



Quarterly Report to the MISC Committee

FY 2009, Third Quarter

January 1 to March 31, 2009

Manager's Report

Most of MISC's work focuses on early detection, response & control, and outreach & education. To a lesser degree we are involved in research and prevention activities. One area that MISC has been increasingly involved in over the last quarter is biocontrol. We are not in the forests looking for potential biocontrol agents; nor are we in the lab, testing host specificity of potential insects for fireweed or ivy gourd, although in the past, MISC has propagated petri dishes full of a fungus that attacks miconia leaves. The work of finding and testing potential biocontrol agents is best left to the expert entomologists of the U.S. Forest Service and Hawai'i Department of Agriculture. Where we can lend a hand is in the area of public opinion.

This has become increasingly important as efforts to release the long-anticipated scale insect for strawberry guava has been stalled by concerns from the public. At the annual Hawai'i Conservation Conference last July, an impromptu meeting to address this issue identified the need to address public concerns using a variety of approaches. Maui has been on the forefront of such efforts.

Lissa and Wendy participated in the very exciting release of *Quadrastichus erythrinae*, the parasitoid wasp that attacks the Erythrina gall wasp, which has decimated *wili wili* trees statewide. They were able to witness the released larvae land on infected leaves and immediately begin feeding. This was a great opportunity for our outreach staff to experience first hand the ultimate goal of any biocontrol project – the release of a carefully tested agent with demonstrated host specificity. Lissa also visited the biocontrol facility on O'ahu and later shared with our field staff information about the important work done by HDOA. Staff also received training in how to address questions from the public regarding biocontrol.

Since September, our monthly columns in the Maui News have included a message about biocontrol in four out of seven articles. Members of the Committee have been active in efforts of the Maui Conservation Alliance to promote acceptance of biocontrol by our political decision-makers. Through concerted and collective efforts, the Mayor supported and the County Council adopted a resolution entitled, "Supporting safe, effective biological control for Maui County's forest pests." Committee members also are working to get our opinion leaders into the native forests, where they can see both the devastating impacts of some invaders as well as the impossibility of manual or chemical control. The work of MISC is but one piece of the larger puzzle of statewide efforts to address the threat of invasive species. So while we may not have the expertise or the mandate to find the pests that will naturally help keep these plants in check, we are doing what we can to support statewide efforts to make biocontrol a more prominent tool in the battle against invasive species.

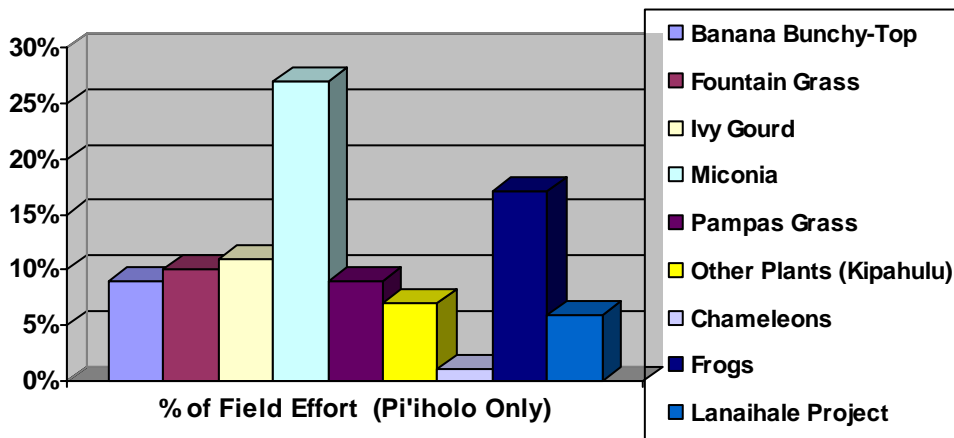
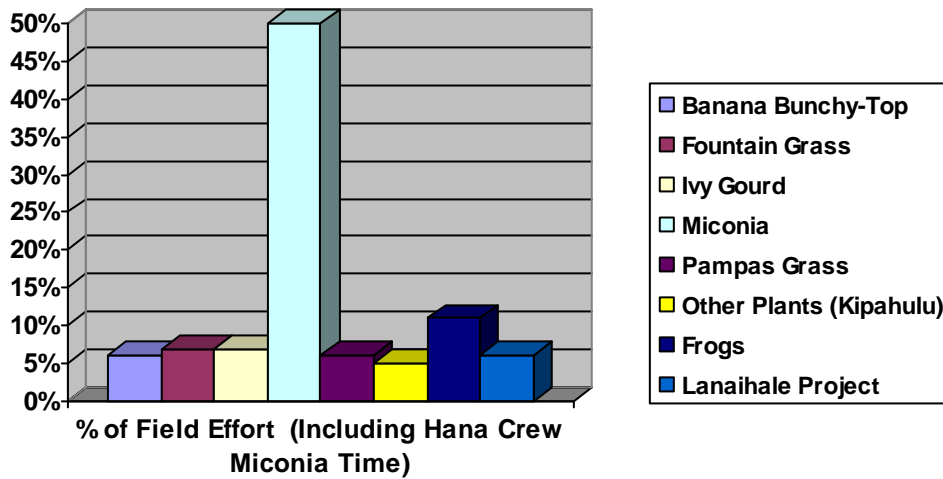
Quarterly Highlights

