



MISC

MAUI INVASIVE SPECIES COMMITTEE

Quarterly Report to the MISC Committee

FY 2011, First Quarter

July 1 to September 30, 2010

Manager's Report

O ka mapopō wale nō ka mea hāpapa i ka pōuli.
Only the blind gropes in the darkness.

One of MISC's operating principles is that we are "data-driven." We track: number, type, and reproductive status of plants controlled, frog populations visited and eradicated, ant vials collected, infected banana trees, miles driven, geospatial area surveyed, staff and volunteer hours by project, people at PR events, students taught, dollars spent, along with information about a host of other variables. Our data are entered into one of our customized databases. I suppose we could track more precisely how much time we spend tracking our work, but suffice it to say, it's a considerable amount. And we are regularly reminded of its value.

MISC works simultaneously on so many different fronts that we would be lost without a solid information system. On any given day, the make-up of the plant or vertebrate crew varies. Some staff might be at the Honomanū camp site killing pampas grass, while others might be on Lāna'i targeting ivy gourd. Some might be flying miconia heliops while others are doing BBTV or little fire ant surveys. If it's county fair week, all bets are off. How would a crew know which properties to survey without an efficient database system to inform the decision-making process? Even with miconia, where the Hāna staff composition is relatively stable from week to week, we still need up-to-date information about how long it's been since a specific management unit has been covered and what was found during previous surveys: any seeders present at the site in the past? When covering vast acreages by air for miconia or pampas grass, you simply could not get to the exact location of known plants without good GPS points. And of course, our data system is essential for showing results to our funding agencies.

Our data prove to be valuable for purposes beyond our own management or reporting. This year, pampas grass data were used for a talk at the annual Hawai'i Conservation Conference. The MISC data system was the focus of a University of Washington graduate study by a former MISC employee. Our miconia data informed a UH Mānoa study on the economics of miconia biocontrol. We have collaborated with staff from UC Davis on pampas grass genetics and UH CTAHR researchers on banana aphids. Utah State University researchers will soon be working side-by-side with the coqui crew to measure the efficacy of our control techniques, with our effort data (hours, acres, citric acid used) providing the backdrop for the study.

So kudos to the data gatherers, enterers, proofers, and crunchers. Without that constant attention to tracking the details, we'd still be stumbling around in the dark.

Employee of the Quarter



Congratulations to **Tanya Vasquez**, MISC's "Employee of the Quarter" for July to September 2010. The irrepressible Ms. Tanya is the queen of crew logistics and decontamination for the Hāna miconia operation. Tanya started with the crew back in 2000 as part of the Emergency Environmental Workforce and continued on as the Miconia Decontamination Aide when the National Park Service, DOFAW, and MISC crews were merged into a combined miconia crew. Tanya diligently maintains the crew's miconia field gear and ensures that decon protocols are followed. She keeps track not only of the crew's socks, but also of the comings and goings of her boys. Tanya is a multi-tasking wizard and assists with everything from maintaining payroll records to inventorying gear to assisting with school programs and volunteers. Never at a loss for words, Tanya is a strong advocate for her crew and provides a vital communication link between MISC's Hāna and Pi'i'holo-based operations. Tanya's can-do attitude and energy are contagious. Thanks for everything you do, Tanya!

