

DAVID Y. IGE  
Governor

SHAN S. TSUTSUI  
Lt. Governor



State of Hawaii  
**DEPARTMENT OF AGRICULTURE**  
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Phone: (808) 973-9600 FAX: (808) 973-9613

SCOTT E. ENRIGHT  
Chairperson, Board of Agriculture

PHYLLIS SHIMABUKURO-GEISER  
Deputy to the Chairperson

**TESTIMONY OF SCOTT E. ENRIGHT  
CHAIRPERSON, BOARD OF AGRICULTURE**

**BEFORE THE HOUSE COMMITTEE ON AGRICULTURE**

**MARCH 15, 2017  
8:30 A.M.  
CONFERENCE ROOM 312**

**SENATE BILL NO. 272 SD2  
RELATING TO RAT LUNGWORM DISEASE**

Chairperson Creagan and Members of the Committee:

Thank for the opportunity to testify on Senate Bill No. 272 SD2, relating to rat lungworm disease. The Department supports the intent of this measure provided it does not impact the Department's priorities submitted in the Executive Budget.

Rat lungworm disease is a serious and relatively new pathogen to plague the consumption of fresh produce grown in the islands. There is a great need to conduct research into the biology of the carriers of the disease, the ways in which it can be spread, outreach to the public in understanding the condition, and methods that can be employed to control and/or contain it.

The department supports the intent of SB272 SD2 provided it is funded at a level in which research can be conducted and carried out to achieve implementation of prevention measures. It is especially critical that Integrated Pest Management practices can be identified that minimize the use of chemicals and employ a variety of management techniques that will provide long term control of the pathogen. Outreach is an especially critical component of any IPM tactics. The more that the public understands the hazards of the disease, the less of a public health issue it will become. As noted in the bill, the medical expenses associated with contracting the disease can run into the millions. Research dollars spent in developing long term and effective



Page 2

management programs are minor compared to the expected medical bill associated with those who contract the illness.

Thank you for the opportunity to testify on this measure.

DAVID Y. IGE  
GOVERNOR OF  
HAWAII



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

KEKOA KALUHIWA  
FIRST DEPUTY

JEFFREY T. PEARSON, P.E.  
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

STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621  
HONOLULU, HAWAII 96809

Testimony of  
SUZANNE D. CASE  
Chairperson

Before the House Committee on  
AGRICULTURE

Wednesday, March 15, 2017  
8:30 AM  
State Capitol, Conference Room 312

In consideration of  
SENATE BILL 272, SENATE DRAFT 2  
RELATING TO RAT LUNGWORM DISEASE

Senate Bill 272, Senate Draft 2 proposes to appropriate funds to support research, control, and outreach activities relating to rat lungworm disease. **The Department of Land and Natural Resources (Department) supports this measure provided that its passage does not replace or adversely impact priorities indicated in the Executive Budget request.**

The Department recognizes the threat of rat lungworm disease and the lack of information on statewide distribution of the parasite *Angiostrongylus cantonensis* and its hosts. The Department also notes that the Hawaii Invasive Species Council (HISC), which is administered by the Department, received proposals for research and education regarding this disease in Fiscal Year (FY)16 and FY17 but was unable to identify adequate resources to support all of these efforts. In FY17 the HISC is providing partial funding support to a project developing outreach programs and materials regarding rat lungworm disease under the direction of the University of Hawaii at Hilo. Additional funding support for a more comprehensive research, control, and outreach program, as described in this measure, would be strongly beneficial. The Department supports this measure, provided that the appropriations described therein do not impact appropriations to the HISC or other priorities indicated in the Executive Budget request.

The Department notes that Senate Draft 1 streamlines funding to the University of Hawaii at Hilo for the implementation of tasks described in the measure, and is supportive of this approach.

Thank you for the opportunity to comment on this measure.



# UNIVERSITY OF HAWAII SYSTEM

## Legislative Testimony

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Testimony Presented Before the  
House Committee on Agriculture  
March 15, 2017 at 8:30 a.m.

by  
Donald O. Straney  
Chancellor, University of Hawai'i at Hilo

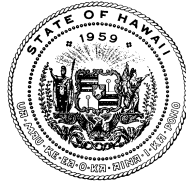
SB 272 SD2 – RELATING TO RAT LUNGWORM DISEASE

Chair Creagan, Vice Chair DeCoite, and Members of the Committee:

My name is Donald Straney, Chancellor of the University of Hawai'i at Hilo and I support the intent of SB 272 SD2 to fund programs, studies and activities to prevent and eradicate rat lungworm disease.