ACTIVITY HIGHLIGHTS

- Jan 1: Teya meets with Legislators on O'ahu
Jan 8: Teya attends Maui Conservation Managers meeting
Jan 9: All staff meeting at Ke'anae
William Midgley's last day with MISC
Jan 12-16: Crew to Lāna'i to assist with guava control on Lān'ihale
Jan 16: Early Detection Workshop for Maui Forest Bird Recovery Project
Jan 17: Scoping workshop for Hō'ike curriculum invasive species module
Jan 21: Teya to O'ahu for the opening of the Legislature
Jan 23: Wendy Swee attends basic helicopter training
Jan 26-29: Dave & Adam K. to Lāna'i for ivy gourd control
Jan 27: Teya attends Maui Cattleman's Association meeting
- Feb 2: Miconia Operations meeting
Feb 6: MISC Meeting, partner updates & funding
Miconia conference planning meeting
Feb 8: Wendy assists with volunteer silversword planting at Haleakalā NP
Feb 9-13: Crew to Lāna'i for fountain grass survey & control
Feb 10: Teya attends Endangered Species Recovery Council meeting
Feb 13: Miconia conference planning meeting
Feb 16: Seabury Winterim trips: Hāna miconia & Haleakalā crater weed control
Feb 20: Teya, Mike, & Adam attend RCUH human resources training
Feb 23-27: Mike attends Pesticide and Fish and Wildlife Resources training on O'ahu
Feb 24: Lissa, Brooke, and Wendy attend Adobe Illustrator training
Feb 25: Teya and Lissa to O'ahu for CGAPS meeting
Feb 26: Lissa attends Public Outreach Working Group meeting on O'ahu



- Mar 2: Teya attends County Council Meeting re: biocontrol resolution
Mar 3: Teya gives presentation to USFWS on O'ahu
Lissa, Brooke, and Wendy attend Adobe Illustrator training
Mar 4: Teya attends Maui Cattleman's Association meeting
Mar 6: Miconia conference planning meeting
Mar 8: All staff boat trip!
Mar 10: Lissa, Brooke, and Wendy attend Adobe Illustrator training
Mar 11: Teya attends Maui Conservation Managers meeting
Teya attends Cattleman's Association meeting
Mar 14: Educational Booth at Agricultural Awareness Day
May 20: Teya, Mike, & Elizabeth attend RCUH human resources training



PR & Education News

MISC IN THE NEWS

The year began with a viewpoint article by Teya regarding the potential to fund an environmental workforce using money from the economic stimulus package. MISC's January Kia'i Moku column continued the series of biocontrol articles from the end of 2008. Written by Art Medeiros, the article discussed the impacts of Kahili ginger and why it would be a prime target for biocontrol. Articles in February and March discussed the poison dart frog and MISC's newest target species, *Erica lusitanica*.

