

STATE OF HAWAII
DEPARTMENT OF HEALTH
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**Testimony in SUPPORT of HB 297 HD 1
RELATING TO MOSQUITO VECTOR CONTROL**

SENATOR MIKE GABBARD, CHAIR
SENATE COMMITTEE ON AGRICULTURE AND ENVIRONMENT

SENATOR ROSALYN H. BAKER, CHAIR
SENATE COMMITTEE ON COMMERCE, CONSUMER PROTECTION, AND HEALTH

Hearing Date: March 18, 2019
1:15 pm

Room Number: 224

1 **Fiscal Implications:** None

2 **Department Testimony:** The Department of Health (DOH) supports and offers amendments to
3 HB 297, HD1 which directs the Department of Agriculture (DOA) to review the *Aedes Aegypti*
4 mosquito with *Wolbachia* bacteria for placement on the appropriate animal import list. It also
5 requires collaboration between the DOA and DOH to report findings and recommendations of
6 this technology and other alternative vector control methods.

7 DOH is aware of and is supportive of current ongoing research with various strains of
8 mosquitoes and bacteria which may provide innovative ways of controlling mosquitoes in the
9 environment. To insure that this bill is inclusive of new and emerging technologies and does not
10 adversely impact ongoing research efforts, the DOA, Department of Land and Natural
11 Resources, (DLNR) and DOH offer the following amendments.

12 **Offered Amendments:** The departments therefore suggest the following amendments,
13 beginning with SECTION 1, page 2, line 10, to clarify that the importation of mosquitoes
14 originating from Hawaii stock should be part of the review described in this measure:

15 The legislature further finds that protecting the residents of Hawaii from mosquito-borne
16 illnesses such as Zika and dengue viruses warrants further inquiry into the feasibility and safety
17 of importing and releasing mosquitoes with *Wolbachia* bacteria. Accordingly, the purpose of this
18 Act is to investigate potential innovative vector control programs by:

1 (1) Directing the department of agriculture to review the *Aedes aegypti* mosquito
2 with *Wolbachia* bacteria, including *Aedes aegypti* mosquitoes originating from
3 Hawaii stock that could be imported for landscape scale mosquito control, and
4 render a determination for placement of the mosquito on the appropriate animal
5 import list,; and

6 (2) Directing the departments of agriculture and health to collaborate on a report to the
7 legislature that includes recommendations regarding the importation of the *Aedes*
8 *aegypti* mosquito with *Wolbachia* bacteria, including *Aedes aegypti* mosquitoes
9 originating from Hawaii stock, that could be imported for landscape scale
10 mosquito control and recommendations for appropriate vector control programs.

11 SECTION 2. The department of agriculture shall review the *Aedes aegypti* mosquito
12 with *Wolbachia* bacteria, including *Aedes aegypti* mosquitoes originating from Hawaii stock that
13 could be imported for landscape scale mosquito control, and render a determination for
14 placement of the mosquito on the appropriate animal import list, pursuant to section 150A-6.2,
15 Hawaii Revised Statutes.

16
17 SECTION 3. The department of agriculture and the department of health shall
18 collaborate on a report to the legislature that shall include:

- 19 (1) Findings and recommendations regarding the importation and release of the *Aedes*
20 *aegypti* mosquito with *Wolbachia* bacteria, including *Aedes aegypti* mosquitoes
21 originating from Hawaii stock, that could be imported for landscape scale
22 mosquito control;
- 23 (2) Determination for the placement of the *Aedes aegypti* mosquito with *Wolbachia*
24 bacteria on the appropriate animal import list pursuant to section 150A-6.2,
25 Hawaii Revised Statutes, and the status of the import list placement process;
- 26 (3) Recommendations, plans, timeline, and implementation costs for a mosquito control
27 program using the *Aedes aegypti* mosquito with *Wolbachia* bacteria, if permitted,
28 and, if not permitted, recommendations for other alternative vector control means;
29 and
- 30 (4) Any other relevant findings, recommendations, and any necessary proposed
31 legislation.

32
33 The DOH also requests that DLNR be included as a participating agency to collaborate on a
34 report to the legislature on Page 2, Line 20 and on Page 3, Line 11.

35
36 Thank you for the opportunity to testify on this measure.