UH Hilo views the proposal as a positive solution to address a critical health issue in the state.

Thank you for the opportunity to testify on SB 272 SD2. Aloha.



STATE OF HAWAII  
DEPARTMENT OF HEALTH  
P. O. Box 3378  
Honolulu, HI 96801-3378  
doh.testimony@doh.hawaii.gov

**Testimony COMMENTING on S.B. 272 S.D. 2**  
**RELATING TO RAT LUNGWORM DISEASE**  
**REPRESENTATIVE RICHARD P. CREAGAN, CHAIR**  
**HOUSE COMMITTEE ON AGRICULTURE**

Hearing Date: March 15, 2017

Room Number: 312

1 **Fiscal Implications:** The Department of Health appreciates the intent of S.B. 272 S.D. 2, but  
2 defers to the priorities set forth in the Executive Biennium Budget.

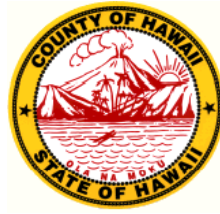
3 **Department Testimony:** This measure seeks to appropriate funds in the 2017–18 and 2018–19  
4 fiscal period (2 years) to the University of Hawaii at Hilo for programs, studies, and activities  
5 related to the prevention and eradication of rat lungworm disease. This measure also provides  
6 that the University of Hawaii at Hilo shall collaborate with the Department of Health,  
7 Department of Land and Natural Resources, Department of Agriculture, and the Governor’s Joint  
8 Rat Lungworm Task Force, to create a statewide plan for the prevention and eradication of rat  
9 lungworm disease.

10 The Department of Health concurs with and supports the consensus of the Joint Rat Lungworm  
11 Task Force, which is that outreach and education are essential priorities in addressing the risk of  
12 angiostrongyliasis in Hawaii’s communities.

13 In addition to educational activities conducted during the investigation of reported cases of  
14 angiostrongyliasis illness, DOH efforts, in conjunction with partners, have included statewide  
15 school garden food safety workshops and the distribution of flyers to at-risk communities as well  
16 as commercial food establishments. We welcome the opportunity to continue our work with  
17 partners to improve public health education and prevention of this serious disease.

18 Thank you for the opportunity to testify.

**Harry Kim**  
*Mayor*



**Wil Okabe**  
*Managing Director*

**Barbara J. Kossow**  
*Deputy Managing Director*

## County of Hawai'i

### Office of the Mayor

25 Aupuni Street, Suite 2603 • Hilo, Hawai'i 96720 • (808) 961-8211 • Fax (808) 961-6553  
KONA: 74-5044 Ane Keohokalole Hwy., Bldg C • Kailua-Kona, Hawai'i 96740  
(808) 323-4444 • Fax (808) 323-4440

Dear Chair Creagan and members:

Re: SB 272, SD2 Rat lungworm disease

SB 272, SD2 says that rat lungworm disease has stricken more than 70 people in the State, claiming lives and causing grave disabilities. While primarily affecting the Big Island, it has now been identified on Maui as well.

Although the disease is not well known, it has devastating effects on its victims. One can only hope that we can get a handle on this disease before it destroys more lives.

Fortunately, our University is willing and able to assist with research and education, but substantial funding is needed to support its efforts. We certainly believe that such an investment of state dollars is warranted.

Please approve funding for SB 272, SD2.

Respectfully submitted,

Harry Kim  
Mayor  
County of Hawaii



P.O. Box 253, Kunia, Hawai'i 96759  
Phone: (808) 848-2074; Fax: (808) 848-1921  
e-mail info@hfbf.org; www.hfbf.org

March 15, 2017

HOUSE COMMITTEE ON AGRICULTURE

**TESTIMONY ON SB 272, SD2  
RELATING TO RAT LUNGWORM DISEASE**

Room 312  
8:30 AM

Aloha Chair Creagan, Vice Chair DeCoite, and Members of the Committee:

I am Randy Cabral, President of the Hawaii Farm Bureau (HFB). Organized since 1948, the HFB is comprised of 1,900 farm family members statewide, and serves as Hawaii's voice of agriculture to protect, advocate and advance the social, economic and educational interests of our diverse agricultural community.

