MAUI INVASIVE SPECIES COMMITTEE

Quarterly Report to the MISC Committee
FY 2012, Third Quarter
January 1 to March 31, 2012

Manager's Report

E hōʻike mai ana ka lāʻau a ke kia manu.
The stick of the birdcatcher will tell.

In old Hawaiʻi, the success of the birdcatcher could be gauged by counting the birds on his gummed stick. The *kaona* (meaning) of this *ʻōlelo noʻeau* is that we will know how successful a person is by what he produces. At MISC, we do a lot of counting, perhaps not of sticky birds, but using other metrics that tell the tale.

Although we don't exist under the life-threatening mantra of the academic world to "publish or perish," we strive to share the results of our work with the broader conservation community. Whether "publication" involves a paper in a peer-reviewed journal or conference proceedings, or giving a poster or paper at a professional conference, we benefit from the effort in a number of ways.

Analyzing our accomplishments for a particular species forces us to review our data and overall strategy in a way that is more probing than the typical report to a funder might be. Why is this good? For starters, it can point out gaps in our data collection, which then leads to improvement in our data management system. Focused analysis also helps answer the question: are we making a difference? Case in point – pampas grass work in the Honomanū area involves schlepping across wet, boggy terrain. It's not only hard to cover the exact same area on repeat visits to gauge success, but doing so may cause unnecessary damage to native plants. A presentation for the Hawaiʻi Conservation Conference inspired development of an innovative GIS approach to measure progress over time by analyzing areas where track lines intersected. The results helped substantiate other data that indicated we were making progress.

Sharing our work also helps ensure that our knowledge about relevant control technologies or basic species biology is up to date. Other benefits include enhanced connections with other professionals in the conservation community, broader recognition for the work we're doing, professional development opportunities for MISC staff, and meaningful feedback to staff and partners. We are proud of MISC's published articles about plant eradications and our coqui program and numerous presentations about specific work on target species. We are especially grateful for the support of our Committee and partners in these endeavors, as direct collaborators, reviewers, cheer-leaders, and funders, and look forward to counting more sticks together. *Mahalo nui ia ʻoukou!*

