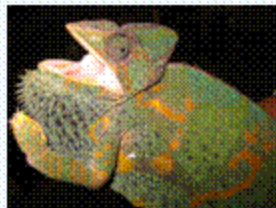
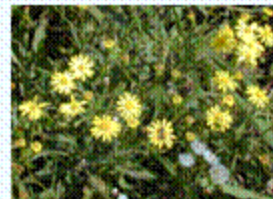


Island-based Partnerships & Statewide Coordination to Protect Hawaii



Hawaii's Biosecurity—Safeguarding Hawaii from Invasive Pest Species

Invasive alien pests pose a constant and costly threat to Hawaii's native ecosystems, ecosystem functions, biodiversity, watersheds, tourism- and agriculture-industries, public health, and the quality of life of residents and visitors. Over the years, state and federal programs have arisen piecemeal to address specific pest concerns, resulting today in an array of programs with limited scope and lacking in comprehensive coordination. The development of a comprehensive program to address invasive species requires acknowledgement of the numerous gaps in agency authorities and policies, the commitment of leaders to fix the system, and securing funding that will allow these programs to succeed.

A comprehensive protection program consists of the following measures:

1. Prevention: The most cost-effective and effective measure for protecting Hawaii. This should include adequate laws preventing importation of pests, adequate and enforceable punishments; adequate inspection protocol at all ports of entry; clear and non-conflicting agency mandates and jurisdictions.
2. Early Detection and Rapid Response: Even with the best prevention systems, pests will get through. There needs to be clear mandates and set protocols for monitoring, early detection and rapid response around ports of entry, including response to pests in the environment while still incipient.
3. Ongoing control of existing pests: Management of established, widespread pests is needed.

Some headway has been made in the past ten years to forge partnerships between agencies, organizations, and businesses in an effort to close the gaps in the system. The Coordinating Group on Alien Pest Species (CGAPS), a partnership of government agencies and non-government organizations, has been working since 1994 to address policy and funding gaps as they relate to prevention and rapid response. CGAPS works to bring about policy change to prevent new invasive pests from entering the state and helps coordinate funding for early detection and rapid response capabilities, primarily via the Invasive Species Committees of Hawaii.

This report focuses on some of the major achievements of the Invasive Species Committees as they function as rapid response crews on each island.

Island-based Partnerships

The Invasive Species Committees of Hawaii (ISCs) are island-based partnerships of government agencies, non-government organizations and private businesses working to protect each island from the most threatening invasive pests.

The ISCs were formed to address the need for rapid response and control work on new invasive pests that have the potential to severely impact the economy, ecosystem, watersheds, human health and quality of life. A driving objective of the ISCs is to

control the most threatening pests while populations are still relatively small and it is economically feasible to control or eliminate them.

ISCs write annual action plans to address their island's priority target species, pest species that were evaluated and ranked to determine their level of threat and potential for control given limited monetary resources. ISC members meet regularly to coordinate actions and resources, and to track progress on species and issues. Each ISC has a field crew that carries out the action plan by mapping, controlling and monitoring their priority target species.

Formation of the ISCs

The Maui Invasive Species Committee was the first ISC to form, evolving in 1998 from an informal partnership called the Melastome Action Committee, which coalesced in 1991 after *Miconia* was found in Hawaii. After years of working together to address the unusually aggressive plants in the Melastome family (including *Miconia*, *Clidemia* and *Tibouchina*), it became clear to partners that there was no clear agency mandate for rapid response and control work for the wide variety of pest plants and animals flowing into the state, and no funding to carry out this important function. Furthermore, it was clear that some pests like *Miconia* were not receiving an adequate level of effort or resources. MISC wrote its' first action plan, selected its priority target species, and secured the first of several successful grants in 1998, enabling them to hire a project coordinator, field crew and education specialist in the fall of 1999.

Other islands soon followed suit, with the evolution of the Big Island Melastome Action Committee to the Big Island Invasive Species Committee (BIISC) in 1999, the Oahu Invasive Species Committee (OISC) in 2000, the Molokai subcommittee of MISC (MoMISC), and the Kauai Invasive Species Committee (KISC) in 2001. The ISCs are in varying stages of development. Some, like KISC and OISC are in the start-up phase, purchasing or acquiring vehicles, equipment, office and baseyard space, while others are refining their structure and procedures.

Each island ISC has a different mix of agencies, organizations, businesses, interest groups and individuals that have come together in a grassroots effort to protect Hawaii from invasive pests. The ISCs have not only impacted statewide conservation efforts, but have been featured as a model for national and world efforts for addressing invasive species issues.

Funding

The collective funding for the ISCs is approximately \$1.5 million per year. Support for ISC activities has been through grants and other soft-money sources. One steady source of funds has been through the DLNR line item, LNR 402, through which close to \$400,000 has been passed each year since 2000. Other sources of funding are through the US Forest Service-Forest Stewardship Program, the US Fish and Wildlife Service, individual Counties, and the Hawaii Community Foundation Natural Resources Conservation Program. Individual ISCs have also been able to secure grants through the National Fish and Wildlife Foundation *Pulling Together Initiative*. The ISCs receive

tremendous support through its members, in the form of equipment loans and other in-kind services.