**Hawaii Farm Bureau supports SB 272, SD2, relating to Rat Lungworm Disease.**

Providing safe and wholesome food is a priority for the Farm Bureau and its members. Unfortunately, not enough is currently known about Rat Lungworm Disease, or angiostrongyliasis, to fully protect the public. For example, although we know that people in Hawaii can get the disease by eating food contaminated by the larval stage of *A. cantonensis* worms found in raw or undercooked snails or slugs, and we know that people have also become infected by eating raw produce that contains a small infected snail or slug, or part of one, it is *not* known whether even just the slime left by infected snails and slugs is able to cause infection.

This is critical information since the disease can cause a rare type of meningitis (eosinophilic meningitis) that is extremely painful, debilitating, and can be deadly. Because there is no specific treatment for the disease, patients are only given supportive therapy and pain medication.

As more people are encouraged to grow their own food in backyard gardens, and school gardens are becoming more prevalent, the risk of being infected with this disease increases. Nutritionists advise the public to eat plenty of fresh leafy vegetables. However, without knowing enough about the transmission of rat lungworm disease, this advice may

be risky in areas infested by snails and slugs. We need to know if the slime alone can cause the disease, and if washing or other pre-consumption measures will prevent transmission. Backyard gardeners and others who may not practice pest management to effectively control snails and slugs, or those who purchase greens from these sources, may be particularly at risk.

HFB supports funding of the University of Hawaii at Hilo and their collaboration with state agencies to help learn more about the disease and to prevent the spread of it and other food-borne diseases, especially to children through school garden projects.

Thank you for the opportunity to provide testimony on this measure.



# Hawai'i Farm to School and School Garden Hui

Coordinated through The Kohala Center



## TESTIMONY

House Committee on Agriculture  
March 15, 2017, 8:30 a.m.

### Island Networks & Organizations

Farm to Keiki (Preschool)  
FoodCorps Hawai'i  
Grow Some Good  
Hawai'i Island School Garden Network/The Kohala Center  
'Iolani School  
Ka Ohana O Na Pua  
Kaua'i School Garden Network/Malama Kaua'i  
Kōkua Hawai'i Foundation ('ĀINA In Schools)  
Maui School Garden Network  
Moloka'i School Garden Network/Sustainable Moloka'i  
O'ahu Farm to School Network

### State Agencies

Hawai'i Department of Agriculture: Farm to School Program  
Hawai'i Department of Education: Hawai'i Child Nutrition Programs  
Hawai'i Department of Education: School Food Services Branch  
Hawai'i Department of Health: Healthy Hawai'i Initiative  
UH CTAHR Master Gardeners

## **SB272, SD2: RELATING TO RAT LUNGWORM DISEASE**

Chair Creagan, Vice Chair DeCoite, and Members of the Committee,

The Hawai'i Farm to School and School Garden Hui **supports SB272, SD2.**

Rat Lungworm Disease (RLWD) is an issue that can no longer be ignored in Hawai'i. There is a desperate need for funding, research, monitoring/control, and educational outreach dedicated to this disastrously debilitating disease, so that there are ZERO cases going forward.

The Hawai'i Farm to School and School Garden Hui stands ready to assist with educational outreach to Hawai'i's students and schools.

We have created a School Garden Safety Manual, which includes information on RLWD, and are holding workshops around the state to bring this information to educators. The manual is available online via The Kohala Center's website under Farm to School Resources (link to School Garden Safety Manual: [https://drive.google.com/file/d/0B\\_Qw59RHMj\\_QR3dZQ3o5UXYxWWc/view](https://drive.google.com/file/d/0B_Qw59RHMj_QR3dZQ3o5UXYxWWc/view)).

Formed in 2010, the Hawai'i Farm to School and School Garden Hui is a statewide network comprised of five island-level networks, active organizations, and representatives of the Hawai'i Departments of Agriculture, Education, and Health. Our mission is to strengthen Hawai'i's statewide farm to school and school garden movement.

Please pass this bill to enable the ERADICATION of RLWD in Hawai'i.

Thank you very much.

