
- Invasive species (e.g., habitat-modifiers, including weeds, ungulates, algae and corals, predators, competitors, disease carriers, and disease)
- Ecological consequences of climate change
- Limited information and insufficient management of information
- Uneven compliance with existing conservation laws, rules, and regulations
- Overharvesting and excessive extractive use
- Management constraints
- Inadequate funding

The SWAP sets goals to guide conservation efforts across the state to ensure protection of Hawai‘i’s Species of Greatest Conservation Need and the diverse habitats that support them. The following seven objectives have been identified as the elements necessary for the long-term conservation of Hawai‘i’s native wildlife:

- Maintain, protect, manage, and restore native species and habitats in sufficient quantity and quality to allow native species to thrive
- Combat invasive species through a three-tiered approach combining prevention and interdiction, early detection and rapid response, and ongoing control or eradication
- Develop and implement programs to obtain, manage, and disseminate information needed to guide conservation management and recovery programs
- Strengthen existing partnerships and create new partnerships and cooperative efforts
- Expand and strengthen outreach and education to improve understanding of our native wildlife resources among the people of Hawai‘i
- Support policy changes aimed at improving and protecting native species and habitats
- Enhance funding opportunities to implement needed conservation actions

Miconia is an invasive species that poses threats to the native ecosystem. The proposed project will address the threat of invasive species and provide a tool for resource managers to combat invasive species that would otherwise not be feasible due to management constraints and inadequate funding. The proposed project is consistent with the goals of SWAP because it provides a cost-effective tool for resource managers to combat *miconia*, one of Hawai‘i’s worst weeds, which will assist with maintaining, protecting, managing, and restoring native species and habitats.

2.5.7 Hawai‘i Interagency Biosecurity Plan

The 2017–2027 Hawai‘i Interagency Biosecurity Plan (HIBP) is the State’s first multi-agency, comprehensive biosecurity plan that includes coordinated strategies to protect Hawai‘i’s agriculture, environment, economy, and health from invasive species. The HIBP identifies gaps in the current biosecurity system, which consists of a network of state agencies and partners working within the areas of pre-border, border, and post-border management, as well as public engagement. The plan creates a shared path forward to address these gaps through 147 actions.

This project is consistent with the actions identified in the HIBP related to biological control, which is an essential tool to address widespread invasive species that are difficult to control through conventional methods. Those actions include the following:

- Increase funding and staffing for Hawai‘i’s biological control programs
- Hire a biological control program coordinator, doubling the size of HDOA’s Biological Control Section Staff
- Build state-of-the-art biocontrol facilities equipped to develop effective biocontrol for high-impact target species

2.5.8 Hawai‘i Forest Action Plan

The DLNR DOFAW is the lead agency in the development of the 2016 Hawai‘i Forest Action Plan (FAP), which covers all forest land ownerships (state, private, and federal) and enables DOFAW to continue to seek funding for landscape-scale management and to integrate the many programs the division administers through one planning document. The plan identifies nine priority areas for Hawai‘i’s forests, including the following:

- Water quality and quantity
- Forest health, invasive species, insects, and disease
- Wildfire
- Urban and community forestry
- Climate change and sea-level rise
- Conservation of native biodiversity
- Hunting
- Nature-based recreation
- Tourism

Miconia is an invasive plant species that poses a threat to water quality and quantity and conservation of native biodiversity. The FAP identifies plants that are non-native, invasive, and habitat-modifying as one of the current, most pervasive threats to native biodiversity in Hawai‘i, and discusses the negative impacts that invasive plants can have on the hydrological processes of forested watersheds.

The proposed project is consistent with the goals of the FAP, which supports and recommends a substantial increase in resources for biocontrol as a necessary tool in invasive species management and identifies biocontrol as one of the management approaches in the FAP.

3.0 DETERMINATION

Section 11-200-12 of the HAR sets forth the criteria by which the significance of environmental impacts shall be evaluated. The following discussion restates these criteria individually and evaluates the project’s relation to each.

1. *The project will not involve an irrevocable commitment or loss or destruction of any natural or cultural resources.*

The proposed action deals with specific interactions between the biological control agent and the target weed and is not expected to involve irrevocable commitment or loss or destruction of any natural or cultural resources.

2. *The project will not curtail the range of beneficial uses of the environment.*

The proposed action involves specific interactions between the biological control agent and the target weed and is not expected to curtail any beneficial uses of the environment.

3. *The project will not conflict with the State's long-term environmental policies.*

The proposed action is expected to benefit the environment by reducing the negative impact caused by the target weeds. This is in line with the State's long-term environmental policies.

4. *The project will not substantially affect the economic or social welfare of the community or State.*

The proposed action involves specific interactions between the biological control agent and the targeted noxious weed species and is not expected to affect the economic or social welfare of the community or State.

5. *The project does not substantially affect public health in any detrimental way.*

The proposed action involves specific interactions between the biological control agent and the target weed and will not impact public health.

6. *The project will not involve substantial secondary impacts, such as population changes or effects on public facilities.*

The proposed action involves specific interactions between the biological control agent and the target weed and is not expected to cause substantial secondary impacts.

7. *The project will not involve a substantial degradation of environmental quality.*

The proposed action deals with specific interactions between the biological control agent and the target weed and is expected to improve environmental quality by reducing the negative impacts caused by miconia to the environment.

8. *The project will not substantially affect any rare, threatened, or endangered species of flora or fauna or habitat.*

The proposed action is expected to benefit many rare, threatened, or endangered species of flora and fauna by reducing the negative impact caused by miconia on the biological environment.

9. *The project is not one which is individually limited but cumulatively may have considerable effect upon the environment or involves a commitment for larger actions.*

The proposed action does not involve a commitment for larger actions, and the cumulative effect is expected to be beneficial by reducing the overall impact of this invasive species on the environment.

10. *The project will not detrimentally affect air or water quality or ambient noise levels.*

The proposed action involves specific interactions between the biological control agent and the target weed species and is not expected to affect air or ambient noise levels. The suppression of this noxious weed species is expected to reduce erosion and runoff, leading to improved water quality.

11. *The project will not affect or will not likely be damaged by being located within an environmentally sensitive area such as floodplains, tsunami zones, erosion-prone areas, geologically hazardous lands, estuaries, fresh waters or coastal waters.*

The proposed action involves specific interactions between the biological control agent and the target weed and is subjected to damage by being located within an environmentally sensitive area.

12. *The project will not substantially affect scenic vistas or viewplanes identified in county or state plans or studies.*

The proposed action may temporarily reduce vegetation cover in affected natural areas but is not expected to substantially affect scenic vistas or viewplanes.

13. *The project will not require substantial energy consumption.*

The proposed action involves specific interactions between the biological control agent and the target weed species and will not require substantial energy consumption.

3.1 Conclusion

For the reasons above, and in consideration of comments received during early consultation and the draft environmental assessment review period, DLNR DOFAW, with support from HDOA, has concluded that the proposed project will not have a significant impact in the context of HRS Chapter 343 and Section 11-200-12 of the HAR, and has determined a Finding of No Significant Impact (FONSI).

4.0 DOCUMENT PREPARERS

This FEA was prepared for the State of Hawai‘i, DLNR DOFAW. Agencies, firms, and individuals involved included the following:

SWCA Environmental Consultants (Consultant):

Danielle Frohlich, Botanist/Invasive Species Specialist
 M.S., 2009, Botany/ Ecology, Evolution, and Conservation Biology, University of Hawai‘i at Mānoa
 B.A., 2000, Environmental, Population, and Organismic Biology, University of Colorado

DLNR DOFAW:

Robert Hauff, State Protection Forester
 Master of Forestry, 1998, Yale University
 B.A. International Relations, 1993, University of Washington

Cynthia King, Entomologist, Native Ecosystem Protection and Management, Hawai‘i Invertebrate Program
 M.S. Entomology, 2008, University of Hawai‘i at Mānoa
 B.S. Environmental Science Policy and Management, 2001, University of California, Berkeley

USDA Forest Service, Pacific Southwest Research Station:

Tracy Johnson, Research Entomologist, Institute of Pacific Islands Forestry
 Ph.D. Entomology, 1995, M.S. Entomology, 1990, North Carolina State University
 A.B. Biology, 1984, University of California, Berkeley

5.0 LITERATURE CITED

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APPENDIX A: COMMENTS RECEIVED DURING EARLY CONSULTATION

Thirteen letters of correspondence were received during the 30-day public comment period for release of *E. chrysippe* for the biological control of miconia.

ALAN M. ARAKAWA
Mayor



DAVID S. TAYLOR, P.E.
Director

GLADYS C. BAISA
Deputy Director

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793-2155
www.mauiwater.org

June 13, 2018

Department of Land and Natural Resources
Division of Forestry and Wildlife
1151 Punchbowl Street, Room 325
Honolulu HI 96713
Attn: Robert D. Hauff

RE: Early Consultation on Environmental Assessment for the state-wide release of the butterfly *Euselasia chrysippe* for biological control of the noxious weed *Miconia calvenscens*

Dear Mr. Hauff:

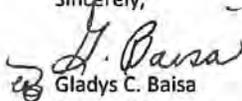
Thank you for the opportunity to provide comments on the above-stated project.

A sustainable future water supply depends on healthy watershed forests for adequate surface and groundwater recharge. DWS has granted over \$5 million in financial support to the Maui Invasive Species Committee (MISC) through our Watershed Protection Grants Program since 1999. Their main project directive has been to contain and eradicate several major invasive species. *Miconia calvenscens* is their primary ground and aerial operations target. Highly specialized herbicide ballistic technology (HBT) has been applied strategically since 2012 to protect the most remote watershed areas while minimizing the footprint on the landscape.

The remote possibility of undetected *Miconia calvenscens* population(s) cannot be ruled out, but we are proud of MISC's significant accomplishment to keep the species out of the West Maui Mountains Watershed. However, the fight continues on the windward side of the East Maui Mountains with core infestations in remote, lower-elevation, areas near Hana and Nahiku. Aggressive efforts are being implemented in response to control established populations and to disrupt incipient populations from moving further up the mountain. We welcome any supporting countermeasure. So, based on the promising test results against invasive melastomes in Hawai'i, we support the coordinated use of the *Euselasia chrysippe* (Lepidoptera: Riodinidae) butterfly for biological control of *Miconia calvenscens*, *Clidemia hirta*, and other closely related weeds.

Should you have any questions, please call Robert De Robles at our Water Resource and Planning Division at (808) 463-3113.

Sincerely,


Gladys C. Baisa
Deputy Director

"By Water All Things Find Life"

DAVID Y. IGE
GOVERNOR
STATE OF HAWAII

DOUGLAS S. CHIN
LT. GOVERNOR
STATE OF HAWAII



JOHIE M. K. MASAGATANI
CHAIRMAN
HAWAIIAN HOMES COMMISSION

WILLIAM J. AILA, JR.
DEPUTY TO THE CHAIRMAN

STATE OF HAWAII
DEPARTMENT OF HAWAIIAN HOME LANDS

150 BAKER AVENUE
HILO, HAWAII 96720

May 30, 2018

Robert Hauff, State Protection Forester
Department of Land and Natural Resources
Division of Forestry and Wildlife
1151 Punchbowl Street, Room 325
Honolulu, Hawai'i 96813

Dear Mr. Hauff:

Subject: Early Consultation on Environmental Assessment for
the state-wide release of the butterfly *Euselasia
chrysippe* for biological control of the noxious
weed *Miconia calvescens*.

The Department of Hawaiian Home Lands acknowledges receiving
the request for comments on the above-cited project. After
reviewing the materials submitted, due to its lack of proximity
to Hawaiian Home Lands, we do not anticipate any impacts to our
lands or beneficiaries from the project.

However, we highly encourage all agencies to consult with
Hawaiian Homestead community associations and other (N)ative
Hawaiian organizations when preparing environmental assessments
in order to better assess potential impacts to cultural and
natural resources, access and other rights of Native Hawaiians.

Mahalo for the opportunity to provide comments. If you have
any questions, please call Rae Ann Hyatt, at 620-9480 or contact
via email at raeann.p.hyatt@hawaii.gov.

Aloha,

M. Kaleo Manuel
Acting Planning Program Manager

Harry Kim
Mayor



Diane L. Ley
Director

Ron Whitmore
Deputy Director

County of Hawai'i

DEPARTMENT OF RESEARCH AND DEVELOPMENT

25 Aupuni Street, Room 1301 • Hilo, Hawai'i 96720-4252
(808) 961-8366 • Fax (808) 935-1205
E-mail: chrsdev@hawaiicounty.gov

June 22, 2018

TO: Robert D. Hauff, State Protection Forester, DLNR

FR: Diane Ley, Director, Department of Research and Development

RE: Early Consultation on Environmental Assessment for the state-wide release of the butterfly *Euselasia chrysippe* for biological control of the noxious weed *Miconia calvenscens*

Thank you for the opportunity to provide consultation on the Environmental Assessment for the state-wide release of the butterfly *Euselasia chrysippe* for biological control of the noxious weed *Miconia calvenscens*.

Miconia is an aggressive invasive species that readily encroaches upon public and private lands contributing to the shading out of native and non-native trees and undergrowth; thus, effectively disrupting healthy forests and landscape ecosystems and ultimately exposing soils to erosion. Extensive efforts and public expense were put forth to control this tree, with little success. Today, with the outbreak of Rapid Ohia Death, it is more important than ever that Hawaii's forests are protected from aggressive species as *Miconia*.

A successful biocontrol candidate, such as *Euselasia chrysippe*, would be a welcome tool to control the further spread of *Miconia* throughout the Island of Hawaii.

C: Harry Kim, Mayor

Hawai'i County is an Equal Opportunity Provider and Employer



University of Hawai'i, Manoa
 Pacific Cooperative Studies Unit
 3190 Maile Way, St. John 410, Honolulu, Hawai'i 96822
 E-mail dduffy@hawaii.edu Ph: (808) 956-8218 Fax: (808) 956-4710

MEMORANDUM

TO: Dr. R. Hauff, State Protection Forester
 Hawaii Department of Land and Natural Resources

FROM: David Duffy *L signing for David Duffy*
 PCSU Unit Leader/PI c/o Botany

RE: Environment Assessment of *Euselasia chrysippe* as a biological control agent
 against *Miconia calvescens*.

OANRP encourages the release of *Euselasia chrysippe* against *Miconia calvescens*, a serious potential threat but not yet present on lands that we manage on Oahu. It has not become a serious problem for us because it has been aggressively managed by the Oahu Invasive Species Committee (OISC) who have contained it to some few sites in the Koolau range. Were funds for OISC to lapse *Miconia* would be spread rapidly by birds.

This biological control agent is not very specific within the Melastomataceae, an added benefit. It will attack almost all other established melastomes in Hawaii with the exception of *Tibouchina* for which the state has already proposed the release of another biological control agent. Its minor feeding on *Psidium cattleianum* could possibly be of benefit in the control of that species. We are particularly supportive of the release of this biocontrol agent because of its potential to damage *Clidemia hirta* which is a significant weed in many areas managed by OANRP.

OANRP does not have *Miconia calvescens* on lands that it manages. If we can assist in other way, please us know.



Mr. Robert Hauff
 Department of Land and Natural Resources
 Division of Forestry and Wildlife
 1151 Punchbowl St. Rm 325
 Honolulu, HI 96813

June 21, 2018

Dear Mr. Hauff,

The O'ahu Invasive Species Committee (OISC) supports the release of a natural enemy to control the growth and spread of miconia (*Miconia calvescens*). Biocontrol is an effective tool to reduce populations of invasive plants that have already become too widespread to eradicate or suppress with surveys, hand-pulling and herbicides.

Biocontrol will be an enormous help to management efforts on Hawai'i Island and Maui where miconia is very widespread. OISC has been controlling miconia on O'ahu since 2001 and we have been able to suppress the population enough that there were only 12 trees found over 13,000 acres surveyed in 2017. Although OISC intends to continue with its program until miconia is eradicated from O'ahu, it would be helpful to have the biocontrol released elsewhere in the state in the event we lose funding or are unable to keep up with our suppression program. We have been able to keep the number of mature trees to just 12 trees over 13,000 acres surveyed so we are optimistic that biocontrol will not be needed, however, it takes a full-time field crew using ground and helicopter surveys to achieve this. If we are not able to keep up the effort decades into the future, a miconia biocontrol will be a key component to protecting 'ōhi'a forests on O'ahu.

Miconia's large leaves allow it to flourish in dense shade intolerable to most other plants. It matures quickly and produces millions of bird-dispersed seeds. It is estimated that in 60 years, this species turned 60,000 acres of Tahitian forest into single species stands where nothing else can grow. To put that number in perspective, the Ko'olau Range watershed is approximately 100,000 acres. Once miconia takes over, understory plants cannot survive in the deep shade of its canopy and the forest floor becomes bare earth and more susceptible to erosion. Miconia is a particularly devastating invasive species and we are pleased to see that a biocontrol is finally ready for release. Mahalo for the opportunity to comment.

Regards,

Rachel Neville
 OISC Manager

743 Ulukahiki Street • Kailua, Hawaii 96734 • Ph: (808) 266-7994 Fax: (808) 266-7995
www.oahuisc.org

DAVID Y. IGE
GOVERNOR OF HAWAII



SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE
MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

June 21, 2018

State of Hawaii
Department of Land and Natural Resources
Division of Forestry & Wildlife
Attention: Mr. Robert Hauff, State Protection Forester via email: robert.d.hauff@hawaii.gov
1151 Punchbowl Street, Room 325
Honolulu, Hawaii 96813

Dear Mr. Hauff:

SUBJECT: Early Consultation on Environmental Assessment of the state-wide release of the butterfly *Euselasia chrysippe* for biological control of the noxious weed *Miconia calvescens*

Thank you for the opportunity to review and comment on the subject matter. The Department of Land and Natural Resources' (DLNR) Land Division distributed or made available a copy of your report pertaining to the subject matter to Land Division's Districts for their review and comments.

At this time, enclosed are comments from the Land Division's Oahu, Maui, Hawaii and Kauai Districts on the subject matter. Should you have any questions, please feel free to call Lydia Morikawa at 587-0410. Thank you.

Sincerely,

Russell Y. Tsuji
Land Administrator

Enclosure(s)
cc: Central Files

DAVID Y. IGE
GOVERNOR OF HAWAII



RECEIVED
LAND DIVISION

JUN 21 AM 10:53

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE
MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

May 25, 2018

MEMORANDUM

FROM
TO:

DLNR Agencies:

- Div. of Aquatic Resources
- Div. of Boating & Ocean Recreation
- Engineering Division
- Div. of Forestry & Wildlife
- Div. of State Parks
- Commission on Water Resource Management
- Office of Conservation & Coastal Lands
- Land Division – OLDO/HDLO/MDLO/KDLO
- Historic Preservation

TO

FROM: Russell Y. Tsuji, Land Administrator

SUBJECT: Early Consultation on Environmental Assessment of the state-wide release of the butterfly *Euselasia chrysippe* for biological control of the noxious weed *Miconia calvenscens*

LOCATION: State-wide

APPLICANT: Department of Land and Natural Resources, Division of Forestry and Wildlife

Transmitted for your review and comment is information on the above-referenced project. We would appreciate your comments by **June 22, 2018**.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Lydia Morikawa at 587-0410. Thank you.

- We have no objections.
- We have no comments.
- Comments are attached.

Signed:

Print Name: Wesley T. Matsunaga

Date: 6/7/18

Attachments
cc: Central Files



SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE
MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

May 25, 2018

MEMORANDUM

2018 MAY 31 A 10:44
RECEIVED
LAND DIVISION
HILO, HAWAII

2018 JUN -8 AM 10:57
RECEIVED
LAND DIVISION
DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

FROM:
TO:

DLNR Agencies:

- Div. of Aquatic Resources
- Div. of Boating & Ocean Recreation
- Engineering Division
- Div. of Forestry & Wildlife
- Div. of State Parks
- Commission on Water Resource Management
- Office of Conservation & Coastal Lands
- Land Division - OLDLO/HDLO/MDLO/KDLO
- Historic Preservation

TO:

FROM: Russell Y. Tsuji, Land Administrator
 SUBJECT: Early Consultation on Environmental Assessment of the state-wide release of the butterfly *Euselasia chrysippe* for biological control of the noxious weed *Miconia calvescens*
 LOCATION: State-wide
 APPLICANT: Department of Land and Natural Resources, Division of Forestry and Wildlife

Transmitted for your review and comment is information on the above-referenced project. We would appreciate your comments by **June 22, 2018.**

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Lydia Morikawa at 587-0410. Thank you.

- We have no objections.
- We have no comments.
- Comments are attached.

Signed: 

Print Name: GORDON C. HETT

Date: 6/5/18

Attachments
cc: Central Files



SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE
MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

May 25, 2018

MEMORANDUM

TO: **DLNR Agencies:**
 Div. of Aquatic Resources
 Div. of Boating & Ocean Recreation
 Engineering Division
 Div. of Forestry & Wildlife
 Div. of State Parks
 Commission on Water Resource Management
 Office of Conservation & Coastal Lands
 Land Division – OLDO/HDLO/MDLO/KDLO
 Historic Preservation

RECEIVED
LAND DIVISION
2018 JUN 15 AM 11:25
DEPARTMENT OF LAND AND NATURAL RESOURCES
STATE OF HAWAII

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Early Consultation on Environmental Assessment of the state-wide release of the butterfly *Euselasia chrysippe* for biological control of the noxious weed *Miconia calvenscens*
LOCATION: State-wide
APPLICANT: Department of Land and Natural Resources, Division of Forestry and Wildlife

Transmitted for your review and comment is information on the above-referenced project. We would appreciate your comments by **June 22, 2018**.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Lydia Morikawa at 587-0410. Thank you.

RECEIVED MAY 31 2018

- We have no objections.
- We have no comments.
- Comments are attached.

Signed: *[Signature]*

Print Name: Daniel Orullias

Date: 6/6/18

Attachments
cc: Central Files



SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE
MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

May 25, 2018

MEMORANDUM

2018 JUN -4 PM 1:14
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LAND DIVISION
DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

TO: **DLNR Agencies:**
 Div. of Aquatic Resources
 Div. of Boating & Ocean Recreation
 Engineering Division
 Div. of Forestry & Wildlife
 Div. of State Parks
 Commission on Water Resource Management
 Office of Conservation & Coastal Lands
 Land Division – OLDO/HDLO/MDLO/KDLO
 Historic Preservation

FROM: Russell Y. Tsuji, Land Administrator
 SUBJECT: Early Consultation on Environmental Assessment of the state-wide release of the butterfly *Euselasia chrysippe* for biological control of the noxious weed *Miconia calvescens*
 LOCATION: State-wide
 APPLICANT: Department of Land and Natural Resources, Division of Forestry and Wildlife

Transmitted for your review and comment is information on the above-referenced project. We would appreciate your comments by **June 22, 2018**.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Lydia Morikawa at 587-0410. Thank you.