Quarterly Highlights

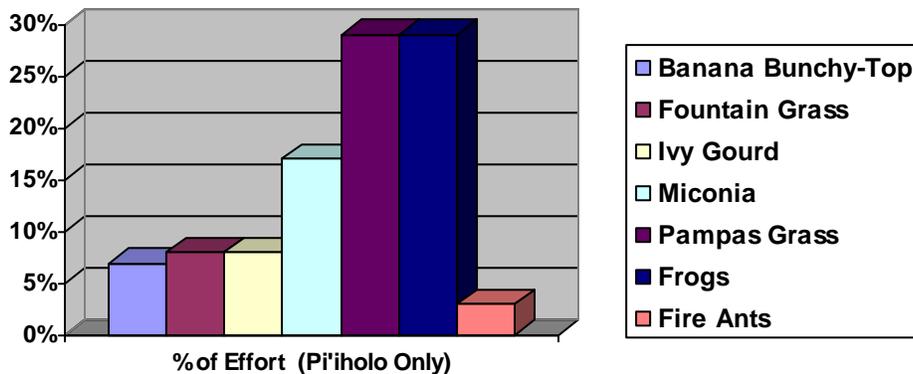
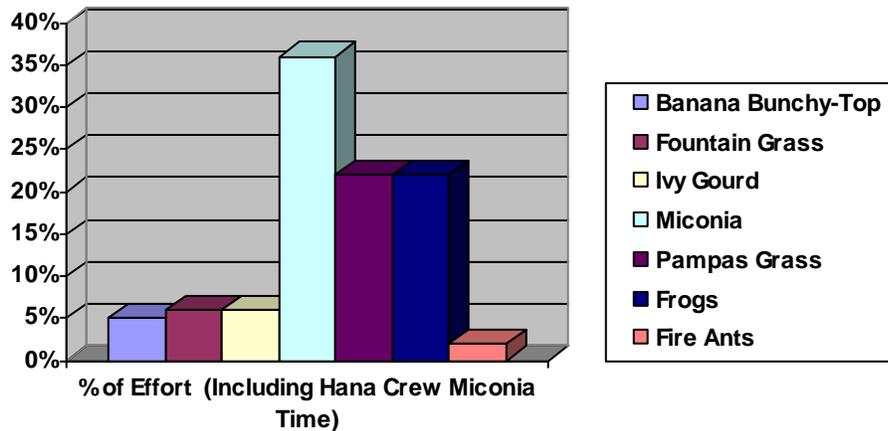
ACTIVITY HIGHLIGHTS

- July 3: Makawao Paniolo Parade
- July 12-16: Crew to Honomanū for pampas control
- July 12-13: Crew to Kaua'ūla for pampas control
- July 12-16: Brooke to San Diego for ESRI Conference
- July 15: Teya, Adam, & Elizabeth attend safety training with Ron Nagata
Basic Heli training with Perry Bednoz for temporary & expired staff
- July 19-23: Crew to Honomanū for pampas control
- July 20: Lissa gives LFA presentation to Maui Orchid Society
- July 21: Brooke attends Google Earth Workshop
- July 22: Teya attends harbor bio-security meeting
Teya and Adam meet with HDOA re: stinging nettle caterpillar sites
- July 26: Pi'i'holo baseyard & office cleaning day
- July 28: Lissa attends LFA meeting in Kona



Aug 2: Teya & Lissa attend Public Outreach Working Group meeting on O'ahu
 Aug 3: Teya, Adam, & Lissa attend CGAPS meeting on O'ahu
 Aug 4-6: Hawai'i Conservation Conference
 Aug 7-9: Lissa & Wendy attend COSIA Workshop
 Aug 9: Teya attends Maui Conservation Alliance – Vertebrate meeting
 Aug 9-13: Both Pi'iholo crews to Lāna'i for fountain grass control & LFA survey
 Aug 13: Visit from Tavita from the National Park in American Samoa
 Aug 14: Lissa & Adia do LFA PR at the swap meet
 Aug 16: Teya attends Established Pest Working Group meeting on O'ahu
 Aug 19: Teya attends Maui Conservation Alliance meeting at Haleakalā
 Aug 20-21: Hō'ike DOE teacher workshop
 Aug 23-27: Crew to Honomanū for pampas control
 Aug 25: Snake training – all staff
 Aug 28: Hō'ike DOE teacher workshop field trip
 Aug 30-Sep 3: Crew to Honomanū for pampas control

Sept 3: Miconia operations meeting
 Sept 4: Educational booth at 'Ulupalakua Cares
 Sept 7-10: Crew to Honomanū for pampas control
 Sept 8: Teya to O'ahu for HISC Resources Working Group Meeting
 Sept: 10 MISC meeting – early detection & public relations
 Sept 13-16: Haleakalā frontcountry pampas sweeps
 Sept 21: Teya & Adam attend Mayor's Pai'a budget hearing
 Sept 22: Final LFA treatment at Waihe'e, survey, and video filming
 Sept 27: All staff attend RCUH Workplace Violence Training
 Sept 28: Lissa attends MALP meeting
 Sept 30: Maui County Fair Parade



PR & Education News

MISC IN THE NEWS

The July topic for MISC's Maui News Kia'i Moku column was HDOA's release on Maui of the biological control agent for stinging nettle caterpillar. The August article, written by Dr. James Leary, tackled the difficulty of controlling the notorious tumbleweed. In September, the column focused on *Cortaderia selloana*, the fact that it's reproducing on Maui, and that it has proven far more invasive than *C. jubata* in California.