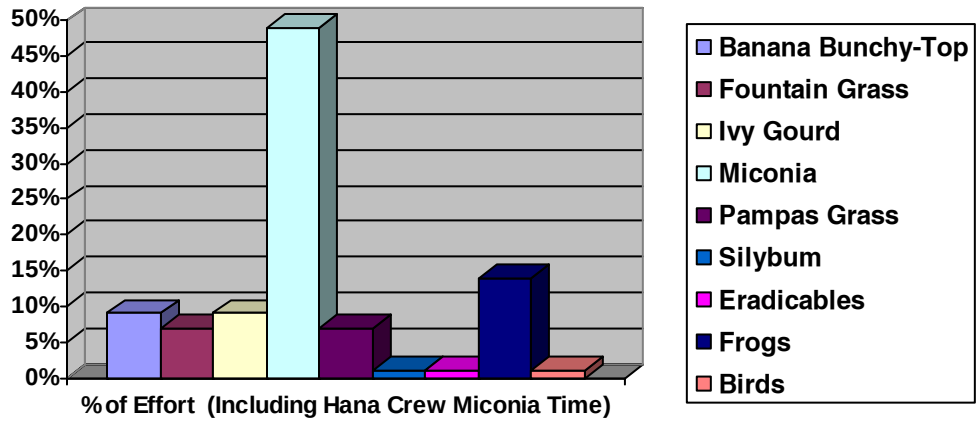
Employee of the Quarter

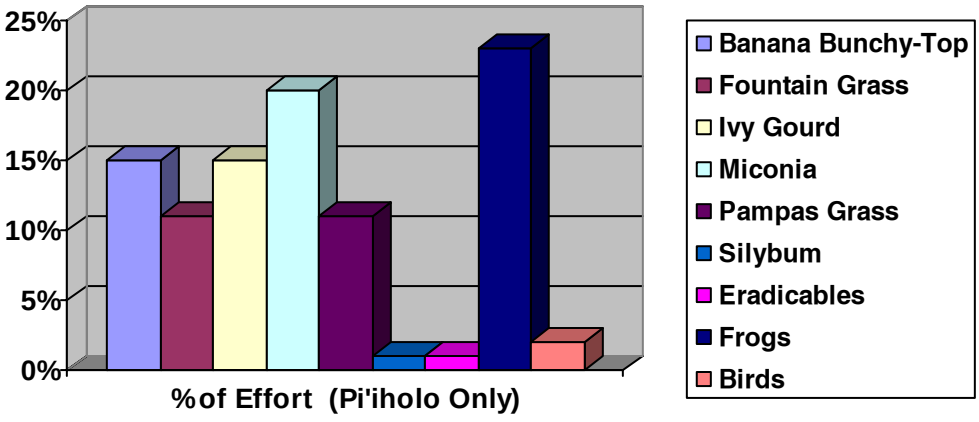
Our Employee of the Quarter has long been recognized as central to MISC's success. Elizabeth Anderson has been described as MISC's "glue," "heart," and "ultimate gap-filler." She has an amazing ability to handle a dizzying array of fiscal accounts, while also knowing at any time how many trucks, staff, and fatigues we have, when the next heliops is scheduled, and what the rest of us need to do to stay on track with our own responsibilities. In addition to her fiscal oversight, Elizabeth is our *de facto* Human Resource manager. She makes sure everyone keeps up to date on required training, but is also a huge advocate for personal advancement. Elizabeth plays a key role in our education and outreach program, especially with the Hōʻike project, and has assumed ever-more responsibility with report generation. Elizabeth has the longest tenure with MISC of any employee, so her institutional knowledge helps guide management decisions. Not enough responsibilities? Elizabeth somehow finds the time to help out with other PCSU projects as well. We would be remiss in failing to recognize other ways she brightens our lives: her home-grown roses add beauty and fragrance while the addition of "therapy dog" Quigley adds levity and a sense of home to the Makawao yurts. Mahalo nui for all you do for us, Elizabeth!

Quarterly Highlights

Jan 10:	Teya & Lori attend HISC meeting on Oʻahu
	Adam attends EMWP 20th anniversary outplating in Waikamoi
Jan 12:	Adam & Lori attend opening of the Legislature on Oʻahu
	Teya & Hāna crew meet with Tahitian delegation at Kahanu Gardens
Jan 14:	Hōʻike curriculum teacher's workshop
Jan 17:	Lori attends Legislative session on Oʻahu
	Lissa attends Public Outreach Working Group meeting on Oʻahu
Jan 19:	Miconia journal club meeting – modeling spread in Australia
Jan 20:	Miconia operations meeting
Jan 23-26:	Vertebrate crew to Molokaʻi for BBTV surveys
Jan 24:	Teya attends Maui Deer Working Group meeting
Jan 27:	Teya & Elizabeth attend RCUH policy update
Jan 29-31:	Teya & Lissa to Kauaʻi for LFA video filming/interviews
Feb 1-2:	Management staff retreat/meeting – Keʻanae
Feb 2-9:	MoMISC staff assists with field work in Kalaupapa
Feb 6-8:	Brooke gives presentation at Weed Science Society of America meeting
Feb 8:	Teya & Lori meet with DLNR on Oʻahu
Feb 10:	Teya, Adam, Mike, Brooke, Imi, & Darrell attend RCUH work performance training