- We have no objections.
- We have no comments.
- Comments are attached.

Signed: Darlene Bryant-Takamatsu
 Print Name: Darlene Bryant-Takamatsu
 Date: 6/4/18

Attachments
 cc: Central Files

R. Fenstemacher PhD
1386 Manu Mele Street
Kailua, Hawaii 96734
(808) 235-1813
hale underscore noa at yahoo dot com
21 June 2018

Mr. Hauff
State Protection Forester
Department of Land and Natural Resources
1151 Punchbowl Street, Room 325
Honolulu, Hawaii 96813

Dear Mr. Hauff:

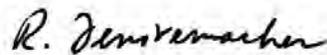
I have been hiking in Hawaii for a long time. The beauty and scientific wonder of Hawaii's unique native forests and the endemic flora they contain have captivated my imagination since the very start.

While out in the forest, I have seen with my own eyes how both miconia and willaiki live up to their reputation as truly terrible weeds that significantly damage the forest. With time, these weeds invade and take over large areas of previously intact native forest, almost exclusively as a monoculture, and choke out large swaths of the native plants that were growing there. These disastrous growth habits severely degrade unique natural habitat, which results in severely negative consequences to our watersheds and the native flora. Highly invasive weeds like these are an existential threat to Hawaii's unique native forests.

Because neither miconia nor willaiki appear to have any substantially redeeming benefits enough to counterbalance an overwhelming tendency to do harm, I support the planned release of biocontrol agents that specifically target miconia and willaiki. The environmental impact of successfully controlling highly invasive weeds like these, which pose an existential threat to Hawaii's unique flora, would be to encourage native forest recovery and enhancement of our island watersheds.

Mahalo for this opportunity to comment. Please keep me in the loop.

Me ke aloha,



R. Fenstemacher

Robert Hauff, State Protection Forester
 Department of Land and Natural Resources
 Kalanimoku Building, room 325, 1151 Punchbowl Street
 Honolulu, Hawaii 96813

18 June 2018

RE: Early Consultation on Environmental Assessment for *Pseudophilothrips Ichini* and *Euselasia chrysippe* for biological control of the noxious weeds *Schinus terebinthifolia* and *Miconia calvescens*, respectively.

Dear Sir:

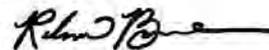
Aloha. The Hawaii Botanical Society would like to express support of biocontrol efforts for the invasive weeds, miconia (*Miconia calvescens*) and wililaiki (*Schinus terebinthifolia*).

Wililaiki overpowers mesic habitat and chokes out native plants that should grow there. It expands as a monoculture to impoverish one of Hawaii's most threatened and unique ecosystems. Release of targeted biocontrol agents specific to wililaiki should aid recovery of these vanishing native mesic forests, recovery of the associated unique biota from those areas, and enhance the watershed.

Likewise, biocontrol of miconia (*Miconia calvescens*) should also be very positive. Miconia has a track record of invading native wet forests as a monoculture, which degrades that ecosystem, too. Release of targeted biocontrol agents specific to miconia should aid recovery of these native forests and enhance this ecosystem's vital watershed function.

In summary, both of these species are noxious, invasive weeds, and releasing biocontrol specific for them would be good for Hawaii's forests and watershed.

Me ke aloha,



Rebecca Barone, President
 Hawaii Botanical Society
 c/o UH Botany
 3190 Maile way
 Honolulu, HI 96822

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
 PHONE: (808) 768-8000 • FAX: (808) 768-8041
 DEPT. WEB SITE: www.honolulu.gov • CITY WEB SITE: www.honolulu.gov

KIRK CALDWELL
 MAYOR



KATHY K. SOKUGAWA
 ACTING DIRECTOR

TIMOTHY F. T. HIU
 DEPUTY DIRECTOR

EUGENE H. TAKAHASHI
 DEPUTY DIRECTOR

June 14, 2018

2018/ELOG-1065(rns4)
 1602440

Mr. Robert Hauff
 State Protection Forester
 Division of Forestry and Wildlife
 State of Hawaii
 Department of Land and Natural Resources
 1151 Punchbowl Street, Room 325
 Honolulu, Hawaii 96813

Dear Mr. Hauff:

SUBJECT: State-wide Release of the Butterfly *Euselasia chrysippe* for
 Biological Control of the Noxious weed *Miconia calvescens*

We have reviewed your May 23, 2018 request for comments on proposed release of the butterfly *Euselasia chrysippe* for biological control of the noxious weed *Miconia calvescens*. The purpose of the release is to protect the "highly diverse native wet forest ecosystems."

We rely on the experts of the State Department of Land and Natural Resources to evaluate the ecological impacts of invasive species and the appropriate methods of controlling those invasive species, as informed by the best local, national, and international science.

Protection of Oahu's native wet forest ecosystems is consistent with City policies in the Oahu General Plan, the eight Development Plans and Sustainable Communities Plans, and the Oahu Watershed Management Plan. These Plans call for protection of natural resources, support of watershed infiltration and aquifer recharge, and reduction of sedimentation and toxic pollution of streams and coastal water caused by excessive storm water flows, all which will be supported by control of invasive species like *Miconia calvescens*.

Thank you for the opportunity to provide comments on this matter. Should you have any questions, please contact Lisa Imata of our staff at 768-8041.

Very truly yours,


 Eugene H. Takahashi
 Deputy Director

EHT:bkg

APPENDIX B: CULTURAL IMPACT ASSESSMENT FOR THE PROPOSED STATEWIDE RELEASE OF A BUTTERFLY (*EUSELASIA CHRYSIPPE*) AS BIOCONTROL FOR MICONIA (*MICONIA CALVESCENS*)

A Cultural Impact Assessment for the Proposed Statewide Release of a Butterfly (*Euselasia chrysippe*) as Biocontrol for Miconia (*Miconia calvescens*)

State of Hawai'i

FINAL



Prepared By:
Lokelani Brandt, M.A.

Prepared For:

Division of Forestry and
Wildlife, Department of Land
and Natural Resources
1151 Punchbowl Street, #325
Honolulu, HI 96813

October 2019



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**A Cultural Impact Assessment for the
Proposed Statewide Release of a Butterfly
(*Euselasia chrysippe*) as Biocontrol for Miconia
(*Miconia calvescens*)**

State of Hawai‘i



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1. INTRODUCTION

At the request of the Department of Land and Natural Resources (DLNR), Division of Forestry and Wildlife (DOFAW) and Hawai‘i Department of Agriculture (HDOA), referred to hereafter as the State of Hawai‘i, ASM Affiliates (ASM) has prepared this Cultural Impact Assessment (CIA) for the proposed statewide release of a butterfly (*Euselasia chrysippe*) as a biocontrol agent targeting *Miconia calvescens* (*Miconia*), a noxious fast-growing tree in the melastome family (Melastomataceae). Native to Central and South America, *Miconia* was introduced to the island of O‘ahu in 1961 as an ornamental plant and has become a major threat to Hawai‘i’s wet forest ecosystems (Medeiros et al. 1997). In 1991, the first efforts to control the spread of *Miconia* were initiated on Maui and in 1992, under Hawai‘i Administrative Rules, Chapter 68, it was officially listed as a noxious weed in the State of Hawai‘i (ibid.). In the State of Hawai‘i the term “invasive species” is any “alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health” (Invasive Species Advisory Committee 2006:1). By 1996, management programs to eradicate known populations and to control the spread of *Miconia* were initiated on the islands of Kaua‘i, O‘ahu, and Hawai‘i (Leary et al. 2013). While removal and containment through applied herbicides and mechanical action have been the primary means of control, the increased operational cost associated with the spread of *Miconia* into more remote regions compounded by averse policy has shifted management strategies (Leary et al. 2013; Medeiros et al. 1997). To enhance Hawai‘i’s *Miconia* management efforts, DOFAW is proposing to release a natural enemy, a small butterfly *E. chrysippe*.

The current CIA is intended to inform an Environmental Assessment (EA) conducted in compliance with Hawai‘i Revised Statutes (HRS) Chapter 343. This CIA was prepared in adherence with the Office of Environmental Quality Control (OEQC) *Guidelines for Assessing Cultural Impact*, adopted by the Environmental Council, State of Hawai‘i, on November 19, 1997. As stated in Act 50, which was proposed and passed as Hawai‘i State House of Representatives Bill No. 2895 and signed into law by the Governor on April 26, 2000, “environmental assessments . . . should identify and address effects on Hawaii’s culture, and traditional and customary rights . . . native Hawaiian culture plays a vital role in preserving and advancing the unique quality of life and the ‘aloha spirit’ in Hawai‘i. Articles IX and XII of the state constitution, other state laws, and the courts of the State impose on governmental agencies a duty to promote and protect cultural beliefs, practices, and resources of native Hawaiians as well as other ethnic groups.”

The primary focus of this report is on understanding the cultural and historical context of *Miconia* with respect to Hawai‘i’s host culture. This CIA is divided into four main sections, beginning with an introduction of the proposed action followed by a physical description of *Miconia* and the proposed biocontrol agent *E. chrysippe*. Part two of this report provides a cultural-historical context of the settlement of the Hawaiian Islands by early Polynesian settlers and the transformation of their beliefs and practices associated with the land following Western contact. An overview of the history of biocontrol in Hawai‘i is also provided, and this section concludes with a detailed discussion of the introduction of *Miconia* to the South Pacific and into the Hawaiian Islands; all of which combine to provide a geographical and cultural context in which to assess the proposed action. The results from the consultation process are then presented, along with a discussion of potential impacts as well as appropriate actions and strategies to mitigate any such impacts.

PROPOSED ACTION

DOFAW has been working cooperatively with HDOA and the United States Forest Service (USFS) to control the harmful impacts of certain widespread invasive plant or pest species through the use of biological control (also referred to as biocontrol). Classical biocontrol is the strategy of using an invasive species' natural enemies from its native range to reduce the impacts of the invasive species. Biocontrol projects typically require years of research and survey work to find potential candidates that are subjected to a host of tests. Only those candidates that are host-specific, meaning they can only complete their life cycle on their intended invasive species host and shown to only negatively impact the growth and abundance of the target invasive species are considered for release. Once testing has been successfully completed, agencies must comply with national and state regulatory requirements for the release of the biocontrol agent. As such, the proposed action involves the use of state lands and funds, which necessitates compliance with Hawai'i Revised Statutes (HRS) Chapter 343, also known as the Hawai'i Environmental Policy Act (HEPA). The proposing agencies are conducting an Environmental Assessment (EA) of the proposed action to evaluate potential environmental impacts and this CIA is an essential component of the EA to ensure compliance with HRS Chapter 343.

***MICONIA CALVESCENS* AND THE PROPOSED BIOLOGICAL CONTROL AGENT**

Native to the montane forests of Central and South America, *Miconia calvescens* (Melastomataceae) is a mid-story tree that measures 12 to 15 meters tall (Figure 1) (Leary et al. 2013). This tree has strongly trinerved, oblong-shaped leaves that can reach lengths of 80 centimeters (ibid.) (Figure 2). The species present in Hawai'i, French Polynesia, southern Mexico, and Costa Rica are of a bicolor form with a purple leaf underside and green left topside (see Figure 2) (Medeiros et al. 1997). This attractive characteristic has made it favorable amongst plant collectors and horticulturalists who value the plant's vibrant colors and velvety texture (Leary et al. 2013). Flowers and fruits of the *Miconia* plant grow on stalks and in clusters and the inflorescence can vary in color from white to pink (Figure 3). *Miconia* can flower/fruit between two to three times per year and in moist conditions, it grows rapidly and can reach maturity within four to five years and produces millions of propagules in a single reproductive cycle (ibid.). This tree produces small purple-colored edible fruits that measure approximately 5.9 millimeters in diameter that are dispersed, in a natural setting by both frugivorous bird populations and natural dispersal such as gravity and water (Figure 4). Seeds can also be spread by human when seed filled soil adheres to shoes, clothing, equipment or vehicles. Each fruit is packed with anywhere from 50-200 minuscule seeds with each fruit measuring about 0.5 millimeters in diameter, which unceasingly accumulates in the soil and can remain viable for more than sixteen years (ibid.). Once sunlight penetrates the soil, dormant *Miconia* seeds can quickly germinate. Germination of dormant seeds is exacerbated when herbicidal or natural (i.e. high winds or hurricanes) defoliation occurs allowing more sunlight to permeate the forest floor. Areas containing high densities of *Miconia* are known to shade out the understory vegetation and is presumed to promote surface soil erosion in steep terrains (ibid.).

To supplement existing biological control efforts, DOFAW and the United State Forest Service (USFS) is proposing a statewide release of *Euselasia chrysippe* (Lepidoptera: Riodinidae), a small golden colored butterfly native to Costa Rica whose caterpillars feed externally on leaves of several species of *Miconia*. Larvae hatch from large egg masses and continue to molt and move in unison to feeding sites, helping to optimize foraging and deter enemies. *E. chrysippe* has been evaluated as a potential biological control agent for *Miconia calvescens* through research in its native Costa Rica as well as in containment facilities in Hawai'i. Tests have been conducted on a variety of native and non-native plants to identify the butterfly larvae's potential host range. Results indicate that it does not have the capacity to impact native or economic plants in Hawai'i, and its host range is limited to *M. calvescens* and closely related weeds within the melastome family. Melastomes in Hawai'i includes *Miconia*, *Clidemia* (*Clidemia hirta*) and other invasive alien species, but no native plants.



Figure 1. Tall stands of *Miconia* growing along the Onomea scenic route in South Hilo, Hawai'i.



Figure 2. Trinerved and bicolor leaves of *Miconia*.

1. Introduction



Figure 3. White inflorescence growing on stalks at the top of a *Miconia* plant.



Figure 4. Mature dark purple fruits on the pink stalks of a *Miconia* plant.

2. BACKGROUND

The following section contains a cultural-historical context of the settlement of the Hawaiian Islands by early Polynesian settlers and the transformation of their beliefs and practices associated with the land following western contact. An overview of the history of biocontrol in Hawai'i is also provided and this section concludes with a detailed discussion of the introduction of *Miconia* to the Hawaiian Islands and its impacts to Hawai'i's wet forests.

GEOGRAPHICAL AND CULTURAL CONTEXT OF HAWAI'I

The Hawaiian Islands are located within the vast and remote Pacific Ocean, situated more than 3,200 kilometers (2,000 miles) from the nearest continent (Juvik and Juvik 1998). The 16,640 square kilometers (6,425 square miles) of land consists of eight main large volcanic islands, Hawai'i, Maui, Kaho'olawe, Lāna'i, Moloka'i, O'ahu, Kaua'i, and Ni'ihau and 124 smaller islands, reefs, and shoals (ibid.) (Figures 5 and 6). Due to its geographical placement in the middle of the vast Pacific Ocean, coupled with its diverse climatic conditions, the Hawaiian Islands boasts the highest levels of endemism in both native plants and animals, with over 10,000 species found nowhere else in the world (Cannarella 2010).

While the question of the timing of the first settlement of Hawai'i by Polynesians remains unanswered, several theories have been offered that derive from various sources of information (i.e., archaeological, genealogical, mythological, oral-historical, radiometric). However, none of these theories are today universally accepted. What is more widely accepted is the answer to the question of where Hawaiian populations came from and the transformations they went through on their way to establish a uniquely Hawaiian culture. More recently, with advances in palynology and radiocarbon dating techniques, Kirch (2011) and others (Athens et al. 2014; Wilmshurst et al. 2011) have convincingly argued that Polynesians arrived in the Hawaiian Islands, sometime between A.D. 1000 and A.D. 1200 and expanded rapidly thereafter (c.f., Kirch 2011). The initial migration to Hawai'i is believed to have occurred from Kahiki (the ancestral homelands of Hawaiian gods and people) with long distance voyages occurring fairly regularly through at least the 13th century. It has been generally reported that the sources of the early Hawaiian populations originated from the southern Marquesas Islands (Emory in Tatar 1982). In these early times, Hawai'i's inhabitants were primarily engaged in subsistence-level agriculture and fishing (Handy and Handy 1991). This was a period of great exploitation and environmental modification when early Hawaiian farmers developed new subsistence strategies by adapting their familiar patterns and traditional tools to their new environment (Kirch 1985; Pogue 1978). According to Fornander (1969), the Hawaiians brought from their homeland certain Polynesian customs and belief: the major gods Kāne, Kū, Lono, and Kanaloa; the *kapu* system of law and order; the *pu'uhonua* (places of refuge), the *'aumakua* concept, and the concept of *mana*.

For generations following initial settlement, communities were clustered along the watered, windward (*Ko'olau*) shores of the Hawaiian Islands. Along the *ko'olau* shores, streams flowed and rainfall was abundant, and agricultural production became established. The *ko'olau* region also offered sheltered bays from which deep-sea fisheries could be easily accessed, and nearshore fisheries, enriched by nutrients carried in the fresh water, could be maintained in fishponds and coastal waters. It was around these bays that clusters of houses where families lived could be found (McEldowney 1979). In these early times, Hawai'i's inhabitants were primarily engaged in subsistence-level agriculture and fishing (Handy and Handy 1972). Following the initial settlement period, areas with the richest natural resources became populated and perhaps crowded, and by about A.D. 1200, the population began expanding to the Kona (leeward side) and more remote regions of the island (Cordy 2000).

As the population continued to expand so did social stratification, which was accompanied by major socioeconomic changes and intensive land modification. Most of the ecologically favorable zones of the windward and coastal regions of all major islands were settled and the more marginal leeward areas were being developed. During this expansion period, additional migrations to Hawai'i occurred from Tahiti in the Society Islands. Rosendahl (1972) has proposed that settlement at this time was related to the seasonal, recurrent occupation in which coastal sites were occupied in the summer to exploit marine resources, and upland sites were occupied during the winter months, with a focus on agriculture. An increasing reliance on agricultural products may have caused a shift in social networks as well; as Hommon (1976) argues, kinship links between coastal settlements disintegrated as those links within the *mauka-makai* settlements expanded to accommodate the exchange of agricultural products for marine resources. This shift is believed to have resulted in the establishment of the *ahupua'a* system sometime during the A.D. 1400s (Kirch 1985), which added another component to an already well-stratified society. The implications of this model include a shift in residential patterns from seasonal, temporary occupation, to the permanent dispersed occupation of both coastal and upland areas.

2. Background

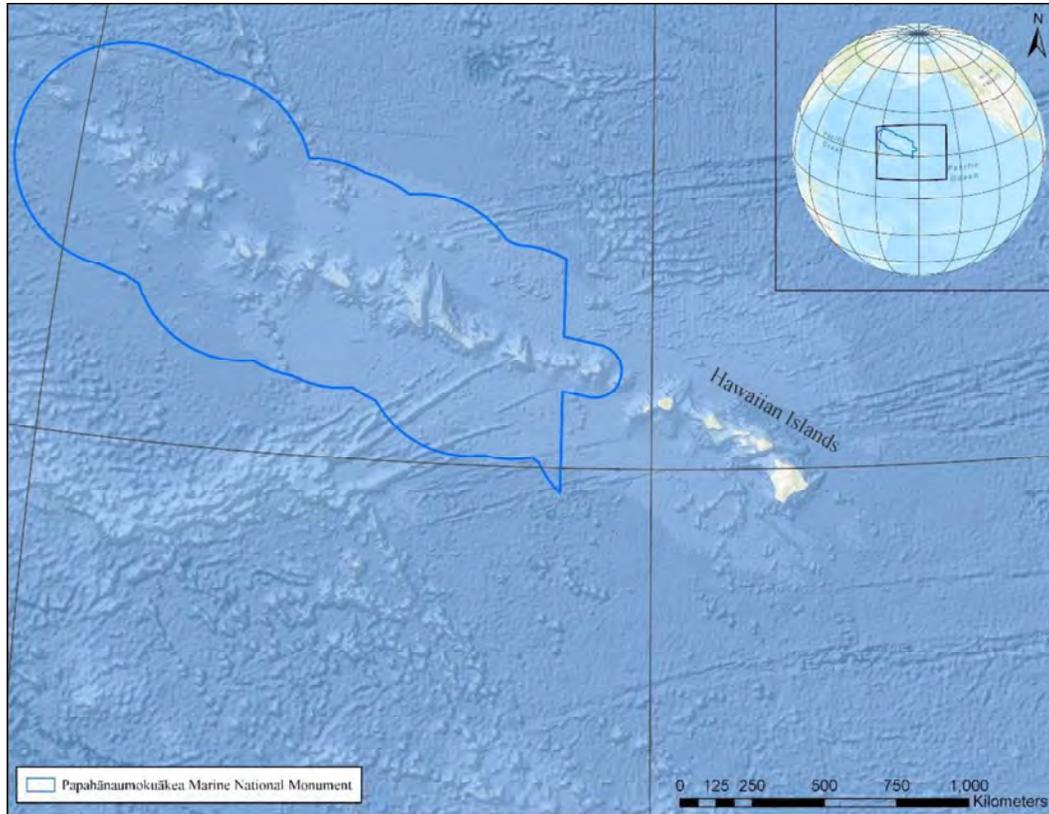


Figure 5. Map of the Hawaiian archipelago.