Rapid Response, Control and Monitoring

ISCs focus their activities in 4 areas:

1. On-the-ground control, containment or eradication of targeted invasive alien species.
2. Recognition of and preparation for rapid response to control new incipient alien species not yet present.
3. Education of community members, legislators, and businesses about invasive species.
4. Support of statewide efforts by other ISCs and CGAPS to affect changes in policies related to invasive species (e.g. plant importation screening, revision of state Noxious Weed List).

Most species that the ISCs work on are considered incipient—they are present in such small numbers and in limited locations that there is the potential for “eradication”, at least until it is brought in again. However, some ISCs are dealing with large, established populations of species like *Miconia* and coqui frogs, populations that are considered not eradicable, but require control due to the potential range and damage these species could do if left unchecked. For example, *Miconia* on Maui and the Big Island are being managed by mapping all individuals and controlling mature, peripheral locations first in an effort to keep it from spreading. This concept is similar to the practice of fighting a fire from the outside towards the center, and battling small new fires outside the core to keep the problem from establishing new strongholds. At current funding levels eradication is not possible on the Big Island, and there are questions about this possibility on Maui, therefore the immediate goal is containment until adequate funding is found. For more information on the statewide effort to control *Miconia*, see Table 6 on pg. 24.

Species are selected as targets by each committee, using the best available information on species distribution and abundance, biological and environmental information about the species, its potential range and the potential for control or eradication given limited resources. Targets are reevaluated periodically to assess the possibility of control given new information.

Public Outreach and Education

MISC hired a Public Relations and Education Specialist in December 1999 to assist in gaining landowner permission for the field crew and to raise awareness of invasive species issues. MISC’s media campaign is conducted through booths at community events, classroom visits, public presentations, press releases, pest alerts, and other forms of outreach.

In September 2002 the ISCs and CGAPS pulled together to hire a central Public Information Officer. The primary goal of the PIO is to educate the public, public officials and special interest groups such as the landscape and nursery industry about invasive species issues in order to effect a change in perception, actions, or funding for invasive species issues. Success in reaching this goal will be seen by a change in public awareness or perception of the issue; an increase or change in the actions of people in

regards to invasive species; or an increase in funding for invasive species programs in the state.

The secondary goal is to promote CGAPS and the ISCs as viable solutions that aid in the battle against invasive pests in an effort to build awareness and support for these initiatives. Success in reaching this goal will be seen by increased media exposure of CGAPS and the ISCs and the services they provide.

Since September, a number of press releases have been sent to news organizations about invasives, television news events and a public meeting was held to relay the status of *Miconia*, brown treesnakes (*Boiga irregularis*), red imported fire ants (*Solenopsis invicta*), West Nile Virus, invasive algae, and other pests. Additionally, articles written by the PIO and the MISC Public Relations and Education Specialist continue to appear in green industry trade journals and newspapers to raise awareness of invasive species.

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Priority Target Species

All of the plant species targeted by the ISCs are able to outcompete existing plants, resulting in a change in ecosystem components, structure and function. Some plants like fountain grass and bushy beardgrass also change the fire regime of an area. Animal species like coqui consume large amounts of insects, and veiled chameleons are able to take birds, disrupting pollination services and further jeopardizing threatened and endangered species. Some species also impact human health and quality of life, such as long-thorn kiawe, little fire ants and coqui frogs.



Miconia (Miconia calvescens)

- Tree native to Central and South America, introduced as an ornamental.
- Produces millions of seeds per year dispersed by birds, rats, pigs, humans. Seeds remain viable for 8 or more years.
- Potential range is all wet and mesic forests to 6000 ft. elevation.
- Priority Target for BIISC, KISC, MISC, OISC.



Fountain Grass (*Pennisetum setaceum*)

- Bunch grass native to Africa, introduced as an ornamental.
- Produces many seeds per year, wind dispersed. Seeds remain viable for 7 or more years.
- Potential range is all dry and mesic forests.
- Priority Target for KISC, MISC, OISC.



Pampas Grass (*Cortaderia selloana* and *C. jubata*)

- Large bunch grass native to South America, introduced as an ornamental.
- Produces many seeds per year, wind dispersed.
- Potential range is all mesic and wet forests.
- Priority Target for KISC, MISC, MoMISC, OISC.



Long-Thorn Kiawe (*Prosopis juliflora*)

- Tree or sprawling shrub native to Africa, introduced for agriculture, possibly accidentally.
- Produces many seeds that are water and animal dispersed.
- Potential range is unknown; appears able to hybridize with short-thorn kiawe.
- Priority Target for KISC, OISC.



Ivy Gourd (*Coccinia grandis*)

- Vine native to tropical Asia, introduced as a food crop.
- Produces many seeds that are bird dispersed; spreads vegetatively.
- Potential range is unknown.
- Priority Target for KISC, MISC.