REACHING OUT TO THE COMMUNITY

MISC participated in the Maui County Agricultural Festival at Maui Tropical Plantation. New displays focused on MISC's role in the agricultural community and highlighted our work to control banana bunchy top virus and share information about the public health risk from stinging nettle caterpillar. Turnout was good with 275 people visiting the MISC table. A new temporary MISC display case was put up at the Kahului Airport this quarter. The display highlights banana bunchy top virus and stinging nettle caterpillar. The display case is located in the main airport hub near the news stand.



MISC IN (AND OUT OF) THE CLASSROOM

Wendy assisted with an outreach activity planting silverswords in Haleakalā National Park with six local high school students and three teachers in early February. For the fourth year MISC participated in the Seabury Winterim program. This year we hosted a group of eight students pulling miconia in Hāna for three days as well as a group of ten students removing rabbit's foot clover and telegraph weed in the crater for four days. Five Kamehameha Schools students joined the vertebrate crew for a night of hand capturing frogs and Wendy and Lissa gave a presentation to an enthusiastic group of 25 fourth graders at St. Anthony School in March.



HŌ'IKE INVASIVE SPECIES MODULE

Work on the 5th module in the Hō'ike o Haleakalā Curriculum continued with another teacher scoping session on January 17. Shannon Wianecki has made significant headway with the writing and lesson development.

EARLY DETECTION PROGRAM

MISC began the year with a January 16th Early Detection workshop for 12 new staff at the Maui Forest Bird Recovery Project.

Plant Updates

IVY GOURD

Efforts continue to eliminate established *Coccinia grandis* sites. There were fifteen mature ivy gourd plants found on Maui this past quarter with one fruiting plant found in Lahaina. Ivy gourd findings have been on a steady decline island-wide for the past two quarters, but this quarter saw an increase in the number of plants controlled.

Two visits to Lāna'i this past quarter resulted in almost the same number of mature ivy gourd plants controlled as in the last quarter. One fruiting plant was found during field surveys of Kō'ele and the surrounding areas. There was an increase in the number of seedlings controlled. The seed bank at some of these sites is high. Immature plant numbers are consistent with last quarter's control numbers. There were 66 mature ivy gourd plants found this past quarter, which is not surprising after the winter rains.

FOUNTAIN GRASS

There was one mature fountain grass plant found at the Waiehu Dunes site this quarter. The plant was growing hidden among other grasses. An immature plant was found at the Mākena wastewater site. A seedling and two immature plants were found at the Kahakuloa rappel site. There have been no new fountain grass locations discovered for the past three quarters. Field crew monitored all existing known locations this quarter and only the five plants mentioned above were found. Prior to this quarter, the last fountain grass plant found at the Kahakuloa site was in April of 2008. This site has been a challenge to monitor due to the need to rappel to thoroughly survey the area.

Fountain grass work in the Kānepu‘u area on Lāna‘i was augmented by a group of O‘ahu-based DLNR/DOFAW administrators and the Lāna‘ihale crew this past quarter. The O‘ahu-based group was on island already assisting with the Lāna‘ihale petrel project. Control efforts continued at the Honopū fountain grass population, which was discovered in August 2008. Field crew extended the search area and controlled plants in all phenology classes. Efforts at this site have been successful in controlling seedling recruitment. Mature fountain grass plant numbers have been steadily decreasing at the Kō‘ele Golf Course. Two members of the Castle & Cooke staff assisted MISC during our January 2009 trip. Last year Castle & Cooke did heavy equipment work plowing lantana with an articulating front-end loader. With the lantana removed, considerably less field time is needed to survey the site.