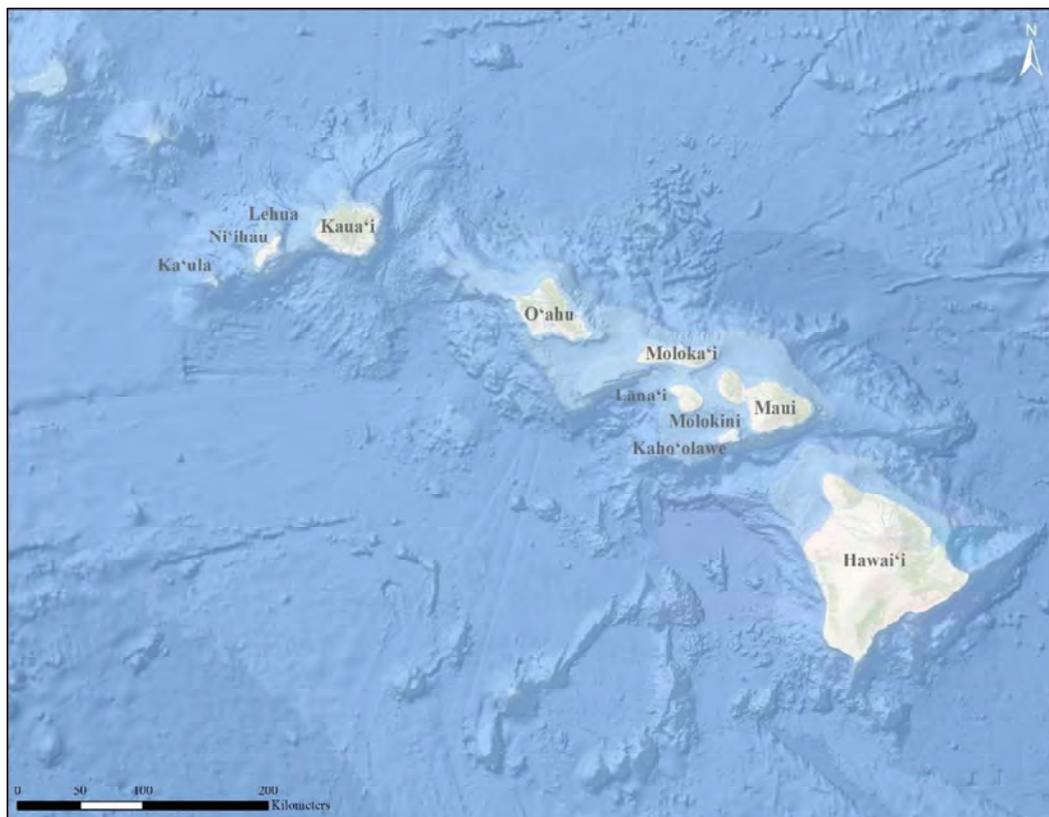


Figure 6. Map of the main Hawaiian Islands

Adding to an already highly-complex society was the development of the traditional land division system, which included the *ahupua'a*—the principle land division that functioned for both taxation purposes and furnished its residents with nearly all of the fundamental necessities. *Ahupua'a* are land divisions that typically incorporated all of the eco-zones from the mountains to the sea and for several hundred yards beyond the shore, assuring a diverse subsistence resource base (Hommon 1986). Although the *ahupua'a* land division typically incorporated all of the eco-zones, their size, shape, and resource base varied greatly (Cannelora 1974). In summarizing the types of ecozones that could be found in a given *ahupua'a*, Hawaiian scholar and historian, Samuel Kamakau writes:

Here are some names for [the zones of] the mountains—the *mauna* or *kuahiwi*. A mountain is called a *kuahiwi*, but *mauna* is the overall term for the whole mountain, and there are many names applied to one, according to its delineations ('*ano*). The part directly in back and in front of the summit proper is called the *kuamauna*, mountaintop; below the *kuamauna* is the *kuahea*, and makai of the *kuahea* is the *kuahiwi* proper. This is where small trees begin to grow; it is the *wao nahele*. Makai of this region the trees are tall, and this is the *wao lipo*. Makai of the *wao lipo* is the *wao 'eiwa*, and makai of that the *wao ma'ukele*. Makai of the *wao ma'ukele* is the *wao akua*, and makai of there is the *wao kanaka*, the area that people cultivate. Makai of the *wao kanaka* is the '*ama'u*, fern belt, and makai of the '*ama'u* the '*apa'a*, grasslands.

A solitary group of trees is a *moku la'au* (a “stand” of trees) or an *ulu la'au*, grove. Thickets that extend to the *kuahiwi* are *ulunahale*, wild growth. An area where *koa* trees suitable for canoes (*koa wa'a*) grow is a *wao koa* and mauka of there is a *wao la'au*, timber land. These are dry forest growths from the '*apa'a* up to the *kuahiwi*. The places that are “spongy” (*naele*) are found in the *wao ma'ukele*, the wet forest.

Makai of the '*apa'a* are the *pahe'e* [*pili* grass] and '*ilima* growths and makai of them the *kula*, open country, and the '*apoho* hollows near to the habitations of men. Then comes the *kahakai*, coast, the *kahaone*, sandy beach, and the *kalawa*, the curve of the seashore—right down to the '*ae kai*, the water's edge.

That is the way *ka po'e kahiko* [the ancient people] named the land from mountain peak to sea. (Kamakau 1976:8–9)

The *hoa'āina* (native tenants) and '*ohana* (families) who lived on the land had rights to the gather resources for subsistence and for tribute (Jokiel et al. 2011). As part of these rights, the *ahupua'a* residents were also required to supply resources and labor that supported the royal community of regional and/or island kingdoms. The *ahupua'a* became the equivalent of a local community, with its own social, economic, and political significance and served as the taxable land division during the annual *Makahiki* procession (Kelly 1956). During this annual procession, the highest chief of the land sent select members of his retinue to collect *ho'okupu* (tribute and offerings) in the form of goods from each *ahupua'a*. The *hoa'āina* (native tenants) who resided in the *ahupua'a* brought their share of *ho'okupu* to an *ahu* (altar) that was symbolically marked with the image of a *pua'a* (pig). *Ahupua'a* were ruled by *ali'i 'ai ahupua'a* or chiefs who controlled the *ahupua'a* resources; who, for the most part, had complete autonomy over this generally economically self-supporting piece of land (Malo 1951). *Ahupua'a* residents were not bound to the land nor were they considered the property of the *ali'i*. If the living conditions under a particular *ahupua'a* chief were deemed unsuitable, the residents could move freely in pursuit of more favorable conditions (Lam 1985). This structure safeguarded the well-being of the people and the overall productivity of the land, lest the chief loses the principle support and loyalty of his or her supporters. *Ahupua'a* lands were in turn, managed by an appointed *konohiki* or lesser chief-landlord, who oversaw and coordinated stewardship of an area's natural resources (ibid.). In some places, the *po'o lawai'a* (head fisherman) held the same responsibilities as the *konohiki* (Jokiel et al. 2011). When necessary, the *konohiki* took the liberty of implementing *kapu* (restrictions and prohibitions) to protect the *mana* of the area's resources from physical and spiritual depletion.

Many *ahupua'a* were further divided into smaller land units termed '*ili* and '*ili kūpono* (often shortened to '*ili kū*). '*Ili* were created for the convenience of the *ahupua'a* chief and served as the basic land unit to which the *hoa'āina*, retained for often long periods of time (Jokiel et al. 2011; MacKenzie 2015). As the '*ili* themselves were typically passed down in families, so too were the *kuleana* (responsibilities, privileges) that were associated with it. The right to use and cultivate '*ili* was maintained within the '*ohana*, regardless of any change in title of the *ahupua'a* chief (Handy and Handy 1991). Malo (1951), recorded several types of '*ili*: the '*ili pa'a*, a single intact parcel and the '*ili lele*, a discontinuous parcel dispersed across an area. Whether dispersed or wholly intact, the '*ili* land division required a cross section of available resources, and for the *hoa'āina*, this generally included access to agriculturally fertile lands and coastal fisheries. While much of the same resource principles applied to the '*ili kūpono*, these land units were

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politically independent of the *ahupua'a* chief. This designation was applied to specific areas containing resources that were highly valued by the ruling chiefs, such as fishponds (Handy and Handy 1991).

The *ali'i* who presided over the *ahupua'a* (*ali'i-ai-ahupua'a*), in turn, answered to an *ali'i ai moku* (chief who claimed the abundance of the entire *moku* or district) (Malo 1951). Although *moku* (districts) were comprised of multiple *ahupua'a*, they were considered geographical subdivisions with no explicit reference to rights in the land (Cannelora 1974). This form of district subdividing was integral to Hawaiian life and was the product of resource management planning that was strictly adhered to. As knowledge of place developed over the centuries and passed down intergenerationally by direct teaching and experience, detailed information of an area's natural cycles and resources were retained and well-understood. Decisions were based on generations worth of highly informed knowledge and sustainably adapted to meet the needs of a growing population. This highly-complex land management system mirrors the unique Hawaiian culture that coevolved with these islands.

Evolution of Hawaiian Land Stewardship Practices and the Impacts on Hawai'i's Native Forests

Their ancient and ingrained philosophy of life tied them to their environment and helped to maintain both natural, spiritual, and social order. In describing the intimate relationship that exists between Hawaiians and *'āina* (land), Hawaiian historian and cultural specialist, Kepā Maly writes:

In the Hawaiian context, these values—the “sense of place”—have developed over hundreds of generations of evolving “cultural attachment” to the natural, physical, and spiritual environments. In any culturally sensitive discussion on land use in Hawai'i, one must understand that Hawaiian culture evolved in close partnership with its' natural environment. Thus, Hawaiian culture does not have a clear dividing line of where culture and nature begins.

In a traditional Hawaiian context, nature and culture are one in the same, there is no division between the two. The wealth and limitations of the land and ocean resources gave birth to, and shaped the Hawaiian world view. The *'āina* (land), *wai* (water), *kai* (ocean), and *lewa* (sky) were the foundation of life and the source of the spiritual relationship between people and their environs. (Maly 2001)

The Hawaiian *'ōlelo no'eau* (proverbial saying) “*Hānau ka 'āina, hānau ke ali'i, hānau ke kanaka*” (Born was the land, born were the chiefs, born were the commoners), conveys the belief that all things of the land including *kanaka* (humans) were literally born (*hānau*), and are thus connected through kinship links that extend beyond the immediate family (Pukui 1983:57). *'Āina* or land, was perhaps most revered, as another *'ōlelo no'eau* notes, “*He ali'i ka 'āina; he kauwā ke kanaka,*” which has been translated by Pukui (1983:62) as “The land is a chief; man is its servant.” The lifeways of early Hawaiians, which were derived entirely from the finite natural resources of these islands, necessitated the development of sustainable resource management practices. Over time, what developed was an adaptable management system that integrated the watershed, freshwater, nearshore fisheries, all of which are connected through the many unique ecosystems that extend from the mountains to the sea (Jokiel et al. 2011).

Kilo or astute observation of the natural world became one of the most fundamental stewardship tools used by the ancient Hawaiians. The vast knowledge acquired through the practice of *kilo* enabled them to observe and record the subtlest changes, distinctions, and correlations in their natural world. Examples of their keen observations are evident in Hawaiian nomenclature, where numerous types of rains, clouds, winds, stones, environments, flora, and fauna, many of which are geographically unique, have been named and recorded in centuries-old traditions such as *oli* (chants), *mele* (songs), *pule* (prayers), *inoa 'āina* (place names), *'ōlelo no'eau* (proverbial sayings), all of which were transmitted orally through the ages. Other traditional Hawaiian arts and practices including, (but not limited to) *hula* (traditional dance), *lapa'au* (traditional healing), *lawai'a* (fishing), *mahi'ai* (farming) further reinforced knowledge of and connection to the natural environment.

Their exclusive dependency on a thriving natural environment led Hawaiians to develop a sophisticated and comprehensive system of land stewardship that was reinforced through the strict adherence to practices that maintained and enhanced the *kapu* and *mana* of all things in the Hawaiian world. In Hawaiian belief, all things natural, places, and even people, especially those of high rank, possesses a certain degree of *mana* or “divine power” (Pukui et al. 1972; Pukui and Elbert 1986:235). *Mana* is believed to be derived from the plethora of Hawaiian gods (*kini akua*) who were embodied in elemental forces and natural resources, such as the land, mountains, plants, animals, water and certain material objects and persons (Crabbe et al. 2017). Buck (1993) expanded on this concept noting that *mana* was associated with “the well-being of a community, in human knowledge and skills (canoe building, harvesting) and in nature (crop fertility, weather, etc.)” (in Else 2004:244). Hawaiian cultural practitioner and conservation biologist, Sam Gon III adds that this belief “imposes familial responsibilities on people, and engenders respect and care for native plants and animals” (Gon III 2010:1–2).

To ensure the *mana* of the resources, certain places, and people remained protected from over-exploitation and defilement, *kapu* of various kinds were implemented and strictly enforced. According to Elbert and Pukui (1986:132) *kapu* are defined as “taboo, prohibitions; special privilege or exemption...” Kepelino (1932) notes that *kapu* associated with the gods applied to all social classes, while the *kapu* associated with the chiefs were applied to the people. As the laws of *kapu* dictated social relationships, it also provided “environmental rules and controls that were essential for a subsistence economy” (Else 2004:246). Juxtaposed to the concept of *kapu* was *noa*, translated as “freed of taboo, released from restrictions, profane, freedom” (Pukui and Elbert 1986:268). Some *kapu*, particularly those associated with maintaining social hierarchy and gender differentiation were unremitting, while those *kapu* placed on natural resources were applied and enforced according to seasonal changes. The application of *kapu* to natural resources ensured that such were resources remained unspoiled and available for future use. When the *ali‘i* or the lesser chiefs (including *konohiki* and *po‘o lawai‘a*) determined that a particular resource was to be made available to the people, a decree was proclaimed indicating that *kapu* had been lifted, thereby making it *noa*. Although transitioning a resource from a state of *kapu* to *noa* allowed for its use, people were still expected to practice sustainable harvesting methods and pay tribute to the ruling chief and the gods and goddesses associated with that resource. *Kapu* were strictly enforced and violators faced serious consequences including death (Jokiel et al. 2011). Violators who managed to escape death sought refuge at a *pu‘uhonua*, a designated place of refuge or sometimes were freed by the word of certain chiefs (Kamakau 1992). After completing the proper rituals, the violator was absolved of his or her crime and allowed to reintegrate back into society.

This ancient and ingrained way of life underwent serious transformations following the arrival of Captain James Cook in 1778. This year marks the end of what is often referred to as Hawai‘i’s Precontact Period and the beginning of the Historic Period. While this time mark signifies an important date in Hawaiian history, it is vital to note that throughout the early Historic Period, even with Western influences, the Hawaiian chiefs still held outright rule over the land and its resources and maintained strict adherence to the *kapu* system—the very system from which their power was derived. For many Hawaiian historians, the abrogation of the *kapu* system in 1819, also marked significant socio-religious changes. Some scholars have argued that the abolishment of the *kapu* system undermined the very foundation upon which traditional Hawaiian society was built, ultimately altering the relationship between the chiefs and the people as well as their relationship to the land (Else 2004; Kame‘eleihiwa 1992). At the outset of the Historic Period, there was a continued trend toward craft and status specialization, intensification of agriculture, *ali‘i* controlled aquaculture, the establishment of upland residential sites, and the enhancement of traditional oral history. The veneration of traditional gods and the strict observation of the *kapu* system were at their peaks (Kent 1983; Kirch 1985). With the influx of foreigners, many of whom were quick to introduce the idea of trade for profit, Hawai‘i’s traditional culture, and the socio-political economy began to shift to meet the growing demands of the foreign populations.

The Arrival of Foreign Plants and Animals and the Transformation of the *Kapu* System

By the time Kamehameha had conquered O‘ahu, Maui, and Moloka‘i, in 1795, Hawai‘i saw the beginnings of a market system economy and the work of the native tenants shifted from subsistence agriculture to the production of foods and goods that could be traded with early explorers and whalers (Kent 1983). Introduced fruit trees and garden vegetables, often grown for trade with Westerners included yams, coffee, melons, Irish potatoes, Indian corn, beans, figs, oranges, guavas, and grapes (Wilkes 1845). Animals such as goats, sheep, pigs, cattle, horses, and turkeys that were left by Cook and other early visitors between 1778 and 1803 were allowed to roam freely (Kuykendall 1938). Of all the foreign introductions, cattle had the most profound impact. Setting the foundations of Hawai‘i’s livestock industry, in 1793, Captain George Vancouver, who had visited the islands during Cook’s 1778 voyage, gifted the first cattle to Kamehameha. The lack of quality cattle feed proved to be detrimental to the animals. To combat this, Kamehameha, at the demand of Captain George Vancouver, enforced a *kapu*, which lasted until the 1830s that prohibited the killing of the animals (Bergin 2004; Kuykendall 1938). The first head of steer and sheep that were gifted by Vancouver were driven into the upland plains of Waimea on Hawai‘i Island and allowed to roam and multiply (Barrera 1983). The unrestrained populations of cattle had increased significantly and by the 1830s had become a nuisance to native farmers. Additionally, the environmental degradation of the native forests had become apparent to Kamehameha’s sons and heirs who began to take steps to control the ravenous cattle population. In an effort to protect their crops, and to reduce the risk of encountering the large and often dangerous animals, native farmers began constructing taller enclosures to prevent the animals from plundering their gardens and destroying their homes. On Hawai‘i Island, where cattle populations are said to have numbered in the tens of thousands, tall rock walls that stretched for miles were built around the more densely populated areas (Bergin 2004). While the introduced plants and animals contributed to the development of Hawai‘i’s early market economy, the exportation of native hardwoods, particularly *‘iliahi* or sandalwood compounded the preexisting environmental degradation and wreaked havoc on the native lifeways.

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The *'iliahi* or sandalwood (*Santalum ellipticum*) trade established by Euro-Americans in 1790 quickly turned into a viable commercial enterprise (Oliver 1961). By 1810, and with the backing of Kamehameha and other chiefs, this industry flourished, as farmers and fishermen were ordered into the mountains of their district to cut sandalwood and carry it to the coast. Although the laborers were compensated with *kapu* (material), food and fish (Kamakau 1992), the neglect of their personal subsistent duties lead to food shortages and famine. The harsh working conditions coupled with lack of nutrition severely degraded the health and *mana* of the native people, ultimately contributing to a population decline. This industry also began to erode the relationship between the *ali'i* and the common people (Else 2004). Kamakau (ibid.:204) described the collapse of a traditional subsistence system and the industry's detrimental effects on the people: "...this rush of labor to the mountains brought about a scarcity of cultivated food . . . The people were forced to eat herbs and tree ferns, thus the famine [was] called Hi-laulele, Haha-pilau, Laulele, Pualele, 'Ama'u, or Hapu'u, from the wild plants resorted to." Once Kamehameha realized the dire effects this industry on his people, he "declared all the sandalwood the property of the government and ordered the people to devote only part of their time to its cutting and return to the cultivation of the land" (ibid.: 1992:204). Kamehameha also proclaimed sustainable harvesting strategies as noted by Kamakau, who wrote, "He ordered the sandalwood cutters to spare the young trees and, not to let the felled trees fall on the saplings" (ibid.:209-210).

On May 8th, 1819, Kamehameha, who had seen the onset of impacts brought about by foreign introductions, died at his royal residence at Kamakahonu in Kailua-Kona and named his son 'Iolani Liholiho heir to his kingdom (Kamakau 1992). By May 21st 'Iolani Liholiho (Kamehameha II) at the age of twenty-one began his rule. As traditional custom dictated and to allow for all people to rightfully mourn the loss of their chief, all *kapu* were relaxed following the death of a chief (ibid.). It was the responsibility of the new ruler to conduct the proper rituals and ceremonies to reinstate all *kapu*. However, Liholiho's attempts to reinstate the long-standing *kapu* system was futile and the future of the *kapu* system stood in a state of uncertainty. *Kuhina Nui* (Premier), Ka'ahumanu (the wife of Kamehameha and the *hānai* (adopted) mother of Liholiho) and his biological mother Keōpūolani lured the young chief back to Kona and the *kapu* system was symbolically abolished when Liholiho ate in the presence of his mothers. While Liholiho, his mothers and other chiefs favored the complete abolishment of the *kapu* system, others including Kekuaokalani and his followers prepared to wage war, determined to have the ancient laws reinstated. After several failed attempts at negotiation, Liholiho's army led by Kalaimoku went head-to-head against the forces of Kekuaokalani in the Battle of Kuamo'o (Fornander 1918–1919). Western weaponry had already permeated traditional Hawaiian warfare and Kekuaokalani, who stood behind the ancient laws of the land was killed by gunfire on the battlefield alongside his wife Manono, thereby extinguishing the last public display of resistance. The abolishment of the *kapu* system in 1819, began to undermine the very foundations upon which traditional Hawaiian culture was formed. Adding to an already socio-politically fractured society was the arrival of Protestant missionaries who sought to fill the spiritual void of the Hawaiian people.

In October of 1819, just five months after the death of Kamehameha, the first American Protestant missionaries aboard the Brig. *Thaddeus* left Boston, Massachusetts and by March 30th, 1820, sailed to Kawaihae on the northwest coast of Hawai'i Island (Hawaiian Mission Children's Society 1901). Having heard of the overturning of the ancient *kapu* system, these early missionaries formed close alliances with some of Hawai'i's royalty, including Ka'ahumanu who held a tremendous amount of political power. Starting in 1823, these early missionaries, one of which included William Ellis (1917) set out into the remote parts of the islands in search of suitable locations for future mission stations and within a few short years, mission stations were being constructed outside of the main town centers. Christian beliefs quickly spread and soon established a firm foothold in the islands. The missionaries quickly discovered that many Hawaiians were selective about what aspects of Christianity they were willing to adopt. In striving for complete conversion, the missionaries with the help of the *ali'i* implemented laws that enforced Euro-American beliefs on the Hawaiian people. To an extent, this furthered the efforts of the missionaries. Despite these massive cultural changes, many Hawaiians continued to hold to their ancient beliefs, especially those associated with their relationship to the land. Throughout the remainder of the 19th century, introduced diseases and global economic forces continued to degrade the traditional life-ways of the Hawaiian people.

Private Property and Its Effects on Traditional Concepts of Land and Land Use Practices

By the mid-19th century, the ever-growing population of Westerners in the Hawaiian Islands forced socioeconomic and demographic changes that promoted the establishment of a Euro-American style of land ownership. By 1840, the first Hawaiian constitution had been drafted and the Hawaiian Kingdom shifted from an absolute monarchy into a constitutional government. Convinced that the feudal system of land tenure previously practiced was not compatible with a constitutional government, the *Mō'i* Kauikeaouli and his high-ranking chiefs decided to separate and define the ownership of all lands in the Kingdom (King n.d.). The change in land tenure was further endorsed by missionaries and Western businessmen in the islands who were generally hesitant to enter business deals on leasehold lands that

could be revoked from them at any time. The push for exclusive private property rights culminated in the *Māhele ʻĀina* of 1848 and the subsequent *Kuleana Act* or *Enabling Act* of 1850.

While the formalization of private property rights was a success for many Westerners, this ultimately led to the displacement of many Hawaiians from their ancestral lands—lands that they had come to know so intimately. In general, although many Hawaiians were awarded lands during this period, it was realized that the parcels they were awarded were insufficient to sustain their traditional subsistence lifestyles. Additionally, access to resources that were once a part of the now fragmented *ahupuaʻa* system further curtailed traditional subsistence activities. As many Hawaiian continued to migrate to the populated centers around the islands and even elsewhere, large tracts of land that were once dotted with small communities and extensive traditional agricultural fields were being prospected for large scale commercial agriculture and ranching. Although these industries added to the cultural tapestry of the islands, such operations required vast amounts of land and water. The mass acquisition of land and the diversion of water from their natural courses during the 19th and 20th centuries resulted in numerous court battles between Western businessmen competing to increase their operations and native Hawaiians who willfully held to their traditional lifeways. Such issues continue to be vetted in Hawaiʻi courtrooms.

Formerly forested lands were being grazed down and, in some places, planted with introduced species of grass and various shrubs to form natural fencing and to be used as livestock feed (Henke 1929). In the drier leeward area of Hawaiʻi, the planting of *kiawe* or algaroba (*Prosopis robusto*) proved to be useful for the cattle and apiary industry (ibid.). By the mid-19th century, the apparent destruction of native forest habitat had severely diminished the water supply of islands, ultimately prompting action by the Hawaiian Kingdom government. In 1876, the Kingdom legislature under the administration of King David Kalākaua passed “An Act for the Protection and Preservation of Woods and Forests” (Planters’ Labor and Supply Company 1887:438).” Between 1876-1910, uncoordinated efforts between the government and various agricultural sectors were undertaken to remedy the loss of native forests and to increase water supply (Cannarella 2010). Wild ungulates were removed from some native forests habitats—an effort that began in the 1830s—and efforts to fence off sections of intact forests set the foundation for Hawaiʻi’s forest reserves. To replenish severely degraded forests, a large number of non-native species were experimentally planted, including, *paina* or ironwood (*Casuarina equisetifolia*), silver oak (*Grevillea robusto*), wind acacia, sour plum, and a number of other species (Henke 1929). Efforts to diversify the Kingdom’s economy and the long-standing trend of introducing exotic plant and animal species to the islands continued to mount.