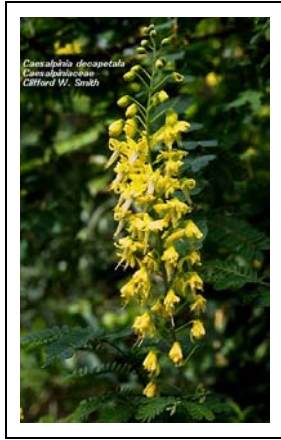
Bushy Beardgrass (*Schizachyrium condensatum*)

- Tufted grass native to Central and South America, introduction history unknown.
- Produces many seeds, spread by wind and humans.
- Priority Target for OISC.



Cattail (*Typha latifolia*)

- Wetland rush native to North America, North Africa and Eurasia, introduction history unknown.
- Reproduces and spreads vegetatively and by wind-dispersed seeds.
- Potential range is all low elevation wetlands.
- Priority Target for KISC.



Cat's Claw (*Caesalpinia decapetala*)

- Sprawling shrub native to Tropical Asia, introduced for agriculture and ornamental.
- Produces many seeds per year, dispersed by birds, rats and humans.
- Potential range is mesic lowland forests.
- Priority Target for MoMISC.



Little Fire Ant (*Wasmannia auropunctata*)

- Native to Central and South America, accidental introduction via infested plants.
- Spreads in infected nursery materials, particularly palms.
- Priority Target BIISC, KISC.



Coqui Frog (*Eleutherodactylus coqui*)

- Native to Puerto Rico, accidental introduction via infested plants.
- Spreads in infected nursery materials.
- Priority Target for BIISC, KISC, MISC, MoMISC, OISC.



Veiled Chameleon (*Chamaeleo calytratus*)

- Native to Yemen, illegal introduction for the pet trade.
- Spread by humans.
- Priority Target for MISC.

Results

The ISCs use hand-held GPS (global positioning system) units to record species locations and data in the field. These data are downloaded into databases to produce maps using Arc View mapping software. The collection of data allows the ISCs to track by species, the acres covered by ground and by air, locations of individual plants or populations, biological information such as the size class or reproductive status of the plant, and the amount of herbicide used to control it. The database and mapping products allow managers to effectively plan weekly-control objectives, and to schedule long-term monitoring and follow-up control work of previously treated plants.

The results are listed by island for State Fiscal Year 2002 and the first half of FY 2003 (7/1/2001-12/31/2002), and a statewide *Miconia* control report follows.

Big Island Invasive Species Committee

BIISC Members

Hawaii Volcanoes National Park, U.S. Geological Survey-Biological Resources Division, US Department of Agriculture-Forest Service (USFS), US Fish and Wildlife Service, Hawaii Army National Guard, Hawaii Department of Land and Natural Resources-Division of Forestry and Wildlife, Hawaii Department of Agriculture (HDOA), University of Hawaii-College of Tropical Agriculture and Human Resources, UH Department of Botany, UH Pacific Cooperative Studies Unit, The Nature Conservancy of Hawaii, and Kamehameha Schools. Additional participation is received from the Hawaii County Farm Bureau.

BIISC Priority Target Species

The Big Island Invasive Species Committee has the largest land area to care for, and the largest infestations of *Miconia* (*Miconia calvescens*), fountain grass (*Pennisetum setaceum*), coqui frogs (*Eleutherodactylus coqui*), and little fire ants (*Wasmannia auropunctata*). In many cases, these species have spread beyond the possibility of eradication, and in the case of fountain grass, control measures are focused on management actions that directly protect endangered or rare species or special management areas. BIISC has a crew of seven field staff, a data specialist and a coordinator.

Miconia is BIISC's top priority species and it is estimated that 111,000 acres need to be searched by field crews every two years. This acreage is calculated by drawing 1 km rings around seeding *Miconia* trees and 0.5-kilometer rings around immature trees. BIISC's objective at current funding is to slow the spread of this tree in an effort to contain it and keep it from reaching higher elevations where it would invade high-quality native forests such as Hawaii Volcanoes National Park.

The establishment of the Emergency Environmental Work Force (EEWF) had a tremendous impact on BIISC's ability to conduct control work on *Miconia*. BIISC-Hilo went from a crew of 7 persons to a crew of 90 for three months. During that time, the

crew destroyed 337,382 *Miconia* over 6340 acres. The total number of *Miconia* controlled between July 1, 2001 – Dec. 31, 2002 was 383,185 plants.

BIISC has also provided assistance to HDOA in surveying for and treating populations of little fire ants (*Wasmannia auropunctata*) over 39 acres. There are currently 21 known infestations totaling over 84 acres. Original sites appear to be infested nurseries, with infestations spreading outwards, and new locations in residential areas resulting from plant movement.

On the Kona side, BIISC provided supervision for an EEWf crew working to remove pickleweed (*Batis maritima*) from Kaloko-Honokohau National Historic Site, a Hawaiian fishpond that is used by endangered Hawaiian stilts as a nest and forage site. The crew also cleared fountain grass (*Pennisetum setaceum*), and other weeds from 6.33 acres in an area identified by the National Park Service (NPS) as a priority for invasive plant control. The clearing of the area revealed previously unknown petroglyphs, graves, and an ancient trail system.

