

Minutes of the Advisory Committee on Plants and Animals
June 8, 2021 Meeting
Hawaii Department of Agriculture (HDOA)

I. CALL TO ORDER

The meeting of the Advisory Committee on Plants and Animals (Committee) was called to order by Committee Chairperson Mr. Darcy Oishi on Tuesday, June 8, 2021 at 9:11 a.m. via Zoom meeting.

Members Virtually Present:

Darcy Oishi, Committee Chairperson, Hawaii Department of Agriculture (HDOA)
Dr. Maria Haws, Professor of Aquaculture, Pacific Aquaculture & Coastal Research Center, University of Hawaii at Hilo
Dr. Benton Pang, Invasive Species Team Manager, U.S. Fish and Wildlife Service
Robert Hauff, State Protection Forester, Division of Forestry & Wildlife, Department of Land & Natural Resources (DLNR) Ex Officio Member Designated Representative
Myra Ching-Lee, Acting Branch Chief, Disease Outbreak Control Division, Department of Health, Ex Officio Member Designated Representative
Kenneth Matsui, Petland/Pets Pacifica
Leslie Segundo, Environmental Health Specialist, Office of Environmental Quality Control (OEQC), Department of Health, Ex Officio Member Designated Representative

Others Virtually Present:¹

Jodi Yi, Deputy Attorney General
Jonathan Ho, Acting Manager, Plant Quarantine Branch (PQB), HDOA
Noni Putnam, Land Vertebrate Specialist, PQB, HDOA
Chris Kishimoto, Entomologist, PQB, HDOA
Lance Sakaino, Plant Specialist, PQB, HDOA
Wil Leon Guerrero, Microorganism Specialist, PQB, HDOA
Jonathan Kam, Acting Invertebrate & Aquatic Biota Specialist, PQB, HDOA
Trenton Yasui, Acting Inspection & Compliance Chief, PQB, HDOA
Karen Hiroshige, Secretary, PQB, HDOA
Jason Azus-Richardson, IT Specialist, HDOA
Adam Vorsino
Alexh
Anonymous
Brandon Kim – Sen. Gabbard

¹ The identification of the public members is based on their sign-in name but are not verified.

Chris Farmer
Conservation Council for Hawaii
Cynthia King
David Smith – LNR
Dennis LaPointe
Emily Gardner, Esq.
Eric Vanderwerf, PRC
Floyd Reed
Gracelda Simmons
Hanna Mounce
Janelle
Jonathan Likeke Scheuer
Joshua Fisher, USFWS
Katherine McClure
Lainie Berry
Lincoln. Wells
Luka Zavas
Matthew Medeiros
Michelle Tavares-Cassel
Renee Bellinger
Stephanie Mladinich
Steve Montgomery
Teya Penniman
Uilani B

II. INTRODUCTION AND COMMENTS

Chairperson Darcy Oishi and the Committee members introduced themselves.

III. APPROVAL OF MINUTES FROM THE MAY 14, 2021 MEETING

Chairperson Darcy Oishi asked if the Committee had a chance to review the minutes for the May 14, 2021 meeting before entertaining a motion to approve them.

With no further questions or comments Committee Member Robert Hauff made a motion to approve the May 14, 2021 meeting minutes. The motion was seconded by Committee Chairperson Darcy Oishi.

Chairperson Oishi asked if there were any comments or discussion from the public. No response from the public. Motion was moved to a vote and passed unanimously.

Vote: APPROVED 7/0.

IV. COMMENTS FROM GENERAL PUBLIC ON AGENDA ITEMS (ORAL OR WRITTEN)

Written testimony was received and distributed to the Committee members.

Committee Member Kenneth Matsui noted that he will recuse himself from the mosquito agenda item. He believes *Aedes* mosquitos and humans should be the higher priority. He believes the upcoming proposal will work, but the risk of Dengue and Zika are high enough that we should focus on that first.

Chairperson Oishi asked if there were any comments from the public. Five individuals raised their hands. Chairperson Oishi said that oral testimony will be heard after the requests have been presented. Deputy Attorney General Yi concurred with the Chair.

V. REQUESTS TO BE REVIEWED BY THE ADVISORY COMMITTEE

Land Vertebrate

Request to: (1) Allow the Importation of Two Mute Swans, *Cygnus olor*, an Animal on the List of Restricted Animals (Part B), by Permit, for Exhibition, by Grand Hyatt Kauai Resort and Spa; and (2) Update Permit Conditions for the Importation of Two Mute Swans, *Cygnus olor*, an Animal on the List of Restricted Animals (Part B), by Permit, for Exhibition, by Grand Hyatt Kauai Resort and Spa.

PQB Land Vertebrate Specialist Noni Putnam provided a synopsis of the request. Ms. Putnam stated that she received a total of five advisory subcommittee recommendations; two of which recommended approval and three recommended disapproval to allow the importation of two mute swans, an animal on the List of Restricted Animals (Part B) by permit for exhibition by the Grand Hyatt Kauai Resort & Spa (Grand Hyatt Kauai). Ms. Putnam said to refer to the comments made by the advisory subcommittee members. She said that she mentioned to the Grand Hyatt Kauai that the subcommittee comments be addressed prior to presenting before the Committee and to referred to comments by Michelle Tavares-Cassel, Assistant Director of Engineering at the Grand Hyatt Kauai.

Ms. Putnam said that she received an email that morning from Ms. Tavares-Cassel that she wanted reiterated from the previous land vertebrate specialist stating that it was obvious that Mr. Campos was running a tight ship and that he encouraged the committee to support his efforts in allowing visitors to enjoy the exotic animals. Ms. Putnam noted that the applicants Mr. Jezrael Campos and Ms. Tavares-Cassel were in attendance and available to answer questions, if needed.

Committee Chairperson Darcy Oishi asked the members of the Committee if they had any questions for PQB or the applicant.

Committee Member Dr. Benton Pang had questions regarding procedures on the attachments. Dr. Pang wanted to verify if there are always procedures, inspections and health certificates required prior to birds arriving into Hawaii. He further asked, "Are these procedures always in place when importing birds to Hawaii?" Ms. Putnam said "That is correct." She noted PQB and Animal Quarantine have their own conditions and requirements that they regulate and enforce.

