

STATE OF HAWAII  
DEPARTMENT OF HEALTH  
P. O. Box 3378  
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doh.testimony@doh.hawaii.gov

**Testimony COMMENTING on H.B. 474**  
**RELATING TO RAT LUNGWORM DISEASE**  
REPRESENTATIVE JUSTIN H. WOODSON, CHAIR  
HOUSE COMMITTEE ON HIGHER EDUCATION

Hearing Date: February 14, 2017                      Room Number: 309

1    **Fiscal Implications:** The Department of Health appreciates the intent of H.B. 474 but defers to  
2    the priorities set forth in the Executive Biennium Budget. The Department estimates at least  
3    \$650,000 in additional resources (supplies, staff time, trainings) would be necessary to fulfill the  
4    requirements of this measure for fiscal year 2017–2018.

5    **Department Testimony:** This measure seeks to appropriate funds to the University of Hawaii at  
6    Hilo, the Department of Health, Department of Land and Natural Resources, and the Department  
7    of Agriculture for programs, studies, and activities related to rat lungworm disease. The  
8    Department recognizes public concern over angiostrongyliasis (or rat lungworm), one of several  
9    emerging diseases of public health concern. At the Governor’s request, DOH assisted the  
10   Governor’s office in initiating a Joint Rat Lungworm Task Force in 2016, which also includes  
11   membership from the Department of Tropical Medicine, John A. Burns School of Medicine  
12   (JABSOM), University of Hawaii at Hilo, University of Hawaii at Manoa, State Department of  
13   Agriculture, U.S. Department of Agriculture, and clinicians. The Department of Health concurs  
14   with and supports the consensus of the Joint Rat Lungworm Task Force, which is that outreach  
15   and education are essential priorities in addressing the risk of angiostrongyliasis in Hawaii’s  
16   communities.

17   DOH educational efforts, in conjunction with partners, have included statewide school garden  
18   food safety workshops and the distribution of flyers to at-risk communities as well as  
19   commercial food establishments. We welcome the opportunity to continue our work with  
20   partners to improve public health education and planning regarding this important concern.

21   Thank you for the opportunity to testify.

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  
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LAND  
STATE PARKS

STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES

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Testimony of  
SUZANNE D. CASE  
Chairperson

Before the House Committee on  
HIGHER EDUCATION

Tuesday, February 14, 2017  
2:03 PM  
State Capitol, Conference Room 309

In consideration of  
HOUSE BILL 474  
RELATING TO RAT LUNGWORM DISEASE

House Bill 474 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.

Thank you for the opportunity to comment on this measure.

**DAVID Y. IGE**  
Governor

**SHAN S. TSUTSUI**  
Lt. Governor



State of Hawaii  
**DEPARTMENT OF AGRICULTURE**  
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Honolulu, Hawaii 96814-2512  
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**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 HIGHER EDUCATION**

**FEBRUARY 14, 2017  
2:03 P.M.  
CONFERENCE ROOM 309**

**HOUSE BILL NO. 474  
RELATING TO RAT LUNGWORM DISEASE**

Chairperson Woodson and Members of the Committee:

Thank for the opportunity to testify on House Bill No. 474, 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 HB474 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 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.

# Hawai'i Farm to School and School Garden Hui

Coordinated through The Kohala Center



## TESTIMONY

House Committee on Higher Education  
February 14, 2017, 2:03 p.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 O'ahu Master Gardeners

## HB474: RELATING TO RAT LUNGWORM DISEASE

Chair Woodson, Vice Chair Hashem, and Members of the Committee,

The Hawai'i Farm to School and School Garden Hui **supports HB474.**

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

Testimony Presented Before the  
House Committees on Higher Education and Education

Tuesday, Feb. 14, 2017, 2:00 PM

**HB 474 - RELATING TO RAT LUNGWORM DISEASE**

Chair Woodson (Higher Education), Chair Takumi (Education) and members of respective committees.