BIISC supervised a second crew in North Kona that cleared a 13-mile long, 50 feet wide swath of fountain grass to establish a network of fuel breaks. The fuel break protects 70 acres of dryland forest, 750 acres of endangered plant habitat in Pu'uwa'awa'a, and 40,000 acres of DLNR Game Management Area in Pu'uana'hulu from wildfires starting along the highway. DLNR's cost of maintaining fuel breaks due to fountain grass is over \$500,000 per year.

Other work conducted by BIISC included controlling incipient plant pests like the plume poppy (*Bocconia frutescens*), a plant that is believed to be an escaped ornamental. Plume poppy is infesting dry forests, one of the most critically endangered ecosystems in Hawaii. BIISC worked to clear 140 acres of approximately 300 plants.

Map 1: BIISC Target Species Distribution

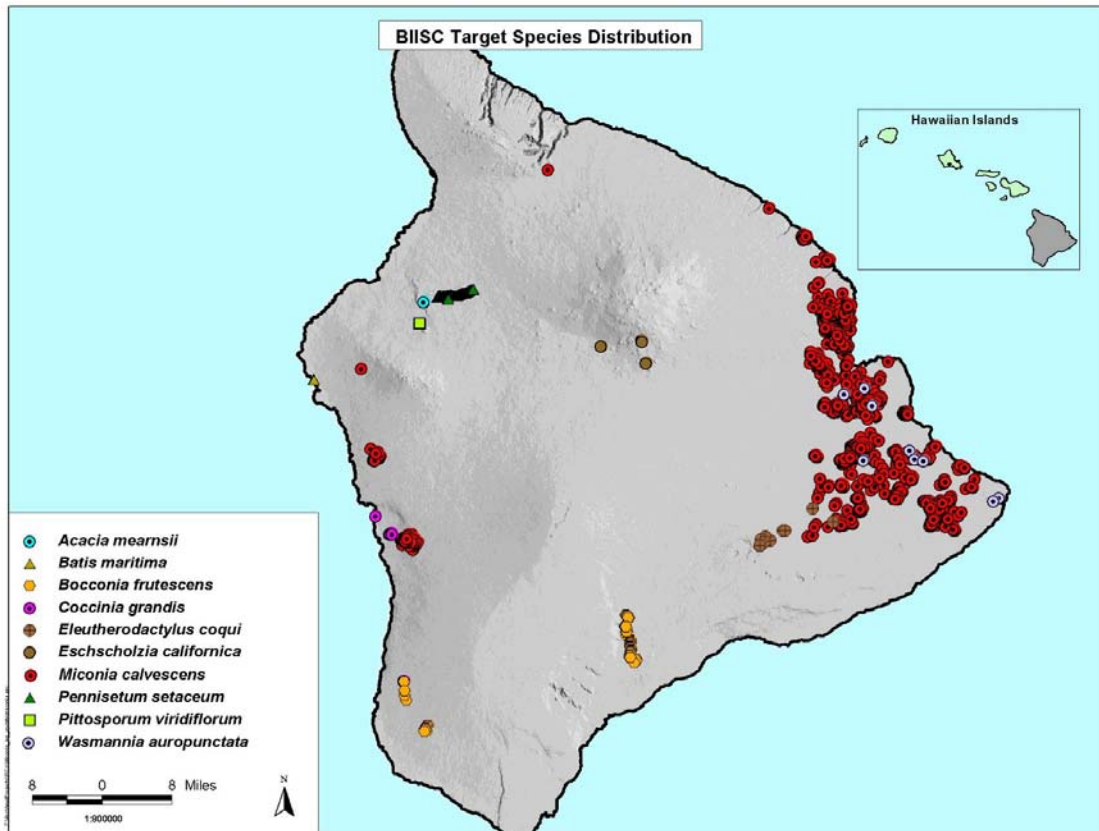


Photo 1, 2: BIISC field crewmember Jenn Randall prepares to rappel to a *Miconia* area (left). Part of the EEWF crew working with BIISC (right).



Table 1: BIISC Priority Target Species

Type	Scientific Name	Common Name	Acres		Individuals Controlled		Total Individuals Controlled 7/1/01-12/31/02
			FY 02	FY 03 (7/02-12/02)	FY 02	FY 03 (7/02-12/02)	
Plants	<i>Acacia mearnsii</i>	black wattle	1.5	0	200	0	200
	<i>Bocconia frutescens</i>	plume poppy	140	0	300	0	300
	<i>Batis maritima</i>	pickleweed	1	N/T	N/A	N/A	N/A
	<i>Cytisus palmensis</i>	tagasaste	1.5	0	3	0	3
	<i>Eschscholzia californica</i>	California poppy	7.8	0	449	0	449
	<i>Miconia calvescens</i>	<i>Miconia</i>	17,877.1	9393.9	361,717	21,468	383,185
	<i>Pennisetum setaceum</i>	fountain grass	89	N/T	N/A	N/A	N/A
	<i>Pittosporum viridiflorum</i>	Cape pittosporum	8.5	0	100	0	100
	<i>Rubus glaucus</i>	raspberry	6	0	100	0	100
Animals	<i>Eleutherodactylus coqui</i>	coqui frog	N/A	N/A	1316	0	1316
	<i>Wasmannia auropunctata</i>	little fire ant	26	13	N/A	N/A	N/A
Sub-Total			18,149.9	9406	364,185	21468	385,653
BIISC Total			27,555.9		385,653		