Sincerely,

Lydi Morgan Bernal  
Coordinator  
Hawai'i Farm to School and School Garden Hui  
schoolgardenhui@kohalacenter.org  
www.hawaiischoolgardenhui.org



March 15, 2017

**COMMITTEE ON AGRICULTURE**

*Rep. Richard Creagan, Chair; Rep. Lynn DeCoite, Vice Chair; and Committee Members  
Public Hearing, March 15, 2017 at 8:30 a.m., Conference Room 312*

**TESTIMONY of WILLIAM F. ANONSEN  
MANAGING PARTNER/PRINCIPAL of THE MARITIME GROUP, LLC  
IN SUPPORT of S.B. 272 SD2 (RAT LUNGWORM DISEASE)**

*My name is William Anonsen and I am the Managing Partner/Principal of THE MARITIME GROUP, LLC. We support SB 272 SD2 which would provide funding to the University of Hawaii at Hilo for programs, studies, and activities related to rat lungworm disease, which should include a report to the legislature with strategies and objectives to instigate appropriate plans to prevent and eradicate the disease.*

*Rat lungworm disease, is a parasite that is carried by rats and transferred to humans by slugs or flatworms, and is a debilitating and potentially deadly disease that has been spreading fear through the Puna district on Hawaii Island, although individuals have been stricken with the disease on other island, such as Maui. The State Department of Health has been tracking the disease for the past 10-years. With proper educational outreach, awareness and the engagement of prevention methods, rat lungworm is a preventable disease, to include thoroughly washing all their fruits and vegetables.*

*Hawaii is the epicenter for rat lungworm disease in the nation. It's generally assumed that most people become infected via accidental ingestion of an infected slug or snail on produce; however the majority of victims in Hawaii don't really know how they were infected.*

*Early detection is paramount, however currently diagnosis can be complicated with affected individuals with different symptoms. Symptoms can range from flu-like conditions to completely debilitating nerve pain. The parasite travels through the bloodstream to the brain and can cause devastating health problems.*

*The passage of this measure and it corresponding appropriations for funding to better understand and address the issue, coupled with the implementation of a plan, can prevent and eradicate this public safety concern before it spreads further.*

***Mahalo for the opportunity to comment in support of this measure.***

*Sincerely,*

*William F. Anonsen*

*William F. Anonsen  
Managing Partner/Principal*

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***1221 Kapiolani Blvd., Suite 1032, Honolulu, Hawaii, 96814  
Tel: (808) 589-1223 www.The-Maritime-Group.com***

**From:** mailinglist@capitol.hawaii.gov  
**Sent:** Monday, March 13, 2017 9:18 AM  
**To:** AGRtestimony  
**Cc:** nredfeather@kohalacenter.org  
**Subject:** Submitted testimony for SB272 on Mar 15, 2017 08:30AM

**SB272**

Submitted on: 3/13/2017

Testimony for AGR on Mar 15, 2017 08:30AM in Conference Room 312

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Nancy Redfeather	Hawaii Island School Garden Network	Support	No

Comments: These are critical steps for school age children and general communities to understand this real problem, for on-going research to continue to find solutions to this serious threat, and to support those who for so long have been holding this work and not receiving the compensation they need to go on. Mahalo!

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**From:** mailinglist@capitol.hawaii.gov  
**Sent:** Monday, March 13, 2017 10:19 PM  
**To:** AGRtestimony  
**Cc:** christym@rocketmail.com  
**Subject:** \*Submitted testimony for SB272 on Mar 15, 2017 08:30AM\*

**SB272**

Submitted on: 3/13/2017

Testimony for AGR on Mar 15, 2017 08:30AM in Conference Room 312

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Christy Martin	Coordinating Group on Alien Pest Species (CGAPS)	Support	No

**Comments:**

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**From:** mailinglist@capitol.hawaii.gov  
**Sent:** Monday, March 13, 2017 1:58 PM  
**To:** AGRtestimony  
**Cc:** lydibernal@gmail.com  
**Subject:** Submitted testimony for SB272 on Mar 15, 2017 08:30AM

**SB272**

Submitted on: 3/13/2017

Testimony for AGR on Mar 15, 2017 08:30AM in Conference Room 312

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Lydi Morgan Bernal	Individual	Support	No