Committee Member Matsui said that Ms. Putnam referred to earlier submittals by the Grand Hyatt Kauai and asked if they previously had mute swans? Ms. Putnam stated the Grand Hyatt Kauai previously had swans at their facility. Ms. Putnam said that the PQB was notified of the swans passing on, and it appears to be one of the reasons for the request. Mr. Matsui asked if the swans they want to import are all females or both males and females? Ms. Putnam stated that the application is for two mute swans. She deferred the question to the Grand Hyatt Kauai. Mr. Matsui also asked if the Grand Hyatt Kauai ever had issues with the swans escaping; for instance, in the case with a hurricane? Ms. Putnam said, "no" according to the information provided and noted the birds at their facility are pinioned and closely watched.

Ms. Tavares-Cassel, Grand Hyatt Kauai, said that they do have emergency procedures in place for natural disasters, and that they collect all of the animals which are placed indoors in separate crates. She said that they have a wildlife facility which is located indoors and inside their landscaping compound area. She further mentioned that the birds are also pinioned to prevent the birds from flying away, and that there are security-wellness check procedures in place 24 hours a day. Ms. Tavares-Cassel said they are currently working on expanding their CCCS (Closed Caption Camera System) to make sure there are cameras on every exhibit on property. Chairperson Oishi asked Ms. Putnam if there had been any reports of any mute swan attacks noting the concerns expressed by some of the advisory subcommittee members? Ms. Putnam said that there have been no reports of any aggression or attacks on record from the five facilities that currently have mute swans at their facilities.

Committee member Matsui restated his question regarding if the Grand Hyatt Kauai would be importing all females or both males and females? Ms. Tavares-Cassel

said that they don't have a preference and that the swans don't normally reproduce on property. Mr. Matsui asked if there are any Nene geese in any adjacent areas? Ms. Tavares-Cassel said that they have a separate area for two Nene geese that they are housing for the State. She further said that they have had these Nene geese for 20+ years, which were transferred to their facility through the State due to injury. Mr. Matsui stated that he saw a YouTube video of swans going after Canadian geese, which is just a color variation of Nene geese. He asked if there was any problem with the compatibility of those two geese? Ms. Tavares-Cassel said that they are in separate exhibits, therefore, there have been no problems.

Committee Chair Oishi asked Ms. Putnam what will happen if the Board does not update the permit conditions? Ms. Putnam said that it is her understanding if the conditions are denied, the import permit will not be granted. She noted that there are other sites that also have restricted animals, and her goal is to work with those permittees to update old existing conditions to include applicable requirements of municipal, state, or federal law.

Jonathan Ho, Acting PQB Manager, said that the submittal is requesting to allow importation and update the permit conditions; they're tied together. He reiterated Ms. Putnam's comments that if the Board does not want to update permit conditions, then they would very likely not allow importation. He said that if the Committee felt there was something inadequate regarding the conditions, this is the time to insert additional language regarding importation. Mr. Ho said that because there was discussion regarding allowing only females, that could be a suggested requirement, but it's the Committee's decision.

Committee member Matsui asked if the mute swans that are already in Hawaii are both males and females or are they one sex or another? Ms. Tavares-Cassel said that they have both males and females. Mr. Matsui stated that if we allow only females, it doesn't matter because there are both males and females already here.

Advisory Committee Member Rob Hauff stated that Ms. Tavares-Cassel also mentioned that there are Nene geese already on display, and they don't interact with the swans. He asked, "What about wild Nene geese flying around Kauai?" He said that he noticed that the pen is open with a two-foot barrier. Mr. Hauff asked, "Are there any interactions between the wild Nene?" Ms. Tavares-Cassel stated that in her six-year tenure, she has never seen wild Nene land on the property, and that Jez [Jezrael Campos] could attest to that. She said that she sees them flying overhead all the time, and she's unsure why they stay away – "maybe because there's so many people here." Ms. Tavares-Cassel further mentioned that occasionally, she'll see a Koloa duck, and then it'll disappear.

Committee member Dr. Pang asked if there were any other wild birds that enter the water features on the property, and are the water features artificial or natural?

Jezrael Campos, Grand Hyatt Kauai, said that the water features are man-made; they are not actual sources; any run-off goes back into the water filtration system, and nothing goes back into the natural habitat. Ms. Tavares-Cassel reiterated that only once or twice in her six years she has seen a Koloa duck in the water features and that lasts a day or two, and then they're gone again; nothing else.

Committee member Hauff asked Ms. Putnam if it would make any sense to change the conditions to import only females knowing that there are males, with the idea that eventually there would be only a female population and that would be additional security against reproduction?

Ms. Putnam stated that based on the suggestions of the advisory subcommittee, the Committee could recommend a stipulation be added into the permit conditions requiring the importation of only females. Ms. Putnam said her understanding is the Grand Hyatt Kauai does not currently have any mute swans at their facility, but they do have other Black swans on their property that are male. She further mentioned the facility is planning to house the mute swans in a different area from the other swans. Ms. Putnam said that if the advisory committee does recommend to move forward with this, the conditions can stipulate only male or only female.

Committee member Matsui states that he's unclear as to what impact this restriction of "only females" would have at other institutions that have other male mute swans. He asked if they would be allowed to continue to have them, or we would effectively be forcing them to get rid of them? Ms. Putnam said that her understanding is that facilities that currently have males and females would be able to continue with operations based on the conditions set forth at the time. She further mentioned that if there should come a time where problems arise, we will address them at that time. Moving forward, if there is concern regarding allowing only females, we'll address it at this time. If there are any other facilities requesting import, then those conditions will be dealt with at that time.

Mr. Ho stated that the current conditions do not prohibit breeding. He said that instead of limiting by sex, you could limit propagation in the conditions. Mr. Ho said they do provide us with inventory, and if they were intentionally or unintentionally breeding them, the applicant would have to take corrective actions or would be in violation of the permit conditions. He said the applicant can attest to whether they can separate them or not and noted the likelihood of breeding them is very low.