DAVID Y. IGE
Governor

JOSH GREEN
Lt. Governor



PHYLLIS SHIMABUKURO-GEISER
Chairperson, Board of Agriculture

GLENN K. MURANAKA
Deputy to the Chairperson

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TESTIMONY OF PHYLLIS SHIMABUKURO-GEISER
CHAIRPERSON, BOARD OF AGRICULTURE

BEFORE THE SENATE COMMITTEES ON AGRICULTURE & ENVIRONMENT AND
COMMERCE, CONSUMER PROTECTION, & HEALTH

MARCH 18, 2019
1:15 P.M.
CONFERENCE ROOM 224

HOUSE BILL NO. 297 HD1
RELATING TO MOSQUITO VECTOR CONTROL

Chairpersons Gabbard and Baker and Members of the Committees:

Thank you for the opportunity to testify on House Bill 297 HD1, relating to Mosquito Vector Control. This bill (1) directs the Hawaii Department of Agriculture (DOA) to review the *Aedes aegypti* mosquito with *Wolbachia* bacteria for placement of the mosquito on the appropriate animal import list; and (2) directs DOA and the Department of Health (DOH) to collaborate on a report to the legislature including recommendations regarding the importation of *Aedes aegypti* mosquito with *Wolbachia* bacteria, plans, timeline, and implementation costs for a mosquito control program using the *Aedes aegypti* mosquito with *Wolbachia* bacteria if permitted, or if not permitted, recommendations for other alternative vector control means. The Department supports the intent of this bill and offers the following comments.

The Department works with DOH and the Department of Land and Natural Resources on research efforts regarding the potential to utilize *Wolbachia* as a tool for landscape-scale control for mosquitoes that carry avian diseases (particularly *Culex quinquefasciatus*). These current research efforts could inform future research on mosquitoes such as *Aedes aegypti* that carry human disease. One research option currently being explored is the collection of mosquitoes in Hawaii, which could be



exported to a laboratory on the mainland with expertise in transfusion of the *Wolbachia* mosquito and then re-imported for further research and, potentially, release. This scenario carries lower risk than importing mosquitoes with potentially non-Hawaiian DNA from other parts of the world for release in Hawaii. The departments therefore suggest the following underlined amendments:

Section 1 should read:

The legislature further finds that protecting the residents of Hawaii from mosquito-borne illnesses such as Zika and dengue viruses warrants further inquiry into the feasibility and safety of importing and releasing mosquitoes with *Wolbachia* bacteria. Accordingly, the purpose of this Act is to investigate potential innovative vector control programs by:

- (1) Directing the department of agriculture to review the *Aedes aegypti* mosquito with *Wolbachia* bacteria, including *Aedes aegypti* mosquitoes originating from Hawaii stock that could be imported for landscape scale mosquito control, and render a determination for placement of the mosquito on the appropriate animal import list; and
- (2) Directing the departments of agriculture and health to collaborate on a report to the legislature that includes recommendations regarding the importation of the *Aedes aegypti* mosquito with *Wolbachia* bacteria, including *Aedes aegypti* mosquitoes originating from Hawaii stock, that could be imported for landscape scale mosquito control and recommendations for appropriate vector control programs.

Section 2 should read:

SECTION 2. The department of agriculture shall review the *Aedes aegypti* mosquito with *Wolbachia* bacteria, including *Aedes aegypti* mosquitoes originating from Hawaii stock that could be imported for landscape scale mosquito control, and render a

determination for placement of the mosquito on the appropriate animal import list, pursuant to section 150A-6.2, Hawaii Revised Statutes.

Section 3 should read:

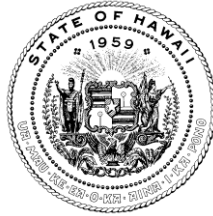
SECTION 3. The department of agriculture and the department of health shall collaborate on a report to the legislature that shall include:

- (1) Findings and recommendations regarding the importation and release of the *Aedes aegypti* mosquito with *Wolbachia* bacteria, including *Aedes aegypti* mosquitoes originating from Hawaii stock, that could be imported for landscape scale mosquito control;

On the issue of importation, the Hawaii Revised Statutes Chapter 150A-6.2 contains a provision that allows certain entities, such as the University of Hawaii, to potentially import an unlisted organism, such as *A. aegypti*, on a case-by-case basis for the purpose of conducting scientific research in a manner that *A. aegypti* will not be detrimental to agriculture, the environment, or humans, provided the importer can meet permit requirements as determined by the Board of Agriculture. The intent of this provision is to allow importation for projects like this one without going through the entire rulemaking process to place an organism on the list. It allows for research to begin, a risk level to be developed, and then appropriate list placement be made, as opposed to conducting list placement first and then potentially finding out that the placement needs to be changed after the research is conducted. The Department recommends consideration of this option initially, in lieu of formal list placement.