The introduction of large-scale planting of sugar cane during the mid- to late-19th century resulted in massive land clearing efforts around the islands. The success and growth of the sugar industry within the more arid parts of the islands was highly dependent upon an ample supply of irrigation water (Wilcox 1996). Occasional wildfires and pests such as the leafhopper threatened the burgeoning sugar industry (Campbell and Ogburn 1990). To ensure economic prosperity, these sugar companies invested in experimental agriculture. New varieties of cane collected from various parts of the world were introduced without restraint and tested to meet the climatic challenges of growing cane in Hawaiʻi. By the 1890s, under the administration of King David Kalākaua, efforts to regulate plant and animal imports, many of which carried pests that were unknown to the islands, had become a priority for the Hawaiian Kingdom government.

HISTORY OF BIOCONTROL IN THE HAWAIIAN ISLANDS

The use of classical biocontrol, “the suppression of pest populations by introduction and liberation of natural enemies,” has been actively undertaken in the Hawaiian Islands for roughly 130 years with varying degrees of success (Funasaki et al. 1988:105; Lai 1988). Throughout the latter half of the 19th century, as the Hawaiian Islands became an agricultural hotspot for sugar cane and other crops, many new plant species, some carrying insect pests, were introduced without restraint. In 1890, the Hawaiian Kingdom Government, under the administration of King David Kalākaua established the Commissioners of Agriculture to prevent unwanted immigrant pests from entering the islands, and to control those that had already been introduced. The duties of the Commissioners were detailed in Chapter II of *Session Laws of 1890*. Chapter II titled “An Act Relating to the Suppression of Plant Disease, Blight, and Insect Pests” reads:

SECTION 2. It shall be the duty of such Commissioners to seek to prevent the introduction into this Kingdom of any plant disease, blight, or insect pests injurious to any tree or trees, plant or plants, or vegetation; and to seek to exterminate any such diseases, blight or insect pests now existing or hereafter introduced.

They shall have the power to enter upon any premises where they have reason to believe there is any tree, plant, or vegetation affected with any disease, blight, or insect pest; and to take all reasonable and proper steps to prevent the spread of any such disease, blight or insect pest, and if

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after due trial (such trial to be not longer than ten days) it is found by said Commissioners, or one of them, that the trees, plants or vegetation cannot be cured, or the blight destroyed, that then an in such case he or they may order the same destroyed. (Kalakaua 1890:4–5)

The initiation of the 1890 laws was in response to unregulated efforts to control pests—an act that prior to 1890 was being initiated at the whim of private citizens. The earliest accounts of the unregulated use of biocontrol can be traced back to 1865, when Dr. William Hillebrand, a physician, and naturalist, brought the mynah bird (*Acridotheres tristis*) from India to Hawai‘i to control army worms that were infesting Hawai‘i’s pastures (Funasaki et al. 1988). Because of the mynah bird’s appetite for rotting and decomposed things, and for its use of garbage as nesting material, the bird was given the Hawaiians name of “*manu-‘ai-pilau*,” which can be translated as the bird that consumes rotten things (Pukui and Elbert 1986:486). The mynah bird is also known in Hawaiian as “*piha‘ekelo*”, literally translated as “full of ‘ekelo sound,” a name given because of its raucous nature (ibid.:326). The debate over whether the introduction of the mynah bird was successful in controlling army worms spilled over into local newspapers. Proponents of the mynah bird emphasized its success, however, others alleged that such comments poorly represented the birds’ impacts to agriculture and to the people. An article published in *The Pacific Commercial Advertiser* in 1876 challenged some of the alleged successes:

THOSE CATERPILLARS.—The *Gazette* says that owing to the large increase of *mynah birds*, “not a caterpillar is to be seen in this regions,” (Honolulu) while at points outside of this favored range of the birds the grass has been destroyed. This would be a very pretty and pleasing statement in favor of the usefulness of the *mynahs*, if it were true, as unfortunately it is not. Right here and now, in the immediate neighborhood of the city, on the plains and elsewhere the birds abound, caterpillars do much more abound,—in such immense quantities that it would be simply impossible for the former to make any perceptible impressions on the mass. No doubt the *mynah* would not refuse a fat caterpillar now and again; but we don’t believe they prefer them as a regular diet, for the bird is something of an epicure and delights to range from stolen beefsteak to a nest of pigeon’s or dove’s eggs. Chickens are very good at destroying the vermin, so far as their capacities go; and turkeys are better. But the plague is usually of but brief duration. (The Pacific Commercial Advertiser 1876:3)

Complaints of the mynah bird attacking people and livestock filled the local newspapers throughout the late 19th century. The noisy mynah bird had become such a nuisance to the residents of Honolulu that some people took to the city with guns to exterminate the birds. The mynah bird proponents fired back and proposed a law that would prevent the killing of the birds. An article written in the November 9th, 1894, issue of *The Hawaiian Star* blamed the mynah bird and the dove for aiding in the spread of another noxious introduction, *Lantana camara*, which was brought to the islands from “tropical America in the year 1858” (The Hawaiian Star 1894:3).

During Hawai‘i’s sugar plantation era, rats had become a serious pestilence to sugar plantation owners and considerable attempts to bring Hawai‘i’s rat population under control were being actualized. An article published in the March 31, 1883, edition of *The Pacific Commercial Advertiser* details the proposed introduction of the infamous mongoose (*Herpestes javanicus*), a native of India to Hawai‘i’s cane fields:

THE Planters’ Monthly has lately been proposing the introduction of a little animal from India called the mongoose, as a destroyer of rats. He is a famous ratter, surpassing the cat or the ferret. He is described as a lively little urchin, about the size of a weasel, as having a snaky body, vicious looking claws, a sharp nose, a villainous eye and looks like “murder incarnate.” In speaking of his action in capturing rats, it is said that he crawls sinuously up to his victim until within easy distance for a rush, and then strikes with unerring aim, snapping rats just at the base of the brain. The rat has not time even to squeak, so sudden and deadly is the onslaught. Wherever the rat can enter the mongoose can follow. Thus as a ratter this lively little Indian is incomparable, but the trouble is he will not confine his operations to what is deemed his legitimate business. Some writers have endeavored to save his credit as a poultry destroyer, but a naturalist, who has carefully observed his characteristics, says that he is a general destroyer, not only of everything under, but of many creatures over his size. When in a cage the sight of a small living creature made him frantic and whenever he escaped, as he sometimes did, he made a sensation in the poultry house. The mongoose is not content with marauding forays in the yard, but he seems to pervade the house when domesticated... The rat is unquestionably a great pest of the cane and rice planter and grain cultivator in all parts of the world. The rat pest was deemed so serious here some fifty years ago that an enlightened and enterprising Commissioner of the Hawaiian Government, sent inquest of Chinese... to procure a species of snake famed as a destroyer of rats; but the Hawaiian people, whose sacred soil had been kept free from snakes and toads by some patron saint equal in influence to St. Patrick, conceived a holy terror of the snake, notwithstanding his possible utilities, and passed a decree that Hawaii would have no

snake in her plantations. The destruction of rats in the cane-fields was hardly deemed a sufficient compensation to the Hawaiian mind for the probable presence every now and then of his snakeship in the thatch of the Hawaiian *hale pili*... (The Pacific Commercial Advertiser 1883:2)

By September of 1883, Mr. William H. Purvis, a plant collector and investor in the Pacific Sugar Mill at Kukuihaele on Hawai'i Island, imported seven mongooses, fowls, and exotic plants from Australian colonies (Daily Honolulu Press 1883). The imported mongooses were "...intended for the damp lands of the Kukuihaele plantation at Hamakua..." (ibid.:4). A number of *'iole manakuke* or mongooses, were liberated in the cane fields of both Hilo and Hāmākua (Funasaki et al. 1988; Pukui and Elbert 1986). Subsequently, in 1885, mongooses were released on Maui, Moloka'i, O'ahu, and Kaua'i. While mongoose populations had quickly established themselves on Maui, Moloka'i, and O'ahu, to date, the mongoose has not established itself on Kaua'i. Both introductions rapidly multiplied and spread beyond their intended target species. While the introduction of the mongoose appears to have some success in combatting the rodents, their impacts were highlighted in newspaper editorials as early as 1886, from writers complaining that the mongooses were becoming a pest in their own. One such article read:

The mongoose is a useful little creature for the destruction of rats. He was brought here for that purpose, and, we believe, had done his work thoroughly well on several plantations. But the mongoose does not confine himself to rats, and complaints come from some quarters that ducks and chickens are being destroyed by wholesale. The mongoose may ultimately prove to be a greater nuisance than a benefit. (The Daily Bulletin 1886:2)

By the late 19th-century, the mongoose had become a sort of cultural symbol. A review of newspaper articles published in Hawai'i during this period reveals that the mongoose was often used to reference people or things that exhibited wild behavior and for people who came to Hawai'i that had no intent to leave. However useful these introductions were in controlling its intended target, over time, their unintended impacts had become obvious. In its wake, the mongoose destroyed livestock, the eggs of native bird species, and the noisy mynah bird is associated with aiding in the proliferation of the noxious weed, *Lantana camara* (Funasaki et al. 1988). These early and poorly thought out introductions are what Funasaki et al. (1988:106) described as a classic example of "biological control gone astray." Funasaki et al. (ibid.) emphasize that:

However, it must be realized that prior to 1890, planning and evaluation before the introduction of any organism were nonexistent simply because they were not required. There were no laws or regulations restricting or prohibiting the importation of any plant or animal from other geographical areas into Hawaii.

While these early introductions appear to have been a practical solution to a growing problem, ultimately, the lack of regulation, adequate pre-release testing protocols, and post-release monitoring created even more problems for Hawai'i's environment and people. In response to these ill-fated early and unregulated releases, Hawai'i's government leaders began to formalize a plan that would limit the introduction of unwanted pest species and control those that had already been introduced.

Regulated Efforts to Control Unwanted Pest in Hawai'i

By the late 19th century, efforts to study the natural enemies of unwanted pests that were impacting Hawai'i's agricultural industry were being formalized. In 1893, the year of the unlawful overthrow of Queen Lydia Lili'uokalani, the provisional government of the Republic of Hawai'i appointed Albert Koebele as the entomologist to biologically control the many species of immigrant pests (Funasaki et al. 1988). Koebele is credited with being "one of the first, if not the very first entomologist, to engage in the introduction of natural enemies as a method of combating insect pests" (Giffard et al. 1925:340). Between 1893 and 1910, Koebele spent much of his time traveling to places like Australia, Fiji, Japan, China, Ceylon (modern-day Sri Lanka), Mexico, and California where he studied various insects that he thought would be beneficial to combat pests that were introduced to the islands. In 1893, Koebele successfully used biocontrol to combat the cottony cushion scale (*Icerya purchasi*). In summarizing Koebele's biological introductions to the Hawaiian Islands, Giffard et al. (1925:342) remarked:

He made the beginning in this line of work, and much of the time was working alone, yet seventeen species of lady beetles were successfully introduced by him and have become valuable factors in keeping reduced such pests as scale insects, mealybugs, plant lice and leaf mites. At least six other lady beetles were introduced and became established, but after a few years disappeared. The eight lantana insects were introduced by him, and about the same number of miscellaneous parasites of Diptera and Lepidoptera, etc. Following Mr. Koebele in this line of work, the other entomologists have introduced a larger number of beneficial insects, and some of them have produced more

2. Background

spectacular and valuable results, but this should not in any way lessen the credit to be given to him who was the pioneer in Hawaii in this important branch of entomological work.

Encouraged by Koebele's successes, in 1903, the Territorial Government (formalized in 1898), enacted laws to create the Board of Commissioners of Agriculture and Forestry (the precursor to the Hawaii Department of Agriculture (HDOA)). These early laws provided for facilities and materials "to obtain, propagate, study, and distribute beneficial species of insects to control pest species of insects and weeds" (Funasaki et al. 1988:107). Additionally, a quarantine system to prevent new immigrant pests from entering the islands was also created. Another early organization responsible for the release of a number of biological control agents was the Hawaiian Sugar Planters' Association (HSPA), founded in 1895. In 1904, HSPA instituted an Entomology branch and from its founding to about 1942, this branch aided in combatting a variety of pests that were plaguing Hawai'i's cane fields and threatening the economic promise of the sugar industry (ibid.). Throughout the early to mid-20th century, as Hawai'i's agricultural interest grew to include pineapple and other tropical fruit, additional institutions were organized to study and combat its share of pests. Such organizations included the United States Bureau of Entomology and Plant Quarantine's Fruit Fly Laboratory (now U.S. Department of Agriculture's Tropical Fruit and Vegetable Research Laboratory), Experiment Station of the Pineapple Producers Cooperative Associations, HSPA's Experiment Station, Hawaii Agricultural Experiment Station of the University of Hawaii's College of Tropical Agriculture, the California Agricultural Experiment Station of the University of California, and the Hawaii Department of Health (ibid.). By the 1940s and 1950s, the creation and introduction of chemical pest control had become the favored alternative (Howarth 1983). While chemical pest control still maintains its place in managing unwanted pests, the environmental and health risks associated with its use has led to the adoption of stricter regulations and a push towards finding more natural and low-cost alternatives (ibid.).

Collectively, the laws passed in 1890 to regulate unwanted immigrant pests set the foundation for what is known today as Hawai'i Revised Statutes (HRS) Chapter 141, which governs the State of Hawai'i, Department of Agriculture (HDOA)—the state agency responsible for protecting and diversifying Hawai'i's agricultural industry. HDOA's Plant Industry Division maintains three branches: Pesticides Branch, Plant Pest Control Branch, and the Plant Quarantine Branch that collectively work "to protect Hawaii's agricultural industries, environment, and [the] general public by preventing the introduction and establishment of harmful insects, diseases, illegal non-domestic animals, and other pests..." (Department of Agriculture 2016). In 2003, under Hawai'i Revised Statutes (HRS), Chapter 194, the State of Hawai'i legislature authorized the creation of the Hawai'i Invasive Species Council (HISC), the agency responsible for coordinating efforts between various local, state, federal, and international agencies and organizations to stop the introduction and spread of invasive species in the islands (State of Hawai'i 2005). Since the creation of the HISC, millions of dollars have been allocated to various local councils and government departments and programs to combat invasive species. Efforts have been directed at prevention, response and control, research and technology, and outreach (ibid.). There are four invasive species committees that represent each of the four counties (Kaua'i, O'ahu, Maui, and Hawai'i Island) in addition to an aquatic invasive species team (ibid.).

Historically, Hawai'i's biological control programs were aimed at controlling weeds and pests that were adversely impacting the agricultural industry. During the 1970s and 1980s, the heightened interest in native and endemic taxa, fueled by the passing of federal legislation to protect endangered plants coupled with the growth of native-plant organizations has led to greater consideration of the potential risk of introduced biological control agents on endemic taxa (Pemberton 2004). Hawai'i as a "hub for tourism, trade, and military transport" and the state's continued reliance on globally imported goods perpetuates the ongoing assault of introduced foreign species (Messing and Wright 2006). Funasaki et al. (1988:108) report that "more biological control projects against immigrant species of insect pests have been conducted in Hawaii than anywhere else in the world" and nearly a third of the introduced species (roughly 200 pest species) are known to be established. Reimer (2002:86) reports that "many of these introductions appear to have been successful in that the pest populations eventually did drop to acceptable levels, although scientific evaluations of the effectiveness of these introductions have been virtually non-existent." The lack of natural enemies to combat such pests has propelled state agencies, namely HDOA to continue to identify the pests' natural enemies and to develop stringent host-range testing protocols for the study and release of such agents. Although the application of classical biocontrol in Hawai'i has, at times proven to be economically successful, it is recognized that environmental risks are inherent in biological control programs (Holland et al. 2008; Howarth 1983; Pemberton 2004).

Historically, several individuals and agencies have participated in the study and release of biocontrol agents in the Hawaiian Islands. Today, the U.S. Department of Agriculture-Animal Plant Health Inspection Service-Plant Pest Quarantine (USDA-APHIS-PPQ) and the HDOA regulates the importation of biocontrol agents (Reimer 2002). While these agencies have distinct mandates and jurisdictions, there is some overlap with respect to the regulated use of biocontrol. Efforts to improve pre-release testing has resulted in a federal and state permitting process which includes an environmental review. In summarizing this process, Reimer (ibid.:87) writes:

All biocontrol agents imported for weed control attack plants and are by definition plant pests. They are, therefore, regulated by USDA.

The USDA requires separate permits for

- 1) Importation of a plant pest into the U.S.;
- 2) Movement of a plant pest between States; and
- 3) Release of a plant pest into the environment.

The federal permitting process requires the submission of PPQ Form 526 (Application for Release) that is forwarded to the HDOA for review and recommendations. All applications to date, for which HDOA has recommended rejection, have also been denied by the USDA. If approval is recommended by HDOA, USDA then reviews the application. This process usually involves review by the Technical Advisory Group; however, Hawai'i applications are exempt from TAG review due to the thoroughness of the HDOA review process. A draft environmental assessment (EA) is requested from the applicant for any requests for the release of weed biocontrol agents. The USDA prepares the final EA. If endangered or threatened species potentially are affected by the release of a biocontrol agent then the application is sent to the U.S. Fish and Wildlife Service for review. A release permit is issued if the evaluation of the EA produces a finding of no significant impact (FONSI).

While there are some similarities between the federal and state process, Chapter 150A of the Hawai'i Revised Statutes (HRS) regulates the importation of any plant or animal into the State of Hawai'i whether or not it is a plant pest (Reimer 2002). HRS 150A strictly prohibits the importation of all non-domestic animals and microorganisms unless approval is obtained by the Board of Agriculture. The review process for a state importation permit application involves six steps. Reimer (ibid.:88-89) provides a synthesis of the six-step process:

First, the application is submitted to the HDOA with all of the required and pertinent information, including information on host specificity, distribution, preferred habitat, temperature requirements, etc. Host specificity studies may be carried out either in the country of origin or in one of the three approved containment facilities in Hawai'i. The Advisory Subcommittee then reviews the application. The recommendations from this subcommittee are passed on to the Plants and Animals Committee for their recommendations to the BOA. The BOA either approves or disapproves the application. If approved, the application is submitted to a public hearing process. Comments from the public are brought back to the BOA for discussion, followed by final approval or disapproval of the application. If approved, a State permit is issued. The organism may be imported and released if both State and Federal permits have been issued and permit conditions are met by the importers. The HDOA review process for the introduction of biocontrol agents has evolved into an effective system that screens agents for host specificity and potential negative

Additionally, efforts to improve public transparency following the decision rendered by the Hawai'i Intermediate Court of Appeals (*Ohana Pale Ke Ao v. Board of Agriculture, State of Hawaii*, 118 Hawaii 247, 249-50, 188 P.3d 761, 763-64 [Hawaii Ct. App. 2008]) has made the HDOA recognize that such biocontrol activities are subject to Chapter 343, Hawai'i Revised Statutes (Hawai'i Environmental Policy Act, HEPA) (Holland et al. 2008). Between 1890 and 1999, a total of 708 natural enemies have been released in Hawai'i, of which 286 have become established and the majority (237) of the introduced agents have contributed to the control of the target pest species (Reimer 2002). Prior to 1944 (before the formalization of the BOA), only 54% of the introduced agents were host-specific. This percentage has increased over the years with 77% host specificity being reported between the years 1944-1975. Since 1975, host specificity for all released biocontrol agents increased to 100% (ibid.). While stricter regulations have been adopted and modified over the years to reduce the environmental risk associated with the use of biological control agents, continued field research and open dialogue remains as a critical component to improving our understanding and mitigating the environmental, economic, and cultural risks associated with such actions.

INTRODUCTION OF *MICONIA* TO THE HAWAIIAN ISLANDS AND EARLY ERADICATION EFFORTS

Miconia is one of fifteen known Melastome species naturalized in the Hawaiian Islands and as noted in HAR §4-68-10, all species have been declared a noxious weed in the State of Hawai'i. *Miconia* is found in the wet, windward regions of four of the major Hawaiian Islands—Hawai'i, Maui, O'ahu, and Kaua'i in habitats receiving 1,800-2,000 millimeters or more of annual rainfall (Medeiros et al. 1997). Figure 7 shows the distribution of established and potential *Miconia* habitats on five of the major Hawaiian Islands.

2. Background

Miconia was first introduced to the Wahiawa Botanical Garden on O‘ahu in 1961 by botanist and horticulturalist Joseph F. Rock (Medeiros et al. 1997). In 1964, a single *Miconia* was planted at the Harold L. Lyon Arboretum in Mānoa Valley. A newspaper article published in the July 15th, 1965 edition of the *Honolulu Star-Bulletin*, shows a specimen of *Miconia* growing on O‘ahu (Figure 8). In 1971, Pacific botanist, F. R. Fosberg who studied the developing infestation of *Miconia* on the high volcanic island of Tahiti, warned Hawai‘i authorities of the plant’s potential to destroy native Hawaiian forests (ibid.). Despite the warnings, between 1975-1983, *Miconia* was cultivated at the Waimea Botanical Garden on the northwestern shore of O‘ahu, however, the seasonally dry climate limited its growth and its potential to spread which led employees to destroy the plants altogether (ibid.). Naturalized seedlings were noted as early as 1975, within the Mānoa Valley vicinity, however, it was not until the 1990s that efforts to remove the few naturalized specimens were undertaken by local organizations such as the Sierra Club. In the early 1990s, after recognizing the plant’s threat, the staff at the Harold L. Lyon Arboretum destroyed the original parent plant. *Miconia* is now naturalized at several locations on the Ko‘olau Range, including Mānoa, Kalihi and Nu‘uanu valleys (see Figure 7).

On Hawai‘i Islands, *Miconia* was first reported in the early 1960s in the Hilo District at the estate of Herbert Shipman and by 1971, this species had become naturalized. A review of historical newspaper articles indicate that volunteers efforts to manually eradicate populations of *Miconia* on Hawai‘i Island were in effect as early as 1982. Prior to 1992, *Miconia* plants were being sold and has since become naturalized in many other loci on the windward side of Hawai‘i Island, including Hakalau, Onomea, Pāpa‘ikou, Hilo, Pana‘ewa, Waiākea Uka and at various locations in the Puna District. *Miconia* is also found, although less extensively, at locales in the North and South Kona Districts (see Figure 7). The *Miconia* infestation on Hawai‘i Island is considered to be the most extensive in all of Hawai‘i (Medeiros et al. 1997). *Miconia* population on Hawai‘i Island is estimated to cover some 250,000 acres, ranging from monotypic stands to single trees (Tavares and Santos 2002).