Feb 13:	Teya on KAIO radio show with Teena Rasmussen about deer MoMISC quarterly meeting
Feb 13-15:	Seabury Winterim group works with the Hāna crew
Feb 15:	Teya to Oʻahu to meet with Hauʻoli Mau Loa Foundation directors
Feb 17:	MISC Meeting – public relations and early detection
Feb 18-19:	Hōʻike curriculum teacher's workshop
Feb 21:	Teya, Lissa, & Lori attend CGAPS meeting on Oʻahu
Feb 22:	Teya & Adam attend Maui Conservation Alliance meeting
Feb 23-27:	Vertebrate crew to Molokaʻi for BBTV surveys
Feb 24:	Teya attends RCUH employee award luncheon on Oʻahu
Mar 1:	Elizabeth attends RCUH I-9 training Miconia journal club meeting – biocontrol
Mar 7-8:	Adam conducts rappelling training/refresher for WMMWP & MISC staff
Mar 9 & 15:	Adam assists with AmeriCorps summer intern interviews
Mar 10:	Hōʻike curriculum teacher's workshop
Mar 12:	Teya & Adam meet with the Mayor, Rob Parsons and Dale Castleton
Mar 12-16:	Crew to Lānaʻi for fountain grass control
Mar 13:	Teya, Adam, Elizabeth, & ʻImi attend safety meeting with RCUH insurance representatives
Mar 15:	Teya attends OED presentation to County Council
Mar 19-21:	Joe, Abelardo, Matt, & Kona attend pesticide training
Mar 27:	Teya & Adam attend Maui Deer Working Group meeting
Mar 29-30:	CPR Refreshers – all staff, Basic First Aid – new staff





PR & Education News

MISC IN THE NEWS

Maui Invasive Species Committee and our work was covered twice in the Maui News during this quarter: an article about how the loss of federal funding could impact agricultural inspectors included a quote from Teya Penniman, and Mayor Arakawa mentioned miconia and coqui as invasive species control efforts that could be supported by a "Sustainable division" within the County.

Through the Kia'i Moku column in the Maui News this quarter, MISC had articles on: what the public can do throughout the year to prevent the spread of invasive species; the risk of hitchhiking pests coming in on Valentine's flowers and the importance of supporting local flower growers; and the impacts of miconia and strawberry guava on watersheds. These articles as well as all the articles written for the Kia'i Moku column are available online at www.hear.org/misc/mauinews/. Articles in the Maui News helped us reach 22,000 readers in Maui County.

Maui News Articles

Article Date	**Article Name**	**Topics Discussed**
Feb. 24	Agricultural inspectors at airport face layoffs - Loss of nearly $1 million in fed earmarks the cause; risk of invasive species a worry	Prevention efforts of HDOA, quote by Teya Penniman
March 7	Sustainable division to be put to the voters-10 county charter amendments will be on ballot in November	Miconia, coqui frogs
Kia'i Moku		
Jan. 8	Simple measures can help in fight to stop invasive species	Suggestions for monthly activities to address and prevent spread of invasive species
Feb. 12	Give your loved one the gift of local this Valentine's Day	Pest introductions via flower trade, 'ōhi'a rust
March 11	Alien species disrupt collection of water in Hawai'i rain forests	Miconia and strawberry guava impacts on watershed
	Total articles/reach	**5 articles–22,000 readers**

REACHING OUT TO THE COMMUNITY

Events & Presentations

The first quarter of 2012 is typically a quiet time for community events so outreach efforts were focused on presentations. Lissa addressed employees of the Hawai'i Department of Transportation during a training about MISC, reporting target species, and measures to limit the spread of invasive plants. Brooke Mahnken summarized our pampas control efforts in a presentation at the Weed Science Society of America. For the fourth consecutive year, MISC spoke with new interns at the Maui Forest Bird Recovery Project about invasive species they may encounter during their field work.

Events/Presentations:

Date	Event/Presentation	Topics	Audience
Jan. 9 & 12	Presentation: Hawai'i Department of Transportation	Miconia, little fire ant, coqui frog	31
Feb. 6	Presentation to Weed Science Society of America	Pampas control program	10
Feb. 15	Early Detection Workshop for Maui Forest Bird Recovery Project	Pampas grass, invasive birds, little fire ant	6
	Total:		**47 people**

Television Media

The little fire ant PSAs as well as a miconia PSA aired on the Maui County public access station, Akakū, regularly throughout the quarter. Little fire ant PSA's were aired again on Oceanic Time Warner Cable from January 25th through 29th. The public service announcements focus on reporting unusual, small, stinging ants and direct people to the HDOA hotline, 643-PEST, and the website LFA-Hawaii.org

MISC assistance with film projects during the final quarter of 2011 came to fruition with footage of the Hāna miconia crew appearing in the January 19th airing of the DLNR-commissioned documentary "Rain Follows the Forest" and in segments aired during the week of March 25th.