Mr. Ho addressed Mr. Matsui's comment by saying that right now the current conditions do stand. He reiterated, "As Noni stated, they would technically still be allowed." Moving forward, should there be a need to strongly regulate that, we can work with them outside of the permitting process.

Ms. Putnam said that advisory subcommittee member Dr. Carolyn McKinnie stated in her comments: “Birds are regulated under the AWA (Animal Welfare Act) though no standards have been set as yet. Currently, we are in the process of developing bird standards so in the future these animals will be regulated and inspected by USDA.” Ms. Putnam said that in the event different state or federal rules or regulations are presented, the PQB would work with those agencies to make sure the sites adhere to state and federal conditions. If the permittees are not able to follow the state or federal rules or regulations, appropriate steps will be taken regarding the disposition of the animals.

Chair Oishi requested a motion. Receiving no responses from the committee members, Chair Oishi made a motion to approve. Advisory Committee Member Dr. Maria Haws seconded the motion. Chair Oishi asked if there was any discussion? Mr. Hauff said that he wasn’t sure how the other committee members felt about adding in the “females only” condition. Chair Oishi asked Ms. Putnam if she was aware of any progeny from imported mute swans? Ms. Putnam said, “yes”.

Chair Oishi asked Ms. Putnam if the permit conditions were set for the Grand Hyatt Kauai at this point, would all future applicants requesting importation of mute swans have the same permit conditions that the Board sets? Ms. Putnam stated that any future requests to import mute swans would follow the conditions reviewed by the Committee, and as approved by the Board. Chair Oishi says that it’s pertinent to have a discussion given the additional information.

Committee member Hauff asked to amend the existing motion or recommend a new motion. Chair Oishi asked the committee if they wanted to recommend females only or prohibit breeding? Mr. Hauff stated that breeding would likely be accidental and not intentional and did not know how you would prevent accidental breeding. Chair Oishi reiterated that one of the recommendations was that males are more aggressive than females, so he suggested recommending that only females be allowed for import. He made a motion to approve the request and amend the permit conditions to restrict importation to females only. Mr. Hauff seconded the motion. The motion was called to vote.

Vote: APPROVED 6/0, with 1 abstention (Pang)

Motion Passed.

Chair Oishi called forward the next request from Plant Quarantine.

Insects:

Request to: (1) Determine if the Establishment of the Southern House Mosquito, *Culex quinquefasciatus*, a Vector of Avian Influenza in Hawaii, Constitutes an Ecological Disaster; (2) Allow the Importation of the Southern House Mosquito, *Culex quinquefasciatus*, an Unlisted Insect, Inoculated with a Foreign *Wolbachia* Bacteria Species, by Special Permit, for Laboratory, Field-Release, and Area-Wide Mosquito Suppression Research, by the University of Hawaii at Manoa; (3) Establish Special Permit Conditions for the Importation of the Southern House Mosquito, *Culex quinquefasciatus*, an Unlisted Insect, Inoculated with a Foreign *Wolbachia* Bacteria Species, for Laboratory, Field-Release, and Area-Wide Mosquito Suppression Research, by the University of Hawaii at Manoa, (4) Determine the Probable Impact on the Environment if the Southern House Mosquito, *Culex quinquefasciatus*, an Unlisted Insect, Inoculated with a Foreign *Wolbachia* Bacteria Species, is Accidentally Released; and (5) Are the proposed permit conditions sufficient to ensure that the Southern House Mosquito, *Culex quinquefasciatus*, an Unlisted Insect, Inoculated with a Foreign *Wolbachia* Bacteria Species, presents probably minimal or no significant effects on the environment.

Mr. Christopher Kishimoto, PQB Entomologist, provided a synopsis of this import request by applicants Floyd Reed and Matthew Medeiros, University of Hawaii, Manoa. Due to the time constraints of the applicant to attend this meeting, Mr. Kishimoto requested that the Committee's questions be posed to the applicant first before soliciting questions from the public.

Committee Chair Oishi asked the Committee if there were any questions for PQB or the applicant.

Committee Member Leslie Segundo addressed the Committee about the determination of whether or not an Environmental Assessment (EA) exemption can be issued, saying that there are thirteen (13) criteria set forth in Chapter 343, Hawaii Revised Statutes (HRS), that need to be examined. If there is a finding that the cumulative impact of a project has a significant effect on the environment or if sensitive environments are involved, an EA exemption cannot be issued.

Committee Member Dr. Benton Pang asked Mr. Segundo if there was a difference between a positive impact or a negative impact in determining the issuance of an EA exemption?

Mr. Segundo replied that the statute (Chapter 343, HRS) does not consider whether or not an environmental impact is positive or negative. It could be a significant beneficial impact. Mr. Segundo reiterated that the possible impact on the environment

needs to be run through the criteria set forth in Chapter 343, HRS to determine significance. A question about likely impact on the environment cannot simply be asked and answered to determine the issuance of an EA exemption. Mr. Segundo said that in order to clear Chapter 343 HRS, a project needs to determine one of three things: 1) Will the project really have minimal or no significant impact on the environment? 2) If the environmental impact of the project is unknown, an EA must be completed with public input. 3) An Environmental Impact Statement needs to be prepared.

In light of what Committee member Segundo said, Committee Chair Oishi asked Mr. Kishimoto, noting that the subcommittee on Entomology members had determined there was no significant impact on the environment caused by this project, did that mean there was no significant impact or no significant negative impact caused by the project? Mr. Kishimoto replied that the subcommittee members likely meant that there would be no significant negative impacts on the environment.

Chair Oishi mentioned that the applicants only selected intrastate shipments of mosquitoes on the PQB permit application. Mr. Kishimoto said it was an error, and that the applicants were importing mosquitoes from out of state with the possibility of intrastate shipments in the future.

Chair Oishi asked the applicants if there has been an extensive study on *Wolbachia* bacteria in *Cu. quinquefasciatus* to determine what strains of *Wolbachia* to inoculate the mosquitoes with and if anyone else had already inoculated *Cu. quinquefasciatus* successfully with the three strains the applicants plan to import?