REACHING OUT TO THE COMMUNITY

Parades marked the beginning and end of a busy quarter. An overgrown coqui frog kept a grumpy sleeper awake, the little fire ant (or giant costumed LFA) announced its arrival on Maui, and an i'iwi was attacked by a brown tree snake in the MISC floats for both the Makawao Paniolo Parade on July 3rd and the County Fair Parade on September 30th. An estimated 3,500 people were in attendance at the parades.



In an attempt to expand outreach efforts to a different audience, MISC set up a booth at the Maui Swap Meet in August. We focused our efforts on little fire ant detection with MISC summer hire, Adia White, starring as the little fire ant. We handed out 120 fire ant detection kits, consisting of instructions and materials for baiting and reporting. In addition, we distributed another 500 LFA kits to attendees at the Paniolo Parade. Little fire ant detection was also the focal topic at the annual 'Ulupalakua Cares event on September 5th, where we spoke with 184 people.

COMMUNITY PRESENTATIONS

Other community outreach efforts this quarter included presentations to the Maui Orchid Society about little fire ant and to a Huelo community action group, Mālama Hamakua, about invasive species of concern in their area, including miconia, and a discussion of the use of biocontrol for strawberry guava.

MISC also assisted with Brown Tree Snake Detection workshops put on by Maui County and the Hawai'i Department of Agriculture. Through the workshops, conservation workers, field professionals, and the general public were trained on what to look for and how to report sightings of snakes.



MISC IN THE CLASSROOM

This quarter MISC focused education efforts on training the trainers; the annual teacher development workshop based on the Hō'ike o Haleakalā curriculum was held August 20, 21 and 28. Seven teachers attended the workshop and learned about Hawaiian ecosystems using lessons from the Hō'ike curriculum. Presentations highlighting Maui conservation efforts were given by Jeff Bagshaw of Haleakalā National Park, Philip Thomas of Hawaiian Ecosystems at Risk, Kelly Iknayan of Maui Forest Bird Recovery Project, and Tara Miller of Maui Sea Grant Extension. Carol Rosetta from Lahainaluna High School shared her experiences using Hō'ike and Shannon Wianecki, Hō'ike curriculum writer, tested an activity from the new invasive species module.



A field trip to The Nature Conservancy's Waikamoi Preserve reinforced lessons included in Philip Thomas' presentation about unique Hawaiian adaptations and the curriculum's forest bird activity ("Win, Lose, or Draw"). All the teachers on the hike had an extremely rare opportunity to observe a juvenile 'i'iwi feeding on and pollinating a *Lobelia grayana*, seeing firsthand how the bird's beak shape exactly matches the flower's blossoms. MISC will continue to support the participating teachers as they implement lessons from the Hō'ike curriculum this semester.

Plant Updates

FOUNTAIN GRASS

Field crew revisited all fountain grass sites on Maui with no plants discovered. Maui County water tanks remain a challenge due to limited accessibility. Water tank enclosures are maintained by mowing with power equipment and we are continuing to work on identifying which Maui County water tanks may have been infested.

Control efforts continued at all known fountain grass populations on Lāna'i. A new site in Lāna'i City was discovered by Mos Masicampo from the Lāna'i Native Species Recovery Program. Even with this new infestation, fountain grass numbers for the quarter showed a decrease in both mature and immature plants found.

IVY GOURD

Efforts to control established ivy gourd sites also continued this quarter. There was an increase in the number of ivy gourd plants controlled due to a challenging control site in Ha'ikū where the ivy gourd is growing in rubbish on a steep grade. A new site that was found in Nāpili during little fire ant surveys also contributed to the increase.

Two visits were made to the Mānele golf course ivy gourd site on Lāna'i. The number of fruiting plants controlled this quarter remained constant (10 plants) and the number of immature plants controlled decreased significantly (down by 171 plants) from last quarter.