Date	Media	Topics	Audience
Jan. 9-March 31	Public Service Announcements on Akakū (Public Access Station)	Little fire ant and miconia	Maui County cable subscribers
Jan. 19	"Rain Follows the Forest" Documentary on KGMB	Miconia and footage of MISC Hāna Miconia crew	Statewide
Jan. 25-29	Public Service Announcements on Oceanic Time Warner	Little fire ants	Statewide cable subscriber
March 25-30	"Outside Hawai'i" on OC16	Miconia	Statewide cable subscribers

Internet
There were a total of 5,430 pageviews through the following MISC sponsored and maintained Internet sites: mauiisc.org (primary website), mauiinvasive.org (blog), lfa-hawaii.org (little fire ant reporting site), coquifreemaui.org (coqui-free certification program for Maui County), and the Maui Invasive Species Committee page on Facebook. on the OC16 show "Outside Hawai'i."

Internet presence:

Website	**Topics**	**Pageviews**
Main Website: mauiisc.org	Miconia, fountain grass, pampas grass, coqui frog, little fire ant, BBTV	1,162
Blog: mauiinvasive.org	Fountain grass, coqui frog, pampas grass, miconia, little fire ant	3,445
lfa-hawaii.org	Little Fire Ant	373
coquifreemaui.org	Coqui frogs, coqui-free certification program	91
Facebook-MISC	Miconia, fountain grass, pampas grass, coqui frog, little fire ant, BBTV	359 (post clicks)
	Total:	**5,430 pageviews**

MISC IN THE CLASSROOM
In order to engage teachers in the development of lessons for the Invasive Species module currently being written for the Ho'ike o Haleakalā Curriculum, writer Shannon Wianecki and Abe Vandenberg held a series of three workshops to demonstrate the lessons. Teachers were offered a stipend to teach the lessons in the classroom and provide feedback. In total, 14 teachers in Maui County participated in the one to two day workshops

Teacher Development Workshops:

Date	**Topics**	**Teachers Reached**
January 14	Invasive Species Module Unit 1	6
January 18 &19	Invasive Species Module Unit 1 and hike into Waikamoi	4
January 24	Invasive Species Module Unit 1	4
	Total:	**14 teachers in 3 workshops**

This quarter MISC had 18 school group activities reaching 426 students. Abe Vandenberg worked with school groups from Moloka'i to Kīhei to Kula doing primarily little fire ant activities. One highlight from the quarter was the Seabury Winterim volunteer trip to Hāna to pull miconia. During the two field days the students worked in the Hāna Ranch area and the Hāna core covering a total of 58 acres.

Classroom visits:

Date	School/Group Visited	Topic	Students Reached
January 13	King Kekaulike Science Fair	Little fire ants	80 students and parents
January 18	Hāna Elementary: 3rd - 5th grade	Little fire ants	99 students in 4 classes
January 24	Molokaʻi High School	Little fire ants	54 students in 3 classes
February 2	Makawao Montessori	Little fire ants	15 students in 1 class
February 2	Seabury Hall Upper School	Miconia-prep for field work	10 students
February 13	Hawaiʻi Island Elementary at the Hui Noʻeau	Little fire ants, Miconia, strawberry guava	12 students
February 14-15	Seabury Winterim Volunteers in Hāna	Miconia	Repeat (10 students)
March 2	Kula Elementary 3rd and 4th grade	Little fire ants	126 students in 1 class
March 8	Baldwin High School	Timeline activity	9 students in 2 classes
March 14	Kīhei after-school art class for elementary	Little fire ants	10 students in 1 class
March 22	Baldwin High School	Invasive species jeopardy	11 students in 2 classes
	Total:		**426 students in 18 classes**

Plant Updates

MICONIA

During this quarter two Kawela management units, located northwest of Olopawa and the Hāna Core, were completed. A total of 207 acres were swept in the Kawela area and 73 mature plants were detected and controlled. A dense understory of ginger combined with thick, head-high vegetation made for slow moving sweep lines in these areas. Crew also completed work on two private properties in Kaʻelekū West, with 10 mature plants found and controlled.