On Maui, in the early 1970s, *Miconia* was introduced at Helani Gardens, a private nursery and botanical gardens located in the windward Hāna District. During the early 1990s, when the threat of *Miconia* was realized, *Miconia* populations had already become abundant and naturalized at Helani Gardens. Concerted localized efforts to eradicate established populations at Helani Garden resulted in a more manageable situation. Despite control at Helani Gardens, between 1991-1993, five additional *Miconia* populations were identified in windward East Maui. As of 1997, ten populations of *Miconia* were known to exist on the island of Maui from near sea-level to 430 meter elevation, including Upper and Lower Nāhiku, Hāna/Olopawa, Ke‘anae, Hoalua, two sites at Huelo, Peahi, Upper Ke‘anae, and Kaupō (see Figure 7) (ibid.).

After receiving a report from a resident of the Wailua Homestead in east Kaua‘i in 1995, HDOA followed up and confirmed a population of *Miconia* that was reported to have spread from a single large tree that was transported from O‘ahu and given to a nursery on Kaua‘i. Some twenty plants were removed, however, by December of 1995, additional monitoring around the site resulted in the discovery of two *Miconia* plants with plastic pots attached to its roots. Additional populations of *Miconia* were discovered along the Wailua River and in the vicinity of the nursery as well as the Kapa‘a Homesteads. In 1996, a single plant was discovered further inland near the Wailua Reservoir (ibid.) (see Figure 7). Although *Miconia* has not been reported on Ni‘ihau, Lāna‘i, Kaho‘olawe, or Moloka‘i, the wet, windward region of east Moloka‘i contains optimal growing conditions for *Miconia* (see Figure 7). The drier conditions found on the former three islands make for less suitable *Miconia* habitat.

In the early 1990s, after being officially listed as a noxious weed, concerted efforts to manually eradicate this highly invasive plant was initiated on the island of Maui. In 1991, the Melastome Action Committee (MAC) convened and began developing an eradication plan for Maui. The Maui MAC also obtained funding to drive aggressive eradication efforts. By 1995, a second MAC was set up on Hawai‘i Island and this group effectively organized *Miconia* mapping and control efforts. On O‘ahu and Kaua‘i where *Miconia* was less widespread, eradication efforts were led primarily by HDOA, DLNR, and volunteer groups. A statewide interagency public education and involvement campaign dubbed “Operation Miconia” was launched. Wanted posters, newspaper stories, public service announcements, and *Miconia* reporting hotlines helped to create more public awareness about the plant and served as an important tool in helping officials located new *Miconia* populations (Medeiros et al. 1997). These early eradication and containment efforts utilized a combination of applied herbicides and mechanical removal. While these efforts have been successful in helping to contain *Miconia* populations, increased operational cost associated with the spread of *Miconia* into more remote regions compounded by averse policy has shifted *Miconia* management strategies (Leary et al. 2013; Medeiros et al. 1997). To enhance *Miconia* management efforts, DOFAW is seeking biocontrol as a potentially viable option.

2. Background

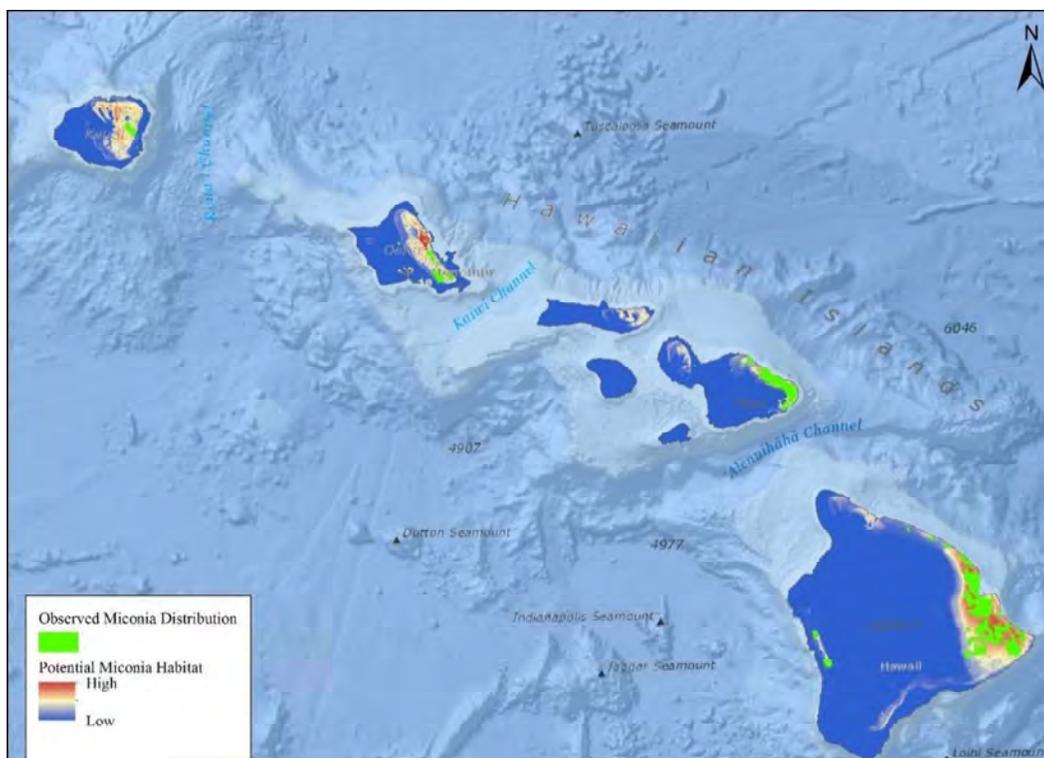


Figure 7. GIS map showing areas with confirmed *Miconia*'s infestations and potential *Miconia* habitat across the Hawaiian Islands.



Tamatsu Kubota, left, and Lindy Loo, of the Hawaii Association of Nurserymen, discuss attributes of a specimen *Miconia magnifica*, a rare ornamental with two-foot long reddish-maroon leaves. The two men will appear on KHVH-TV's "Aloha State Farmer" program at 8:30 a.m. Sunday to talk about a two-day nursery course to be given next Wednesday and Thursday at the East-West Center, University of Hawaii campus. A variety of topics will be covered by specialists.

Figure 8. *Miconia* shown in a 1965 HonoluluStar-Bulletin article (Sybert 1965:58).

2. Background

A Concise Global and Pacific Overview of *Miconia Calvescens*

In its native habitat of Central and South America, *Miconia calvescens*, which is both abundant and widely distributed across the lowlands have been reportedly used on occasion as fuel (Williams 1936). Although the seeds are described as sweet and attractive to frugivorous bird and other insects, the author of this report has not identified any documented sources describing its use as food or medicine by humans. Although *Miconia* has been introduced to places in Europe and Asia it has not been deemed as an invasive species (CABI 2018). However, in parts of Australia, the Dominican Republic, and in the French Polynesian Islands of Tahiti, Raiatea and Mo'orea, *Miconia* has become a major threat to tropical native ecosystems (Meyer and Florence 1996). Prior to this plant's arrival in Hawai'i, its impacts on the tropical forest ecosystems on high volcanic islands in French Polynesia were carefully studied. Juxtaposing the long-term environmental impacts of the *Miconia* infestation on Tahiti to Hawai'i has long-served as an important assessment and projection tool as both islands share highly comparable geographical, climatic, topographic, and biotic similarities (Medeiros et al. 1997).

Miconia was introduced to the Papeari Botanical Gardens in Tahiti in 1937 as a garden ornamental and was later outplanted on the plateau of Taravao where it thrived in the moist tropical climate (ibid.). In Tahiti, *Miconia* has been named *pa'a honu* which means turtle carapace and is a local reference to the large leaf size which resembles a turtle shell (CABI 2018). In the early part of the 1970s, botanist began to raise awareness of the plant's growing infestation and warnings were put out to authorities including those in Hawai'i. After observing the infestation in Tahiti, the late Smithsonian Institution botanist, F. Raymond Fosberg warned Hawai'i authorities stating that "It is the one plant that could really destroy what's left of the native Hawaiian forest" (Altonn 1991:A-8). Nearly thirty years after its introduction to the French Polynesian islands, it has been deemed by scientist as one of the most ecologically damaging pest plants (Medeiros et al. 1997; Meyer and Florence 1996). It now dominates over two-thirds of the island of Tahiti and in some locales, grow as pure monotypic stands. *Miconia* has since spread to the surrounding islands of Raiatea and Mo'orea and to the Society archipelago (Meyer and Florence 1996). In describing this plant's impacts on the indigenous and endemic flora Meyer and Florence (ibid.:778) state that "In Tahiti, seventy to 100 native plant species including forty to fifty endemics are estimated to be directly threatened by *M. calvescens*." Additionally, Florence and Meyer (ibid.:781) explain that "dense monotypic stands of *M. calvescens* prevents not only regeneration of the native plant species but also removes habitat for other animals." Although no cultural uses of *Miconia* have been identified in the remote tropical islands of French Polynesia, it is widely recognized that the spread of *Miconia* into native forests threatens the indigenous and endemic taxa.

The extensive spread of *Miconia* throughout the French Polynesian island of Tahiti and its impacts on the native wet forest habitat is an ecological and cultural concern that is widely applicable to the Hawaiian Islands. Hawai'i's wet forest habitat, which is a culturally valued resource has maintained a significant role in perpetuating the life-ways and traditions of the Hawaiian people. Continued encroachment upon this habitat by highly invasive species such as *Miconia* poses an ecological threat that has significant cultural ramification.

Cultural Uses of Native Wet Forest Habitat in Hawai'i

The use of native wet forests plants in traditional Hawaiian culture is both extensive and well-documented (see Abbott 1992; Buck 1957; Krauss 1993). The flowers, fruits, woods, roots, and bark of many native plants found in the wet forests of the Hawaiian Islands have been and continue to be extensively used in many Hawaiian cultural practices. Although plants were held in high esteem and celebrated in traditional lore, plants were also valued as a collective whole for its ability to attract diverse wildlife, such as birds and insects. Endemic Hawaiian birds were highly valued for their colorful plumages which were extensively used in creating spectacular feathered garbs, headdresses, *lei*, and other insignia that were worn or displayed traditionally by Hawaiian nobility. The task of collecting birds was undertaken by the *po'e kia manu* (bird catchers), who held a profound understanding of avian behavior and the forest resources, including what plants to use to attract and capture the birds.

The plethora of plants found in Hawai'i's wet forest was and remains an integral component of many traditional Hawaiian cultural practices. Large trees provided a variety of hardwoods from which canoes, houses, *ki'i* (carved images), fishing accessories, and various utilitarian and recreational implements were made. Aerial roots of the climbing '*ie ie* (*Freycinetia arborea*) were harvested and plaited together to form tightly stitched '*ie* (baskets). Ferns were collected from the forest floor and woven into *lei* or tucked into *kapa* (bark cloth) as a scenting agent. Flowers and fruits were collected for *lei*, natural dyes, and sometimes mixed together with other plants to make medicinal concoctions. Additionally, plots in the wet forests were cleared to cultivate *olonā* (*Touchardia latifolia*), an endemic plant that was purposefully grown and from which cordage of the finest quality was made. Hawaiian ethnobotanist, Beatrice Krauss notes:

The finest cordage made by the ancient Hawaiian—in fact, the finest cordage made in the Pacific basin—was made from *olonā*. *Olonā* was cultivated in patches of two or three acres primarily in wet, upland areas. Young shoots or layered cuttings were used for planting material; the latter were obtained by bending down a branch and covering the portion touching the ground with soil so that roots emerged from it. The rooted section, with its terminal leaves, was severed and this became a rooted cutting. Planting was close to prevent side branches from growing. *Olonā* patches were kept free of weeds, especially from [*sic*] creeping vines, which were abundant in surrounding areas; these would otherwise have choked the *olonā* plants. The stalks were ready for harvest at the end of a year or eighteen months. (Krauss 1993:27–28)

The forest itself also holds profound spiritual implications as various plants found in the wet forest were considered *kinolau* (embodiments) of named deities, many of whom took specific plant forms of the deity Kū. Such examples include but are not limited to Kūka‘ōhi‘alaka, Kūpūlupulu, Kūmokuhālī‘i, and Kūalanawao (Fornander 1919–1920; Handy and Handy 1991; Kamakau 1976). While Kū is considered the activating energy associated with the forest, other deities are also recognized including Kāne, who is embodied in the sun and in freshwater; Lono who is connected to winds, storms, and fertility; and Laka who is associated with transpiration (Edith Kanaka‘ole Foundation n.d.). Therefore, the Hawaiian forest, at a minimum, represents the dynamic interplay between Hawaiian deities.

These forested spaces also filled an important spiritual and utilitarian need for Hawaiian *hula* dancers, healing practitioners, and artisans, all of whom rely heavily on Hawai‘i’s forest resources (Stewart 2003). *Hula* practitioners have long valued Hawai‘i’s rich forest, which continue to be extensively used in making adornments, implements, and in furnishing the *kuahu* (altars). In describing the *kuahu*’s association with the forest, Emerson (1909:19) explained that “the wildwoods of Hawaii furnished in great abundance and variety small poles for the framework of the *kuahu*, the altar, that holy place of the halau, and sweet-scented leaves and flowers suitable for its decoration.” In detailing the thoughtful process of greening a *kuahu*, Emerson adds:

It was necessary to bear in mind that when one deflowered the woods of their fronds of *ie-ie* and fern or tore the trailings lengths of *maile*—albeit in honor of Laka herself—the body of the goddess was being despoiled, and the despoiling must be done with all tactful grace and etiquette.

It must not be gathered from this that the occasion was made solemn and oppressive with weight of ceremony, as when a temple was erected or as when a tabu chief walked abroad, and all men lay with their mouths in the dust. On the contrary, it was a time of joy and decorous exultation, a time when in prayer-song and ascriptions of praise the poet ransacked all nature for figures and allusions to be used in caressing the deity. (Emerson 1909:16)

Other plants utilized in greening a *kuahu* included ‘*ie‘ie* (*Freycinetia arborea*), *halapepe* (*Pleomele* sp.), ‘*ōhi‘a lehua* (*Metrosideros polymorpha*), ‘*ekaha* (*Asplenium nidus*), *ma‘o hau hele* (*Hibiscus brackenridgei*), *hau* (*Hibiscus tiliaceus*), *kī* (*Cordyline fruticosa*), ‘*ilima* (*Sida fallax*), and *lama* (*Diospyros sandwicensis*) (Emerson 1909).

While historical literature enumerates many different types of *kahuna* (esteemed and highly specialized experts), the *kahuna* whose practice involved the extensive use of both cultivated and wild plants was the *kahuna lā‘au lapa‘au*. These *kahuna* treated the sick using highly tailored plant-based recipes that were accompanied by rituals and ceremonies. With the change in landscape and the arrival of non-native plants to the islands, Krauss (ibid) notes that many “Precontact prescriptions have been altered by addition or substitution of postcontact-introduced plants.” Krauss provides a succinct summary of the meticulous preparation of traditional plant-based medicines:

Different parts of a plant were used for medicine: roots, stems, leaves, flowers, bark, fruits, and seeds. These were prepared for use by brewing, pounding and extracting the juice or sap, pounding and making an infusion, or the part to be used was chewed and swallowed without any preparation. Plant material was pounded in special stone mortars with stone pestles made for this purpose only. In cases where leaves were used, dosages consisted of a specific number of leaves; specific handfuls of leaves; or the quantity of leaves that, when rolled together, fitted within the circle formed when the tips of the thumb and forefinger were joined. When bark was used, a strip of a designated width and length was prescribed. For berries, flowers, flower buds, and the like specific numbers determined the dosage. The “magic” numbers in prescribing dosages, times and, duration of treatment were one, three, and five; four and five; five and six; or five only, according to different sources. Pounded material was strained through or squeezed out with cleaned fabriclike sheath at the base of coconut fronds (‘*a‘a niu*) or with the fibers of the native sedge *makaloa*. Medicinal herbs were usually administered in formulations that almost always included salt and red clay, ‘*alaea*. (Krauss 1993:101)

3. Consultation

The adaption of cultural traditions is an important aspect of any living culture. While many artisans continue to utilize Hawai'i's forest plants in a more traditional manner, it is common today to see many Native Hawaiian (and non-Hawaiian) artisans incorporate or draw inspiration from native plants to create contemporary clothing, home furnishings, musical implements, accessories, art, and many other utilitarian and decorative items. The restoration and revitalization of native plant habitat is crucial to sustaining Hawaiian traditions, beliefs, cultural practices well into the future whether that be in a traditional or more contemporary manner.

3. CONSULTATION

Gathering input from community members with genealogical ties and long-standing residency or relationships to the study area is vital to the process of assessing potential cultural impacts to resources, practices, and beliefs. It is precisely these individuals that ascribe meaning and value to traditional resources and practices. Community members often possess traditional knowledge and in-depth understanding that are unavailable elsewhere in the historical or cultural record of a place. As stated in the OEQC Guidelines for Assessing Cultural Impacts, the goal of the oral interview process is to identify potential cultural resources, practices, and beliefs associated with the affected project area. It is the present authors' further contention that the oral interviews should also be used to augment the process of assessing the significance of any identified traditional cultural properties. Thus, it is the researcher's responsibility to use the gathered information to identify and describe potential cultural impacts and propose appropriate mitigation as necessary.

INTERVIEW METHODOLOGY

In an effort to identify individuals knowledgeable about traditional cultural practices and/or uses associated with *Miconia* or the habitat in which it thrives, a public notice was submitted to the Office of Hawaiian Affairs (OHA) for publication in their monthly newspaper, *Ka Wai Ola*. The notice was submitted via email on April 9th and was subsequently published in the May 2019 issue of *Ka Wai Ola* (2019:21) (Appendix A). As of the date of the current report, no responses have been received from the public notice. Although no responses were received as a result of the *Ka Wai Ola* publication, ASM staff contacted forty-five individuals via email and/or telephone regarding the preparation of the current CIA. These individuals were selected because they were either recognized cultural practitioners, plant experts, or Native Hawaiian organizations who utilize Hawai'i's forest resources for cultural purposes or were believed to have cultural knowledge about the target species or other plants found within the target species habitat. Of the forty-five individuals contacted, twenty individuals responded to our request with either brief comments, referrals, or accepted the interview request. The names and affiliation of these twenty individuals are listed in Table 1 below. Of the twenty respondents, ASM staff successfully conducted interviews with nine individuals (see summaries below). A complete list of all persons contacted for consultation is available upon request.

The interviewees were asked a series of questions regarding their background, and their experience and knowledge of the target species. Additional questions focused on any known cultural uses, traditions, or beliefs associated with any of the target species. The interviewees were then asked about their thoughts on the cultural appropriateness of using biocontrol control agents and whether they were aware of any potential cultural impacts that could result from the use of biocontrol control. The interviewees were then asked whether they had any recommendations to mitigate any identified cultural impacts as well as share any additional thoughts about the proposed action.

As part of the interview process and with the consent of the interviewees, some of the interviews were audio-recorded for note-taking purposes only (audio files not available). Where audio recordings were not permitted, ASM staff recorded notes throughout the interview process. Upon completion of the interview, ASM staff prepared an interview summary, which was emailed to the interviewees for review. The interviewees were given the opportunity to review the summary for accuracy and allowed to make any necessary edits. With the approval of the interviewees, the finalized version of the summaries is presented below.

Table 1. Persons contacted for consultation.

<i>Name</i>	<i>Affiliation, Island</i>	<i>Initial Contact Date</i>	<i>Comments</i>
Shalan Crysedale	The Nature Conservancy, Ka‘ū Preserve, Hawai‘i	3/6/2019	See summary below
John Repogle	Retired from The Nature Conservancy, Ka‘ū Preserve, Hawai‘i	3/6/2019	See summary below
Nohealani Ka‘awa	The Nature Conservancy, Ka‘ū Preserve, Hawai‘i	3/6/2019	See summary below
Arthur Medeiros	Auwahi Forest Restoration Project, Maui	3/7/2019	Responded via email on March 11, 2019, stating “Thank you for your valuable work supporting this essential action to attempt to slow the loss of Hawaiian biota.”
Jen Lawson	Waikōloa Dry Forest Initiative, Hawai‘i	4/3/2019	See summary below
Robert Yagi	Waikōloa Dry Forest Initiative, Hawai‘i	4/3/2019	See summary below
Wilds Brawner	Ho‘ola Ka Manaka‘ā at Ka‘ūpūlehu, Hawai‘i	4/9/2019	See summary below
Sam ‘Oahu Gon III	The Nature Conservancy, O‘ahu	4/22/2019	Responded to interview request but was unable to provide input on this project.
Mike DeMotta	National Tropical Botanical Gardens, Kaua‘i	4/22/2019	See summary below
Wili Garnett	Cultural practitioner, Moloka‘i	5/7/2019	Responded via email stating “I have mostly been involved with <i>Erythrina</i> gall wasp parasite release and monitoring, but experience watching <i>Tibouchina</i> and <i>Schinus</i> degrade watershed on many islands, including Molokai and even cultural resources at Kalaupapa.”
Emily Grave	Laukahi Network, O‘ahu	5/7/2019	Responded via email stating that she was not aware of cultural uses of this plant.
Kim Starr	Starr Environmental, Maui	5/9/2019	See summary below
Forest Starr	Starr Environmental, Maui	5/9/2019	See summary below
Manaiakalani Kalua	Cultural practitioner, Hawai‘i	5/30/2019	See summary below
Talia Porter	Honolulu Botanical Gardens, O‘ahu	6/3/2019	Responded to interview request but was unable to secure an interview.

Table 1 continues on next page

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Table 2. continued.

<i>Name</i>	<i>Affiliation, Island</i>	<i>Initial Contact Date</i>	<i>Comments</i>
Robert Keano Ka'upu	Cultural practitioner, O'ahu	6/16/2019	Responded via phone that he has been interested in learning about the cultural uses of <i>wiliwili</i> but was not aware of any uses or of anyone else who used this wood for cultural purposes.
Hinaleimoana Wong-Kalu	Cultural practitioner, O'ahu	7/16/2019	Responded to interview request but was unable to secure an interview.
Pelehonuamea Harman	Cultural practitioner, Hawai'i	7/31/2019	Referred ASM staff to Dennis Kana'e Keawe
Dennis Kana'e Keawe	Cultural practitioner, Hawai'i	8/12/2019	See summary below
Iliahi Anthony	Cultural practitioner, Hawai'i	8/30/2019	See summary below

*End of Table 1***SHALAN CRYSDALE, JOHN REPLOGLE, AND NOHEALANI KA'AWA**

On March 6th, 2019, Lokelani Brandt and Matt Clark interviewed Shalan Crysdale, John Replogle (retired from the Nature Conservancy), and Nohea Ka'awa of The Nature Conservancy (TNC) Ka'ū Preserve regarding DOFAW's proposed action and to gather any known cultural knowledge of *Miconia*. Shalan indicated that there are no known populations of *Miconia* in Ka'ū. While Shalan and others were aware of *Miconia* infestations on Hawai'i Island they were not aware of any traditional or contemporary uses of this plant.