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 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 from unfiltered 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. In these areas we could 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 the best practices for treating catchment water as 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 HB 474 with full, necessary funding.

Aloha Senator Justin Woodson and the Senate Higher Education Committee,

My name is Kathleen Howe and I am a member of the Hawaii Island Rat Lungworm Working Group at the University of Hawaii at Hilo. I am testifying in support of HB 474 as the need for funding for research and education in Hawaii for rat lungworm disease is essential. Annual cases of rat lungworm disease continue to be reported and serious cases have resulted in deaths and permanent disability in Hawaii. We can no longer ignore this serious health problem. Every year since my son's case of angiostrongyliasis, or rat lungworm disease in 2008, I have been contacted by multiple victims of the disease. In the past year two toddlers were infected and sent to Honolulu for treatment. In December of 2014 and March of 2015 two people of more advanced age were infected and both succumbed. This disease is costing all of us money, health, and peace of mind. In January I completed a Masters of Science degree, and for the past five years I have been conducting research and education outreach on this issue. I feel I can speak with some authority on the subject.

At the 59<sup>th</sup> annual meeting of the American Society of Tropical Medicine and Hygiene in Atlanta, Georgia, information was presented on the results of the Center for Disease Control (CDC), Hawaii Department of Health (DOH), and the United States Department of Agriculture (USDA)/Pacific Basin Agriculture Research Center (PBARC) study on Hawaii Island in 2005- 200. Investigators showed the infection rate in mollusks (slugs and snails) ranged from 24 to 78%, depending on species analyzed, and they confirmed that 57% of the rats were



positive by examination, having active infection with worms found in the heart and lungs, and 100% were positive by examination of lung tissue sample using realtime PCR, providing DNA evidence of current or past infection. Of the rats tested by PCR, 32% had very high infection levels, which corresponded to more than 100 larvae in ~25mg of tissue. The presenters remarked at the conference that “the severe cases of eosinophilic meningitis being reported could be due to overexposure of humans to highly infected mollusks: there are no measures in place in Hawaii to control the spread of *A. cantonensis*.” The authors concluded “angiostrongyliasis may be a more serious public health issue in Hawaii than currently estimated and measures to control its spread in mollusks and rodents may be warranted” (Banda et al. 2010). From my research I can attest that infection levels on Hawaii Island continue to be extremely high, and all of the main Hawaiian Islands have infection.

The State of Hawaii estimates it imports 85-90% of its food, making it vulnerable to natural disasters and world events should there be a disruption in the shipping and the food supply. 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 (group) 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. However, some nine years after the 2007 CDC and DOH

study was conducted in Hawaii, there has been no concerted effort made by any county, state or federal agency to control the spread of *A. cantonensis* in mollusks and rats, nor has there been a public education campaign to encourage residents to control these hosts. 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.

In 2012 I co-authored a 2<sup>nd</sup> grade activity book on rat lungworm disease, “The Mystery of Rat Lungworm Disease,” which is based on the Hawaii State Science Standards for that grade level. The book gives the basics of the hosts of the parasite and the life cycle, as well as how to check, clean, and cook fresh vegetables. We’ve distributed all 10,000 copies printed and would like to print more, as they are frequently requested. In 2015-2016 I worked with five partner schools on Hawaii Island to develop an Integrated Pest Management plan for invasive slugs and snails for school gardens, and accompanying STEM curriculum. Again the materials will be done in collaboration with teachers and will be based on the Next Generation Science and Common Core Math, as well as Hawaii State Educational Standards. While we’ve received partial funding to continue the project through the Hawaii Invasive Species Program (HIISC), so that the management plan and curriculum is available throughout the state, more funding will be crucial for implementation.

Much of my graduate research looked at the potential for infection by water, as we have many residents living in Hawaii County who rely on rainwater catchment as do many farms. My studies show that drowned slugs and snails, particularly the very effective host, the semi-slug, can indeed shed large numbers of infective stage rat lungworm parasites when drowned and the larvae can live for

some time outside of the slug/snail host. Funded studies are crucial to know what size filters will keep the parasite out of the water and if UV light is effective. Transmission may also be possible through skin. A mouse study conducted in 1991 showed that skin or mucosa contact with infective stage larvae may cause angiostrongyliasis. The worm recovery ratio efficiency from lacerated skin infection (40%) was higher than those from the unabraded skin (6%) or the foot pad infections (4%). Anal infection had higher worm recovery (51%) than vaginal (28%) or conjunctival (21%) infections. Mice infected by subcutaneous inoculation had a significantly higher worm burden than those infected orally. The simple act of bathing or washing in inadequately filtered catchment water could theoretically be a source of exposure. Water transmission may be one of the reasons the case numbers of angiostrongyliasis are highest for Hawaii County.

In lieu of the continued number of cases occurring annually, the need for funding for research and education in Hawaii for rat lungworm disease is not just crucial it is essential. Initiating host control measures and de-worming rats may be a way to reduce parasite load in hot spots. Farmers need to implement control measures. Food handlers need to be educated. Farm to School workers and school garden teachers need to be educated. Rainwater catchment users need to be educated. Medical professionals, residents, and visitors to Hawaii all need to be educated about rat lungworm disease. An easy diagnostic tool is essential and work on that is in progress but funding is necessary to make this simple blood test available and in use throughout the state. On behalf of the people of Hawaii, and to ensure the health and mental well-being of both residents and visitors alike, I ask you to fully support HB 474 and help us reduce or eliminate more cases of this horrific disease. Mahalo nui loa.

**From:** mailinglist@capitol.hawaii.gov  
**Sent:** Monday, February 13, 2017 9:50 AM  
**To:** HEDtestimony  
**Cc:** una@hawaii.rr.com  
**Subject:** Submitted testimony for HB474 on Feb 14, 2017 14:03PM

**HB474**

Submitted on: 2/13/2017

Testimony for HED on Feb 14, 2017 14:03PM in Conference Room 309

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Una Greenaway	Individual	Support	No

Comments: Please pass this bill. It is extremely important. These researchers have been working on their own time and own dime for too long. This is a debilitating disease which has affected tourists and local people. It is not a lifestyle problem, it is the state's problem. Let's work together. Thanks you Una Greenaway

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**From:** mailinglist@capitol.hawaii.gov  
**Sent:** Monday, February 13, 2017 8:56 AM  
**To:** HEDtestimony  
**Cc:** sairam2@hawaiiantel.net  
**Subject:** Submitted testimony for HB474 on Feb 14, 2017 14:03PM

**HB474**

Submitted on: 2/13/2017

Testimony for HED on Feb 14, 2017 14:03PM in Conference Room 309

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Geoffrey Lasr	Individual	Support	No

Comments: I LIVE HERE IN PUNA GROUND ZERO FOR RAT LUNG KNOW MANY PEOPLE WHO HAVE AND HAD IT IT IS DEVASTATING AFRAID TO EAT SALADS IN RESTAURANTS FUNDING NEEDS TO HAPPEN TO CONTINUE RESEARCH AND EDUCATION I totally support this bill SINCERELY GEOFFREY LAST

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**From:** mailinglist@capitol.hawaii.gov  
**Sent:** Monday, February 13, 2017 8:01 AM  
**To:** HEDtestimony  
**Cc:** makikirandy@yahoo.com  
**Subject:** Submitted testimony for HB474 on Feb 14, 2017 14:03PM

**HB474**

Submitted on: 2/13/2017

Testimony for HED on Feb 14, 2017 14:03PM in Conference Room 309

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Randy Ching	Individual	Support	No

Comments: Chair Woodson, Vice-Chair Hashem and members of the committee, Please pass HB474. This bill would fund research on rat lungworm disease - a disease that has disproportionately affected residents of the Big Island. Mahalo for your consideration.

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**From:** mailinglist@capitol.hawaii.gov  
**Sent:** Monday, February 13, 2017 5:29 AM  
**To:** HEDtestimony  
**Cc:** arthurwdodge@gmail.com  
**Subject:** Submitted testimony for HB474 on Feb 14, 2017 14:03PM

**HB474**

Submitted on: 2/13/2017

Testimony for HED on Feb 14, 2017 14:03PM in Conference Room 309

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Arthur Dodge	Individual	Comments Only	No

Comments: My name is Arthur Dodge. I am testifying in support of HB 474 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 crop contamination. 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 HB 474 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 HB 474 and provide funding for UHH to continue to do their work with adequate monies. Mahalo. Sincerely, Arthur Dodge

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**From:** mailinglist@capitol.hawaii.gov  
**Sent:** Sunday, February 12, 2017 8:24 PM  
**To:** HEDtestimony  
**Cc:** lizhansen222@gmail.com  
**Subject:** Submitted testimony for HB474 on Feb 14, 2017 14:03PM

**HB474**

Submitted on: 2/12/2017

Testimony for HED on Feb 14, 2017 14:03PM in Conference Room 309

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
elizabeth hansen	Individual	Support	No

Comments: Please support this bill. I know several adults who have severe life impacting issues due to this disease. We cannot let this disease continue to afflict people. If you knew the people like I do, then you would also be worried about the impact of this disease and worried about it continuing. Thank you

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Testimony in Support of HB 474  
Relating to Rat Lungworm Disease  
February 12, 2017

Aloha Chair Creagan and Members of the Committee:

My name is Alejandra Duarte and I am a Nursing Student at University of Hawaii at Hilo. I fully support the intent of House Bill No. 474 relating to rat lungworm disease. Our island needs to have a greater understanding of this disease. By allocating funds to support research, control, and outreach activities relating to rat lungworm disease, the effects of this debilitating disease on our community could be decreased.

As a nursing student, I have an increased awareness of this disease from hearing it mentioned in the hospital and from encounters with individuals who suffer from the disease and it's long lasting effects. However, I believe that the community needs education and protection. It is time for the State of Hawaii to help those who have already begun to take action.

On my own personal account, I experience frequent stress about rat lungworm disease. While there is a beautiful selection of produce at Hilo Farmers Market, my fear of rat lungworm disease leads me to buy mostly imported produce because I know it is safe. Also, as much as I would love to have a garden, I am hesitant to start growing my own food in fear of unknowingly coming in contact with snails, slugs, larvae or their slime.

Thank you for the opportunity to testify on HB 474 and thank you for your time.

Sincerely,  
Alejandra Duarte

**From:** mailinglist@capitol.hawaii.gov  
**Sent:** Friday, February 10, 2017 12:29 PM  
**To:** HEDtestimony  
**Cc:** dylanarm@hawaii.edu  
**Subject:** \*Submitted testimony for HB474 on Feb 14, 2017 14:03PM\*

**HB474**

Submitted on: 2/10/2017

Testimony for HED on Feb 14, 2017 14:03PM in Conference Room 309

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Dylan P. Armstrong	Individual	Support	No

Comments:

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**From:** mailinglist@capitol.hawaii.gov  
**Sent:** Sunday, February 12, 2017 12:58 PM  
**To:** HEDtestimony  
**Cc:** marykalbin@gmail.com  
**Subject:** Submitted testimony for HB474 on Feb 14, 2017 14:03PM

**HB474**

Submitted on: 2/12/2017

Testimony for HED on Feb 14, 2017 14:03PM in Conference Room 309

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Mary Albin	Individual	Support	No

Comments: Funding is needed to support research on this potentially deadly disease. Please support this bill.

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**Sent:** Thursday, February 9, 2017 8:33 PM  
**To:** HEDtestimony  
**Cc:** susiemarie\_@hotmail.com  
**Subject:** Submitted testimony for HB474 on Feb 14, 2017 14:03PM

**HB474**

Submitted on: 2/9/2017

Testimony for HED on Feb 14, 2017 14:03PM in Conference Room 309

Submitted By	Organization	Testifier Position	Present at Hearing
Susan Blau	Individual	Support	No

Comments: These bills SB272 and HB474 are so important for the health of all islanders and visitors. This devastating illness caused by rats and slugs MUST be addressed IMMEDIATELY. The fact that it has gone basically ignored for over 10 years is criminal. Kay Howe is our leading island expert and has been unheard all this time. The deaf ears must listen to her. We don't want poison spread aerially, or test in military areas to harm our entire ecosystem, and pollute our water supply, (like the government did in Brazil with zika virus, poisoning the pregnant women, harming their babies) We want EDUCATION. People don't understand that when they put food trash in bushes in parks they are feeding rats and the slugs transfer the bacteria to humans. People who live here or come from America or any other foreign lands have no idea that they can't pick up food fallen from a tree, or even from the tree or the garden, without inspection and forcefully washing and scrubbing food with hot water, BEFORE eating it. Fresh food purchased from stores is still being found to contain slugs in the packages from the local farms. Guidelines must be created and enforced. Every store that sells fresh food, must educate the people eating their food. Water catch systems must be upgraded with small enough micron water filter cartridges. The planning dept. need to get up to bat with this to mandate this for water systems in new and already built homes. The fact that these slugs (and other crop damaging pests) were allowed to be introduced to Hawaii shows that agricultural inspections are also not adequate at controlling these types of infiltrations. This MUST CHANGE. This illness has ruined so many peoples' lives already. We must be heard, because everyone's lives are at stake. Please fully support HB474. Mahalo, Susie Marie Blau

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**From:** mailinglist@capitol.hawaii.gov  
**Sent:** Thursday, February 9, 2017 9:12 AM  
**To:** HEDtestimony  
**Cc:** slwsurfing@yahoo.com  
**Subject:** \*Submitted testimony for HB474 on Feb 14, 2017 14:03PM\*

**HB474**

Submitted on: 2/9/2017

Testimony for HED on Feb 14, 2017 14:03PM in Conference Room 309

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

Comments:

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**From:** mailinglist@capitol.hawaii.gov  
**Sent:** Tuesday, February 7, 2017 3:40 PM  
**To:** HEDtestimony  
**Cc:** lydibernal@gmail.com  
**Subject:** Submitted testimony for HB474 on Feb 14, 2017 14:03PM

**HB474**

Submitted on: 2/7/2017

Testimony for HED on Feb 14, 2017 14:03PM in Conference Room 309

<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 HB474, 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 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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## HEDtestimony

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From: Daniel Kalili on behalf of Rep. Justin Woodson  
Sent: Thursday, February 9, 2017 6:48 AM  
To: HEDtestimony  
Subject: FW: HB 474

Categories: Green Category

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From: Kathe Hannauer [mailto:klhannauer@me.com]  
Sent: Thursday, February 9, 2017 5:24 AM  
To: Rep. Justin Woodson <repwoodson@capitol.hawaii.gov>  
Subject: HB 474

Aloha Representative Woodson,

My name is Katherine Hannauer, and I am testifying in support of HB 474, 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. I have personal knowledge of this, sadly, because my brother contracted this horrible disease in the early 2000s, and it has ruined his life. He has severe, chronic neuropathic pain, and will for the rest of his life, as far as anyone can tell him. In addition, he is cognitively and physically depleted, and clinically depressed.
- Rat lungworm disease, a food-borne illness, is detrimental to Hawaii's efforts to become food secure. This problem will hurt your farmers, grocers, school gardens and consumers. Already there are those who do not purchase fresh vegetables grown in Hawaii, and many will not consume salads at restaurants because they don't know how well the lettuce has been washed. Education for food handlers is important!
- There must 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 your keiki are safe. I visited the Big Island a couple of years ago to give my brother some assistance, and was very taken with its natural beauty. I'm sorry to say, though, that I would not go back today, knowing what I do about this horrible disease, and I certainly would not recommend to anyone that they visit Hawaii for pleasure, no matter how beautiful the islands are.
- 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 HB 474 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 HB 474 and provide funding for UHH to continue to do their work with adequate monies. Mahalo.

Sincerely,

Katherine Hannauer

**From:** mailinglist@capitol.hawaii.gov  
**Sent:** Monday, February 13, 2017 11:35 AM  
**To:** HEDtestimony  
**Cc:** rmchugh@hawaii.edu  
**Subject:** Submitted testimony for HB474 on Feb 14, 2017 14:03PM

**HB474**

Submitted on: 2/13/2017

Testimony for HED on Feb 14, 2017 14:03PM in Conference Room 309

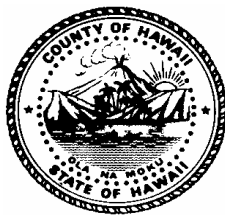
<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Robert McHugh	Individual	Comments Only	No

Comments: I would like to voice my support for HB 474 along with the growing number of citizens who are concerned about the lack of funding dedicated to protecting my community from Rat Lungworm and the lack of attention to the damage that Rat Lungworm has caused. I support HB 474 and urge all of the members of the committee to support its passage.

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**Eileen O'Hara**  
Council Member  
Council District 4



**Phone:** (808) 965-2712  
**Fax:** (808) 961-8912  
**Email:** eileen.ohara@hawaiicounty.gov

**Chair:** Environmental  
Management Committee

**Vice Chair:** Planning Committee and  
Agriculture, Water & Energy  
Sustainability Committee

**County of Hawaii**  
**Hawaii County Council**  
25 Aupuni Street, Suite 1402 • Hilo, Hawai'i 96720  
(808) 961-8255 • Fax (808) 961-8912

**LATE**

Date: Feb. 12, 2017

To: Justin Woodson & Mark Hashem, Chair & Vice Chair of HED Committee

From: Eileen O'Hara, Hawaii County Councilmember, District 4

Subject: **Testimony in support of HB474 relating to Rat Lungworm Disease at HED hearing on Feb. 14, 2017 at 2:30 PM**

Aloha Representatives of the HED Committee,

I am testifying in support of the proposed bill HB474 which would provide much needed research and funding support to address the devastating disease known as Rat LungWorm Disease. My Council District encompasses the area of Lower Puna where many cases have been diagnosed over the last 10 years or so. Further, a recent study conducted by a Masters Degree student at the University of Hawaii at Hilo, points definitely to the fact that this disease can also be spread through the use and consumption of catchment water which is the most common source of residential water in my district.

I strongly support this measure for the furtherance of research and educational programs to promote public awareness of the source and impact of this disease.

Mahalo,

*Eileen O'Hara*

Eileen O'Hara, Councilmember  
Hawaii County Council, District 4



**UNIVERSITY OF HAWAII SYSTEM**  
Legislative Testimony

**LATE**

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Testimony Presented Before the  
House Committee on Higher Education  
February 14, 2017 at 2:03 p.m.

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

HB 474 – RELATING TO RAT LUNGWORM DISEASE

Chair Woodson, Vice Chair Hashem, 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 HB 474 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 HB 474. Aloha.

**LATE**



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

February 14, 2017

HEARING BEFORE THE  
HOUSE COMMITTEE ON HIGHER EDUCATION

**TESTIMONY ON HB 474**  
RELATING TO RAT LUNGWORM DISEASE

Room 309  
2:00 PM

Aloha Chairs Woodson, Vice Chair Hashem, 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 HB 474** 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 are 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.

HFB supports funding of the University and the appropriate 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.

**LATE**

**From:** mailinglist@capitol.hawaii.gov  
**Sent:** Monday, February 13, 2017 2:25 PM  
**To:** HEDtestimony  
**Cc:** summer\_roper@yahoo.com  
**Subject:** Submitted testimony for HB474 on Feb 14, 2017 14:03PM

**HB474**

Submitted on: 2/13/2017  
Testimony for HED on Feb 14, 2017 14:03PM in Conference Room 309

Submitted By	Organization	Testifier Position	Present at Hearing
Summer Roper	Individual	Support	No

Comments: Aloha Representative Woodson, My name is Summer Roper\_. I am testifying in support of HB 474 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 crop contamination. 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 HB 474 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 HB 474 and provide funding for UHH to continue to do their work with adequate monies. Mahalo. Sincerely, Summer Roper

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**LATE**

Testimony Presented Before the  
House Committee on Higher Education  
and

House Committee on Education  
Tuesday, Feb. 14, 2017, 2:00 PM

By

Carolyn Ma, PharmD

Dean

UH Hilo - Daniel K. Inouye College of Pharmacy (DKICP)

## **HB 474 - RELATING TO RAT LUNGWORM DISEASE**

Chairs Woodson and Takumi, Vice Chairs Hashem and Har, and members of the committees:

My name is Carolyn Ma and I am the Dean for the Daniel K. Inouye College of Pharmacy (DKICP). I am submitting this testimony as a member of the Hawai'i Island community in support of HB 474. This is an interesting proposal and I fully support the intent of the bill to help fund programs, studies and activities to prevent and eradicate rat lungworm disease. Thank you for the opportunity to testify.



**LATE**

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 HB 474 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 HB 474 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 HB 474 and provide funding for UHH to continue to do their work with adequate monies.

Mahalo,

Sincerely,

Donna Mitts

**LATE**

February 14th, 2017

Representative Justin H. Woodson, Chair  
Representative Mark J. Hashem, Vice Chair  
Member of the House Higher Education Committee

House Committee on Higher Education

From: Tia Vernon

Testimony in support of H.B. number 474 relating to rat lungworm disease

My name is Tia Vernon and I represent the students of Kalaheo. I am in support of the bill H.B. number 474 relating to rat lungworm disease. You are able to get rat lungworm disease by eating food that has been contaminated by the larval stage of *A. cantonensis* worms. In Hawaii, these larval worms can be found in raw or undercooked snails or slugs. There have been cases in which dogs and horses have contracted rat lungworm disease. If the University of Hawaii at Hilo, the department of health, department of land and natural resources, and department of agriculture are able to get funds, they could do further research in order to find ways to stop the disease from spreading to animals.

According to Hawaii News Now, 38 of the 42 cases of rat lungworm statewide since 2007 have happened on Hawaii Island. Rat lungworm disease is a parasite that is carried by rats and transferred to humans by slugs or flatworms. Experts say the most likely culprit is contaminated produce. There have also been a lot of cases in which horses had to be put down because the slug or possibly even the slime trail from the slug or snail is infected. If this disease is deadly to horses, than who is to say it isn't deadly to humans. A majority of the victims don't even know how they were infected. One person who might get this disease will probably have different symptoms than another person who has this disease. The scariest part about this disease is that it can affect the brain and spinal, according to the State Department of Health. Funds need to be provided in order for more research to be done about this disease if we want to find how to further prevent cases of it.

In conclusion, I strongly urge for the University of Hawaii at Hilo, the department of health, department of land and natural resources, and department of agriculture to be given the funds needed in order for this program to find away to stop this disease from spreading to dogs and horses. Rat lungworm disease can be a potentially dangerous disease if the proper research is not done to figure out how dangerous this disease can be. We can't let other people suffer from this disease, especially not the animals. Thank you for listening to my testimony.