Comments: Aloha Kakou Thank you very much for hearing this bill. I am writing in strong support of SB272 SD2, Relating to Rat Lungworm Disease. I have THREE friends who contracted Rat Lungworm Disease (RLWD) within the past 1.5 years, all ages 30-40 years old. Their lives were almost completely destroyed by this disease and they now live with serious physical disabilities because of it. Two friends were a husband and wife couple (now divorced) living in Hilo who contracted RLWD from an under-washed head of lettuce purchased from Hilo farmers market. Another friend lives on Maui and contracted RLWD from a salad eaten at a restaurant. How did this happen? UNINFORMED food producers, food service workers, consumers, and health care providers. It's time for Hawaii to shine the light on this issue so that there are ZERO cases going forward. Please pass this bill to enable the ERADICATION of RLWD. Thank you very much!

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**From:** mailinglist@capitol.hawaii.gov  
**Sent:** Monday, March 13, 2017 4:13 PM  
**To:** AGRtestimony  
**Cc:** mendezj@hawaii.edu  
**Subject:** \*Submitted testimony for SB272 on Mar 15, 2017 08:30AM\*

**SB272**

Submitted on: 3/13/2017

Testimony for AGR on Mar 15, 2017 08:30AM in Conference Room 312

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Javier Mendez-Alvarez	Individual	Support	No

Comments:

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## SB 272 – Relating to Rat Lungworm Disease

Aloha Chairman Richard Creagan, Vice Chair Lynne DeCoite, and members of the House Agriculture Committee,

My name is Kathleen Howe, I am a member of the Hawaii Island Rat Lungworm Working Group at the University of Hawaii, Daniel K. Inouye College of Pharmacy. I am testifying in support of SB 272. I have been researching and conducting education outreach on the rat lungworm since 2011. I have been passionate about the disease this parasite causes since 2008, when my son was hospitalized with rat lungworm disease. He spent 3 months in a coma, and four months in the hospital. I have spent the past 8 years helping him to recover. He will always have neurological disabilities because of his infection.

Annual cases of rat lungworm disease continue to be reported and serious cases have resulted in death and permanent disability in Hawaii. There is an urgent need for more research to aid in better understanding the possible disease transmission pathways so infections be prevented. Host control of both rats, and slugs and snails is key if we are to reduce parasite populations in areas of high infection.

In 2009 the *Increased Food Security and Food Self-sufficiency Strategy* was prepared by state agencies with the objective of increasing the amount of locally grown food consumed by Hawaii's residents. The public has shown avid interest in supporting local food production and proof of support can be seen in the growing number of farmers' markets, grocery stores, and restaurants selling locally grown produce and products. As the interest in the local food movement has grown so has the support for school garden projects. Each of the main Hawaiian Islands now has a school garden hui and there are an estimated 200 school and youth gardens in the State of Hawaii, with almost 70 of these located on Hawaii Island. To further promote healthy diets and local

agriculture, in 2015 the Hawaii Farm to School Bill, a program intended to introduce students to healthier eating habits by introducing them to new vegetables and fruits that are procured from local farmers, was signed into law. While public support of the local food movement has grown, efforts to control the spread of the rat lungworm parasite and its hosts, and to educate the general public of risks and disease prevention has not followed a similar trend.

To date there have been no concerted efforts made by any Hawaii county or state agency to control the spread of the rat lungworm parasite in mollusks and rats, nor has there been a public education campaign to encourage residents to control these hosts. The hosts of the rat lungworm are also agricultural pests, some of which are listed among the top 100 worst invasive species in the world and include the rat (*Rattus rattus*) the flatworm, *Platydemous manokwari*, and the snails *Achatina fulica* and *Euglandina rosea*. Without control efforts in place, the rat lungworm parasite and its hosts could pose a direct threat to agricultural production, food safety, and food security in Hawaii.

During dry conditions slugs and snails may be drawn to water sources. Residents, tank cleaners, and myself have seen slugs and snails on and inside rainwater catchment tanks, and catchment may be a variable of interest when considering the factors that may be causing higher disease incidence on Hawaii Island, which has a high percentage of households that rely on rainwater catchment for their household water supply. My studies at UHH have shown that drowned semi-slugs, one of the most effective carriers of the rat lungworm parasite, can shed many infective stage larvae when drowned. Rainwater catchment use is not only confined to residential use, it is also used for agriculture on Hawaii Island, and it is unknown to what degree agricultural-use catchment water is filtered, if at all. During my research studies at UHH I examined an infected New Guinea flatworm. When the planarian died after several days it rapidly decomposed into a puddle of dirty-looking water which still contained live, infective-stage rat lungworm larvae. The remnants of infected tissue from a decomposed slug, snail, or



flatworm could contaminate leafy greens and the microscopic parasites would be missed even if the produce was examined for evidence of the host organism. Knowing the ability of the larvae to survive outside the dead slug, snail, or flatworm host in wet conditions, environmental exposure to the larvae in soils, puddles, etc. may be possible sources of disease transmission.