While Shalan and John were not entirely against the use of biological control agents, they did share some of their concerns. Shalan, John, and Nohea stressed the importance of trial testing to ensure that the release of any proposed biological control agent does not adversely impact other native species as well as other valued crops. They spoke about the limitations of laboratory trial testing that may not account for all the variables that are present in the trees natural habitat. They strongly recommended that extensive trial testing be conducted prior to any proposed field release and they hope to see more post-release field monitoring to safeguard against the spread beyond the intended target species.

WILDS PIHANUI BRAWNER

Wilds Brawner, Site Manager of the non-profit organization, Ho'ōla Ka Makana'a at Ka'ūpūlehu Dryland Forest, was interviewed by Lokelani Brandt on April 18th, 2019. Since 2008, Wilds has worked at the 70-acre Ka'ūpūlehu Dryland Forest preserve performing a variety of duties including management and education.

When asked about his knowledge of *Miconia*, Wilds indicated that in his years of work, he has not encountered *Miconia* populations in the leeward sides of Hawai'i Island, but was aware of its impacts to the wet forest of Hawai'i Island and elsewhere. Wilds indicated that he was not aware of any known past cultural uses of this plant.

When asked about any potential cultural impacts that could result from the use of biocontrol, Wilds emphasized that utilizing biocontrol has "great potential" and that it may be a solution to help manage unwanted pests under the condition that there has been extensive research, lab and field testing, and controlled releases. He emphasized that extensive research should consider every possible factor that could potentially result in negative impacts, especially to other endemic taxa. He also stressed that public education should be a key component in this process, as it will create opportunities for the public to learn and provide input. He believes that public input can help assess the possible risks and identify steps to manage those risks. Wilds strongly recommended that all future biological control efforts integrate public input and that it should move towards a community-based resource management structure. Wilds suggested that ways to promote biocontrol are through responsible action, extensive and evidence-based testing and research, and if these pre-release efforts are successful, biocontrol "can be the silver bullet" to managing pests. He concluded that although the process has potential to control invasive species, the idea and use of the word "control," as opposed to "management," is very loaded and attaches unrealistic expectations to the effort. As with any forest, Wilds believes that with proper "management", the results will net a positive cultural impact. New forest growth produces more flowers and seed and ultimately creates more opportunities for people to interact with these forests

through place-based learning. He emphasized that when people interact and participate in caring for our “beloved” resources and when the *mo‘olelo* of these resources are shared, it can then become a living cultural resource for the people.

MIKE DEMOTTA

On April 24th, 2019, Lokelani Brandt conducted an interview with Mike DeMotta, the Head Curator of the living collections for the National Tropical Botanical Gardens (NTBG) on Kaua‘i. Mike manages the center’s plant inventory database, which includes a large collection of native plants. He has also been tasked with developing ways to improve their native plant populations by creating spaces for a thriving living collection. Through his work, Mike has been heavily involved with native plant restoration from the coastal dry areas on Lehua Island to the pristine native forests in Limahuli Valley on Kaua‘i’s north shore.

When asked about any traditional cultural uses of the *Miconia*, Mike stated that he was unaware of any cultural importance or uses for any part of this plant. He went on to explain that *Miconia* is incipient on Kaua‘i and has been carefully monitored and controlled by the island’s invasive species committee. He explained that these early monitoring efforts have prevented mass spreading of this highly invasive plant.

When asked about whether any potential cultural impacts could result from the use of biocontrol, Mike believes that with proper research, biocontrol could preserve or rescue native forests. With his strong involvement with restoration, Mike strongly believes biocontrol will assist in opening up spaces for the regeneration of native forests and proposed that drastic measures are imperative to control or eradicate the aggressive nature of invasive species. Although he is genuinely concerned about the possibility of a collateral loss of one or two native species, Mike reasoned that the overwhelming threat to native forests from invasive species had lent to his advocacy for biocontrol. He argued that the manpower needed to control these threats are not feasible and are unrealistic. He is particularly pleased that the focus has shifted to conservation and that there is a growing awareness that we are losing pristine forests to these invasive species.

JEN LAWSON AND ROBERT YAGI

On April 26, 2019, Lokelani Brandt and Aoloa Santos met with Executive Director, Jen Lawson and Preserve Manager, Robert Yagi, of the Waikoloa Dry Forest Initiative. The Waikoloa Dry Forest Initiative manages 275 acres of dryland forest located near the Waikoloa community. When asked about any known cultural uses of *Miconia*, Jen and Robert were not aware of any known past or current uses of this plant although they were aware of the past and ongoing efforts to control this plants spread. While no specific information about *Miconia* was obtained, they did offer their insights into the proposed use of biological control to aid in management strategies.

Although Jen is a proponent of biocontrol, she explained that the proper research must be conducted and that dissemination of that research should be provided to the affected communities. She expressed that one of the main challenges will be garnering public support for the proposed action because of preconceived notions that are heavily influenced by the historical and unsuccessful application of biocontrol. Although Jen was aware of the extensive research that is conducted prior to the release of any biocontrol agent, she remarked that such research is not always effectively shared with the communities. She added that the lack of public information and transparency only exacerbates misconceptions thereby making community support difficult to establish. In light of this, Jen recommended that DOFAW and other associated agencies restructure informational public meetings to be engaging and inclusive of community input as she believes this may improve trust between the affected communities and the agencies. Additionally, she strongly advocates for a more collaborative partnership between the DOFAW and its agencies as a way to promote a more open dialogue between the agencies and community groups who work closely with some of these invasive species. Jen and Robert also recommended that more consistent post-release monitoring be conducted and that such efforts should be done in conjunction with established community groups.

FOREST AND KIM STARR

On May 31st, 2019, Lokelani Brandt and Aoloa Santos met with Forest and Kim Starr at their home in Olinda, Maui. Born and raised on Maui, Forest always enjoyed nature. He later moved to New York to attend Cornell University and in 1992 met his now wife and business partner, Kim, who is of Hawaiian descent but was *hānai* (adopted and raised) by a Japanese-Italian family. Since then they have done numerous volunteer and contract work in the conservation field. They currently co-own Starr Environmental and serve as biologists and environmental consultants for developers and federal and state agencies. Forest and Kim have extensive experience in botanical and

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environmental restoration work in the Hawaiian Islands. Forest shared that they have assisted in prior biocontrol releases but they primarily focus on the early detection of introduced species.

When asked about any known cultural uses of *Miconia*, Forest and Kim stated they are not aware of any cultural uses of this plant other than its use as an ornamental. They both expressed that this plant is highly invasive in Hawai‘i because there are no natural predators. Additionally, Hawai‘i’s wet environmental conditions create the ideal environment in which this plant can thrive and maintain its invasive characteristic. Forest stated that *Miconia*, which is known to grow in the wetter regions of the islands, may impact native foliage such as the *olonā* (*Touchardia latifolia*), a plant known to be used in making traditional fibers and cordage.

Forest described much of the vegetation that dominates the islands as a “rag-tag assemblage of pantropical invasive species” and opined that this sort of global homogenization of the islands’ plant life is exacerbating the spread of really aggressive species. Adding to this, Forest expressed that changes in the environment are inevitable and noted that these changes are difficult for many to accept. Forest and Kim believe that biocontrol is a method that can help mitigate or slow the growth of species but “it never eradicates, it just reduces the numbers” and cited the example of the EGW and the panini cactus (*Opuntia ficus-indica*) which have had biocontrol agents released against them. Both Forest and Kim explained that over a course of many years they have seen limited success rates where biocontrol has resulted in complete eradication, which they shared is a common outcome.

When asked about their thoughts on the cultural appropriateness of biocontrol, Forest and Kim shared that they have witnessed the culture and traditions of these islands evolve within an inevitable changing environment. Forest emphasized that the mixed-culture of Hawai‘i has been able to co-exist with the changing environment and they have seen various cultures including Hawaiian culture utilize introduced plants in place of rare or extinct native plants in order to perpetuate their traditional cultural practices. In spite of these cultural adaptations, they feel that biocontrol can be useful in protecting native plant habitats which are both ecologically and culturally important and remain open-minded to these types of undertakings.

Based on their knowledge of the efficacy of former biocontrol efforts, Forest and Kim shared that generally, the way a biocontrol agent is introduced is not very effective and that for the most part, in order for the biocontrol to be entirely successful a large number of biocontrol agents must be introduced. Kim stated that although the purpose of biocontrol is to introduce an organism that is specific to a target plant, the efficacy is oftentimes underwhelming and as a result, there have been a few unintentional consequences. Kim shared that although biocontrol agents are introduced with good intentions, “the unknown,” meaning its potential to cause unforeseen impacts to a non-target species is the main factor that contributes to the general resistance to implement biocontrol. Additionally, Forest and Kim both stated that once a biocontrol agent is released there is very limited and often times no follow-up by the agencies that have invested in the pre-release studies. In light of this, Forest and Kim recommended that post-release monitoring should be held to the same standard as the pre-release of a biocontrol agent. Forest described that “mother nature is so crafty” and that changes are often muted or other factors become more significant than the release, therefore on-going post-release monitoring is a crucial component to this process. Forest also stated that misinformation has been detrimental to these biocontrol efforts and believes that more should be done to effectively communicate these types of undertakings to the public.

MANAIKALANI KALUA

On June 6th, 2019, Lokelani Brandt conducted an interview with Manaiakalani “Manai” Kalua, a *kumu hula* and life-long Hawaiian cultural practitioner. Born and raised in the Hawaiian homestead community of Keaukaha, Manai has dedicated his life to *hula* and because of this, he has had extensive interactions with Hawai‘i’s native plant life, which is a fundamental element to traditional *hula* practices.

When asked about any known cultural uses for *Miconia*, Manai stated that he was not aware of any cultural uses of this plant but expressed that this plant is highly invasive and has taken over areas where he used to gather other plants for ceremonial and other cultural uses. He described collecting ‘*ohe* (bamboo) in the Honoli‘i area (South Hilo District, Island of Hawai‘i), which is now overgrown with *Miconia*. He described a time when he used to collect ‘*ohe* and saw a few *Miconia* plants. Later, when Manai returned to the area, he saw that someone had removed the *Miconia* but put the cuttings in a wood chipper and dispersed the wood chips back into the forest. Since then, he has observed even more *Miconia* growing in the area. He expressed that while this may have been an attempt at eliminating *Miconia*, the lack of knowledge to properly dispose of the plant has resulted in the spreading of this plant. He believes that there is still a lack of public understanding of how to properly dispose of invasive species.

Manai spoke at length about the ways in which invasive species are changing traditional cultural practices specific to *hula*. He explained that within his *hula hālau* he teaches about the proper way to harvest plants in addition to practices that will help limit the spread of invasive species. He now stresses the importance of cleaning all clothing,

equipment, and cars after every visit to the forest. He stated that invasive species are a serious problem that has major environmental and cultural implications and cited the example of Rapid 'Ōhi'a Death (ROD), which has significantly impacted *hula* practices. He noted that culturally, 'ōhi'a is an important part of *hula* adornments and rituals, since becoming aware of ROD, he no longer gathers 'ōhi'a nor does he condone the gathering of this plant. He explained that not being able to utilize 'ōhi'a has required him to be more creative with his cultural practices.

When asked about his thoughts on the cultural appropriateness of utilizing biocontrol, Manai explained that historically we have a long history of unsuccessfully utilizing biocontrol and cited examples including the introduction of the mongoose to control rats and the scale insect to control strawberry guava. Manai expressed concern for the idea of introducing other foreign insects which may adversely impact its intended target but whose impacts are somewhat unknown to the many other species that grow in the same habitat as the target species. He questioned, what will happen to the introduced biocontrol once the target species is eliminated, and what are the long-term impacts of utilizing biocontrol? He noted that we are still living with the repercussion of previous biocontrol choices that we still cannot manage. Although Manai is not a proponent of utilizing biocontrol, he understands that the shift to use biocontrol suggests that all other methods for controlling these invasive species have been exhausted. He was aware that utilizing biocontrol is a much slower process and stated that the government does not have the means to manually eradicate Hawai'i's invasive species. He stated that there are also risks associated with the manual removal of invasive species.

While Manai remains skeptical of the effectiveness of biocontrol, he believes that the government must develop stricter laws and policies to stop the introduction of invasive species. He noted that in his travels to other parts of the world, including Japan and New Zealand, their customs process is far more thorough and intensive. He believes that these countries are exemplary models where the emphasis is placed on stopping the introduction instead of trying to combat its spread. He also advocates for a more rapid response to known invasive species and cited the example of the coqui frog, which on Hawai'i Island is now so widespread and nearly unmanageable. He believes that rapidly responding to invasive species, especially when populations are far more contained, could be far more effective.

DENNIS KANA'E KEAWE

On August 13, 2019, Aoloa Santos conducted an interview with Dennis "Kana'e" Keawe, a retired Commercial Services Consultant for Hawaiian Electric Light Company (HELCO) and former lecturer at the University of Hawai'i at Hilo (UH Hilo). Born and raised on O'ahu, Kana'e moved to Hawai'i Island in November of 1974, to help his father with his coffee farm in Hōnaunau, Kona. Following his retirement from HELCO at age 55, he was asked to teach a Hawaiian studies ethnobotany course at the UH Hilo. Kana'e stated that when he was asked to teach the course, his botanical vocabulary and knowledge was appropriate for teaching young children and therefore acknowledged that in order to instruct at the university level, he needed to expand and develop his botanical nomenclature. Through this process, Kana'e learned that many varieties of Hawai'i's native plants "exists within the tropical belt around the world" and by having in-depth knowledge of scientific names and identifiers allowed him to effectively communicate with people well-versed in similar plants of those regions. Additionally, Kana'e is a renowned Hawaiian artisan and cultural practitioner endearingly referred to by many as "the all-around guy." He has been recognized for his expert-crafted oeuvres, such as *hula pahu* (drum), *kapa* (bark cloth), *i'e kuku* (*kapa* beater), and feather crafts. As a result of his artisanship, he has been afforded opportunities and invitations to visit communities and institutions around the world, notably the Smithsonian Museum, an institution that houses a large collection of Hawaiian antiquities.

When asked about any traditional cultural uses of the *Miconia*, Kana'e stated that he was unaware of any cultural importance or uses for any part of this plant but shared that "the wood of the *Miconia* is hard enough to perhaps be of utilitarian purposes to be utilized to make primary *kapa* beaters." While no specific information about any known past or current cultural uses of this plant was shared, he did offer thoughts on the use of biocontrol. Kana'e expressed his support and did not foresee any major cultural impacts if extensive studies and testing is done prior to its release. He added that although there are unknown variables to this method, humans can only do so much, especially in the current state of our environment and the rapid growth of invasive species.

ILIAHI ANTHONY

On September 3rd, 2019, Lokelani Brandt interviewed Iliahi "Ili" Anthony, a *hula* dancer, *lauhala* weaver, *lei* maker, and natural dye expert. Ili is also an art teacher at Ka 'Umeke Kā'eo Hawaiian Immersion Public Charter School and has a background in designing furniture and exhibit spaces. Ili grew up in the community of Keaukaha and has been dancing *hula* since the age of four. As a life-long *hula* dancer for Hālau O Kekuhi, Ili explained that her knowledge of Hawai'i plant life comes from years of gathering foliage (primarily indigenous and endemic species) and other natural resources for their 'a'ahu (costume), *lei*, and *hula* implements. Ili recalled as a child being accompanied by her *kumu hula* and family members into their gathering areas where they taught her about the Hawaiian cultural significance of the plants, gathering protocols, how to identify them in the forest, and how to sustainably gather and

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prepare them to be used in the context of *hula*. She emphasized that as a small kid, she learned about these practices by watching and listening to her *kumu* and relatives and stated that when you are that young, you're not keenly aware of what it is they are teaching you, but as an adult, those teachings remain and are better understood. Ili openly stated that although she is not of Hawaiian ancestry, she has been raised by native Hawaiians and has learned about many of the traditional practices and customs. She expressed that although she chooses to remain respectful when it comes to Hawaiian issues and matters, she is willing to share her knowledge when asked and feels that she has something to offer.

Ili explained that as a *hula* dancer, she has learned to depend on other cultural practices to help her with gathering certain natural resources needed in *hula*. She described going on expeditions with her brother, who is a hunter, to gather *maile*. Ili explained that her brother knows the trails very well and is very particular about how they cut *maile*, and how much they take from any one plant. She added that although her brother is not necessarily a *lei* maker, he knows this plant and forest resources very well. She explained that she also relies on her father who is a woodcarver to help her make certain *hula* implements. Ili also described gathering with other *hula* dancers, some of whom have a background in native plants and botany, and shared that when she gathers with them, they often teach her about the names and can point out the subtleties that are not obvious to her. Ili believes that this demonstrates the interconnectedness of cultural practices and stated that even people who we think may not use plants, such as hunters and fishers, do often know a lot about native plant life. She stressed that as a *hula* practitioner and in terms of plant resources, she relies greatly on other practices that are not necessarily defined as *hula*.

With respect to learning about and identifying plants, whether native or non-native, Ili shared that unless someone shares that knowledge with her, then she would most likely not know about it. She expressed that when she has gone to get gathering permits from DLNR, she recalled seeing various informational posters in their office which she finds useful for learning about Hawai'i's plant life and invasive pests.

With respect to *Miconia*, Ili explained that she has encountered this plant while gathering *lauhala* in Puna but was not familiar with any cultural uses for this plant. Based on her observations and recollections, Ili believes that *Miconia* is often found in the lower elevations and made reference to the Pahoia area in the Puna District. She shared that *Miconia* is a very strong and resilient plant and wonders if there are other uses for this plant that have not been discovered?

While Ili supports the removal of invasive species, especially if they are directly impacting native plants or native plant habitat, she cautioned that some plants that have been dubbed "invasive" are utilized for various traditional and contemporary cultural purposes. Ili opined that today, people utilize various "rubbish plants" to make adornments such as *lei* and that such plants if properly arranged can be turned into something beautiful and wearable. She also noted that weedy plants such as *laukahi* (*Plantago major*) and the introduced guava (*Psidium guajava*) have become incorporated into Hawaiian *lā'au lapa'au* (plant healing) practices. While she believes that finding a cultural purpose for an invasive plant is not a strong reason to halt invasive species management efforts, she cautioned that people have come to rely on certain invasive species to perpetuate select cultural practices because they are easily accessible and abundant. Adding to this, Ili expressed that people have and will continue to adapt to living with invasive species. Ili also worries that if invasive species, particularly those that are used for cultural purposes become less abundant and available, then people will likely have to find a more readily available substitute, which could result in people gathering indigenous or endemic species. She stated that people tend to use invasive species because they are abundant and easily accessible.

Ili shared that over the years she has observed an increasing number of pests on native plants and made specific reference to '*a'ali'i* (*Dodonaea viscosa*), which now seems to be infested with spiders. She shared that as a *lei* maker, she often brings these plants into her home and disposes of her *hakina* (scrap pieces) in her yard. Although she has not seen those spiders move onto the plants at her home, Ili expressed a sense of uncertainty with gathering and possibly transporting unknown pest.

Ili also spoke about the need to improve our understanding of the ecological relationships that may exist between native and non-native species. She shared that some native plants such as '*iliahi* (sandalwood; *Santalum ellipticum*) is semi-parasitic and relies on a host plant to thrive. She added that we know that native plants have adapted to each other and wonders if native species may have adapted or are adapting to living amongst non-native species as well. She pondered on the idea of removing invasive species and the possibility of causing indirect impacts to native species that have come to rely on them for some life-giving element.

When asked about her thoughts on the cultural appropriateness of using biocontrol, Ili opined that this is a difficult question to answer and lightheartedly stated that "basically, you're introducing another culture into the culture." She asked, what things have we introduced in the past that actually worked? Ili added that she feels there have been more things in the past that have been introduced that haven't worked in comparison to those that have actually worked. Ili

 4. Identification and Mitigation of Potential Cultural Impacts

stated that introducing more foreign species to the islands is a scary thought and wondered what the future would look like. She asked, will we have to continually introduce more foreign species to combat those we previously introduced? Additionally, she wondered what would take the place of these invasives once they are removed?

When asked about her thoughts and recommendations about the proposed action, Ili believes the state could do more in terms of educating the public about identifying invasive species and the ways in which everyone can help limit the spread. She stated that there is a general lack of awareness and believes that providing more information to those who are obtaining gathering permits may be one way to improve awareness. She stressed that the information needs to be presented in a reasonable manner that would not deter people from obtaining a gathering permit. Ili shared that since the events taking place on Mauna Kea, she believes there is growing alertness amongst the people about land and culture-related issues. She has noticed an increasing awareness in schools where teachers are working with students to better understand and to seek solutions to these issues. She believes that the state should improve support to the schools so that the information is more accessible to students and teachers. Ili explained that many teachers want to do more of these kinds of projects with their students but there are many challenges that hinder their ability to execute such projects, including accessibility, funding, time, and finding a good resource person that can connect them to specific places and resources. She expressed that teachers can only guide and facilitate these kinds of projects, but they are not plant experts. She believes that education can be a key component in improving public awareness. She also added that while there may be a robust amount of scientific information about the potentially positive aspects of biocontrol, it needs to be condensed and expressed in layman's terms so that the general population can actually understand and connect to what scientists are discovering. She lamented that otherwise, people won't listen or hear what is being said because they can't connect to or understand what the scientists are saying. Ili made reference to the tremendous educational efforts that were put into improving public awareness about Rapid 'Ōhi'a Death and noted that their outreach team was doing big and small things such as community talks, stickers, hats, and being present at various local community events. She believes that more of these kinds of efforts could be undertaken for other invasive species.

Ili also shared that many scientists are not practitioners and opined that these two groups, although they may share an affinity for preserving plants, both have two completely different relationships with the resource. She believes that the relationship between scientists and practitioners should also be improved because both groups can help to elevate and improve each other's practices if they are willing to work collaboratively. While she feels that this dynamic has been changing, she thinks its especially important as we move towards the possibility of using biocontrol in native plant habitats.