MICONIA

The Hāna-based miconia crew continued to concentrate efforts this quarter in the Olopawa area where there is a high density of miconia. Sweeps were completed in the Kawela area adjacent to the cinder pit. The crew spent additional time sweeping areas in Ke‘anae, Nāhiku Mauka, and an area adjacent to Wailua.



The Pi‘iholo-based crews initiated a significant project in Nāhiku, in an area makai of Hāna Highway. The crews began sweeps in several large parcels that have mature miconia infestations that have never been systematically or comprehensively treated due to various concerns by the landowners. A positive relationship between the coqui frog crew and landowners in the Māliko Gulch community facilitated contact with the Nāhiku landowners in question.



Aerial missions during this quarter totaled eighteen helicopter flight days. Helicopters treated core infestations and also numerous outlier populations from Ke‘anae through the Hāna core. The vast bulk of flight time was spent in the Hāna core due to variable weather conditions. Visits to outlier populations were initiated whenever weather permitted. No significant flight time was spent on reconnaissance due to poor weather and the need to maintain treatment schedules.

A collaborative relationship with personnel at the UH College of Tropical Agriculture & Human Resources was initiated during March of 2009 to develop more efficient and effective miconia treatment methodology. Current methodology has been in use for at least nine years, suggesting the possible availability of improved management practices.

PAMPAS GRASS

We received good news in January when East Maui Watershed Partnership was given permission to build a platform in the center of the pampas grass population in Honomanū. Preparation and building will begin in May. The platform will allow crews to work more efficiently as well and provide a place to camp out of the mud.

A small ground crew surveyed the area around one of our isolated aerial pampas grass points above Kahakuloa on West Maui. After traversing some tricky terrain and navigating to the plant point, the crew found and controlled seven immature pampas plants.

RUBBER VINE

Survey of all known rubber vine sites resulted in no new plants found. Permission issues remain for known sites in the Central Maui area.

ERADICABLE SPECIES

The only known location of *Maclura pomifera* (Osage orange), which is along Ha'ikū Road, has a new landscape manager who plans to establish an edible landscape. This will limit MISC's use of herbicide on the site. The new manager will be using organic gardening techniques and mechanical methods to control the Osage orange root sucker growth. MISC will still be able to control along the roadside where the original suppression work took place.

Another plant with one known location, *Erica lusitanica* (Spanish heath), was controlled along Wai'ale Gulch on Haleakalā Ranch. All plants were pulled (220+) and many seedlings were present. There were numerous flowering plants and the seed bank is expected to be significant. The site will be monitored in three months.

Field crew surveys for *Silybum marianum* (milk thistle) have been ongoing since the third week of March in an attempt to define distribution before a decision is made on the feasibility of control. So far, the area of its infestation is along Makawao Avenue spread in small patches throughout 50 + acres of pasture with all phenologies present.



LĀNA'İHALE FOREST & WATERSHED RESTORATION



MISC field crew, two from Hāna and four from Pi'iholo, had another go at strawberry guava control in the Lāna'ihale petrel nesting area the third week of March. The work is proceeding nicely with completion of approximately three quarters of the project area. Bad weather once again shut down operations mid-week. This DLNR-PCSU project is funded by Castle & Cooke as part of a Habitat Conservation Plan.