One of the applicants, Dr. Matthew Medeiros, replied that a technical report, published a few years ago, included one of the most extensive surveys of *Wolbachia* presence within *Cu. quinquefasciatus* populations in Hawaii. Dr. Medeiros said that the dominant strain of *Wolbachia* found throughout the state was *Wolbachia pipientis*, and he had conducted similar work mainly on Oahu that confirmed the results of the technical paper; and that there's a closely-related very rare second strain.

Dr. Medeiros also said that the *Wolbachia* strains they will import will not be compatible in terms of cytoplasmic compatibility with any *Wolbachia* currently found in *Cu. quinquefasciatus* in Hawaii.

The other applicant, Dr. Floyd Reed, added that mosquitoes with incompatible strains of *Wolbachia* would find it difficult to establish in Hawaii because so few mosquitoes would possess the new strain of *Wolbachia*. Those mosquitoes would most likely get bred out of existence since the new *Wolbachia* strain would be outcompeted by the well-established strain. Dr. Reed also told the Advisory Committee that incompatibility between the strains of *Wolbachia* they wish to import, and the strains currently found in Hawaii within *Cu. quinquefasciatus* has been confirmed. Dr. Reed

further stated that cytoplasmic incompatibility has been established in a range of insects dating back to the 1940s.

Committee member Dr. Pang asked about the first point of the submittal's title if "avian influenza" should be changed to "avian malaria". Dr. Reed agreed.

Committee member Dr. Pang said that he noticed this in a couple of places within the submittal and this should be changed to say "avian malaria" because that is an important correction to make.

Committee member Dr. Pang also noted that the applicants listed they intend to import 12,500 mosquitoes inoculated with each strain of *Wolbachia* from *Aedes albopictus*, but the submittal says they will import 2,500 mosquitoes. Dr. Pang wanted to know which number was correct.

Mr. Kishimoto replied that 12,500 mosquitoes was the correct number.

Committee member Dr. Pang asked if one of the *Wolbachia* strains (WPip4) could be removed from the request since it is not currently found in Hawaii. Dr. Reed agreed to remove this strain from consideration.

Committee member Dr. Pang then asked the applicants if they would be agreeable to only importing mosquitoes from Michigan State University (MSU) since they would ship mosquitoes that were collected from Hawaii. Dr. Reed agreed.

Chair Oishi asked the applicants if the mosquitoes from MSU were pure Hawaiian in origin or if they had been crossed with other mosquitoes that were not collected in Hawaii?

Dr. Reed replied that they had recently found out that the Hawaii collected mosquitoes had been crossed with mosquitoes not of Hawaii origin in order to get the new strains of *Wolbachia*. They thought that the Hawaii collected mosquitoes were going to remain pure, but this was not the case. Dr. Reed said that once the hybrid mosquitoes acquired the new *Wolbachia* strain, they were backcrossed with the Hawaiian mosquitoes, for what is now 7 generations. Dr. Reed also said they would like to continue to backcross those mosquitoes once they arrive in Hawaii with Hawaiian mosquitoes to remove any undesirable genetic traits that could be of concern and to increase fitness, so the males are more competitive in the field after release.

Chairperson Oishi then asked Dr. Reed what genetic markers he uses to determine if a hybrid mosquito can be considered "Hawaiian" and how it could be determined that a mosquito was considered "Hawaiian enough" to be released?

Dr. Reed said that he had tried to generate a genome for Hawaii *Cu. quinquefasciatus* mosquitoes but that has been delayed due to the pandemic. He said there are continuous introductions of *Cu. quinquefasciatus* to the islands due to travel and transport. No one knows how often these introductions are or how many mosquitoes are introduced. Regarding the concern about the MSU mosquitoes being transported to Hawaii, he said there is likely some genetic diversity of *Cu. quinquefasciatus* already in Hawaii. Dr. Reed said it would be prudent to continue backcrossing the MSU mosquitoes with locally collected mosquitoes to bring their genetics as close to Hawaii mosquitoes as possible. He said if you backcrossed the MSU hybrid mosquitoes with Hawaii collected mosquitoes for 10 generations, there is essentially no chance for any of the non-Hawaiian mosquito genes to be present and established in the MSU mosquito's genome.

Hearing no other questions for the applicants or PQB, Chairperson Oishi talked about a motion for the Committee to vote on.

Committee member Dr. Pang told Chairperson Oishi that there was testimony from the public and asked whether a motion should be made before or after hearing public testimony.

Chairperson Oishi said that he wanted to make a motion before hearing from the public.

Committee member Dr. Pang moved that the Committee recommend approval of the permit application to the Board of Agriculture with the amendments he had recommended such as the change in wording from "avian influenza" to "avian malaria", removing the *Wolbachia* strain WPip4 from the request, and allowing only mosquitoes from MSU and the University of Kentucky (UK) to be imported.

Chairperson Oishi asked Mr. Kishimoto if he understood what the amendments to the motion would be.

Mr. Kishimoto asked Committee member Dr. Pang why he wanted to include UK as a possible source of mosquitoes for the permit applicants? Committee member Dr. Pang replied that he was part of some discussions to try to have UK get some of the Hawaiian hybrid mosquitoes from MSU. He wanted to have UK as an approved source of mosquitoes just in case they were unable to get them from MSU.

Chairperson Oishi then asked Mr. Kishimoto if it would be possible to limit the source to allow the applicants to receive mosquitoes only from sources that had mosquitoes of Hawaiian origin? Mr. Kishimoto replied that could be done and the permit conditions could be amended to accommodate that request. Committee member Dr. Pang agreed.

Committee member Robert Hauff asked where the original sources of mosquitoes were mentioned in the submittal? Committee member Dr. Pang replied that the sources were on the second page. He said he was not aware of the University of Maryland having mosquitoes of Hawaiian origin but had heard there was a possibility of MSU and UK working collaboratively with the Hawaii hybrid mosquitoes.

Committee member Hauff asked if the change in requirements for shipping sources of mosquitoes was acceptable to the permit applicants? Committee member Dr. Pang answered, "yes."