4. IDENTIFICATION AND MITIGATION OF POTENTIAL CULTURAL IMPACTS

The OEQC guidelines for assessing cultural impacts identify several possible types of cultural practices and beliefs that are subject to assessment. These include subsistence, commercial, residential, agricultural, access-related, recreational, and religious and spiritual customs. The guidelines also identify the types of potential cultural resources associated with cultural practices and beliefs that are subject to assessment, which "may include traditional cultural properties or other types of historic sites, both man made and natural, including submerged cultural resources"(Office of Environmental Quality Control (OEQC) 1997:1). The origin of the concept of traditional cultural property is found in National Register Bulletin 38 published by the U.S. Department of Interior-National Park Service (Parker and King 1998). A traditional cultural property can be generally defined as:

...one that is eligible for inclusion in the National Register because of its association with cultural practices and beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community. (Parker and King 1998:1)

This definition also implies that any identified traditional practices and beliefs of an ethnic community, or members of that community, exceeds fifty years. "Traditional" as defined in the National Register Bulletin 38 "refers to those beliefs, customs, and practices of a living community of people that have been passed down through the generations, usually orally or through practices (ibid.). Whereas, "Culture" refers to "a system of behaviors, values, ideologies, and social arrangements" in addition to "tools and expressive elements such as graphic arts" (ibid.). The use of the term "Property" defines this category of resource as an identifiable place. Traditional cultural properties are not intangible, they must have some kind of boundary; and are subject to the same kind of evaluation as any other historic resource, with one very important exception. By definition, the significance of traditional cultural properties should be determined by the community that values them.

4. Identification and Mitigation of Potential Cultural Impacts

It is however with the definition of “Property” wherein there lies an inherent contradiction and corresponding difficulty in the process of identification and evaluation of potential Hawaiian traditional cultural properties because it is precisely the concept of boundaries that runs counter to the traditional Hawaiian belief system. The sacredness of a particular landscape feature is often cosmologically tied to the rest of the landscape as well as to other features on it. To limit a property to a specifically defined area may actually partition it from what makes it significant in the first place. However offensive the concept of boundaries may be, it is nonetheless the regulatory benchmark for defining and assessing traditional cultural properties. As the OEQC guidelines do not contain criteria for assessing the significance for traditional cultural properties, this study will adopt the state criteria for evaluating the significance of historic properties, of which traditional cultural properties are a subset. To be significant the potential historic property or traditional cultural property must possess integrity of location, design, setting, materials, workmanship, feeling, and association and meet one or more of the following criteria:

- a Be associated with events that have made an important contribution to the broad patterns of our history;
- b Be associated with the lives of persons important in our past;
- c Embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; or possess high artistic value;
- d Have yielded, or is likely to yield, information important for research on prehistory or history;
- e Have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts—these associations being important to the group’s history and cultural identity.

While it is the practice of the DLNR-SHPD to consider most historic properties significant under Criterion d at a minimum, it is clear that traditional cultural properties by definition would also be significant under Criterion e. A further analytical framework for addressing the preservation and protection of customary and traditional native practices specific to Hawaiian communities resulted from the *Ka Pa’akai O Ka ‘Āina v Land Use Commission* court case. The court decision established a three-part process relative to evaluating such potential impacts: first, to identify whether any valued cultural, historical, or natural resources are present; and identify the extent to which any traditional and customary native Hawaiian rights are exercised; second, to identify the extent to which those resources and rights will be affected or impaired; and third, specify any mitigative actions to be taken to reasonably protect native Hawaiian rights if they are found to exist.

Summary of Culture-Historical Background, Consultation

A review of the culture-historical background information reveals that *Miconia* was introduced to the Wahiawa Botanical Gardens on the island of O’ahu in 1961 as a garden ornamental. Between 1961 and the 1970s, the plant was distributed to other gardens on O’ahu including the Waimea Botanical Gardens on O’ahu’s north shore and at the Harold L. Lyon Arboretum in Mānoa Valley, but was not widespread. During this time, *Miconia* was also reported at the estate of Herbert Shipman in Hilo on Hawai’i Island. By the 1970s isolated populations of *Miconia* had become naturalized on the island of O’ahu, Maui, and Hawai’i. Despite warnings given between 1975-1983 to government officials about the plant’s potential to invade Hawai’i’s wet forest habitat, several individual specimens were destroyed but no major efforts were undertaken to prevent the plant’s spread. By the 1990s, *Miconia* had become aggressively abundant on Maui and Hawai’i islands and to eradicate and contain existing populations “Operation Miconia,” a concerted statewide effort, was officially launched. Public education and awareness about the impacts of *Miconia* to Hawai’i’s wet forest habitat garnered public attention and support. Despite these efforts, *Miconia* is still found on four of the major Hawaiian Islands, namely Kaua’i, O’ahu, Maui, and Hawai’i. Of the four islands, *Miconia* infestation is most extensive on Hawai’i Island and it has been estimated that this plant covers some 250,000 acres.

Identification of Cultural Impacts and Proposed Mitigation Measures

Although *Miconia* has existed in the Hawaiian Islands for more than fifty years, there are no recorded cultural uses for this plant, other than it being used as an ornamental. While horticulturalist and plant collectors are known to favor this plant for its unique qualities, there is no historical evidence to suggest that *Miconia* is crucial to any particular ethnic groups’ cultural history, identity, practices, or beliefs, nor does it meet any of the significance criteria outlined above. Although *Miconia* does not meet any of the significance criteria, what is culturally significant is the wet forest habitat in which it thrives. Hawai’i’s wet forest habitat could be considered significant as a traditional cultural property under Criterion e, as it contains many culturally important indigenous and endemic taxa, which are still utilized in

4. Identification and Mitigation of Potential Cultural Impacts

certain Hawaiian cultural practices. Some of these wet forest resources are also associated with certain Hawaiian cultural beliefs.

Based on the information presented in the culture-historical background and from the insights shared by the consulted parties, it is the assessment of this study that the release of the proposed biological control agent, *Euselasia chrysippe* will not result in impacts to any valued cultural, historical, or natural resources. Conversely, if no action is taken to further reduce remaining populations of *Miconia* from claiming more of Hawai'i's wet forest habitat, then impacts to this valued resource would be anticipated.

While no specific cultural impacts have been identified, the consulted parties shared valuable insight, concerns, and recommendations that could reduce the potential for any future impacts and improve public transparency regarding the effectiveness of biocontrol as a conservation management strategy. Several key themes emerged from the consultation efforts, all of which are further described below:

- 1) maintain stringent pre and post-release testing and monitoring;
- 2) improved community transparency and input;
- 3) active and ongoing public outreach and education;
- 4) improve efforts to limit the introduction of potentially harmful invasive species.

While the consulted parties did not explicitly oppose the use of biocontrol, especially to aid in the recovery of Hawai'i's native forest habitat, they all shared a sense of concern and spoke about the risks inherent in biocontrol activities. While they were all aware of the extensive studies that are conducted prior to the release of any biocontrol agent, they all spoke about the uncertainty of introducing another foreign insect to Hawai'i's fragile ecosystems. Several of the consulted parties noted that although pre-release host specificity test helps with the screening process, they shared that laboratory testing cannot account for all the variables found in nature. The generally held belief is that field release is merely another screening and testing procedure. Despite this element of uncertainty, all of the consulted parties agreed that some sort of action is necessary to limit the growth and spread of *Miconia*. Nearly all of the consulted parties stressed the importance of thorough controlled pre-release studies to safeguard against the potential for the collateral loss of other endemic taxa or economically valuable crops. Several of the consulted parties also stressed the importance of conducting on-going and consistent post-release monitoring to ensure that the biocontrol agent does not spread beyond its intended target. These individuals noted that consistent post-release monitoring will help with early detection if it is found that the proposed biocontrol agent has unintentionally spread beyond the host plant. Wild Brawner suggested the concept of integrated pest management, particularly for native plants, where natural and cultural management practices are employed concurrently. Examples of this include, timing weed removal and planting companion plants to attract active pollinators or insects that may combat other invasive insects.

In looking to future biocontrol efforts, nearly all of the consulted parties expressed the need to integrate more public input and stressed the importance of moving towards a community-based resource management structure. Based on the past public meetings held by HDOA for biocontrol, Jen Lawson felt that the public meetings held by the HDOA should be restructured so that they are engaging and inclusive of community input as she believes this may improve trust between the affected communities and the agencies. Jen Lawson and Iliahi Anthony believe that supporting biocontrol research must be clearly and effectively communicated to the public using various media forms. Iliahi Anthony noted that education and outreach are key components to improve the public's understanding of biocontrol and empowering them with the knowledge and tools to help limit the spread of invasive species. Both Jen Lawson and Iliahi Anthony expressed that improving the public's understanding of the risk and benefits of biocontrol may help to build public transparency and hopefully resolve some of the misconceptions associated with biocontrol. Jen Lawson encourages the responsible agencies to consider partnering with conservation-focused non-profit organizations and community groups, especially during the field release monitoring phase as these groups are working directly with these target species daily. As noted by Kim and Forest Starr, the conventional biocontrol release methods that have been used in the past typically yields results that are underwhelming. Perhaps, the additional support from non-profit organizations could potentially improve the efficacy of biocontrol.

All of the consulted parties spoke about the many misconceptions associated with biocontrol, many of which are based on failed historical examples. While testing and screening procedures have improved significantly since the late 19th century, many people today remain resistant and skeptical to implement biocontrol. It is the author's contention and as described by some of the consulted parties that this widely held belief stems from the agencies' lack of public outreach and education. In light of this, it is imperative that DLNR, DOFAW, and HDOA make serious efforts to participate in public outreach events and to educate the public so that these misconceptions, some of which are rooted in a historical context, can be better understood. Public outreach and education efforts should also demonstrate the potential effectiveness of biocontrol as a conservation management strategy. Iliahi Anthony spoke about the

4. Identification and Mitigation of Potential Cultural Impacts

effectiveness of the Rapid 'Ōhi'a Death (ROD) community outreach efforts and believes that this could be an exemplary model. Iliahi Anthony noted that the ROD outreach team has been actively disseminating information using various media forms.

While combatting existing populations of invasive species is a critical step in managing Hawai'i's natural resources, it was noted by Manaiakalani Kalua that the State of Hawai'i must also ramp up their efforts to prevent the arrival and introduction of unwanted pest species. Manaiakalani Kalua believes that current policies and laws must be revised and strengthened. Both Manaiakalani Kalua and Iliahi Anthony noted that in their travels to other countries their customs entry process is far more rigorous and thorough. Manaiakalani Kalua believes that the State should look to other countries such as New Zealand and Japan as models to prevent the arrival of unwanted pests.

In summary, the recommendations provided above are intended to ensure that the release of *E. chrysippe* as a biocontrol agent for *Miconia* considers the culture-historical context and the concerns and thoughts shared by the consulted parties. While none of the consulted parties explicitly opposed the use of biocontrol, the concerns, and recommendations offered above are intended to support the State of Hawai'i in being mindful of the cultural, social, and environmental uniqueness of Hawai'i. Conducting background research, consulting with community members, and taking steps towards mitigating any potential cultural impacts is done so in the spirit and practice of *Aloha 'Āina*, a contemporary movement founded on traditional practices and beliefs that emphasize the intimate relationship that exists between Native Hawaiians and the *'āina* (land). If DLNR, DOFAW, and HDOA assume ownership of their right and responsibility to release a biocontrol agent, we recommend it be done so in that same spirit and practice. Attention to and implementation of the above-described issues and measures will help to ensure that no such resources, practices, or beliefs will be adversely affected by the proposed release of *E. chrysippe*.

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APPENDIX A.
***KA WAI OLA* PUBLIC NOTICE**

PUBLIC NOTICE

ASM Affiliates is preparing a Cultural Impact Assessment (CIA) in advance of a proposed statewide release of four (4) biological control (biocontrol) agents for four target invasive species. In brief, DOFAW is seeking to conduct a statewide field release of four (4) separate biocontrol agents on four target species:

- introduction of a wasp parasitoid (*Aprostocetus nitens*) to further control the erythrina gall wasp (*Quadrastichus erythrinae*), which has been impacting the native *wiliwili* (*Erythrina sandwicensis*);
- introduction of a small beetle (*Syphraea uberabensis*) to control weedy melastomes (*Tibouchina* spp.);
- introduction of a thrips insect (*Pseudophilothrips ichini*) to control Christmas berry (*Schinus terebinthifolia*);
- introduction of a butterfly (*Euselasia chrysippe*) to control miconia (*Miconia calvescens*).

We are seeking consultation with any community members that might have knowledge of traditional cultural uses or who are involved in any ongoing cultural practices associated with the target species (i.e. *wiliwili*, melastomes, Christmas berry, and miconia). If you have and can share any such information please contact Lokelani Brandt lbrandt@asmaffiliates.com, or Aoloa Santos asantos@asmaffiliates.com, phone (808) 969-6066, mailing address ASM Affiliates 507A E. Lanikaula Street, Hilo, HI 96720.

(Ka Wai Ola 2019:21)

Appendix C: Comments Received During Draft Environmental Assessment Public Comment Period

Twenty-three letters of correspondence were received during the 30-day public comment period for release of *E. chrysippe* for the biological control of miconia. All letters supported the release of *E. chrysippe*, and therefore no changes were made to the draft EA in the composition of the FEA.

From: [biocontrol form](#)
To: [Wideman, Kylee K](#)
Subject: biocontrol form
Date: Friday, April 24, 2020 5:54:16 PM

You've got a new comment:

Comment on a Project
Target: Miconia (Miconia calvenscens)
Name
Shelley Gustafson
Email
shelley.gustafson@hawaii.edu
Address
3190 Maile Way Honolulu, Hawaii 96822 Map It
Comments/Questions
I support the proposed release of Euselasia chrysippe for biological control of Miconia calvenscens in Hawaii. Miconia calvenscens is a severe threat to Hawaii's native forests, and has already modified habitats on a landscape scale in certain areas of the state. We need to act quickly to keep this from happening throughout our islands. The use of biological control is an important part of the overall strategy to mitigate the impacts of Miconia calvenscens on our native forests.
Do you wish to be notified during early consultation for future biocontrol projects?
<ul style="list-style-type: none">• No

From: [biocontrol form](#)
To: [Wideman, Kylee K](#)
Subject: biocontrol form
Date: Friday, April 24, 2020 3:55:19 PM

You've got a new comment:

Comment on a Project
Target: Miconia (Miconia calvescens)
Name
Mark Wright
Email
markwrig@hawaii.edu
Address
University of Hawaii at Manoa 3050 Maile Way Honolulu 96822 United States Map It
Comments/Questions
I strongly support the proposal to release Euselasia chrysippe for the biological control of Miconia in Hawaii. The data presented show that there is a very low, essentially negligible, probability of any potential negative impacts, while a very high likelihood for beneficial impact (reduction in Miconia fitness) is expected.
Do you wish to be notified during early consultation for future biocontrol projects?
<ul style="list-style-type: none">• Yes

From: [biocontrol form](#)
To: [Wideman, Kylee K](#)
Subject: biocontrol form
Date: Tuesday, April 28, 2020 6:00:02 PM

You've got a new comment:

Comment on a Project

Target: Miconia (Miconia calvescens)

Name

Fern Duvall

Email

fern.p.duvall@hawaii.gov

Address

Hawaii DLNR Division Forestry & Wildlife
685
Kahului, HI 96732
United States
[Map It](#)

Comments/Questions

Comments pertain to the Draft Environmental Assessment. examining a butterfly *Euselasia chrysippe* that could help manage invasive Melastomataceae especially *Miconia calvescens* in Hawai'i forests.

I have read the EA and wish to very strongly support the proposed release of this biocontrol as outlined. I send this support as the Chair of the Maui invasive species and as a biologist that is familiar with the issues surrounding the invasive miconia (more than 37,000 acres on East Maui) and melastome invasions of Maui. It is my hope that they caterpillars will also feed on *Clidemia hirta* (*Miconia crenata*) if only to a lesser extent, and perhaps moreso where the latter is more prevalent than *Miconia calvescens*. Any loss of the biomass is welcomed in the areas currently infested by the melastomes. Thank you for your work on biocontrol for Hawai'i.

Do you wish to be notified during early consultation for future biocontrol projects?

- Yes

From: [biocontrol form](#)
To: [Wideman, Kylee K](#)
Subject: biocontrol form
Date: Thursday, April 30, 2020 3:03:38 PM

You've got a new comment:

Comment on a Project
General/Other
Name
Brooke Mahnken
Email
brookemahnken@gmail.com
Address
PO Box 791921 Paia, HI 96779 United States Map It
Comments/Questions
The general public is notoriously miseducated about modern biocontrol. Please follow the recommendations of the expert biologists and members of the conservation community. Asking for public input without adequate outreach/education is a slippery slope. I would not consult my mechanic on a medical condition; I would ask my doctor. Do what is pono and stick with the experts
Do you wish to be notified during early consultation for future biocontrol projects?
<ul style="list-style-type: none">No

Clifford Smith cliff@hawaii.edu

Good morning:

This is a good analysis of the potential environmental consequences of releasing this potential biocontrol agent against *Miconia*. The added benefits against other melastomes is salutary.

Excellent. I encourage the state to proceed as rapidly as possible.

Clifford Smith
Emeritus Professor in Botany
☒

On Thu, Apr 23, 2020 at 3:53 PM Cullison, James A <james.a.cullison@hawaii.gov> wrote:
Aloha Mr. Smith,

Attached is a letter regarding the **Draft** Environmental Assessment for the proposed field release **of** the miconia butterfly (*Euselasia chrysippe*) for biological control **of** miconia (*Miconia calvescens*) in Hawaii. Mahalo for your interest during early consultation, and if you have any questions please feel free to let us know!

Mahalo,

Andy Cullison
Hawaii Island & Forest Health Planner
Hawaii Division **of** Forestry & Wildlife
(808) 436-8122
<https://dlnr.hawaii.gov/hisc/info/biocontrol/>

From: [biocontrol form](#)
To: [Wideman, Kylee K](#)
Subject: biocontrol form
Date: Thursday, April 30, 2020 3:32:09 PM

You've got a new comment:

Comment on a Project

Target: Miconia (Miconia calvescens)

Name

Adam Knox

Email

adamjknox@gmail.com

Address

190 Hauoli Street Apt. 119
Wailuku, Hawaii 96793
United States
[Map It](#)

Comments/Questions

This natural enemy to Miconia calvescens is needed now more than ever. I support the release of this natural enemy and applaud the dedicated work of the career scientists who spent many years researching Euselasia chrysippe and going through the painstaking process of determining host-specificity to protect Hawaii's native flora and fauna from adverse impacts. Truly a commendable effort, as the EA shows. This will be a big win for the State of Hawaii (and invasive species science), and could be helpful in other parts of the world, like Tahiti, where miconia has ravaged large parts of the island. More resources should be put into natural enemy research to aid in the passive reduction of other invasive species in Hawaii and elsewhere. Likewise, more resources should also be put into the programs that actively work to get rid of invasive species, as our quality of life in the islands may hang in the balance if these pests are left to their own devices.

Do you wish to be notified during early consultation for future biocontrol projects?

- Yes

From: [biocontrol form](#)
To: [Wideman, Kylee K](#)
Subject: biocontrol form
Date: Thursday, April 30, 2020 2:28:44 PM

You've got a new comment:

Comment on a Project
Target: Miconia (Miconia calvescens)
Name
Carol Kwan
Email
carol@carolkwanconsulting.com
Address
PO Box 893953 Mililani, Hawaii 96789 United States Map It
Comments/Questions
I support the release of the proposed biocontrol agent for Miconia. I'm glad to see this new tool in the battle against Miconia!
Carol Kwan
Do you wish to be notified during early consultation for future biocontrol projects?
<ul style="list-style-type: none">• Yes

From: [biocontrol form](#)
To: [Wideman, Kylee K](#)
Subject: biocontrol form
Date: Sunday, May 3, 2020 7:52:59 PM

You've got a new comment:

Comment on a Project
Target: Miconia (Miconia calvenscens)
Name
Paul Krushelnycky
Email
pauldk@hawaii.edu
Address
2718 Hlpawai Pl. Honolulu, HI 96822 United States Map It
Comments/Questions
I strongly support the release of Euselasia chrysippe to control Miconia calvenscens. Miconia is one of the most damaging environmental weeds in Hawaii, and biological control is the only feasible methods of managing it at this stage. I am confident that the risks of unwanted detrimental impacts from releasing this agent are very low.
Do you wish to be notified during early consultation for future biocontrol projects?
<ul style="list-style-type: none">• Yes

From: [biocontrol form](#)
To: [Wideman, Kylee K](#)
Subject: biocontrol form
Date: Wednesday, May 6, 2020 5:12:07 AM

You've got a new comment:

Comment on a Project
Target: Miconia (Miconia calvescens)
Name
Nicole Lis
Email
nlis@hawaii.edu
Address
525 W. Lanikaula Street, Hale Kauanoë Room #A106 Hilo, Hawaii 96720 United States Map It
Comments/Questions
<p>Invasive species on the Hawaiian islands pose a serious threat to native plant life, and the longer the issue is pushed off the more difficult it becomes to fix, both financially and ecologically. The miconia rapidly grows, shading out native forests, due to the lack of top-down control as a result of natural predators. Currently only high value sites are being mechanically and chemically controlled, but this temporary solution will not have a lasting impact on the ecosystem. Herbicides also have negative impacts, so biocontrol such as the introduction of a natural predator <i>E. chrysippe</i> could provide a safer, longer lasting solution. It is important to introduce <i>E. chrysippe</i>, as they would help diminish the effects of miconia by defoliating the broad leaves which block the sun from reaching native plants. The caterpillars can also lower reproduction of miconia, preventing spread of the noxious weed. Extensive studies have shown that the <i>E. chrysippe</i> are host specific, so they are not expected to feed on or harm other species. This shows that the caterpillars will target miconia by only foraging on that plant and its close phylogenetic relatives. Furthermore, field observations indicate that there are no significant negative impacts of the <i>E. chrysippe</i> on the environment. The native wet forest ecosystem has the potential to be saved from the noxious miconia if these caterpillars are introduced, and fast action will mitigate future expenses and damage that may become increasingly difficult to turn around.</p>
Do you wish to be notified during early consultation for future biocontrol projects?
<ul style="list-style-type: none"> No

From: [biocontrol form](#)
To: [Wideman, Kylee K](#)
Subject: biocontrol form
Date: Tuesday, May 5, 2020 2:29:53 PM

You've got a new comment:

Comment on a Project
Target: Miconia (Miconia calvescens)
Name
Ryan Coad
Email
rcoad@hawaii.edu
Address
PO box 6054 Hilo, Hawaii 96720 United States Map It
Comments/Questions
Aloha, I've read through the Environmental Assessment for utilizing Euselasia chrysippe as a method of controlling the Miconia populations in Hawaii, and I support this movement wholeheartedly. Many methods of biocontrol in the past have had negative effects on our ecosystems, but the fact that Euselasia chrysippe is very specific about what its caterpillars predate on gives me confidence that this measure will not have detrimental effects. I hope that we can go forward with this method of biocontrol and that the affected ecosystems will experience the reprieve they deserve.
Do you wish to be notified during early consultation for future biocontrol projects?
<ul style="list-style-type: none">• No

Christopher Kishimoto, Entomologist

HDOA PQ Branch

1849 Auiki St.

Honolulu, HI 96819

May 6, 2020

Patrick Conant

P.O. Box 1172

Volcano, HI 96785

Dear Mr. Kishimoto,

I am very pleased to see the Draft Environmental Assessment for the release of the biological control agent *Euselasia chrysippe*. I am a retired Entomologist that was engaged in very similar work over much of my career. The DEA was well written, not overly long and the tests performed in the work were all very thorough over a wide range of plant taxa. I am relieved to read that parasitoids of Riodinids butterflies are not shared with other Lepidoptera, so the risk of biotic interference is reduced.