Thank you for the opportunity to submit testimony.

DAVID Y. IGE
GOVERNOR OF
HAWAII



**STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES**

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**Testimony of
SUZANNE D. CASE
Chairperson**

**Before the Senate Committees on
AGRICULTURE AND ENVIRONMENT
and
COMMERCE, CONSUMER PROTECTION, AND HEALTH**

**Monday, March 18, 2019
1:15 PM
State Capitol, Conference Room 224**

**In consideration of
HOUSE BILL 297, HOUSE DRAFT 1
RELATING TO MOSQUITO VECTOR CONTROL**

House Bill 297, House Draft 1 proposes to direct the Department of Agriculture (DOA) to review the *Aedes aegypti* mosquito with *Wolbachia* bacteria for placement on an appropriate animal import list and requires the DOA and Department of Health (DOH) to report on the feasibility of using *Aedes aegypti* with *Wolbachia* bacteria in an innovative vector control program within the State. **The Department of Land and Natural Resources (Department) supports this measure and offers comments.**

Mosquitoes are non-native to Hawaii and vector diseases, which threaten public health as well as native wildlife. The Department supports the overall concept of using *Aedes aegypti* with *Wolbachia* bacteria for landscape-scale mosquito control in Hawaii. Such technology is already being applied elsewhere in the US and internationally to suppress populations of mosquitoes that vector diseases. The Department also supports the review of *Aedes aegypti* and *Wolbachia* for placement on an animal import list but defers to DOA and DOH with regards to the proper approach to reviewing and listing species for import into the State.

The Department works with DOA and DOH on research efforts regarding the potential to utilize *Wolbachia* as a tool for landscape-scale control for mosquitoes that carry avian diseases (particularly *Culex quinquefasciatus*). These current research efforts could inform future research on mosquitoes such as *Aedes aegypti* that carry human disease. One research option currently being explored is the collection of mosquitoes in Hawaii, which could be exported to a laboratory on the mainland with expertise in transfusion of the *Wolbachia*, after which the mosquitoes could be re-imported for further

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
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DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

research and potential release. This scenario carries lower risk than importing mosquitoes from other parts of the world for release in Hawaii. The departments therefore suggest the following amendments (in gray highlight), beginning with SECTION 1, page 2, line 10, to clarify that the importation of mosquitoes originating from Hawaii stock should be part of the review described in this measure:

The legislature further finds that protecting the residents of Hawaii from mosquito-borne illnesses such as Zika and dengue viruses warrants further inquiry into the feasibility and safety of importing and releasing mosquitoes with *Wolbachia* bacteria. Accordingly, the purpose of this Act is to investigate potential innovative vector control programs by:

- (1) Directing the department of agriculture to review the *Aedes aegypti* mosquito with *Wolbachia* bacteria, including *Aedes aegypti* mosquitoes originating from Hawaii stock that could be imported for landscape scale mosquito control, and render a determination for placement of the mosquito on the appropriate animal import list; and
- (2) Directing the departments of agriculture and health to collaborate on a report to the legislature that includes recommendations regarding the importation of the *Aedes aegypti* mosquito with *Wolbachia* bacteria, including *Aedes aegypti* mosquitoes originating from Hawaii stock, that could be imported for landscape scale mosquito control and recommendations for appropriate vector control programs.

SECTION 2. The department of agriculture shall review the *Aedes aegypti* mosquito with *Wolbachia* bacteria, including *Aedes aegypti* mosquitoes originating from Hawaii stock that could be

imported for landscape scale mosquito control, and render a determination for placement of the mosquito on the appropriate animal import list, pursuant to section 150A-6.2, Hawaii Revised Statutes.