N/A: Not applicable. The data category is not usable for the situation or species. Acres: species cannot be measure by acres; Individuals controlled: unable to count number of individuals controlled.

C/O: Individuals controlled by agency/individual other than the ISC.

N/P: Species not known to be present on the island, monitoring will continue.

N/T: Species not on the Priority Target list at this time.

Kauai Invasive Species Committee

KISC Members

US Department of Agriculture (USDA)-Forest Service, USDA-Natural Resource Conservation Service, USDA-Animal and Plant Health Inspection Service (APHIS), APHIS Wildlife Services; US Fish and Wildlife Service, Hawaii Army National Guard, Department of Defense- Pacific Missile Range Facility, Hawaii Department of Land and Natural Resources (DLNR)-Division of Forestry and Wildlife, DLNR-State Parks, Hawaii Department of Agriculture (HDOA), University of Hawaii-College of Tropical Agriculture and Human Resources, UH Pacific Cooperative Studies Unit, Kauai Community College, Kauai County Office of Economic Development, Kauai County Department of Water, Kokee Resource Conservation Program, Hui o Laka/Kokee Museum, Kamehameha Schools, National Tropical Botanical Garden, The Nature Conservancy of Hawaii, Sierra Club-Kauai Chapter, Kauai Farm Bureau, Kauai Westside Watershed Council, Kauai Watershed Alliance, Kauai Farm Bureau, Garden Island Resource Conservation & Development, Sea Grant, Hanalei Heritage River, Kauai Landscape Industry Council, A&B Foundation, Kauai Nursery and Landscape, and Grove Farm, LLC.

KISC Priority Target Species

The Kauai Invasive Species Committee is the newest ISC. KISC hired a coordinator in April 2002 and a second staff person soon after. Both KISC staff were from the Emergency Environmental Workforce working with the Kokee Resource Conservation Program, and received extensive training prior to being hired at KISC. Work acreages and numbers reflect the hours of survey time needed to assess the status of species for consideration as priority targets. As with all the ISCs, there is extensive survey work conducted to determine the extent of the species before, during and after control work.

Miconia is the top priority target for KISC. Control of *Miconia* on Kauai began in the mid 1990's after plants were reported in the Wailua Homesteads area, which had spread from a single plant imported by a nearby nursery. HDOA and DLNR-Division of Forestry and Wildlife (DOFAW) removed several dozen plants on private properties and on State land in the canyon of Wailua River State Park.

In September 2000, the Sierra Club-Kauai division reported that *Miconia* was spreading. DOFAW, assisted by the volunteers and staff of the Kokee Resource Conservation Program, resumed systematic searches of the area. In 2002 KISC assumed responsibility for surveying, mapping and controlling *Miconia*. With assistance from these partners and volunteers, KISC has since found 12 *Miconia* plants, one of which was mature and seeding. It is thought that approximately 2000 acres around known seed banks need to be searched by field crews every 2-3 years. KISC will begin aerial survey work for *Miconia* and other species once safety training is complete.

KISC has also helped stem the spread of long-thorn kiawe (*Prosopis juliflora*) along the coast, where it is blocking beach access and hybridizing with the short-thorn kiawe. In addition, KISC worked to control waterway-clogging giant reeds (*Arundo donax*) and cattails (*Typha latifolia*) in wetlands and drainages.

KISC staff maintains a watch over imported plants at retailers like Kmart and Wal-Mart to reduce the possibility of coqui infesting Kauai through these pathways. KISC also assists HDOA in monitoring the previously treated little fire ant site in Kalihiwai, and the infestation of greenhouse frogs (*Eleutherodactylus planirostris*).