Work began on the East Honomāʻele area this quarter and will continue into next quarter. To date, 49 acres have been swept and six mature plants controlled. Sweeps also continued in Hāna Ranch on rainy days when other sites were inaccessible. A total of 361 acres were covered on the Ranch this quarter, with 14 mature plants controlled. Students from Seabury Hall assisted with work on the Ranch and in the Hāna Core during their annual two-day Winterim service trip in Hāna.

Aerial operations occurred on two consecutive days in February 2012. The work included a single aircraft for both days and focused on expanded trials using the Herbicide Ballistic Technology (HBT) method of herbicide application in the Waimoku and Wahiumalu outlier populations. HBT development will continue, since the method is showing promise with significant increased efficiency treating outlier infestations on steep slopes.

In February, two presentations regarding the Maui miconia program, including methodology, progress, and prognosis were given at the Weed Science Society of America 2012 meetings. One was given by Dr. James Leary of UH CTAHR and the other was given by Jeremy Gooding of the National Park Service. Both presentations were a success and were attended by an international audience. The newly formed Miconia Journal Club met on January 19 and on March 1. In January the group discussed an Australian paper on predictive models for the spread of miconia and in March the group had a very productive discussion on miconia biocontrol and the next steps MISC can take to try and move things forward.

PAMPAS GRASS

During the last few months the crew has been finishing up with residential and ranch surveys before the busy backcountry pampas grass season begins again. Crew visited 34 residential *Cortaderia* sites this quarter. No immature plants were found and one mature *Cortaderia jubata* was controlled. The crew also made 12 visits to four back-country sites and controlled 19 immature *Cortaderia* plants. In addition, they worked at the Waikamoi flume for 8 days and controlled 199 immature plants. That is a total of 218 *Cortaderia* plants that won't be flowering this year.

FOUNTAIN GRASS

No new fountain grass sites were discovered this past quarter. Seed-bank control work due to high germination (546 mature plants) continues at an infestation of fountain grass on a private residence in Pukalani. Maui Lani and Waiehu Dunes areas had one plant controlled at each location. MISC staff rappelled to control fountain grass twice in Kahakuloa and found none. All other known locations of *Pennisetum setaceum* were monitored with no fountain grass plants found.

On Lānaʻi, one mature and 26 immature fountain grass plants were controlled and all known Lānaʻi sites were visited. Henry Eskaran from Castle & Cooke essentially leveled Gary's Island making sweeps much easier / faster.

IVY GOURD

During a survey in the Maui Meadows subdivision, field crew discovered a new ivy gourd infestation. A subsequent survey was conducted and several adjoining properties also were found to have ivy gourd. Some seed dispersal has occurred. The crew is still in the process of delimiting the Maui Meadows infestation (currently consisting of 30 new populations).

Near Kenui Street in Lahaina, a fruiting plant was controlled. In Kahului, one ivy gourd plant was found and controlled during a little fire ant survey. There is a difficult site at Okika Place in Haʻikū, located in a rubbish pile, that continues to be controlled as it re-grows. Fortunately, this is a male ivy gourd plant. Efforts continued with the control of *Coccinia grandis* at all other known sites this quarter. At these sites there was a small overall increase in the number of mature and immature plants controlled. Viable fruit was found at five locations.

On Lānaʻi, there was a reduction in the number of plants controlled mainly due to the elimination of seed bank. Field crew controlled one mature plant (with four rooted nodes), and three immature plants (non-flowering). In the future, the Lānaʻi Native Species Recovery Program will be taking on more of the ivy gourd survey and control work at Mānele Bay.

OTHER PLANTS

- *Macaranga tanarius* (parasol leaf tree); eight plants were controlled as we continue to monitor nurseries for the potential of plant movement in landscape containers.
- *Maclura pomifera* (Osage orange): root suckers continue to be controlled systematically at the only known location on Maui.
- *Pittosporum viridiflorum* (Cape pittosporum): survey / control efforts continued with 22 immature plants removed from a Koheo Road location. Forest and Kim Starr removed six seedlings at another Kula location.
- *Rhodomyrtus tomentosa* (downy rose myrtle): Forest and Kim Starr removed three immature and one mature plant at a botanical garden in Kula.
- *Rubus ellipticus* (yellow Himalayan raspberry): Forest and Kim Starr removed one plant at a botanical garden in Kula.
- *Silybum marianum* (milk thistle): Survey / control efforts continued with 73 immature, and 15 mature plants controlled this past quarter. The survey area will be expanded along neighboring properties during the next quarter.
- No plants were found during surveys for *Arundo donax, Caesalpinia decapetala, Cryptostegia grandiflora, Macaranga mappa, Melastoma candidum, Melastoma sanguineum, Parkinsonia aculeata, Verbascum thapsus.*