Committee member Segundo asked if the motion on the submittal was approved for laboratory and field release research, did that mean that there would be no EA conducted under Chapter 343, HRS? Mr. Kishimoto asked Mr. Segundo if an EA was needed for the lab research? Mr. Segundo replied that an EA was not needed for the lab research, but it would be necessary for the field-release research because sensitive environments are involved such as national parks or areas with pristine habitat could be possible release sites.

Mr. Kishimoto said that other agencies were working on getting EAs completed for release sites, but that would be done later when release sites are chosen. Mr. Segundo asked what constitutes a field release? Mr. Kishimoto replied that the field release meant that the researchers would be releasing male *Cu. quinquefasciatus* mosquitoes that had been inoculated with a different strain of *Wolbachia* than the strains that naturally occurred in that species in Hawaii for cytoplasmic incompatibility field tests.

Mr. Segundo wanted to know where the release sites would be, and would they include sensitive environments? Dr. Reed mentioned that there were several requirements including United States Department of Agriculture and Environmental Protection Agency requirements that needed to be completed. No mosquitoes would be taken out of the lab until they received all approvals for field release. Dr. Reed said they are working with multiple agencies including DLNR, U.S. Fish & Wildlife Service, ABC Birds, and others to find and secure all the requirements needed for all of their research. Dr. Reed said that until all requirements were met, the mosquitoes would be kept in an arthropod level 2 secure facility within a Biosafety level 2 secure facility at UH Mānoa.

Dr. Reed said that early field release trials could be cage trials that are conducted in non-environmentally sensitive areas. The ultimate goal would be to conduct field release on Kauai and east Maui because of the endemic and endangered birds that are there, but that is not where the first field trials will take place. He said they have been planning this with DLNR. Mr. Hauff, who serves on the Committee for DLNR, confirmed that an EA would be completed before a mosquito field release was conducted in any sensitive bird habitat.

Chairperson Oishi asked Dr. Reed if there was a difference between a cytoplasmic incompatibility program that releases mosquitoes to help protect native birds versus research the applicants want to do that may include caged trials out in the environment? Dr. Reed said that this was all part of a process to have something available to help stop native forest bird extinction; field cage trials, included. But this will also help prevent human disease, as well, since *Cu. quinquefasciatus* vector human pathogens are not yet in Hawaii. Dr. Reed said that his own research is different. He's worked with *Culex* mosquitoes for 10 years. He works with gene-drive technologies that are fundamentally different and volunteering his knowledge, resources, and time to enable this to be applied in the future.

Chairperson Oishi asked for clarification about the research aspect of this project. Mosquitoes released into cages in the environment versus mosquitoes released without any containment into the environment. Dr. Reed responded that they would do whatever they are required to do. If the EPA requires field cage studies or incremental studies for field release, they will do that. But they would always want to continuously monitor the progress of the releases. For data collection, a couple of things they would be looking for would be presence of *Wolbachia* strains in the wild and if native bird populations are recovering.

In light of what was recently discussed, Chairperson Oishi asked Dr. Pang if he would like to amend his original motion. Dr. Pang replied that he would like to keep his motion as is. Chairperson Oishi asked Dr. Pang if he wanted to amend his motion, specifically in regard to acceptable sources of *Wolbachia* inoculated mosquitoes; if he wanted to name specific approved shippers of mosquitoes or if he wanted to keep things a little broader to allow for flexibility in who the permit applicants could receive mosquitoes from? Dr. Pang said that he wanted to allow for more flexibility as long as only mosquitoes with Hawaiian genetics were shipped and used for this project.

Dr. Pang's motion noted by Chairperson Oishi. Mr. Hauff seconded the motion.

Chairperson Oishi then asked for comments from the public, limiting comments to four minutes in length and asking those making public comments to introduce themselves and name their affiliations.

Katherine McClure, a postdoctoral fellow from Cornell University, who studied avian malaria in lowland Hawaii, wanted to underscore the dire situation Hawaii's native forest birds are currently in with regard to avian malaria. She said that she strongly supports approval of the import permit. She said that cytoplasmic incompatibility is very safe for humans, animals, plants, and the environment and the best technique available, direly urgent and required, and to do so represents the best current solution we have in this conservation crises that's devastating our native birds in Hawaii.

Teya Penniman, Project Coordinator for a multiagency group called Birds Not Mosquitoes and employed by the American Bird Conservancy, said that there were three federal agencies, three state agencies, and four nonprofit groups that are working together to support the effort to obtain a permit to research and apply mosquito cytoplasmic incompatibility in Hawaii. Individuals within the Birds Not Mosquitoes group include the state's top forest bird experts, mosquito ecologists, vector control specialists, modelers, communications specialists, and cultural advisors. Their executive committee is comprised of state and federal agency leaders. She said that one aspect of this application that's unusual is the request to grant a special permit on the basis of the current situation constituting it an ecological disaster. Ms. Penniman said that if this permit application is approved, it would pave the way for Hawaii to be the first place in the world to use cytoplasmic incompatibility for conservation purposes. She also said that this technique has already been tested, and its effects can be reversible, if necessary, by simply discontinuing release of the incompatible mosquitoes. Any and all releases of mosquitoes would only be done after satisfying all state and federal regulatory requirements. The American Bird Conservancy also believes that any risks to the environment caused by this project would be very small.

Dr. Chris Farmer, the Hawaii Program Coordinator for the American Bird Conservancy, said that he strongly supported UH's application to import *Cu. quinquefasciatus* for cytoplasmic incompatibility studies. Dr. Farmer stated that since the arrival of humans to Hawaii, approximately two-thirds of the endemic bird species have become extinct. 33 of Hawaii's remaining 44 bird species are listed under the Endangered Species Act, and 11 species have not been seen for decades and are likely extinct. Dr. Farmer said that unless this project is approved, up to 12 native honeycreeper species are expected to become extinct in the near future due to introduced diseases, particularly avian malaria, which is transmitted by non-native mosquitoes like *Cu. quinquefasciatus*. Due to global warming, these mosquitoes are gradually moving up into higher elevations and more habitat for native birds. Dr. Farmer said that the loss of Hawaii's native birds is not just a past ecological disaster, but it is an ongoing one as well, and he predicted another wave of extinctions will occur soon. He said there is now a method using Wolbachia infected mosquitoes that would help save Hawaii's native birds.