PAMPAS GRASS



Pampas season is in full swing and MISC ground crews were busy controlling and surveying for pampas grass in East Maui this quarter. Crews of three workers made four trips into the Honomanū camp for a total of fifteen working days in the field. On these trips, we controlled 17 mature and 23 immature plants. This is a dramatic decrease in plants found and controlled compared to the same quarter in 2008 and 2009, with a slight increase in acres surveyed. In addition to the plants controlled by ground crews, there were 147 plants controlled by helicopter.

In the Upcountry area of Maui, there were 59 residential sites visited and 17 plants controlled at six of those sites.

The annual Front Country Sweeps on the slopes of Haleakalā were conducted from September 13-16 with four other agencies helping survey a total of 1,061 acres. During these four days of cooperative work, five immature plants were found and controlled.



In West Maui, we controlled 775 plants by helicopter - about half of which were mature. A small crew camped in Kaua'ula Valley, one of the only ground-accessible populations, and controlled 164 plants.

RUBBER VINE

No new plants were found. Permission issues remain for known sites in the Central Maui area.

ARUNDO

Four plants were controlled at a recurring site along Kahului Beach Road.

OTHER PLANTS

No *Silybum marianum* plants were found this quarter. The last plant controlled was in May. Surveys will resume when the rainy season begins. *Maclura pomifera* (Osage orange) root suckers continue to be controlled systematically at the only known location on Maui. Three immature *Macaranga tanarius* (parasol leaf) plants were controlled as contaminants in a nursery plant staging area. Surveys at known *Verbascum thapsus* sites revealed no recruitment.

MICONIA

During this quarter, ground operations shifted focus toward the eastern portion of the miconia infestation while also completing areas begun in the past six months.

In July, ground sweeps were completed in an expanded management unit in the Honomā'ele area near Hāna. The Honomā'ele unit was modified to provide a greater buffer distance around residences due to landowner concerns regarding the proximity of helicopter operations. After the area was swept comprehensively, ground sweeps shifted to the east in the Maka'alaē area. The Maka'alaē area was completed during the quarter with the crew reporting low canopy vegetation and few miconia plants. In most

areas, drainages determined sweep lines making for generally easy sweeps in the upper elevations. The unit transitions to open pastures, residential interface, and tall mango forest in the lower elevation areas. The crew also spot-checked the few specific locations that previously had mature miconia plants, which had been treated aerially in the past eight years. No mature miconia were found.

Ground sweeps also concentrated on two additional areas during the summer months. A portion of the Hāna Core infestation mauka of Hāna School was swept resulting in control of numerous seeding individuals and increasing miconia density as the crew proceeded deeper into the core infestation. This management unit was completed in August with the crew reporting the challenging rough a'a terrain that is typical of much of the core. Also in August, the crew re-entered the Pu'u Ki management units that border the mauka section of Hāna Ranch from Mo'omo'onui stream to Kawaipapa stream. The last comprehensive sweeps of the Pu'u Ki management areas were completed three years ago. Overall conditions in the area have become more difficult due to the continued die-off of rose apple and resulting invasion by clidemia. Work in the Pu'u Ki units is ongoing and anticipated to last several months. Initial reports of plant numbers are encouraging and suggest that the dual ground and aerial work mauka of Hāna Ranch is effectively controlling miconia.

Aerial operations for the quarter had 33 scheduled helicopter flight days. Very little time was lost to weather or other delays. Reconnaissance of aerial management units where we expect little or no miconia continued to occupy about a quarter of the aerial effort. Aerial treatment focused on outlier infestations during the June and July missions before focusing on the Hāna Core infestation in September.