Continued islands-wide sampling should be done to determine where the “hot-spots” of infection are and where control efforts should be targeted. An education campaign is key to encourage residents to control hosts around their homes. An open and honest discussion about the issues pertaining to rat lungworm can help agencies and educational entities collaborate to develop innovative solutions for this important, community health problem. Please support SB 272 and fund the important work being done at UHH on rat lungworm disease. It is time to get this serious issue under control.

**From:** mailinglist@capitol.hawaii.gov  
**Sent:** Monday, March 13, 2017 10:13 PM  
**To:** AGRtestimony  
**Cc:** steven\_jacquier@hotmail.com  
**Subject:** Submitted testimony for SB272 on Mar 15, 2017 08:30AM

**SB272**

Submitted on: 3/13/2017

Testimony for AGR on Mar 15, 2017 08:30AM in Conference Room 312

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Steven Jacquier	Individual	Support	No

Comments: Hawaii's local community health, visitor industry, and agricultural sector will all benefit from the much-needed work SB 272 will facilitate. Please support SB 272.

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**From:** mailinglist@capitol.hawaii.gov  
**Sent:** Monday, March 13, 2017 10:10 PM  
**To:** AGRtestimony  
**Cc:** doran\_vaughan@yahoo.com  
**Subject:** Submitted testimony for SB272 on Mar 15, 2017 08:30AM

**SB272**

Submitted on: 3/13/2017

Testimony for AGR on Mar 15, 2017 08:30AM in Conference Room 312

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Doran Vaughan	Individual	Support	No

Comments: Please support funding to UHH for Rat Lung Worm Research. This is an important issue to all who live in or visit Hawaii. Weekly more people are being infected and becoming permanently impaired from this horrendous disease. Yours and my family and friends are all impacted by the disease. This important research at UHH can only continue with the funding being made available through SB 272. Please support SB 272.

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Aloha Hawaii State Representatives,

My name is Donna Mitts and I reside on the Hamakua Coast of Hawaii Island. I have been involved with school learning gardens here for around 15 years. I am testifying in support of SB 272 as the need for funding for the University of Hawaii at Hilo for research and education for rat lungworm disease is essential. The University of Hawaii at Hilo has been the leading proponent for research and education on rat lungworm disease since 2012, and they have been operating with very little funding. Increased funding is crucial for the following reasons:

- Over the past 15-years cases of rat lungworm disease in Hawaii have been increasing in number and severity, costing people their lives, livelihoods, savings, health, and well-being. There have been deaths and disabilities from the disease, many people never recover fully. Those of us who know about the disease are afraid of getting it as we have seen or have heard about the impact it can have on one's health. The disease has affected people in Hawaii, Maui, Oahu, and Kauai Counties, and the parasite has been found on all of the major Hawaiian Islands with the exception of Lanai.
  - Case numbers are under-reported because many doctors are not familiar with the disease and there is no easy diagnostic. Diagnosis currently requires a spinal tap, which is a costly dangerous procedure, and therefore many, many cases go undiagnosed.
  - Rat lungworm disease, a food-borne illness, is detrimental to Hawaii's efforts to become food secure. This problem will hurt our farmers, grocers, school gardens and consumers. Already there are those of us who do not purchase fresh vegetables grown in Hawaii, and many of us will not consume salads at restaurants because we don't know how well the lettuce has been washed. Education for food handlers is important!
  - There needs to be more education available for residents, especially new residents, and visitors who know nothing about the disease. There also needs to be education for the school garden projects so our keiki are safe.
  - The vectors of rat lungworm disease are all invasive species, as is the parasite itself, and there is a need for host control. When case numbers started to rise 10 years ago control efforts should have begun. The semi-slug is an important carrier of the rat lungworm, and it has spread around the island because there has been no education or efforts for host control. All slugs and snails, and some flatworms can be carriers, and they all are invasive species. Rats are also bad for Hawaii and should be controlled.
  - Studies are showing the potential for infection through water, and Hawaii Island relies heavily on rainwater catchment, which may be a reason cases of rat lungworm disease are higher in Hawaii County. We need to know if filters, what size filters, and if UV light will keep the parasite out of household water in a catchment system. There is a need for education for those using rainwater catchment. The use of rainwater catchment for agriculture needs to be explored to ensure prevention of crops.
- People who know about rat lungworm disease and are taking precautions and some are still getting sick. This problem is endangering residents and visitors, as well as Hawaii's reputation as a tropical vacation paradise. I am in support of SB 272 because rat lungworm disease must be addressed in order to ensure that the health and mental well-being of Hawaii's residents and visitors are protected. Please fully support SB 272 and provide funding for UHH to continue to do their work with adequate monies.