Map 2: KISC Target Species Distribution

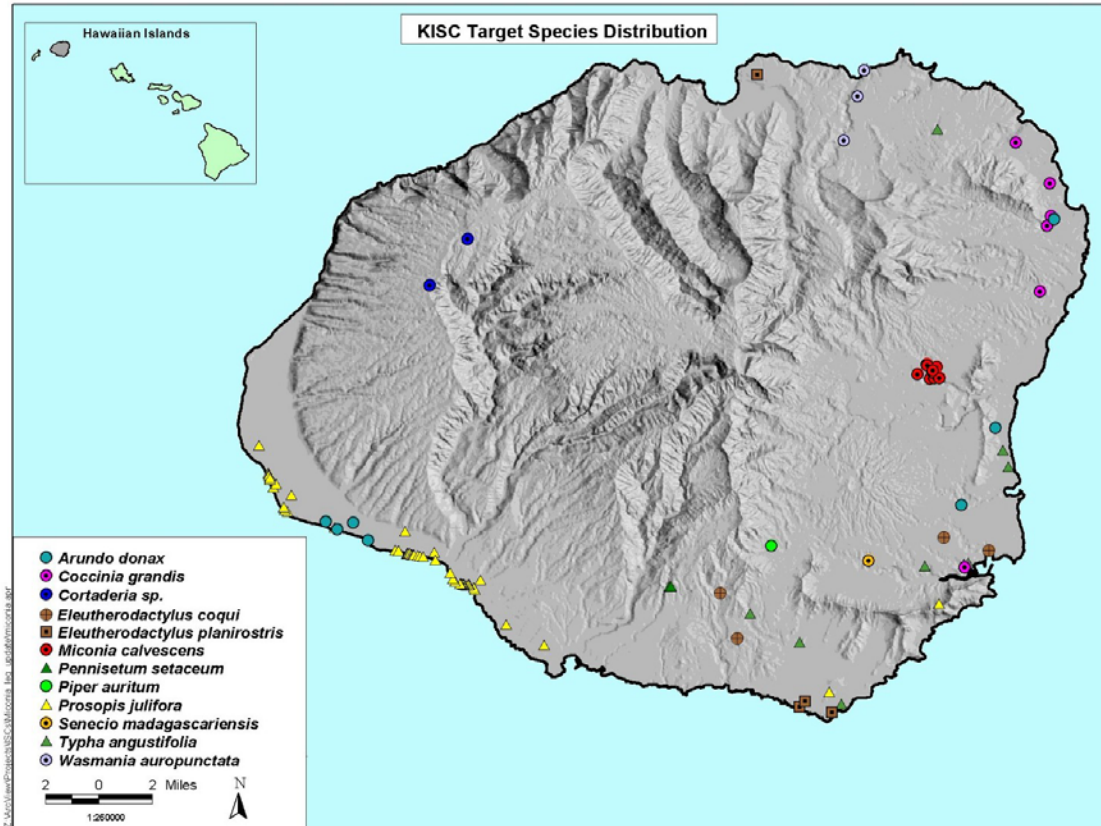


Photo 3, 4: KISC field crewmember Sarah Newton uses a tube to capture a coqui frog (left). KISC with partner agencies and members of the EEWF work on long-thorn kiawe.



Table 2: KISC Priority Target Species

Type	Scientific Name	Common Name	Acres		Individuals Controlled		Total Individuals Controlled 4/1/02-12/31/02
			FY 02 (4/02-6/02)	FY 03 (7/02-12/02)	FY 02 (4/02-6/02)	FY 03 (7/02-12/02)	
Plants	<i>Arundo donax</i>	giant reed	.1	.7	0	1938	1938
	<i>Coccinia grandis</i>	ivy gourd	.5	5.8	0	60	60
	<i>Cortaderia</i> sp.	pampas grass	N/T	11	N/T	400	400
	<i>Miconia calvescens</i>	<i>Miconia</i>	30.5	238.3	3	9	12
	<i>Pennisetum setaceum</i>	fountain grass	0	0	0	0	0
	<i>Piper auritum</i>	false kava	N/T	.1	N/T	4	4
	<i>Prosopis juliflora</i>	long-thorn kiawe	414.2	298	15	104	119
	<i>Pyracantha angustifolia</i>	fire thorn	0	0	0	0	0
	<i>Senecio madagascariensis</i>	fireweed	3.3	19.5	0	35	35
	<i>Typha latifolia</i>	cattail	.2	55.3	0	676	676
Animals	<i>Eleutherodactylus coqui</i>	coqui frog	N/A	N/A	C/O	C/O	0
	<i>Eleutherodactylus planirostris</i>	greenhouse frog	N/A	N/A	C/O	C/O	0
Sub-Total			448.8	617.6	18	3226	3244
KISC Total			1066.4		3244		

N/A: Not applicable. The data category is not usable for the situation or species. Acres: species cannot be measure by acres; Individuals controlled: unable to count number of individuals controlled.

C/O: Individuals controlled by agency/individual other than the ISC.

N/P: Species not known to be present on the island, monitoring will continue.

N/T: Species not on the Priority Target list at this time.

Maui Invasive Species Committee

MISC Members

Haleakala National Park, NPS-Pacific Islands Exotic Plant Management Team, U.S. Geological Survey-Biological Resources Division, US Department of Agriculture (USDA)-Forest Service, USDA-Animal and Plant Health Inspection Service, APHIS Wildlife Services, US Fish and Wildlife Service, Hawaii Army National Guard, Hawaii Department of Land and Natural Resources-Division of Forestry and Wildlife, Hawaii Department of Agriculture (HDOA), University of Hawaii-College of Tropical Agriculture and Human Resources, UH Pacific Cooperative Studies Unit, Maui County Office of Economic Development, Maui County Board of Water Supply, The Nature Conservancy of Hawaii, USDA-Tri-Isle Resource Conservation and Development Council, Inc., East Maui Watershed Partnership, West Maui Watershed Partnership, and Maui Land & Pine Co. Additional participation is received from the Maui Association of Landscape Professionals, Hawaii Cattlemen's Association, Haleakala Ranch, Hana Ranch, Maui County Farm Bureau and the Maui Hotel Association.