EARLY DETECTION & RAPID RESPONSE

Early detection and rapid response activities conducted by Forest & Kim Starr this quarter included delimiting surveys on *Pittosporum undulatum* (Victorian box). All known roadside locations were revisited. No additional plants were found in the known core area around Lower Kimo Rd. A couple of new outlier plants were found near Waipoli. Delimitating surveys for *Pittosporum viridiflorum* (Cape pittosporum) also continued. No new outlier locations were discovered. The staff at a local botanical garden consider the plant to be a weed and pull keiki, but they don't have plans to remove mature trees. Delimiting surveys for *Torilis arvensis* (spreading hedge parsley) *Nassella tenuissima* (Mexican feather grass), & *Erica lusitanica* (Spanish heath) yielded no additional plants.

The Starrs located the *Terminalia ivorensis* (black afara) at a botanical garden in East Maui. The trees are large (>100 ft. tall) and planted in a row near the entrance to the garden. There is no obvious sign of spread, though lawn crew appears to kill any seedlings that pop up in the lawn. A lone *Rubus ellipticus* (yellow Himalayan raspberry) plant was found and controlled at another botanical garden during nursery surveys. This plant likely hitchhiked on a hapuʻu fern from the Big Island. Four *Rhodomyrtus tomentosa* (hill guava) plants were also found and controlled at the garden. These plants apparently sprouted in the past year, presumably from the seed bank of a plant controlled in a nearby location ten years ago.

Fifty-five species were assessed for potential control, using the agreed-upon statewide system. The findings were presented to the MISC Committee and discussed at the February 17th MISC meeting. Through a web- based identification service, the Starrs assisted members of the public and local conservation staff with 68 plant identifications and 30 insect identifications over the past quarter.

SUMMARY OF WORK ON INVASIVE PLANT SPECIES JANUARY - MARCH 2012

Maui

	Plants Controlled			***Acres***
Target Species	**Mature**	**Immature**	**Total**	***Inventoried***
Arundo donax	0	0	0	6
Caesalpinia decapetala	0	0	0	3
Coccinia grandis	49	541	589	1,144
Cortaderia spp.	1	218	219	578
Cryptostegia grandiflora	0	0	0	19
Macaranga mappa	0	0	0	4
Macaranga tanarius	0	8	8	97
Maclura pomifera	0	67	67	4
Melastoma candidum	0	0	0	3
Melastoma sanguineum	0	0	0	1
Miconia calvescens	150	17,857	18,007	981
Parkinsonia aculeata	0	0	0	1
Pennisetum setaceum	3	546	549	137
Pittosporum viridiflorum	0	28	28	50
Rhodomyrtus tomentosa	1	3	4	13
Rubus ellipticus	0	1	1	4
Silybum marianum	15	73	88	74
Verbascum thapsus	0	0	0	22
Grand Totals:	**219**	**19,342**	**19,560**	**3,141**

Lānaʻi

	Plants Controlled			***Acres***
Target Species	**Mature**	**Immature**	**Total**	***Inventoried***
Coccinia grandis	1	7	8	137
Pennisetum setaceum	1	26	27	271
Rhodomyrtus tomentosa	0	0	0	3
Grand Totals:	**2**	**33**	**35**	**411**

Molokaʻi

	Plants Controlled			***Acres***
Target Species	**Mature**	**Immature**	**Total**	***Inventoried***
Argemone mexicana	5,000	5,000	10,000	121
Arundo donax	0	0	0	1
Cryptostegia madagascariensis	0	10	10	10
Falcataria moluccana	0	0	0	10
Ficus virens	0	0	0	1
Merremia tuberosa	0	12	12	2
Miconia calvescens	0	0	0	1,365
Rosa multiflora	0	6	6	3
Senecio madagascariensis	0	0	0	6
Setaria palmifolia	0	3	3	1
Grand Totals	**5,000**	**5,031**	**10,031**	**1,520**