Mahalo,

Sincerely,

Donna Mitts

**From:** mailinglist@capitol.hawaii.gov  
**Sent:** Monday, March 13, 2017 7:11 PM  
**To:** AGRtestimony  
**Cc:** douglasperrine@yahoo.com  
**Subject:** \*Submitted testimony for SB272 on Mar 15, 2017 08:30AM\*

**SB272**

Submitted on: 3/13/2017

Testimony for AGR on Mar 15, 2017 08:30AM in Conference Room 312

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Douglas Perrine	Individual	Support	No

Comments:

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Testimony Presented Before the  
Committee on Agriculture  
Wednesday March 15, 2017 8:30 am

**SB 272 SD2 / HB 474 - RELATING TO RAT LUNGWORM DISEASE**

Chair Creagan and Vice Chair Decoite and members of the Committee on Agriculture,

My name is Dr. Susan Jarvi and I am a Professor in the Department of Pharmaceutical Sciences at the University of Hawaii at Hilo, Daniel K. Inouye College of Pharmacy. My lab has been the lead in rat lungworm education and research for the past 5 years in the state.

I am speaking as a concerned individual in strong support of SB 272 SD2 / HB 474 Relating to Rat Lungworm Disease (RLWD).

Hawaii is the epicenter for rat lungworm disease (angiostrongyliasis) in the United States, and is among the most serious threats to human health of all diseases carried by wildlife in Hawaii. Most infections are presumed to be due to the ingestion of infected slugs or snails on fresh produce or possibly from untreated catchment water. The nematode reproduces in rats and develops in slugs and snails. Although most human cases have originated in east Hawaii Island, there have been cases reported on all of the major Hawaiian Islands. Why so many cases originate on Hawaii Island is unclear. Thus, funding is needed to address this grave issue.

Rat lungworm is a preventable disease, but only if one is informed about it. A significant component of this bill is geared toward prevention through education. My lab (largely through the efforts of Kay Howe) has been the first in the US, and in the world, to develop and implement curriculum to educate our keiki, who can then educate their `ohana on how to best prevent RLWD. While this RLWD curriculum currently only involves 5 schools on Hawaii Island, funding is needed to develop this into a statewide program available for all keiki (especially those in schools with school garden programs). Funding is needed for tracking the spread of highly infected slugs throughout the islands and pinpoint areas of high transmission which could then be targeted for control. We could also run experiments necessary to evaluate the possibility of using rat baits containing anti-parasitic drugs to deworm rats and break the disease cycle.

Funding is also needed to determine which approved vegetable washes are most effective at killing larvae so people can better wash their produce, and continue to eat local and fresh produce safely. East Hawaii has the highest use of catchment water in the state. We need to know if the infective stage of the larvae can be detected in catchment water and the best practices for treating catchment water as we have found that infective stage RLW larvae can live in rainwater for many weeks.

RLWD has already caused multiple deaths; many victims suffer long-term disability.

RLWD impacts the people of Hawaii and its visitors, it impacts public health as a global emerging infectious disease, it impacts agriculture through the loss of public confidence in locally grown produce, and it puts food self-sufficiency and food security (especially with the Farm to School Bill) for all of Hawaii at risk.

Our research group has already built a strong research and education foundation with which to carry out these studies – with relatively very little funding. We are poised to provide the research and educational efforts needed to truly begin to prevent rat lungworm disease in Hawaii and elsewhere. The state of Hawaii needs to take immediate action. Please support SB 272 SD2 / HB 474 with full, necessary funding.