SECTION 3. The department of agriculture and the department of health shall collaborate on a report to the legislature that shall include:

- (1) Findings and recommendations regarding the importation and release of the *Aedes aegypti* mosquito with *Wolbachia* bacteria, including *Aedes aegypti* mosquitoes originating from Hawaii stock, that could be imported for landscape scale mosquito control; . . .

Thank you for the opportunity to comment on this measure.

CHARLES STRUWE, BBA
Research and Experimental Farmer
Oahu, Hawaii

TESTIMONY BEFORE
THE SENATE COMMITTEES ON AGRICULTURE AND ENVIRONMENT AND
COMMERCE, CONSUMER PROTECTION, AND HEALTH

MARCH 18, 2019
1:15 PM
CONFERENCE ROOM 224

HOUSE BILL 297, HD1
A BILL RELATING TO MOSQUITO VECTOR CONTROL

STRONG SUPPORT

Chairs Gabbard and Baker, Vice Chairs Ruderman and Chang and Members of the Committees:

House Bill 297, HD1, A BILL FOR AN ACT RELATING TO MOSQUITO VECTOR CONTROL, directs the Department of Agriculture (DOA) to review the *Aedes aegypti* mosquito with *Wolbachia* bacteria and render a determination to place it on the appropriate animal important list. It requires DOA and the Department of Health to collaborate on a report to the legislature with recommendations for appropriate vector control programs.

Thank you Chair Gabbard and Chair Baker for hearing this very important bill.

World Mosquito Program (WMP)

The World Mosquito Program, formerly known as the Eliminate Dengue Program, is a non-profit research consortium operating in 12 countries (Australia, Mexico, Columbia, Brazil, Kiribati, Vanuatu, Fiji, New Caledonia, India, Sri Lanka, Indonesia, and Vietnam), which aims to develop *Wolbachia* as an intervention to control mosquito-transmitted viruses such as dengue, zika, chikungunya and yellow fever through the intentional release of *Wolbachia*-infected mosquitoes into target areas that will the transmit *Wolbachia* into wild *Aedes* mosquito populations. [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14] with due consideration of the risks [15, 18], safety concerns [16, 18], and regulatory responsibilities [17, 18].

The Department of Agriculture, in its testimony before the House Committees on Health and Agriculture on this bill on February 6, 2019, stated that:

"the importation of *A. aegypti* with *Wolbachia* bacteria and then releasing them into the wild could have unintended consequences" and that "they may not be efficient carriers of *Wolbachia* bacteria, therefore introduction and release may not be a viable technique for control or eradication and could further jeopardize public health and the environment, **especially without any research conducted in the State**" (emphasis added);

While there are risks associated with the release of *Wolbachia* infected *Aedes* mosquitoes [15, 18], and safety concerns [16, 18], the EPA, in its review of the evidence in Popovici, et. al. (2010) [16] regarding the potential for human exposure to *Wolbachia* and *Wolbachia* antigens through exposure to *Wolbachia*-infected *Ae. Aegypti* mosquitoes, concluded that:

"(t)his study can be used in a weight of evidence when considered with the additional evidence presented (in its memorandum) to indicate that humans are not exposed to the *Wolbachia* microbial pesticide through the release of *Wolbachia*-infected *Aedes spp.* Mosquitoes (through a) release program." [18]

Requested Amendment

In order to be clear and precise, I suggest the bill's text be amended to identify the "the *Aedes aegypti* mosquito with *Wolbachia* bacteria" as "the **World Mosquito Program** *Aedes aegypti* mosquito with *Wolbachia* bacteria" at page 2, line 16, page 3, line 2, 5, 14, and 16, and page 4, line 3.

Conclusion

I believe there is ample and readily available evidence for the Departments of Agriculture and Health to conduct a review and render a determination to place the WPM's mosquito on the appropriate animal import list as well as prepare the required report to the legislature with recommendations for appropriate vector control within the time allowed. Therefore, I support this Bill for an Act.

Again, thank you Chair Gabbard and Chair Baker for hearing this very important bill.

Works Cited

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HB-297-HD-1

Submitted on: 3/11/2019 6:10:56 PM

Testimony for AEN on 3/18/2019 1:15:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
Benton Kealii Pang, Ph.D.	Individual	Support	No

Comments: