

LATE TESTIMONY



TO: Senator Jill Tokuda, Chair
Senate Committee on Agriculture and Hawaiian
Affairs

FROM: Penny Levin, Executive Director
'E kūpaku ka 'āina –
The Hawai'i Land Restoration Institute

DATE: Tuesday, February 5, 2008

(Submitted through Legislature's Public Access Room at testimony@capitol.hawaii.gov)

Aloha honorable Chair and Committee members;

I am testifying in support of SB2518 which requests funding for farmer-based apple snail control research.

The apple snail, *Pomacea canaliculata*, has been a major pest to taro farmers for 23 years. In recent years, it has consumed 18-25 % of annual harvests and makes a significant impact on huli (taro tops) survival at planting. The snail has increased the labor required to bring a crop to harvest by an exhausting 50%.

This voracious pest is on the list of the *100 Worst Global Invasive Species*. It is a major threat in more than 18 countries worldwide. The snail has infested taro patches, wetlands, streams, estuaries, ponds, springs, ditches and reservoirs on every island except Molokai'i and Kaho'olawe. Today, there are few taro growing areas that are snail-free.

Approximately 11,000 acres of wetlands and water bodies are at risk of or already infested with the snail; only 5% of those lands are taro farming lands - the rest are under private, state and federal jurisdiction.

The snail is a known disease vector for rat lung worm and leptospirosis, making control of this pest a health concern as well. The presence of large populations of snails has been observed to draw rats and mongoose to taro patches to feed on them, a further threat of disease and to endangered waterbirds.

And yet, taro farmers appear to be the sole advocates for bringing this pest under control. Neither DLNR, nor USFWS have initiated control efforts.

Finding a cost-effective and environmentally safe apple snail control is one of the highest priority issues for growers.

Four years ago, 'E kūpaku ka 'āina began doing the ground work to make a case for more sincere involvement by state agencies and increased resources towards control efforts. We collaborated on an economic impact study, a statewide survey to find how far the snail had spread, researched everything we could find about the snail, interviewed farmers and researchers and agencies, and in 2006 produced a Statewide Strategic Control Plan for Apple

Snails in Hawai'i. The plan outlines best management practices, and recommendations on needed policy changes, management efforts, funding, partnerships, and research priorities, including the farmer-based research in SB2518. (the report is online at <http://www.hear.org/articles/pdfs/applesnailcontrolplanlevin2006.pdf>)

What also we found was that in 23 years, less than \$400,000 had been spent on snail control efforts. Just enough to ensure failure.

Past funding for apple snail controls has gone almost exclusively to HARC and UH and has left taro farmers with no realistic or affordable solutions; and in one project may have encouraged further spread of the snail.

In 2006, we returned to state and federal agencies, working closely with the Coordinating Group on Alien Pest Species, and asked what could be done to help make the plan bear fruit? **To date, no concrete action towards this plan has taken place among state agencies, leaving taro farmers no choice but to go directly to the legislature.**

Taro farmer's have spent 23 years observing the behavior of the apple snail. Their own search for solutions have found promising alternatives based on realistic conditions. On Kaua'i, an organic cover crop rotation practice has been highly successful for one farming family. This is a practice that requires no lab testing as there are no chemical inputs, an important aspect for organic taro farmers. On Maui, taro farmers have partnered with Pacific Biodiesel in examination of an organic soil conditioner that appears to have positive effects on snail mortality.

As 'E kūpaku ka 'āina watched the difficulty of invasive species programs fighting for funding, we made a commitment to find alternatives and partnerships that would support future control efforts. Pacific Biodiesel has willingly offered the opportunity for taro farmers to create a self-sufficient apple snail control fund - a first for invasive species programs in the state of Hawai'i. While this fund may not fulfill its promise right away, it provides a new model for control efforts that includes partnerships with agencies, business and innovation. Most importantly, farmers become key players at the table rather than "cooperators."

The Grant-In-Aid proposal that goes with this bill provides much more detail regarding the tasks to be accomplished, accountability, quality control and allocation of resources for this request.

To answer specific questions that may come up for the legislature:

1. *Is the request personally benefiting any business or taro farmer?* No

If the organic soil conditioner proves to be environmentally safe and effective after careful testing, Pacific Biodiesel will gain the ability to close the loop on recycling cooking oil. It will eliminate any byproduct from the production of biofuel from entering the landfill.

Taro farmers will be compensated for crop commitments and the extensive amount of time they give to growing the taro in the monitoring plots. In the past, UH and

HARC researchers have done numerous studies with taro farmers where planting material, tilling and preparing the patch, weeding, managing water and harvesting is provided by the farmer during trials. No compensation for that effort has ever been made, despite the fact that the crop may have been rendered unsaleable by the research trials

While the tests will occur in the lab and monitoring done on Maui; the primary goal of this work is to assist the farmers of Kaua'i who have greater constraints in choosing control practices than other farmers due to their location within the Refuge.

'E kūpaku ka 'āina is a registered nonprofit that will manage and administer the project. They have also made a significant commitment of in-kind resources (time and expertise) to the project. Approximately 50% of the total project budget is matched by in-kind resources.

2. *Is the project promoting the use of a product without proper testing?* No

Currently, a single site has used the soil conditioner, strictly for the purposes of an organic fertilizer. The product is not available for sale on any market. On the recommendation of specialists within the state, field monitoring will be conducted there to evaluate two key concerns: soil and water portability and soil retention of any ingredients in the compound. The GIA makes it clear that careful lab testing will take place to determine environmental safety before any consideration of field tests at new sites.

3. *Are there existing controls for the snail?* Yes, but most are inefficient, labor and time intensive or inaccessible due to costs, availability of resources, or agency limitations.

The primary controls used today include hand picking, ducks and dry-down periods which force the snail underground. Hand picking is exhausting and never ending. Dry-downs increase weed encroachment into fields tremendously and can impact the quality of the corms. Ducks, in combination with the first two practices significantly reduce overall labor and increase snail control. However; ducks are not readily available to most farmers. In places such as Hanalei, taro farmers can not use domestic ducks due to the presence of native koloa (Hawaiian duck). Their only option is hand picking. While that may be appropriate in a quarter acre patch; it becomes a full time job, in addition to farming the taro, for larger growers. This research has the potential to address this difficult situation and assist wetland managers in reducing snail populations outside taro-growing areas.

4. *Will the work stand up to EPA standards and the scientific peer review necessary to determine environmental safety?* Yes.

A Review Committee comprised of experts in the field of human health, environmental health, pesticide science, stream and wildlife biology, and taro crop health and lo'i management. It also includes a snail expert. This group will be responsible to provide guidance on the development of monitoring protocols and

review lab and field data for quality and accuracy. This group will also make recommendations based on the findings regarding future use of the compound.

CH2M Hill, a partner selected to conduct the lab testing has a high standard of quality control and assurance, documentation and testing. Lab results are evaluated by scientists at a number of levels. Any laboratory used is reviewed for issues that may compromise or skew the results. The company has access to both Hawai'i-based and mainland facilities and can handle the complexity of tests required.

The tests to be done under this project, include:

- LD50 tests on all components of the compound (half life of active ingredients)
- Freshwater and soil degradation –bench tests (how long does it take for the compound to break down)
- EPA approved substitute fauna impacts (to determine risk to native species).
- Soil and water portability (how fast does the compound move through soil and water); and
- Baseline soil and taro plant sampling and monitoring throughout (to determine soil and plant retention over time).
- Snail mortality and field response.

Without these tests, we will not be able to meet taro farmers own requirements for evaluating the safety and validity of the compound.

5. *How will 'E kūpaku ka 'āina show accountability?* As an IRS registered 501(c)(3), our end of year summaries, project reports and account reports are available for public review. The organization will work closely with all partners to ensure tasks are accomplished as promised.
6. *How will the work be documented and the information shared?* Video will be used to document each practice covered under the project. A training video will be made of the organic cover crop rotations model to share with farmers. Workshops will be conducted on four islands to share information and learn from the Kaua'i example. Public television and taro farmers meetings will increase outreach.

The results of laboratory tests and field monitoring will be available through scientific papers to encourage peer review.

A project report will be provided to the legislature 20 days prior to the opening of the 2009 legislative session.

Mahalo for this opportunity to testify. I urge you to support bill SB2518.

Penny Levin, Executive Director
E kūpaku ka 'āina – The Hawai'i Land Restoration Institute

E kūpaku ka 'āina 224 Ainahou Place, Wailuku, Hawai'i 96793. Tel: 285-3947 (c) Email: pennysfh@hawaii.rr.com

Snail Facts

- A snail matures in 2-3 months and proceeds to lay from 4,000-8,000 eggs per year for up to an estimated 5-6 years. The eggs hatch in under a month and are so tiny they almost can't be seen. It breaths both in water and on land and can hibernate for months in dry mud.
- A taro patch (10-12 months of work) with high infestations can be consumed in a matter of days. They are non-discriminatory in their consumption of vegetation but prefer taro.
- The snail poses as serious human health risk. It is a vector for rat lung worm and leptospirosis. On Kauai, it is present in at least one and possibly two resevoirs. The presence of snails draws rats and mongoose who feed on them, a further threat of disease and to endangered waterbirds.
- The snails primary mode of dispersal between ahupua'a has been human transport; within an ahupua'a downhill travel and some upstream movement is self-propelled.
- Once the snail gets into fallow taro areas or adjacent wetlands, they are currently almost impossible to remove. These types of sites are a constant source of reinfestation to active taro patches and wetlands.
- The traditional Hawaiian taro varieties, many of which are so rare they could be considered endangered species, are at risk as well. Growing them in infested areas means extra work to control snails and extra risk of losing rare cultivars.

Snail Control Research Facts

An estimated 22 snail control methods have been tested in Hawai'i or overseas, including chemical and organic practices, baiting and trapping, barriers, fallow periods, temperature changes, electroshock treatment, cover crops, tillage, trenching and mounding of fields, hand-picking, biocontrol, ducks, enforcement, outreach education and pest-for-profit programs.

What has been evaluated in the last decade by agencies and farmers?

HARC Papaya extract, neem, mugwort and yucca compounds, and ferric iron. Poor or inconsistent efficacy rates, expensive application costs (neem). Unknown impacts to crop quality.

DOA Copper sulfate. Moderate efficacy; environmental concerns for taro growers. Impacted crop quality.

UH Pest-for-profit program. Only worked when funding was available and may have caused further spread of the snail. Unrealistic economic, consumer demand and control capability projections.

Taro farmers Ducks, dry-downs, fallow periods, cover crops, tillage, barriers. Ducks are highly effective and significantly reduce labor when combined with other practices but problematic for DLNR and USFWS. Long term fallow (2-3yrs) can eliminate snails but alternate lands to continue farming are often unavailable. Cover crop rotations are highly effective.

LATE

To: Senator Jill Tokuda, Chair
Senator Kalani English, Vice Chair
And Members of the Agriculture and Hawaiian Affairs Committee

From: Chris Kobayashi and Demetri Rivera
Waioli Farm, Hanalei, Kauai, Hawaii

Re: SB 2518 relating to Taro, Apple Snails, and Research
Hearing on 2-05-08 in Conference Room 224 at 2:45 pm.

Testimony in Support of SB 2518

Aloha Chair Tokuda, Vice Chair English and Members of the Committee,

Mahalo for the opportunity to send testimony in support of SB 2518, a farmer based apple snail control research.

The Apple Snail problem has been identified by taro farmers as being a major invasive pest to our industry. Currently, to my knowledge, nothing is being done to address the control of this invasive with environmentally safe applications in the water.

E Kupaku Ka `Aina, The Hawaii Land Restoration Institute, completed a report- "Statewide Strategic Control Plan for Apple Snail in Hawaii" in which farmers were interviewed throughout the state. Both the institute and DASS confirmed that Apple Snails contribute to 18-25% of farmers' crop losses. This is huge and only drives home how hard it is to control the Apple Snail in aquatic conditions.

Without a doubt, we need to have studies done to find environmentally friendly and sound controls or better yet, eliminate the Apple Snail where possible.

The Apple Snail was brought into Hawaii through the aquarium trade. No one knew, including DOA, at the time that this snail could multiply so rapidly, spread so quickly in many of our waterways and consume taro and cause losses to the farmers. Over 10 years ago, DOA did try to help the farmers by using copper sulfate. Since then there were some other research done but none have been touted as the way to control the snails. In the meantime, the snail population was exploding and spreading. If we continue to do nothing, then those numbers will continue to grow exponentially. There are still some farming areas which still do not have the apple snails. We can and must do all that we can NOW to halt the spread, to control the populations, to eliminate where and when possible. If we don't do anything now, years later we'll look back and say, "we should've done something back then in February 2008".

E Kupaku Ka `Aina has proven itself to do a thorough Economic Study and Control Plan of Apple Snails. They have done literature searches and spent numerous hours talking to taro farmers and researchers throughout the state. Because of their close relationship with taro farmers and their ability to understand the farmers' issues, I believe that this institute will do an excellent job of conducting the experiments with Pacific Biodiesel and monitoring the fields and conducting themselves to EPA standards.

On October 8, 2007, taro farmers met with HDOA, CTAHR, Researchers, Extension Agents, Farm Bureau, OHA, HARC, and legislators to start dialogue on SCR 206, relating to the Security and Purity of Taro. Two methods of dealing with the snails were brought to the group's attention and had the general approval to proceed. The research with Pacific Biodiesel was one. The other was the use of cover crops or rotational crops to eliminate Apple Snails from taro lo'i and videotaping this practice for educational purposes. Demetri and I have been using this method since 1997 and have found it to totally eliminate Apple Snails, under the right conditions, as well as have the added benefit of adding organic matter to the soil and thus building up beneficial microorganism populations. We don't know if there may be allelopathic qualities from certain cover crops which would cause the snails to die off, but we do know that it works.

This practice would need to be done after each planting of taro because of the reinfestation of snails by birds, upstream contamination and by floods as we just experienced this past Sunday, February 3. Planting a rotational cover crop helps to break the disease cycle, helps to enrich our soils, and provides a healthy environment for the birds and the taro and eliminates the Apple Snail.

Our desire is to share this practice with other taro farmers because it is a no-brainer that it helps to build soil fertility and eliminates Apple Snails. We would not benefit monetarily from this project. We will be using our own seeds, supplies, and equipment as we usually do in our regular practice. We are merely providing our farm and our practices as an example.

We apologize for not flying in to testify. But we have much work to do after our garden and taro fields were flooded.

Please support this long over due, important legislation for Apple Snail control, SB 2518, so that we farmers can spend more time farming and growing healthy foods for the people of Hawaii.

Mahalo nui.

Chris Kobayashi
P.O.Box 135
Hanalei, Kauai, Hawaii 96714

Demetri Rivera
P.O.Box 114
Kilauea, Kauai, Hawaii 96754

LATE TESTIMONY

Please deliver testimony and attached pictures to AHW committee
Hearing on SB2518, Apple Snail control research
Tuesday, 2-05-08 at 2:45 pm, in conference room 224

Mahalo,
Chris Kobayashi
808-826-7836



LATE

Senator Jill N. TOKUDA, CHAIR
SENATE AGRICULTURE AND HAWAIIAN AFFAIRS COMMITTEE

GLADYS KANOA
FAMILY WITH 8 TARO FARMERS, KEANAE, MAUI
TUESDAY, FEBRUARY 5, 2008

I AM TESTIFYING IN FAVOR OF SB 2518. WE NEED HELP DEVELOPING NEW METHODS OF COMBATTING THE MENACE APPLE SNAIL. OUR FAMILY HAS BEEN INVOLVED IN MOST OF THE EFFORTS OVER THE PAST 20 YEARS TO MITIGATE THE PROBLEM. OUR ONLY SUCCESS HAS BEEN THE USE OF DUCKS, AND HAS BEEN THE ONLY REASON WE CONTINUE TO FARM TARO. I BELIEVE THE SNAIL INFESTATION IS THE MAJOR REASON MANY FARMERS HAVE QUIT.

BECAUSE OUR MAJOR TARO FARMING AREA FOR THE STATE IS IN HANALEI, WHERE THE USE OF DUCKS IS NOT ALLOWED SO AS TO PROTECT OUR NATIVE DUCK KOLOA, WE MUST FIND A RELIABLE METHOD OF SNAIL CONTROL. THE STATEWIDE APPLE SNAIL CONTROL PLAN, COMPLETED IN 2006, OUTLINES BEST PRACTICES, RESEARCH NEEDED, AND ACTIONS NEEDED BY AGENCIES, FARMERS, LANDOWNERS. PLEASE SUPPORT BILL SB 2518.

GLADYS KANOA, KEANAE
PO BOX 790436, PAIA, HI 96779
1-808-248-8449

Val Chung Jr.

~~HB 2518~~

Windward, Oahu

Ph. 2542590

email: makua@hawaii.rr.com

LATE

In favor of HB 2518

Mahalo,
Uncle Val Chung
Na Maka Puae