David Smith, the Administrator for the Division of Forestry and Wildlife of the Department of Land and Natural Resources represented Suzanne Case, the Chairperson of DLNR. Mr. Smith said that DLNR fully supports this permit request and sees the decline of Hawaii's native forest birds as an ecological disaster. They foresee the imminent collapse of native forest birds on Kauai due to global warming which allows mosquitoes to spread to higher elevations. He said they consider three species of birds to be going extinct very soon followed shortly by several more species.

Dr. Hanna Mounce, coordinator of the Maui Forest Bird Recovery Project and Executive Director of Na Koa Manu Conservation, stated that she has been working to

save Hawaii's native forest birds for the past 16 years. She said that other than humans, there has been no introduction that has caused the death of more forest birds than mosquitoes and the diseases they spread. Avian malaria is a primary contributor to population range limitations, declines, and extinctions for Hawaiian honeycreepers. The spread of *Cu. quinquefasciatus* and avian malaria continues to overwhelm Hawaii's native forest bird populations. Maui has only 6 forest bird species remaining and 2 of them are likely to go extinct within the next decade unless something is done to save them. The kiwikiu may have as few as 75 individuals left. Native birds serve as pollinators and seed dispersers to plants that comprise Hawaii's watersheds. This cytoplasmic incompatibility project is one of the best shots to save the remaining native birds. Pursuing this project to save native birds in no way limits similar projects that could help save humans from mosquito-vectored diseases, too.

Eric Vanderwerf, from the non-profit group Pacific Rim Conservation, has been working on the conservation management of Hawaiian Birds for the past 35 years. He reiterated what other commentators had said, saying that the loss of Hawaii's native birds is an ongoing catastrophe that has been happening for decades. Hawaii has already lost most of its native forest birds, and avian malaria and avian pox virus, which are spread by mosquitoes, are the biggest threat to existing populations. He said that in the past we did not have adequate tools to protect native birds, but we do now, so please allow us to use this (cytoplasmic incompatibility) in Hawaii. Mr. Vanderwerf said that he strongly supported this proposal. He agreed with Dr. Mounce saying that if we don't use this technique soon, Hawaii could lose more bird species.

Dr. Dennis Lapointe, Ecologist with the United States Geological Survey, said that he has been studying avian diseases and the role of mosquitoes in the transmission of avian malaria for almost 30 years. He is a member of the Birds Not Mosquitoes steering committee and its research subcommittee. Dr. Lapointe said in the 30-year history of the Pacific Islands Ecosystem Research Center, they repeatedly documented the negative impacts of avian malaria in native Hawaiian forest birds, including the recent rapid decline in native forest bird communities on Kauai and Maui and the changing role of mosquitoes as transmitters of avian malaria and how that is affected by climate change. Dr. Lapointe said that the establishment and spread of *Cu. quinquefasciatus* in the Hawaiian Islands threatens the remaining populations of native forest birds, thereby constituting an ecological disaster.

Chairperson Oishi asked if there were any more comments.

Committee member Dr. Pang wanted clarification on the proposed amendment about restricting the type of mosquitoes that the permit applicants could receive to include only mosquitoes that had genetic material from Hawaii collected *Cu. quinquefasciatus*. Dr. Pang asked Mr. Kishimoto if he could recite the exact wording to make sure that only Hawaiian biotype mosquitoes would be used.

Mr. Kishimoto responded that he did not have specific language drafted yet but that he would create a permit condition that stated that the permit applicants would only be allowed to import mosquitoes from sources that have mosquitoes collected in Hawaii.

Chairperson Oishi called on PQB Acting Manager Jonathan Ho.

Mr. Ho said that to address what Dr. Pang would like, PQB could amend proposed Permit Condition No. 1 to define “restricted article(s)” to mean “Hawaiian biotype Southern House Mosquito, *Culex quinquefasciatus*”. From there, PQB would work with the applicants to ensure only Hawaiian biotype mosquitoes are imported as requested by the Committee. This would also be less cumbersome and give the applicants more freedom than allowing only certain shippers for this project. Amending Permit Condition No. 1 this way would make it very clear that this is what the Committee is recommending.

Committee Member Dr. Pang asked Mr. Kishimoto if a future request to use this mosquito control technique was issued, would PQB be able to process the request faster given that this particular request took a while to come before the Committee?

Mr. Kishimoto replied that it would depend on the nature of the request. If the request was different, for a different purpose, or used other mosquito species, for example, to control mosquitoes specifically for human diseases, it could still take some time to process. Mr. Kishimoto stated that there is typically a lot of questions and communication that goes on between PQB and the applicants with a submittal like this.

Committee Member Dr. Pang said that Mr. Kishimoto did a good job in the completion of the request, and that he did his due diligence in making sure it had all the right safeguards in place.

Chairperson asked if there were any further comments from the Committee. There was no further discussion. Chairperson Oishi called for a vote.

Vote: RECOMMEND APPROVAL with changes to Permit Condition No. 1 – 6/1, with one abstention (Matsui).

Motion passed.

Mr. Kishimoto asked Chair Oishi to repeat the motion for purposes of the record.

Chairperson Oishi reiterated the motion is to approve the request with the edits to the title to reflect avian malaria vs. avian influenza, and changes to the permit conditions limiting it to the importation of the Hawaii biotype mosquito for this purpose.

(Chairperson Oishi called for a recess at 10:56 a.m. to reconvene at 11:02 am.)

Committee member Dr. Pang had a procedural question regarding testimonies that were provided. He asked if the written testimonies and minutes inclusive of some oral testimony included when its forwarded to the Board of Agriculture? Chairperson Oishi said, "yes, that's correct." Chair Oishi also noted that it included 16 written testimonies from various members of the public.

Chairperson Oishi called forward the next request from Plant Quarantine.