MISC Priority Target Species

MISC is the oldest ISC, with staff first hired in September 1999. MISC receives over half of its funding from Maui County and has ten full time staff, including a public relations and education specialist, a GIS database specialist, a field operations manager and an administrative specialist.

MISC's top priority target species is *Miconia*, which was introduced as an ornamental to nurseries in Hana, Nahiku and Keanae in the late 1960's. It was discovered spreading in Hana in 1988 and immediate efforts to contain it with volunteers looked promising until large stands of *Miconia* were spotted above Hana in 1993. A 5-person crew supervised by DOFAW was assigned to clean the 2,000 acres of the known infestation, but it had already spread beyond these boundaries by the time MISC was able to hire a field crew in November 1999.

MISC has mapped all known *Miconia* plants and infestations, and surveyed likely habitats for more. The estimated number of acres that require searching every 2-3 years is 25,000 acres, including a 1-kilometer buffer zone around all seeding trees, and a half-kilometer buffer around immature trees. This information was relayed to officials at Haleakala National Park and National Park Service, which prompted unprecedented assistance from Haleakala National Park and NPS-Pacific Islands Exotic Plant Management Team (PIEPMT). MISC field crews now work alongside the NPS Pacific Islands Exotic Plant Management Team to control *Miconia*.

MISC also received a boost in labor from the Emergency Environmental Work Force, which supported 12 additional field crew members. Between January and May 2002, they surveyed over 2000 acres and eliminated 244,920 *Miconia* including 1985 that were fruiting/flowering.

MISC's rapid response to incipient invaders like downy rose myrtle (*Rhodomyrtus tomentosa*) has been successful. Three populations of this plant were seen by USGS-

Biological Resources Division staff and reported to MISC. Public outreach to homeowners and property owners garnered support for the removal of this species, and all 150 known plants were controlled. Similar rapid response efforts were conducted on ruby saltbush (*Enchylaena tomentosa*) at Kanaha Pond Wildlife Sanctuary, Jerusalem thorn (*Parkinsonia aculeata*) on DLNR land, and Indian rhododendron (*Melastoma septemnerium*) on private property. Monitoring for regrowth and new locations of these species is ongoing.

In May 2002 MISC received a report of a dead veiled chameleon (*Chamaeleo calypttratus*) found on agricultural land. Media attention by MISC resulted in the report and recovery of and two live veiled chameleons in a residential area. Since December 2002, subsequent surveys by MISC in cooperation with HDOA and DOFAW have revealed that this species has been newly established, and periodic surveys continue in an effort to control them before they spread.

MISC has also received reports of snake sightings, and has provided the necessary manpower to conduct searches.