**From:** mailinglist@capitol.hawaii.gov  
**Sent:** Tuesday, March 14, 2017 1:39 PM  
**To:** AGRtestimony  
**Cc:** jan@islandstrategy.com  
**Subject:** Submitted testimony for SB272 on Mar 15, 2017 08:30AM

**SB272**

Submitted on: 3/14/2017

Testimony for AGR on Mar 15, 2017 08:30AM in Conference Room 312

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Jan TenBruggencate	Individual	Support	No

Comments: I am in support of SB272SD2, which is being heard in AGR 312 Mar 15, 2017 8:30 AM. I am a Kaua`i resident and member of the state Advisory Council on Emergency Management. Rat Lungworm is a significant public health issue and needs the research that would be funded by this bill. Thank you.

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RE: SB272 Relating to Rat Lungworm Disease

Aloha Rep. Creagan,

I am writing on behalf of the Big Island Invasive Species Committee to express the Committee's support for SB272, allocating resources for research into angiostrongylosis (rat lungworm disease).

The rat lungworm parasite is a serious threat to both our health and our economy. Primarily carried through the activity of two common invasive species, rats and slugs, the parasite has caused debilitating illness, pain, and even death for some of our community members, making it a priority for public health.

We are very concerned by the potential from transmission of the parasite in catchment water. Not only are many of our island's residents on catchment, with no alternative water source, many of our farmers depend on catchment to irrigate their crops. As the semi-slug continues to expand its range on the Big Island, more of our agricultural regions are at risk from invasion, threatening the safety and viability of Big Island agriculture.

We have seen the work being done at College of Pharmacy to investigate rat lungworm and are very impressed with the efforts of Dr. Sue Jarvi and her team. BIISC has committed to working with the Rat Lungworm working group on outreach and education efforts in any way that we can. We depend on this working group to provide us with the information, education and materials we need to promote a message of safety and health in our community, and so we ask that the necessary funding be put in place to ensure that this effort is maximized.

Mahalo for your consideration,

Franny Kinslow Brewer  
Communications Director

**From:** mailinglist@capitol.hawaii.gov  
**Sent:** Tuesday, March 14, 2017 6:41 PM  
**To:** AGRtestimony  
**Cc:** kalola.thomas@gmail.com  
**Subject:** Submitted testimony for SB272 on Mar 15, 2017 08:30AM



**SB272**

Submitted on: 3/14/2017

Testimony for AGR on Mar 15, 2017 08:30AM in Conference Room 312

Submitted By	Organization	Testifier Position	Present at Hearing
Carole Thomas	Individual	Comments Only	No

Comments: Aloha and good morning. My name is Carole Thomas and I recently had a possible exposure to rat lungworm disease. On March 1, I purchased a head of lettuce at the Hilo farmers' market. Five days later, I found a small slug inside the lettuce after I had already eaten some leaves from the outside. When I bought the produce, I did not see any posters or flyers informing me that buying locally grown produce could expose me to a disease that could make me very ill, with symptoms that could last a lifetime, or result in my death. I did not see any warning signs of this at the airport when I arrived; I heard no public service announcements on the local radio about it. I wish I had. I have not developed symptoms, and am hopeful I have not contracted it. As a visitor to the islands, I'm concerned the state made no effort to educate me about the known health hazard of rat lungworm disease. Knowing that 75.5% of the slug population tested in Puna showed they are infected with this parasite, it seems unconscienable that more is not being done to eradicate this disease and educate the public. This information could easily be disseminated on flights to the islands, in the airports, PSAs on the radio, as well as at the markets. The state needs to step up and do more, through public education and rodent and slug control, to protect its residents and visitors from exposure to this dangerous and avoidable threat. Thank you for your time.

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**LATE**

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**Sent:** Tuesday, March 14, 2017 5:17 PM  
**To:** AGRtestimony  
**Cc:** skaye@hawaii.edu  
**Subject:** \*Submitted testimony for SB272 on Mar 15, 2017 08:30AM\*

**SB272**

Submitted on: 3/14/2017  
Testimony for AGR on Mar 15, 2017 08:30AM in Conference Room 312

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Springer Kaye	Individual	Support	No

Comments:

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