BANANA BUNCHY TOP VIRUS

Several significant efforts were made on the bunchy top front this quarter. First, island-wide surveys on Molokaʻi took place in January. MISC and MoMISC staff worked together to survey from Moʻomomi to Pukoʻo. It appears that BBTV continues to be present only in the Hoʻolehua / Kualapuʻu areas on Moloakʻi. Second, MISC crews made a focused effort to treat / follow-up on historically suspect plants and high probability areas on Maui. Results revealed a significant infestation in the Happy Valley area and a heavily infested farm in Waiheʻe. Finally, Abe Vandenberg took an existing BBTV informational video and trimmed it down to two different lengths. These much shorter videos are ideal for YouTube, Akakū, and other outreach venues http://youtu.be/JB7a9k-81u0.

This quarter, 1,015 properties were visited on Maui and 727 of these sites were surveyed. Of the 95 sites that were found to have bunchy top, 72 were treated. The remaining sites will be treated next quarter pending resident / owner permission.

Town	*Sites Surveyed*	*Sites With BBTV*	*Sites Treated*
Haʻkū	13	6	5
Kīhei	237	52	29
Waiehu	0	1	1
Waiheʻe	2	2	2
Kula	114	3	3
Makawao	7	2	4
Pukalani	105	2	4
Wailea	1	3	1
Wailuku	163	24	23
Hāna	1	0	0
Waikapu	82	0	0
Lahaina	2	0	0
Total	***727***	***95***	***72***

Note: Many of the communities with a low number of surveys and a high number of sites with BBTV are known to have had the disease in the past. Communities with no surveys but BBTV >0 are known locations where treatment / retreatment is ongoing (e.g., farms). The majority of the sites that have not been treated are sites where BBTV was observed from the road but contact has not been made with the resident / owner.

LITTLE FIRE ANTS

This quarter MISC surveyed 16 sites for little fire ants and 170 baited vials were set and collected. All vials were checked for LFA; none were detected

Work continued on the little fire ant video project this quarter. In January, MISC staff traveled to Kauaʻi with videographers Chris Reickert and Masako Cordray to conduct interviews with affected residents and individuals involved in control efforts, specifically KISC manager Keren Gundersen and HDOA Noxious Weed Specialist, Craig Kaneshige.