PLANT DATA JANUARY 1 TO MARCH 31, 2009

Maui

	<i>Plants Controlled</i>			<i>Acres</i>
	<i>Mature</i>	<i>Immature</i>	<i>Total</i>	<i>Inventoried</i>
Priority Target Species				
<i>Miconia calvescens</i>	510	33,073	33,583	5,701.22
<i>Cortaderia spp.</i>	6	36	42	637.49
<i>Pennisetum setaceum</i>	1	6	7	175.16
<i>Coccinia grandis</i>	15	381	396	461.98
<i>Arundo donax</i>	0	0	0	32.8
<i>Cryptostegia grandiflora</i>	0	0	0	31.26
<i>Melastoma candidum</i>	0	0	0	3.12
<i>Parkinsonia acukeata</i>	0	0	0	0.76
<i>Rhodomyrtus tomentosa</i>	0	0	0	53.30
<i>Erica lusitanica</i>	112	130	242	5.44
<i>Eradicable Species Project</i>	0	0	0	50.32
Grand Totals:	644	33,626	34,270	7,158.85

Lānaʻi

	<i>Plants Controlled</i>			<i>Acres</i>
	<i>Mature</i>	<i>Immature</i>	<i>Total</i>	<i>Inventoried</i>
Priority Target Species				
<i>Pennisetum setaceum</i>	95	400	495	280.10
<i>Coccinia grandis</i>	66	1,486	1,552	264.68
<i>Rhodomyrtus tomentosa</i>	0	0	0	14.12
<i>Macaranga mappa</i>	0	0	0	3.27
<i>Senecio madagascariensis</i>	1	0	1	0.36
Grand Totals:	162	1,886	2,048	562.52

BANANA BUNCHY TOP VIRUS

Efforts to suppress banana bunchy top virus (BBTV) continued on Maui and Moloka'i this quarter. On Maui, surveys in Makawao and Kula revealed that the virus is still present and seems to be found at similar frequencies as in the past. However, in Lahaina no bunchy top was found during door-to-door surveys. Historically, eleven properties in Lahaina had BBTV. A few BBTV highlights from this quarter include a cooperative effort with local caretakers to physically remove several infected mats from a Kula property, treatment of nearly all infected plant material at a Kula farm, and use of a portable "Banana Bunchy Top Survey in Progress" sign. The mobile sign has had a very positive effect on neighborhood awareness of the virus and reports of suspect plants.

In Maui County, bunchy top continues to be managed in Pukalani, Makawao, Kula, Kihei, Kahului, Lahaina, and on Moloka'i. No BBTV has been found on Lāna'i or Kaho'olawe. This quarter 428 crew hours were spent visiting 971 properties on Maui. Most of these efforts were spent surveying Lahaina and Makawao. Of 45 sites that were found to have bunchy top this quarter, 34 were treated. The remaining 11 sites will be treated next quarter pending resident/owner permission. The following table summarizes the number of sites surveyed and sites with BBTV by region this quarter.

	<i>Sites Surveyed</i>	<i>Sites With BBTV</i>
Ha'ikū	8	0
Huelo	6	0
Kihei	20	17
Kula	111	9
Lahaina	313	0
Makawao	227	12
Pukalani	24	6
Kahului	1	1
Wailuku	1	0
Total	711	45

Note: Many of the sites surveyed this period have been known to have BBTV in the past. Thus, not all sites with BBTV are new locations.

Vertebrate Status

Unfortunately this quarter MISC lost a valuable long-term crew member when William Midgley moved to California. Willie's willingness to take a lead role in control of residential pampas grass, coqui frogs, eradicable species, and many other targets was very valuable to our program.

COQUI FROGS

The ultimate objective of MISC's coqui control program is a coqui-free County of Maui. This quarter activities in two components of the program reinforced our belief that we share this objective with many County residents. The first component of the program is control of existing populations and rapid response to new reports of coqui frogs. This quarter two residents in the Māliko Gulch area received small sprayers and citric acid to assist with their efforts to control coqui frogs on their properties. Maui Wastewater Treatment facility staff provided twelve large volume sprinkler heads and system design recommendations for our coqui sprinkler system in Māliko Gulch. Windward Aviation donated a 1,000-gallon water storage tank, a pump, and a trailer. This quarter MISC also received seven new frog related reports and followed-up on them all.