Land Vertebrate:

Request to: (1) Remove the Vasa Parrot, *Coracopsis vasa* from the List of Restricted Animals (Part B), and add it onto the List of Conditionally Approved Animals; (2) Allow the Importation of One Vasa Parrot, *Coracopsis vasa*, by Permit, for Individual Possession as a Domestic Animal Companion, by Lise Madson; and (3) Establish Permit Conditions for the Importation of One Vasa Parrot, *Coracopsis vasa*, for Individual Possession as a Domestic Animal Companion, by Lise Madson.

Mr. Jonathan Ho, Acting PQB Manager, provided a brief synopsis of this request and reiterated that this request has been presented to the Board multiple times. Currently, the PQB is working to initiate rulemaking to address procedural issues. Mr. Ho received five responses from the Subcommittee on Land Vertebrates; three recommended disapproval to change the list placement and two committee members recommended approval. Regarding the establishment of permit conditions and to allow importation, there were two disapprovals and three approvals.

Chairperson Oishi asked if the Committee had questions for the PQB or the applicant representative Ms. Gardner.

Committee Member Rob Hauff said that the lists already have broad categorizations of organisms on them, and he was struggling with the possibility of setting precedent with this proposal. He said it appeared that this was low risk because it is a single male bird that would be kept indoors and asked if changing the list placement was the only way to accommodate the request, or was there a way to provide an exception without changing the rules? Mr. Ho said, "correct" and the list

placement defines who can import an animal and also the specific uses that the animal could be used for. He said that an animal on the List of Restricted Animals, Part B (RB List) could not be imported as a domestic animal companion and that there were certain provisions for unlisted animals, such as the prior mosquito request by special permit; therefore, the only way to issue a permit in this instance would be to change the list placement.

Mr. Hauff asked if a reptile collector requested a rare snake to be placed on the List of Conditionally Approved Animals (CA List), would that be analogous to this situation? Mr. Ho said that he understood where Mr. Hauff was coming from and that anyone has the ability to submit a petition. He noted that from a regulatory standpoint, the Vasa parrot, which likely poses a similar risk to those birds already being allowed on the CA List, could still be disapproved by the Board. Mr. Ho said that ultimately PQB enforces the rules, noting the Advisory Subcommittee responses were very varied with both approvals and disapprovals and there was no way to guarantee that the Vasa parrot would not be invasive. He said that if the Vasa parrot is placed on the CA List, then it would be eligible for importation by any other individual for any approved purpose. Mr. Ho said that if the Committee is concerned about the possibility of escape and establishment, then the conditions could be amended to allow the importation of males, only. He said that the review process is designed to assess the potential for risk, even with animals with little background information, and if there is not enough to properly assess risk, then the request could ultimately be denied.

Mr. Hauff said the permit conditions state that the bird needs to be imported into Honolulu. He said the DLNR injurious wildlife rules restrict movement interisland, so how would the applicant get the bird to Hawaii Island? Mr. Ho said that the Board determines the approved ports of entry, and Honolulu is the only full port of entry. Mr. Ho said that any bird species that is imported has to come to Honolulu. PQB's understanding of the injurious wildlife rules was they restricted the interisland movement of species from an island they are established to an island where they are not established. He gave an example of a parakeet being imported into Honolulu, inspected, then given a certificate to move to Kauai. Chairperson Oishi asked if the importation process would not be complete until the animal arrives at its neighbor island destination? Mr. Ho said, "no", the inspection would be conducted in Honolulu, and if it passes inspection, would then be certified for inter-island movement. Mr. Hauff asked if the import process is what determines the exemption from the DLNR rules? Mr. Ho said that when those rules were initially enacted, there was a question about how imports would work due to the port-of-entry issue. Mr. Ho said that the Land Vertebrate Specialist at that time, Mr. Keevin Minami, said he spoke to Mr. Chee at DLNR, who said that because the animals were not collected from the wild, they were exempt from the regulation, and PQB has been operating under this premise.

Chairperson Oishi said that some of the Subcommittee members noted the precedent-setting nature of this request and asked if there has been an RB List to CA

List change before? Mr. Ho said that he was not aware of any recent requests of that nature but noted that in the '90s there were a lot of requests to add unlisted animals to the CA List. He said the only recent instance of a downward placement of an animal was the change in placement of water buffalo from the List of Restricted Animals, Part A, to the RB List. He said with regards to precedent, anyone has the right to submit a petition and go through the process. Mr. Ho said that he didn't think this was precedent setting but noted that it could feel that way due to the complaint, and PQB was going through the process to be compliant.

Committee Member Dr. Benton Pang said the lists were created some time ago. He asked how are the lists updated and who is responsible for those updates? Mr. Ho said that statutorily, any change to the lists would come before the Committee for review. He said any changes would be the responsibility of PQB. Mr. Ho noted that the lists were old and that a comprehensive review of the lists had not been done for some time. He said that for every animal on a list, the review of an individual species involves a lot of work, noting how in-depth a submittal is, that PQB is not currently set up to undertake a comprehensive review of the lists, and doing so would require tremendous resources. Mr. Ho said that PQB is working on individual requests as received to update conditions to address current risks as this is more manageable, while trying to determine a long-term solution to list placement. He said there is a potential for other agencies to start the process and noted PQB did collaborate with DLNR Division of Aquatic Resources on the process to restrict some aquatic species. Mr. Ho said setting a priority or need for changes would make the changes more manageable. He noted removal of certain amphibians from the CA List due to the U.S. Fish and Wildlife Service restrictions, based on the risk of spreading Chytrid fungus, would be a good compartmentalized undertaking.

Dr. Pang asked if there has been a prior instance of allowing only a single animal as a domestic animal companion? Mr. Ho said that he was not aware of that but noted that it is within the Committee's authority to make a recommendation to allow it.

Committee Member Matsui said that the Committee had allowed a single pet turtle many years prior. Mr. Ho said that it was possible that there was an allowance for that situation because prior to the mid-2000s animals on the RB List could be imported as pets on a case-by-case basis, noting that it was possible to have a monkey as a pet; however, that provision has since been removed. Chair Oishi said that the changes to restrictions for pets happened at the same time the regulations for primates changed.

