

DAVID Y. IGE
Governor

JOSH GREEN
Lt. Governor



PHYLLIS SHIMABUKURO-GEISER
Acting Chairperson
Board of Agriculture

State of Hawaii
DEPARTMENT OF AGRICULTURE
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TESTIMONY OF THE DEPARTMENT OF AGRICULTURE

BEFORE THE HOUSE COMMITTEE ON FINANCE

FEBRUARY 21, 2019
11:00 A.M.
CONFERENCE ROOM 308

HOUSE BILL NO. 297 HD1 RELATING TO THE MOSQUITO VECTOR CONTROL

Chairperson Luke and Members of the Committee:

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 transfection 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 House Committee on
FINANCE

Thursday, February 19, 2019
11:00 AM
State Capitol, Conference Room 308

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 the 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 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

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
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

(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.

HB-297-HD-1

Submitted on: 2/17/2019 4:17:43 PM

Testimony for FIN on 2/21/2019 11:00:00 AM

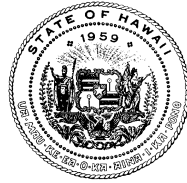
Submitted By	Organization	Testifier Position	Present at Hearing
Joseph Kohn MD	We Are One, Inc. - www.WeAreOne.cc - WAO	Oppose	No

Comments:

THIS STRATEGY HAS ALREADY FAILED IN FLORIDA.

Strongly Oppose wasted expense on impossible proposals = "Eliminating Mosquitos". The cure is worse than the disease. Eradication of mosquitos is a pipe-dream with no rational basis in reality that doesn't include the extinction of humanity. Do not submit to profiteering scientific hubris. Money should not be spent especially for already failed genetic modification of mosquitos. (Check out failed results in Florida) Stop poisoning our 'Ä• ina. Environmental Impact Statements must be performed before any implemented proposals. In addition, none of the proposed technologies have been proven safe for human exposure, and human experimentation without informed consent are war crimes. Perpetrators will be held personally and financial responsible for harms inflicted. Purported "safety studies", mainly provided by the same corporations with vested interests in the results, are mired in bias for profiteering from government expenditures = bad science.

There is no rational reason to pollute our own environment or destroy ecosystems.
www.WeAreOne.cc



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**Testimony in SUPPORT of HB 297 HD 1
RELATING TO MOSQUITO VECTOR CONTROL**

REPRESENTATIVE SYLVIA LUKE, CHAIR
HOUSE COMMITTEE ON FINANCE

Hearing Date: February 21, 2019 Room Number: 308
11:00am

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:

19 (1) Directing the department of agriculture to review the *Aedes aegypti* mosquito
20 with *Wolbachia* bacteria, including *Aedes aegypti* mosquitoes originating from

1 Hawaii stock that could be imported for landscape scale mosquito control, and
2 render a determination for placement of the mosquito on the appropriate animal
3 import list,; and

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

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

14
15 SECTION 3. The department of agriculture and the department of health shall collaborate on
16 a report to the legislature that shall include:

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

31 Thank you for the opportunity to testify on this measure.

CHARLES STRUWE
Research and Experimental Famer
Oahu, Hawaii

LATE

TESTIMONY BEFORE THE HOUSE COMMITTEE ON FINANCE

FEBRUARY 21, 2019
11:00 AM
CONFERENCE ROOM 308

SENATE BILL 297, HD1
A BILL RELATING TO MOSQUITO VECTOR CONTROL
STRONG SUPPORT

Chair Luke, Vice Chair Cullen and Members of the Committee:

House Bill 297, HD1, A Bill 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 on the legislature with recommendations for appropriate vector control programs.

The purpose of this Act is to investigate potential innovative vector control programs.

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

(1) "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);

(2) "Hawaii Revised Statutes Chapter 150A-6.2 already has a provision that allow certain entities, such as the University of Hawaii, to potentially import an unlisted organism . . .

In the United States, the Environmental Protection agency issued a registration in November 2017 for Wolbachia pipientis, ZAP Strain in infected Aedes albopictus ZAP Males ® for 5 years in Washington D.C. and 20 state (California, Connecticut, Delaware, Illinois, Indiana, Kentucky, Massachusetts, Maine, Maryland, Missouri, New Hampshire, New Jersey, Nevada, New York, Ohio, Pennsylvania, Rhode Island, Tennessee, Vermont, and West Virginia) to MosquitoMate, Inc. . (EPA, 2017a, 2017b, 2017c, 2017d; www.mosquitomate.com).

While there are risks associated with the release of Wolbachia infected Aedes mosquitoes (Murry, Jansen, Ede Barro, 2016, Popovici, et. al., 2010), the EPA, in it's review of the evidence in Popovici, et. al. 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 as part of a sterile male insect release program."

I believe there is ample and readily available evidence for the Departments of Agriculture and Health to review in order to conduct their review and render their determination with in the time allowed.

Ingredient 89668-U, *Wolbachia pipientis*, ZAP strain in male *Aedes albopictus* (Asian tiger mosquitoes) – FIFRA (Docket ID Number: EPA-HQ-OPP-2016-0205). November 01, 2017.

United States Environmental Protection Agency. 2017b. Final Registration Decision of the New Active Ingredient *Wolbachia pipientis* ZAP (wPiP) strain in *Aedes albopictus*. PC Code: 069035. November 2, 2017.

United States Environmental Protection Agency, Office of Pesticide Programs, Biopesticide and Pollution Prevention Division (2017c). Notice of Pesticide Registration. EPA Reg. Number: 89664-4. Date of Issuance November 3, 2017.

United States Environmental Protection Agency. 2017d. EPA Registers the *Wolbachia* ZAP Strain in Live Male Asian Tiger Mosquitoes. November 7, 2017.

<https://www.epa.gov/pesticides/epa-registers-wolbachia-zap-strain-live-male-asian-tiger-mosquitoes>

United States Environmental Protection Agency. 2018. Memorandum. Science of the Published Research Article: Popovive et al. (2010), which assesses the potential for human exposure to *Wolbachia* and *Wolbachia* antigens through exposure to *Wolbachia*-infected *Ae. Aegypti* mosquitoes. April 6, 2018.

World Mosquito Program. www.worldmosquitoprogram.org