The second component of the MISC program is the coqui-free nursery certification. The certification encourages specific practices designed to prevent the spread of coqui frogs. Of 76 plant industry businesses contacted on Maui, 34 have expressed interest in participating. Twenty-nine businesses are now certified coqui-free. MISC continues to work with the businesses that have not yet met the certification standards. MISC staff also concluded collection of pre- and post-program consumer surveys ($N = 303$). The surveys were collected to gauge interest in the program and measure program influence on purchasing behavior. Scores for pre- and post-program consumer surveys suggest that no significant change in consumer behavior has yet occurred as a result of the certification program. However, respondents' strong feelings that coqui frogs are an issue in Hawai'i (68%), that the issue is important to them (56%), and that they would seek out a coqui-free certification program if available (79%), indicate that with appropriate outreach, the program may be very successful in influencing consumer behavior.

A West Maui coqui population joins our eradicated list this quarter! Of the 14 known coqui population centers on Maui, eight are considered eradicated - no coqui calls have been heard for a year or more. Mop-up continues at three coqui population centers. These three locations have had few to no coqui during recent visits and we are hopeful that they will be on our eradication list soon. Unfortunately, reintroduction continues to be a major hurdle at two of the remaining seven sites even though they have expressed interest in the coqui-free certification program.

- Crews made 74 separate visits to 43 frog-infested areas and/or suspect locations
- MISC crews spent 211 hours at a variety of locations working on frog control.
- 4,005 lbs. of citric acid were used this quarter.

VEILED CHAMELEONS

At the end of this quarter MISC coordinated a multi-agency effort to thoroughly search all properties in Makawao where veiled chameleons have been, or seem likely to be found. Representatives from HDOA and DLNR joined MISC staff for these searches. Even though the weather was somewhat inclement, searches were conducted for three consecutive nights. No veileds were found. It has now been over one year since the last veiled chameleon was recovered. As a result, MISC will shift our revisit schedule to a bi-annual pattern and encourage resident reporting. If any veiled chameleons are recovered or reported in the future, the site and surrounding area will be searched as soon as possible. A more frequent revisit schedule may be reinstated if additional animals are found.

- This quarter 45 properties were searched over the course of three evenings.
- No veiled chameleons were found during 153 hours of search effort.
- No veiled chameleons were turned in this quarter.
- To date, 206 veiled chameleons have been recovered on Maui. The first chameleon was recovered in March of 2002.

OTHER VERTEBRATES

Two feral rabbits were removed from Pukalani by area residents after MISC responded to a report of loose rabbits in several Pukalani locations. The vertebrate crew followed up on a report of an iguana outside of the Maui Humane Society Office in October. No iguana was found or caught in a trap left on-site for three days. The iguana was recovered this quarter by Humane Society staff after they saw it again outside of their facility.



MoMISC Activities

During this quarter, MoMISC staff spent a majority of time on the initial suppression of 800 mature albizia trees. The trees were girdled and then treated with herbicide leaving the trees standing to expire slowly. MISC crewmembers traveled to Moloka'i to help with this project as well as to survey for banana bunchy top virus. While surveying for BBTV, staff verified that an ornamental grass first thought to be fountain grass was actually pampas grass that had not yet flowered. The homeowner has agreed to remove the plants.

MoMISC continued to check traps for nettle caterpillar and little brown apple moth. The core populations of gooseberry and Australian tree fern were monitored. Other monitoring projects included palm grass, rosa, rubber vine, and arundo. Volunteer Mapuana Hanapi helped with the design of a new display for the wharf as well as a Powerpoint for a landowner's workshop and an Earth Day display. Staff attended a variety of meetings this quarter including the MoMISC quarterly meeting, TNC staff meetings, Governor's advisory meeting, County Council budget hearing, Moloka'i irrigation meeting, Earth Day planning meeting, Kalaupapa general plan meeting, and the Palalau State Park trail meeting.