Mr. Hauff said he had seen the request for public hearings come before the Board at the May meeting, which was denied, and asked why it is back before the Committee now? Mr. Ho said that PQB has been working with Ms. Madson to do the review, but she filed a formal complaint, so the Board chose to immediately review the request because they have the authority to go straight to the next step in rulemaking, which was the public hearing. He said that PQB had already submitted the request to

the Subcommittee for review and had planned the Committee review, so the Board decided to delay the request so that a complete review could occur before the June Board meeting for a final determination.

Chair Oishi called Emily Gardner forward. Ms. Gardner introduced herself and stated she was representing Ms. Madson. Ms. Gardner noted the PQB recommended Ms. Madson petition the Board for rulemaking change before applying for a research permit as an alternative suggestion. The literature review provided by Mr. Greenwell and statement by Dr. Hart both indicated that the Vasa parrot poses less of a risk to the environment than the parrot species that are already on the CA List. She noted that Vasa parrots have odd reproductive behavior and environmental requirements for reproduction, and they bond very closely with their owners. She said the chance of escape of this particular animal is minimal, but noted it did not address the broader concern should other individuals want to import Vasa parrots. Ms. Gardner said that there has been almost no successful breeding of this species in captivity or outside its native habitat. She said that the applicant is committed to being a responsible owner, and she was open for questions.

Mr. Matsui said Fireweed, *Senecio madagascariensis*, is a big problem for ranchers because if cattle eat it, they sometimes die or if calves drink their milk, the calves die. He asked if the Vasa parrot used fireweed as nesting material? Ms. Gardner said that she's an attorney, not a scientist, but could relay that question to the appropriate individuals and get a response back to the Committee. Mr. Matsui said the problem is that the change in placement was the issue not the individual bird. Ms. Gardner said that she understood the placement issue. Mr. Matsui said that a moth, *Secusio extensa*, a fireweed biocontrol agent, was released to control fireweed and asked if the Vasa parrot would eat the moth. Ms. Gardner said that she was unsure but said that it was likely that other parrot species on the CA List are already doing so. Mr. Matsui said that because fireweed and the Vasa parrot are both from Madagascar, there could be an inherent resistance to the toxins within fireweed which warrants additional consideration. Ms. Gardner responded that Dr. Hart of UH Hilo would likely be able to answer these technical questions.

Chair Oishi asked if there were any further questions. Dr. Pang asked if there were conditions to ensure the imported animal would not be a potential vector for diseases or parasites. Ms. Gardner said that Ms. Madson was open to any reasonable requirements and noted the request was reasonable. Mr. Ho noted that proposed Condition No. 7 addressed the concern, noting that banding and 7-day mosquito-proof enclosure requirements also need to be followed as they are requirements by the HDOA Division of Animal Industry (AI). He said should the request be approved, that upon import, the parrot would be taken to the AI facility at the airport to ensure disease requirements are met and PQB inspectors would conduct the inspection at the AI office. Mr. Matsui asked if AI still required banding? Mr. Ho said that the conditions were reviewed by Dr. Isaac Maeda, State Veterinarian, who recommended establishment of the conditions as provided, therefore, assumed the requirement to still be in effect.

Committee Member Dr. Maria Haws said the assessment appeared solid from a scientific standpoint and the lists are outdated. She said that there has been considerable time given in reviewing these requests, and there are organisms with inappropriate list placement. She said she understands PQB's constraints, but something needs to be done about revising the lists and changing the rules so requests can be reviewed in a more efficient fashion.

Chairperson Oishi called for a motion. Mr. Matsui recommended that approval be granted with a requirement that only males be allowed, as this would allow import and minimize the risk of establishment. Chair Oishi seconded the motion and asked for further discussion or public comment. Mr. Hauff asked if a male-only requirement would be feasible?

Mr. Ho said that it could be done and that should this be approved, the list placement would only make the Vasa parrot eligible for importation. Should another individual request import for a purpose different than what is proposed here, they would have to go through the full review process. He also noted that there are already bird species on the list that are male only. Chair Oishi asked if the applicant was responsible for ensuring that the animal is a male. Mr. Ho said that the health certificate would indicate sex.

Dr. Haws stated that if the proposal to accept males only is accepted, what would happen to a future individual on Kauai that wants to import a female Vasa parrot? Would there be females only on Kauai and males only on Hawaii Island? She said that it seemed silly that the first applicant would set the standard for importation and that it did not seem like a very scientific approach. Mr. Matsui said that finches have been males only for decades and that has limited risk of them getting established. Dr. Haws agreed that a mono-sex population did reduce risk, but it highlighted that the process was piecemeal and needs to review the way that this is done. She also asked how do you get something off the CA List; does someone from the public need to petition the Board to do that? She felt that the likelihood of that would be low and that the agency should be doing that work and noted she was not objecting to the particular request but was reiterating that the way the conditions are made needs to be revisited.

Mr. Ho said that the rules were set up for a specific species and specific use and noted that the possibility of females only on Kauai is something that could be done. He said that the rules were written this way to give flexibility in allowing specific uses while being able to evaluate and manage possible risks associated with those import requests. Mr. Ho said that the rules were created in the 1990s, and at that time there was no Amazon.com online shopping or access to many of the exotic species that is now currently available. He said figuring out a way to deal with list placement of animals is noted and from a regulatory standpoint, typically PQB would not lower restrictions without a request, as that could be interpreted as preferential to those

getting the subsequent imports. Mr. Ho said that increasing restrictions on certain animals is certainly something PQB could do and how that should occur needs to be developed.

Chairperson Oishi asked if there were any other comments or discussion. Hearing none, he called for a vote.

Vote: RECOMMENDED APPROVAL 6/1; one opposed (Pang).

Motion Passed.

VI. ADJOURNMENT

Prior to making a motion to adjourn, Dr. Pang thanked the HDOA staff for a job well done with the completeness of the permit request packets received and the public's participation in the discussions. Mr. Matsui seconded the motion. Chairperson Oishi called for a vote, and it was unanimously approved.

Vote: APPROVED 7/0

The meeting was adjourned at 11:44 A.M.

Respectfully Submitted,

Karen Hiroshige
Advisory Committee Secretary