With respect to host specificity of the larvae, Those results reported are also encouraging. The only 2 other plants in Hawaii (*Miconia crenata* and *Miconia bicolor*) that the larvae did well on are also invasive weeds in Hawaii. I see feeding on those weeds as a bonus, since virtually all the Melastomataceae in Hawaii are invasive, and some of them extremely so.

The family Melastomataceae should be prohibited from importation before yet more species are imported. The cost of suppression and containment of *M. calvescens* has been staggering for all infested islands for many years now. I have been involved in all aspects of it, and I started Sierra Club Service Trips to contain *Miconia* on Oahu back in about 1990. To me, biological control is the ultimate control method, but it is neither cheap nor rapid in deployment. It is much cheaper to prohibit potential pests from importation in the first place.

From: [biocontrol form](#)
To: [Wideman, Kylee K](#)
Subject: biocontrol form
Date: Monday, May 11, 2020 6:06:55 PM

You've got a new comment:

Comment on a Project

Target: Miconia (Miconia calvescens)

Name

Karl Magnacca

Email

knm956@gmail.com

Address

709A Hualau Place
Pearl City, Hawaii 96782
United States
[Map It](#)

Comments/Questions

I am writing to strongly support release of the butterfly *Euselasia chrysippe* for biocontrol of *Miconia calvescens*. As a conservation biologist in Hawaii for over 25 years, I have seen the progressive deterioration of our natural environment, primarily due to invasion by alien plants and animals. Since the failed eradication effort on the Big Island several years ago, *Miconia* has been slowly expanding its numbers and range. With rapid ohia death currently devastating the remaining lowland native forests, it is poised to expand dramatically. It is therefore especially urgent that a control agent be released now before it becomes a problem on a scale like that of Tahiti. This butterfly has undergone extensive testing and does not appear to have any adverse effects; if anything, it has a frustratingly narrow host range given how many invasive melastomes we have with no native species.

Do you wish to be notified during early consultation for future biocontrol projects?

- Yes

From: [biocontrol form](#)
To: [Wideman, Kylee K](#)
Subject: biocontrol form
Date: Tuesday, May 12, 2020 3:46:23 PM

You've got a new comment:

Comment on a Project
General/Other
Name
Harjaspreet Kaur
Email
hkaur4@hawaii.edu
Address
9D Clinton street Delaware, New Jersey 07833 United States Map It
Comments/Questions
<p>The Miconia calvescens is one of the most invasive species that threatens native fauna in Hawaiian forest ecosystems. Its broad leaves prevent other plant species from obtaining sunlight needed for photosynthesis. This not only harms native species and can lower biodiversity, but also harms agriculture, horticulture, aquaculture, and livestock in Hawaii. The Miconia can spread quickly with each plant producing approximately 20,000 seeds per fruiting season, outcompeting species around it, and begin to form a monoculture if not controlled. So far, not much has been done to effectively control this species, especially in the long term or widespread. Biocontrol is a more effective way to mitigate the miconia population expansion that will last longer and cover more land. If Euselasia chrysippe is released, it will only forage on this species and its close relatives, since testing has already been done that indicates their low risk of non-target impacts. Furthermore, the Euselasia chrysippe is not expected to wipe out Miconia populations, and instead is expected to reduce population levels enough to provide enough room for sunlight to reach other species. Therefore, the Euselasia chrysippe would be an effective biocontrol that is essential to preserving native plant species and aiding agriculture.</p>
Do you wish to be notified during early consultation for future biocontrol projects?
<ul style="list-style-type: none">• No

From: [biocontrol form](#)
To: [Wideman, Kylee K](#)
Subject: biocontrol form
Date: Tuesday, May 12, 2020 7:29:21 PM

You've got a new comment:

Comment on a Project
Target: Miconia (Miconia calvescens)
Name
Dakota Perry
Email
Dakotap@hawaii.edu
Address
754 Park Ave Banning, California 92220 United States Map It
Comments/Questions
<p>I think that the use of Euselasia chrysippe is a good use because it has the chance to with the bio control of the invasive Miconia. Since the Miconia is not from the island the impact that it has to the native species is very problematic and bringing in a predator for the plants may cause other problems because we don't know how much of an impact it will have on the native species of the island. It is still a good way to try to control the plant species, but because there is no evidence of how it will impact the native species it would be good to start on a single island with a small group and closely monitor the problem within a small ecosystem. I will be keeping up with the biocontrol if it passes and I hope we can restore the beautiful islands of Hawai'i.</p>
Do you wish to be notified during early consultation for future biocontrol projects?
<ul style="list-style-type: none">• No

From: [Kishimoto, Christopher M](#)
To: [Wideman, Kylee K](#)
Subject: FW: [EXTERNAL] support for Miconia biocontrol
Date: Friday, May 15, 2020 7:42:15 PM

From: J. B. Friday <jbfriday@hawaii.edu>
Sent: Friday, May 15, 2020 3:53 PM
To: Kishimoto, Christopher M <Christopher.M.Kishimoto@hawaii.gov>
Cc: Danielle Frohlich <DFrohlich@swca.com>
Subject: [EXTERNAL] support for Miconia biocontrol

Aloha Mr. Kishimoto,

I am writing to support the introduction of the butterfly *Euselasia chrysippe* for biocontrol for Miconia in Hawaii. I am extension forester with the University of Hawaii Cooperative Extension Service, and I work with landowners and managers of forests across the state. Miconia, like many woody invasive plants, has gone too far to be controlled manually with cutting and herbicides. It presents a clear danger to our wet forests based on its behavior elsewhere. Well-tested biocontrol measures such as this one are our only option for controlling the tree.

Sincerely,
J. B. Friday

--

J. B. Friday, PhD
Extension Forester

College of Tropical Agriculture and Human Resources
University of Hawaii at Manoa

Komohana Research and Extension Center
875 Komohana St.
Hilo, HI 96720 USA

tel 808 969-8254

fax 808 981-5211

e-mail jbfriday@hawaii.edu

<https://cms.ctahr.hawaii.edu/forestry>

<http://www.rapidohiadeath.org>

<http://www.facebook.com/HawaiiForestryExtension>

<http://YouTube.com/HawaiiRREA>

<http://www.flickr.com/photos/jbfriday>

https://www.instagram.com/james_b_friday/

He Wa'a, He Moku: The island is a canoe. (We're all in this together).



MALAMA O PUNA

P.O Box 1467

Pahoa, Hawai'i 96778

(808) 965-2000

www.malamaopuna.org * malamaopuna@yahoo.com

Protecting Hawai'i's precious natural heritage

May 14, 2020

Hawai'i Department of Agriculture
1849 Auiki St.
Honolulu, HI 96819
Attn: Christopher Kishimoto
christopher.m.kishimoto@hawaii.gov

Aloha Mr. Kishimoto,

This letter is in reference to the Draft Environmental Assessment, Field Release of *Euselasia chrysippe* (Lepidoptera: Riodinidae) for Biological Control of Miconia, *Miconia calvescens* (Melastomataceae), in Hawai'i.

Malama O Puna is a 501(c)(3) environmental organization based in Puna, Hawai'i Island, and part of our mission is to protect native ecosystems. We have a long history with invasive species control and eradication efforts--having worked to control miconia and other weeds in native forests and taking on the eradication of red mangrove over the entire coastline of our island.

We support biological control whenever circumstances favor it. Biocontrol saves resources, human and material, because it is self-propagating and dispersing. Perhaps most significantly, biocontrol reduces our reliance on chemicals to fight invasions.

In the case of miconia and the proposed biocontrol agent, *Euselasia chrysippe*, there are a number of factors contributing to the likelihood of success:

- The family to which miconia and many other terrible weeds in Hawai'i belong, Melastomataceae, has no members that are native here. Therefore, there is less chance of a jump from miconia to a native species.
- There are no recognized benefits to miconia, other than the beauty of its foliage, but the foliage is only beautiful when the plants are small. When miconia forms a canopy it looks brown and unattractive, and severely limits what can grow beneath it. Therefore, the public is unlikely to object to control efforts.
- Miconia management has for years now been relegated to the status of hopeless on Hawai'i Island, due to the overwhelming populations present relative to the resources available for manual control, and the work becomes increasingly miserable as little fire ants spread.

- Results of trials with the proposed biocontrol agent *Euselasia chrysippe* demonstrate great promise of making a substantial impact on miconia's ability to grow and reproduce. The demonstrated impacts on *Tetrazygia bicolor* and, to a lesser extent, *Clidemia hirta* lead us to optimism that those species too will be controlled to a significant extent. *Clidemia* is one of the worst weeds that we have to deal with in Puna's lowland forests.

Malama O Puna is supportive of the proposed action for miconia biocontrol. We are convinced that adequate research and testing have been done to compel moving forward with the permitting and release of *Euselasia chrysippe*.

E Malama Pono,

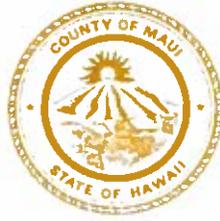
A handwritten signature in cursive script that reads "Ann Kobsa".

Ann Kobsa
President

MICHAEL P. VICTORINO
Mayor

JEFFREY T. PEARSON, P.E.
Director

HELENE KAU
Deputy Director



DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793
www.mauiwater.org

May 20, 2020

State Protection Forester
1151 Punchbowl Street, Room 325
Honolulu, HI 96813
Attn: Ms. Kylee Wideman

SUBJECT: Draft Environmental Assessment (DEA) for the Proposed Field Release of *Euselasia chrysippe* for Biological Control of *Miconia Calvescens* in Hawaii

Dear Ms. Wideman,

Thank you for the opportunity to provide comments on the above-stated DEA.

The sustainability of the Department of Water Supply's (DWS) surface and groundwater sources depend on healthy watersheds. In recognition of this dependency, DWS continues to provide financial, water revenue funded, support to watershed projects in Maui County that combat threats to our upper watersheds.

For over 20 years, DWS has provided grant subsidies to Maui Invasive Species Committee (MISC) and East Maui Watershed Partnership (EMWP) to contain *miconia calvescens* (miconia) in the East Maui watershed. Together, EMWP and MISC are committed to using best management practices and adopting innovative approaches, such as the utilization of herbicide ballistic technology (HBT), which was pioneered in the Maui watersheds, to control outlier populations of miconia. MISC's Miconia Management Strategy relies on both ground and aerial operations to control and contain this highly invasive plant across more than 119,000 acres of suitable habitat.

In addition, DWS supports the University of Hawaii's Project to Develop Bio-Economic Models Prioritizing Mauka Catchment Basins in the East Maui Watershed Against Incipient Miconia Invasion. This project considers the lifecycle of miconia and aims to attack incipient populations before they become of age to disperse seeds.

"By Water All Things Find Life"

Ms. Kylee Wideman
Page 2

We know from MISC and EMWP that their biological and mechanical efforts have always been made in earnest to yield decent progress. However, miconia remains persistent in remote areas so any additional advantage we can gain against it is welcomed. Therefore, we are in support of the free-ranging *Euselasia chrysippe* butterfly to help control miconia and other related species.

Should you have any question, please contact Edna Manzano of our Water Resources and Planning Division at edna.manzano@co.maui.hi.us or call (808) 463-3108.

Sincerely,

A handwritten signature in black ink, appearing to read "Jeffrey T. Pearson".

Jeffrey T. Pearson, P.E.
Director



May 21, 2020

Re: Proposed Statewide Field Release of Euselasia chrysippe for Biological control of Miconia (Miconia calvescens)

The Big Island Invasive Species Committee supports the proposed release of the miconia butterfly *E. chrysippe* as a biological control for miconia. As there are no native members of the Melastomaceae Family in Hawaii, and several species in this group are extremely damaging to Hawaii's ecosystems, we have no concerns with non-target impacts. The EA includes the results of the extensive host testing performed by the researchers and we are satisfied with the specificity results.

BIISC is very familiar with the challenges of controlling miconia through physical and chemical efforts. Our organization claims its roots in the Big Island Miconia Action Committee, a group formed in the mid-1990s to fight miconia - one of the World's 100 Worst Invasive Species as designated by the International Union for the Conservation of Nature (IUCN).

Because the Big Island was the location of the initial naturalization in the 1960s, the infestation here by the 1990s was already entrenched. While other islands pursue eradication, the strategy on the Big Island was, from the beginning, one of containment of core populations and eradication of outliers. However, while over a decade from 1996-2006 BIMAC/BIISC controlled literally millions of plants, it was not feasible to deplete those core populations. With a million seeds per plant, a single reproducing adult can cancel years of control work in just a few seasons. Calculations of the cost of the physical/chemical control ranged from \$22/acre to \$375/acre. With hundreds of thousands of vulnerable acres on the Big Island, the task of controlling with this method alone is nearly impossible.

The strategy of containment adopted in those early years was with the intent of buying time until a biological control agent could be found. Even in 2000, the natural resources professionals who developed the Big Island miconia strategy acknowledged the critical need for this tool. We are excited and grateful to now have this tool available, and we look forward to seeing the "pretty yellow butterfly" at work in our miconia-impacted forests. We appreciate all of the work that has been done to make this biocontrol available.

Thank you for the opportunity to provide comments on this matter. Please do not hesitate to contact us with any questions.

Mahalo,

Franny Brewer
Communications Director
fbrewer@hawaii.edu
(808) 933-3340

From: [biocontrol form](#)
To: [Wideman, Kylee K](#)
Subject: biocontrol form
Date: Monday, May 25, 2020 11:35:42 AM

You've got a new comment:

Comment on a Project
General/Other
Name
David Benitez
Email
david.m.benitez.a@gmail.com
Address
PO Box 964 VOLCANO, HI 96785 Map It
Comments/Questions
<p>I am fully sportive of the proposed release of this biological control agent, and believe the rigorous screening and research conducted ensures appropriate environmental safeguards. This agent is necessary to protect our forests and watersheds from irreversible damage from Miconia, widely recognized among the world's most disruptive pest species. I see no negative environmental impacts due to this proposed action.</p>

From: [biocontrol form](#)
To: [Wideman, Kylee K](#)
Subject: biocontrol form
Date: Monday, May 25, 2020 5:55:25 PM

You've got a new comment:

Comment on a Project

Target: Miconia (Miconia calvescens)

Name

Nathan Dube

Email

oiscmgr@hawaii.edu

Address

743 Ulukahiki St
 Kaiula, Hawaii 96734
 United States
[Map It](#)

Comments/Questions

On behalf of the Oahu Invasive Species Committee and myself, I would like to voice strong support for the release of a bio-control agent here in Hawaii that would reduce the numbers of Miconia plants in the state.

Miconia calvescens is one of the most detrimental and invasive alien species in our state. Miconia trees have been proven to increase erosion due to large leaves that create immense water droplets, a canopy shading out the ability for other species to form the forest under-story, and an especially shallow root system that does not retain soil effectively. These erosion promoting characteristics also exacerbate flooding events across the mauka areas of our state. Even if those flooding events persist only in the forested areas adjacent to our communities--often they are more expansive--the effects are felt throughout the island. Excess runoff carries with it increased sediment due to the erosion caused by Miconia trees, which intensifies coastal brown-water events. The runoff also carries with it non-point source pollutants like chemicals and synthetic debris (e.g. plastics), depositing them throughout neighborhoods on the way to polluting the ocean.

In addition to the erosion and flood complications, Miconia is incredibly invasive. This tree produces up to 9 million seeds per year and has been assessed as a high-risk species by the Hawaii Invasive Weed Risk Assessment. This species is able to form monotypic stands that prevent other species from growing in Miconia-dominated forest areas, which decreases bio-diversity and intensifies erosion due to the absence of other species.

Incorporating bio-control agents is a crucial step in effectively controlling, and one day eradicating, Miconia from our islands. The seed bank longevity for this species is exceptionally long with seeds remaining viable in the soil for at least 18 years. The tree's prolific reproductive capability, high level of invasiveness, and erosion promoting characteristics make Miconia an extremely difficult species to control and eradicate. Conservation land managers need to utilize as many tools as possible in creating a healthier Hawaiian forest, and this biological control agent will assist in that fight.

Do you wish to be notified during early consultation for future biocontrol projects?

- Yes

From: [biocontrol form](#)
To: [Wideman, Kylee K](#)
Subject: biocontrol form
Date: Tuesday, May 26, 2020 2:56:06 PM

You've got a new comment:

Comment on a Project

Target: Miconia (*Miconia calvescens*)

Name

Adam Radford

Email

miscmgr@hawaii.edu

Address

PO Box 983
 Makawao, HI 96768
 United States
[Map It](#)

Comments/Questions

Aloha,

In the hills above Hana, Nahiku, and Keanae, the Maui Invasive Species Committee (MISC) crew hikes day in and day out looking for and pulling miconia plants. A significant amount of helicopter time has also been committed to the project since the 1990s. Fortunately, these efforts have kept miconia to low-elevation forests on East Maui and out of West Maui. However, we are losing the battle.

Miconia, in the melastome family (Melastomataceae), is a notorious invader of Hawaiian forests. A single plant can produce millions of seeds. Miconia seeds grow quickly into large plants with huge leaves that block out the sunlight, preventing other plants from germinating. Miconia's shallow roots do little to stabilize soil. Eventually, miconia becomes the only plant in the forest; invaded sites are known for landslides and erosion that muddy streams and bury reefs.

MISC supports the proposed field release of the small butterfly, *Euselasia chrysippe*, for biological control of the noxious weed *Miconia calvescens*. A variety of tools will be needed to stem the tide, this is an important one.

Euselasia chrysippe is a natural herbivore of miconia in the plant's native range of Costa Rica whose caterpillars feed externally on the leaves of several species of Miconia. Extensive testing has shown *E. chrysippe* to be host-specific to miconia and other closely related members of the melastome family, all of which are non-native weeds in Hawaii. Because *E. chrysippe* is limited to feeding on a small pool of closely related species, all of which are invasive, its release is expected to be beneficial to Hawaii's forests and hydrology, and adverse effects are expected to be negligible, leveling the playing field for control efforts.

Mahalo for your consideration of this request.

Adam Radford

MISC Manager

Do you wish to be notified during early consultation for future biocontrol projects?

- Yes



East Maui Watershed Partnership

Watershed Partners

County of Maui/
Department of
Water Supply

May 26, 2020

Hawaii Dept. of Agriculture
Christopher Kishimoto
1849 Auiki St.
Honolulu, HI 96819

East Maui
Irrigation
Company

Dear Mr. Kishimoto:

Haleakala
National Park

The members of the East Maui Watershed Partnership (EMWP) participate together to protect East Maui's native rainforest and primary water source in perpetuity. *Miconia calvescens* has been determined by EMWP to be one of the most invasive weeds, with the greatest potential to permanently disrupt the watersheds of East Maui.

Haleakala Ranch

EMWP is supportive of an IPM approach to pest control and believes that biological control of *Miconia calvescens* in Hawaii is an important tool for management of this problematic species.

State of Hawaii
Department of
Land and Natural
Resources

The Draft Environmental Assessment and Anticipated Finding of No Significant Impact (DEA-AFONSI) for the Proposed Statewide Field Release of *Euselasia chrysippe* (Lepidoptera: Riodinidae) for Biological Control of *Miconia calvescens* (Melastomataceae) is comprehensive and thorough. EMWP supports the proposed field release of *Euselasia chrysippe*.

The Nature
Conservancy

Sincerely,

Dan Eisenberg
Program Manager
East Maui Watershed Partnership



May 26, 2020

Jonathan Ho
 Plant Quarantine Branch
 Hawai'i Department of Agriculture
 1428 South King Street
 Honolulu, Hawaii 96814-2512

Support for biocontrol for *Miconia*

Aloha mai kākou,

On behalf of the Maui Conservation Alliance (MCA), we would like to voice our support for the proposed field release of the small butterfly, *Euselasia chrysippe*, for biological control of the noxious weed *Miconia calvescens*. A variety of tools will be needed to stem the invasion; this is an important one.

Miconia, in the melastome family (Melastomataceae), is a notorious invader of Hawaiian forests. A single plant can produce millions of seeds. *Miconia* seeds grow quickly into large plants with huge leaves that block out the sunlight, preventing other plants from germinating. *Miconia*'s shallow roots do little to stabilize soil. Eventually, *miconia* becomes the only plant in the forest, displacing rare native plants and disrupting ecosystems. Invaded sites are known for landslides and erosion that muddy streams and bury reefs.

Euselasia chrysippe is a natural herbivore of *miconia* in the plant's native range of Costa Rica whose caterpillars feed externally on the leaves of several species of that genus. Extensive testing has shown *E. chrysippe* to be host-specific to *miconia* and other closely related members of the melastome family, all of which are non-native weeds in Hawaii. Because *E. chrysippe* is limited to feeding on a small pool of closely related species, all of which are invasive in Hawaii, its release is expected to be beneficial to Hawaii's forests and hydrology, and adverse effects are expected to be negligible.

Steve Robertson, Chair
 Tamara Sherrill, Secretary

The MCA is a cooperative partnership of more than thirteen government, private and non-profit organizations who are the key leaders in the management of Maui's native ecosystems. MCA is committed to accelerating conservation management on Maui's highest priority conservation needs.

DAVID Y. IGE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

September 2, 2022

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
FIRST DEPUTY

M. KALEO MANUEL
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
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CONSERVATION AND RESOURCES ENFORCEMENT
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FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

Ms. Mary Alice Evans, Director
State of Hawai'i
Office of Planning and Sustainable Development
Environmental Review Program
235 South Beretania Street, Room 702
Honolulu, HI 96813

RE: FINAL ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT
IMPACT FOR THE PROPOSED FIELD RELEASE OF *EUSELASIA CHRYSIPPE*
(LEPIDOPTERA: RIODINIDAE) FOR BIOLOGICAL CONTROL OF *MICONIA*,
MICONIA CALVESCENS (MELASTOMATACEAE), IN HAWAI'I

Dear Ms. Evans:

With this letter, the State of Hawai'i Department of Land and Natural Resources hereby transmits the Final Environmental Assessment and Finding of No Significant Impact (FEA-FONSI) for the proposed field release of *Euselasia chrysippe* (Lepidoptera: Riodinidae) for biological control of miconia, *Miconia calvescens* (Melastomataceae), in Hawai'i for publication in the next available edition of The Environmental Notice.

In addition to this letter, the online Environmental Review Program (ERP) Publication Form has been submitted through the ERP website, including one (1) electronic copy of the FEA-FONSI as an Adobe Acrobat PDF file.

Should you have any questions, please contact Robert Hauff of the Division of Forestry and Wildlife at (808) 587-4174.

Sincerely,

y

Suzanne D. Case
Chairperson