Vertebrate Status

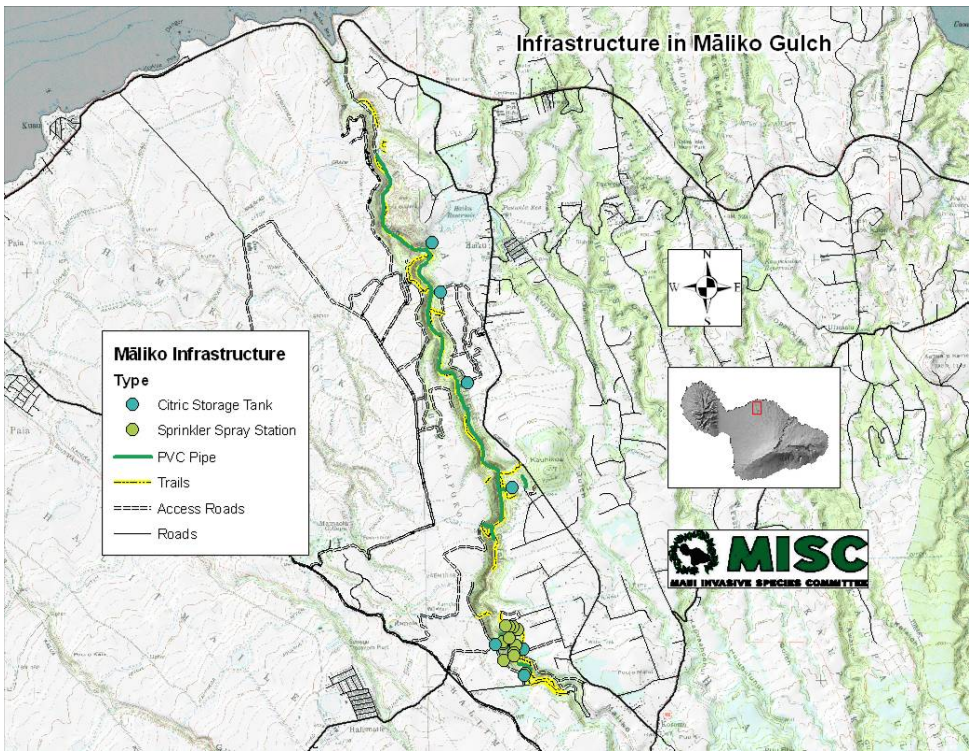
COQUI FROGS

Due to delays in delivery of citric acid and rainy weather the vertebrate crew focused on sites other than Māliko this quarter. Some spot spraying was done in the Māliko area to maintain what has been accomplished, but the majority of time and resources went to the remaining six sites. Those sites continue to have very low numbers of frogs. Crews also spent time visiting all 31 coqui-free participant businesses. One coqui was found and removed during coqui-free site visits on Maui. Dale Castleton, the owner of one of our coqui-free nurseries, presented MISC with a $1,000 donation for our efforts.

A major accomplishment this quarter was completion of the installation of gravity-fed PVC pipes to supply a 12-16% citric acid solution to access points along the bottom of Māliko. The fixed-line system now spans nearly a 3.5 mile stretch of the gulch, along with 7 feed lines running from the rim of the gulch. The system allows crews to more effectively treat areas with frogs in less time. Pumps and mixing stations are positioned at the top of the lines to fill them with citric acid. Placement of valves at 150 foot increments helps maximize the area covered and minimizes the amount of hose crews need to carry into the gulch. Vehicular access along the rim of the gulch makes this an ideal alternative as storage tanks can be filled during the day and drained at night. The fixed-line system will be our primary means of controlling frogs throughout the gulch and its completion is a huge accomplishment. The map below shows most of the infrastructure in Māliko gulch.

This quarter:

- Crews made 143 separate visits to 71 frog-infested areas, suspect locations, or coqui-free participant businesses.
- Eight new reports were received and all had follow-up.
- MISC crews spent 553 hours working on the coqui project.
- 1,453 lbs. of citric acid were used. Three pounds of citric acid were also given to two Māliko area residents who wanted to help control coqui on their properties. These rapid responders are a great help to MISC staff.
- Crews treated approximately two acres of infested area on Maui, mostly at sites outside of Māliko Gulch.
- A shipment of 79,200 pounds of citric acid was delivered and stored in Haʻikū on 3/21/2012.



MITRED CONURES

Eight conure control operations occurred this quarter. Five birds were removed from the Huelo area. An estimated 17 birds remain at the Waipi'o Bay site and 13 at the Huelo Point site. A total of 50.5 person hours were spent in Huelo.

MoMISC Activities

During this quarter, MoMISC continued work on priority species:

- *Argemone mexicana* (Mexican poppy): MoMISC did initial suppression on Mexican poppy with help from Kalaupapa Historical National Park staff. Surveys covered 121 acres and 10,000 plants were treated.
- *Cryptostegia madagascariensis* (rubber vine): MoMISC surveyed nine acres and controlled ten juvenile plants.
- *Falcataria moluccana* (albizia): nine acres were monitored and no plants found.
- *Ficus virens* (bo tree): previously treated trees were monitored.
- *Miconia calvescens* (miconia): MoMISC conducted aerial surveys for miconia over 1,365 acres. No miconia was detected.
- *Senecio madagascariensis* (fireweed): six acres were surveyed and no plants found.
- *Eleutherodactylus coqui* (coqui frog) and *Wasmannia auropunctata* (little fire ant): MoMISC continued to monitor incoming plant shipments from the Big Island to a Molokai nursery. There were no detections of either species this quarter.
- Banana bunchy top virus: MoMISC and MISC crews surveyed over 652 acres for banana bunchy top virus. Ninety-five plants were controlled.