PLANT DATA JULY 1 TO SEPTEMBER 30, 2010

Maui

| Target Species | Plants Controlled | | | Acres |
|---------------------------------|-------------------|---------------|---------------|------------------|
| | Mature | Immature | Total | Inventoried |
| <i>Arundo donax</i> | 4 | 0 | 4 | 6.85 |
| <i>Coccinia grandis</i> | 32 | 844 | 876 | 768.42 |
| <i>Cortaderia</i> | 508 | 2,219 | 2,726 | 12,933.50 |
| <i>Cryptostegia grandiflora</i> | 0 | 0 | 0 | 2.10 |
| <i>Miconia calvescens</i> | 556 | 9,214 | 9,770 | 18,807.94 |
| <i>Pennisetum setaceum</i> | 0 | 0 | 0 | 161.94 |
| <i>Pittosporum undulatum</i> | 0 | 0 | 0 | 15.64 |
| <i>Silybum Marianum</i> | 0 | 0 | 0 | 48.59 |
| <i>Macaranga tanarius</i> | 0 | 3 | 3 | 72.73 |
| <i>Maclura pomifera</i> | 0 | 47 | 47 | 1.91 |
| <i>Pittosporum viridiflorum</i> | 0 | 0 | 0 | 36.64 |
| <i>Verbascum thapsus</i> | 0 | 0 | 0 | 15.30 |
| Grand Totals: | 1,100 | 12,327 | 13,426 | 32,871.56 |

Lanai

| Target Species | Plants Controlled | | | Acres |
|----------------------------|-------------------|------------|------------|---------------|
| | Mature | Immature | Total | Inventoried |
| <i>Coccinia grandis</i> | 10 | 50 | 60 | 264.84 |
| <i>Pennisetum setaceum</i> | 21 | 58 | 79 | 328.26 |
| Grand Totals: | 31 | 108 | 139 | 593.10 |

BANANA BUNCHY TOP VIRUS

This quarter, MISC solicited the help of several Lānaʻi partners for surveys of that island. With partner help, all of Lānaʻi was surveyed for banana bunchy top virus. In only one day, all properties with bananas on Lānaʻi were visited. No banana bunchy top virus



(BBTV) was found. Surveys for little fire ants were conducted on Lānaʻi in conjunction with the BBTV surveys, with no LFA found.

Other items of note this quarter include expanded surveys in Haʻikū, new BBTV finds in Waikapū and Wailuku (both have been treated), and the continuation of West Maui as a relatively BBTV-free area. Unfortunately, in Haʻikū, of the 278 sites surveyed, 32 were found to have BBTV. This is a substantial increase from the four previously known locations. It appears that the majority of these locations are within a small, defined Haʻikū community and few additional sites were found outside of this area. Thirty-one of the infested sites were immediately treated and the remaining site is pending owner permission.

This quarter 864 properties were surveyed on Maui and 744 on Lānaʻi. Of the 79 Maui sites that were found to have bunchy top this quarter, 68 were treated. The remaining 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> |
|--------------|-----------------------|------------------------|
| Haʻikū | 278 | 32 |
| Lahaina | 310 | 2 |
| Kihei | 271 | 40 |
| Kula | 2 | 2 |
| Makawao | 0 | 0 |
| Pukalani | 1 | 1 |
| Waikapū | 1 | 1 |
| Wailuku | 1 | 1 |
| Lānaʻi | 744 | 0 |
| Total | 1,608 | 79 |

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. Furthermore, the low number of sites visited compared to sites with BBTV highlights our efforts to follow up on known infested areas. Driving surveys are also not reflected in these numbers.

LITTLE FIRE ANTS & NETTLE CATERPILLAR

In conjunction with BBTV surveys, Lānaʻi was surveyed for the little fire ant (LFA) this quarter. The surveys were done under the direction of Cas Vanderwoude, the HDOA little fire ant expert. Cas believes that little fire ant, if present on the island, would most easily be found on banana plants, which seems to be one of their favorite habitats. The bases of old leaves provide a perfect location to build a nest. The queens and larvae nest inside the honey-comb structure of the dead leaves, which provides the right moisture levels and plenty of shade. The foragers exploit the many sap-sucking insects living on the banana plant like mealybugs and scale insects.



On Maui, 67 sites were surveyed for LFA this quarter and 2,746 samples collected. Surveys continued to focus on high-risk businesses that regularly receive shipments from the Big Island. Surveys involve placing peanut-butter baited vials on a property and collecting the vials after 45 minutes. Forest & Kim Starr continued to identify all ants collected. No LFA were found. The last treatment at the Waihee LFA site was completed in September. A broad survey was conducted at the site and no LFA were found. The site will be monitored for two years. It is looking very positive for eradication.

MISC helped facilitate the release of a biocontrol for nettle caterpillar this quarter by providing contact information and population density estimates to HDOA.

Vertebrate Status

COQUI FROGS

This quarter, coqui control activities were focused primarily in Māliko Gulch. With the addition of four temporary summer hires, one intern, and one long-term hire, the coqui crew grew to a team of nine dedicated individuals for the summer. These coqui combatants worked long afternoon and evening hours to develop infrastructure (trails, gravity-fed PVC citric acid delivery systems), keep coqui-friendly habitat at bay, mix citric acid, and most importantly – spray and hand capture frogs.



The crew's primary mission this summer was to start systematically suppressing the top and lower thirds of the Māliko population, which spans four miles of gulch from Kaluanui Road to its terminus at the ocean. The data that follow reflect MISC's increased efforts this summer. What is not captured is the impact on the coqui population in the gulch and the positive perception of affected residents. Regular monitoring by the crew suggests a substantial reduction of coqui in areas treated (80% or greater) and anecdotal reports from area residents support these observations. Statements like "I didn't think that was possible," "great job" and "thank you" for all of your hard work" help keep the crew motivated and are signs that we are headed in the right direction.

The mowing of several acres of heavily infested cane grass near the terminus of the gulch (continued from the previous quarter) provided a great boost to our effectiveness. A Māliko area resident offered to help by mowing the grass, loaning the crew his forklift to unload a container of citric acid, and providing a source of water for mixing citric acid solutions. For the first time since working in the lower third of the gulch, no coqui were heard after spraying because the habitat had been so effectively reduced.



Although busy working in the gulch this summer (more than 90% of their coqui time), the crew also found the time to sustain suppression efforts at the other five population centers and respond to new reports.

A 300 gallon sprayer that was on loan from the Big Island Invasive Species Committee was returned to the Big Island this quarter. As a result, the coqui crew and Carl Martin designed and built a new 275 gallon sprayer. The sprayer was mostly constructed from donated materials and cost around \$1,000. This is a substantial savings given that a similar already fabricated sprayer costs around \$9,000. A container of citric acid was delivered and unloaded at MISC's Kokomo Road storage facility, which is being used rent-free thanks to supportive area residents.

- Crews made 123 separate visits to 61 frog-infested areas or suspect locations this quarter. Last quarter, crews made 85 separate visits to 43 frog-infested areas or suspect locations.
- MISC crews spent 1,068 person hours at a variety of locations controlling frogs.
- 46,830 lbs. of citric acid were used this quarter, mostly in Māliko Gulch, compared with 20,075 lbs. last quarter.

Two "Keep Hāna Coqui Free" signs were posted in east Maui this quarter. The signs encourage Hāna residents to call MISC if they hear any coqui and have resulted in several reports, all of which turned out to be greenhouse frogs.

SNAKES

The Hāna Miconia field team responded to a snake report in east Maui this quarter. Fortunately, the report turned out to be false.

MoMISC Activities

MoMISC continued maintenance and monitoring on four of its eight priority species: albizia, Australian tree fern, rubber vine, and tumbleweed.

- All treated albizia trees are decaying.
- MoMISC surveyed 14 acres for Australian tree fern and manually controlled four tree ferns.
- MoMISC surveyed 13 acres for rubber vine and controlled 19 immature plants.

Other work highlights included:

- MoMISC was able to get permission to survey a quarry on Moloka'i where tumbleweed was suspected to be growing. MoMISC surveyed over 65 acres and controlled a total of 758 mature and immature tumbleweed plants and will continue to monitor the site.
- TNC field staff found a single flowering fireweed (*Senecio madagascariensis*) plant on one of their access roads. MoMISC continued early detection surveys for fireweed covering over 107 acres and found no fireweed plants.
- Over 130 acres were surveyed for banana bunchy top virus and 19 plants were treated.
- MoMISC surveyed 18 acres for cat's claw and controlled four plants.
- Two large mature bo trees were removed by USDA Plant Materials Center. MoMISC removed 2 immature bo trees in Kaunakakai that were spreading from viable fruit from a mature tree in Kaunakakai.
- MoMISC re-treated and manually removed a total of 495 mature/immature mangrove plants from the break wall at the wharf.
- Staff manually removed 10 mature and 26 immature upside-down mangrove jelly fish from the swimming area at Kaunakakai wharf.