Map 3: MISC Target Species Distribution

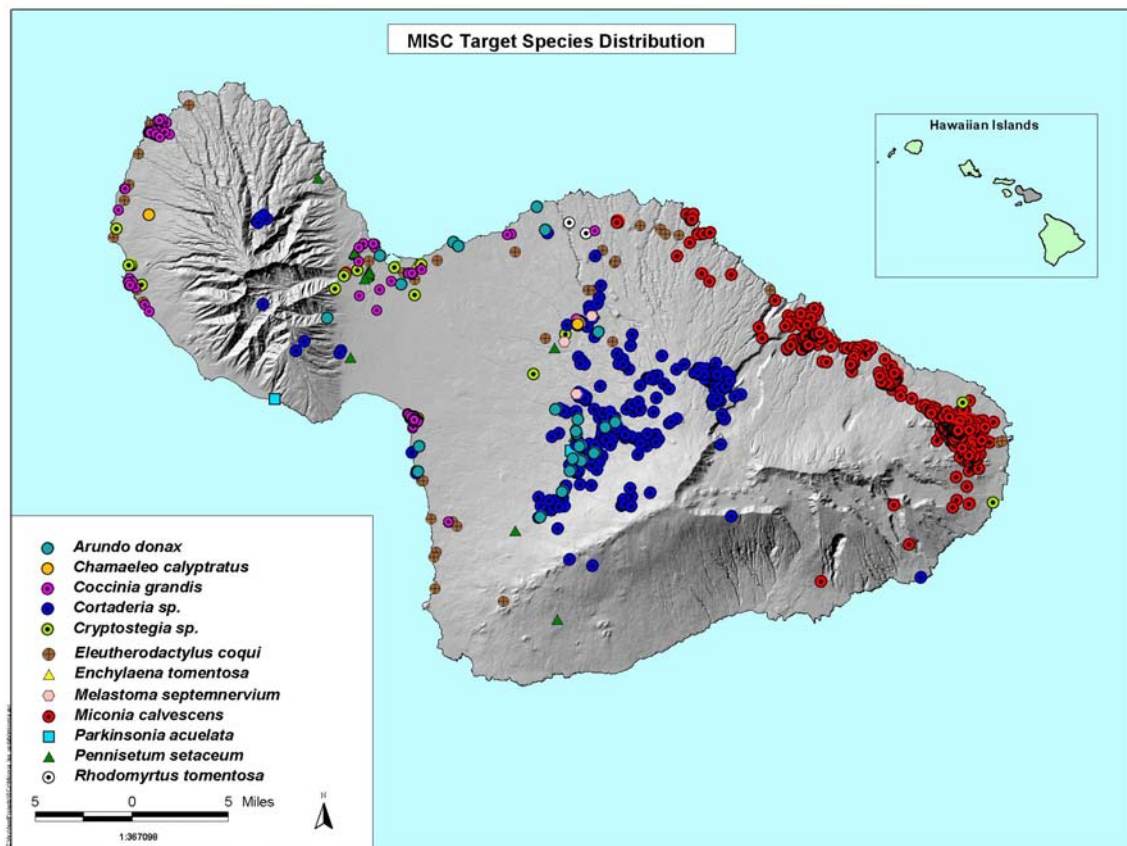


Table 3: MISC Priority Target Species

Type	Scientific Name	Common Name	Acres		Individuals Controlled		Total Individuals Controlled 7/1/01-12/31/02
			FY 02	FY 03 (7/02-12/02)	FY 02	FY 03 (7/02-12/02)	
Plants	<i>Enchylaena tomentosa</i>	ruby saltbush/ Australian chenopodium	.002	N/P	30	N/P	30
	<i>Arundo donax</i>	giant reed	.4	1.5	690	220	910
	<i>Coccinia grandis</i>	ivy gourd	163.5	84.5	4021	4212	8233
	<i>Cortaderia</i> sp.	pampas grass	24,444.8	19,924.7	1690	1127	2817
	<i>Cryptostegia</i> sp.	rubber vine	.9	.7	20	3	23
	<i>Melastoma septemnerium</i>	Indian rhododendron	N/P	0	N/P	1	1
	<i>Miconia calvescens</i>	<i>Miconia</i>	15,991.8	8059.4	247,739	4711	252,450
	<i>Parkinsonia aculeata</i>	Jerusalem thorn	.1	N/P	17	N/P	17
	<i>Pennisetum setaceum</i>	fountain grass	8017.3	229.4	271	387	658
	<i>Rhodomyrtus tomentosa</i>	downy rose myrtle	0	2.2	0	152	152
Animals	<i>Chameleo calyptratus</i>	veiled chameleon	3	5	2	0	2
	<i>Eleutherodactylus coqui</i>	coqui frog	N/A	N/A	N/A	N/A	N/A
	Class: Reptilia Order: squamata Suborder Serpentes	snakes	0	2	0	0	0
Sub-Total			48,621.8	28,309.4	254,480	10,813	265,293
MISC Total			76,931.2		265,293		

N/A: Not applicable. The data category is not usable for the situation or species. Acres: species cannot be measure by acres; Individuals controlled: unable to count number of individuals controlled.

C/O: Individuals controlled by agency/individual other than the ISC.

N/P: Species not known to be present on the island, monitoring will continue.

N/T: Species not on the Priority Target list at this time.

Molokai-Maui Invasive Species Committee

MoMISC Members

Kalaupapa National Historic Park, US Department of Agriculture (USDA)-Forest Service (USFS), USDA Natural Resource Conservation Service, US Fish and Wildlife Service, Hawaii Department of Land and Natural Resources (DLNR)-Division of Forestry and Wildlife, DLNR-Division of Aquatic Resources, Hawaii Department of Agriculture, University of Hawaii-College of Tropical Agriculture and Human Resources, UH Pacific Cooperative Studies Unit, Maui County Office of Economic Development, The Nature Conservancy of Hawaii, USDA Tri-Isle Resource Conservation and Development Council, Inc., USDA Molokai-Lanai Soil and Water Conservation District, and Maui Land & Pine Co.

MoMISC Priority Target Species

MoMISC hired one part time field staff in March 2002 and continues to rely heavily on volunteer support and in-kind services from partners like The Nature Conservancy-Hawaii and DOFAW Maui County.

MoMISC's top priority target is cat's claw (*Caesalpinia decapetala*), due to the absence of established *Miconia*, fountain grass and coqui frogs. MoMISC works closely with staff of The Nature Conservancy-Hawaii and volunteers to monitor for these and other pests. Reports of *Miconia* in Wailau Valley have been investigated by MoMISC. Residents and MoMISC members have not found *Miconia*, although large expanses of the alien invasive Koster's curse (*Clidemia hirta*) are present. All reports have been misidentifications of Koster's curse.

Cat's claw is a thorny shrub that was introduced to the islands before 1910 as a biological pasture fence, similar to gorse. MoMISC surveyed and mapped three relatively small areas of cat's claw on Molokai, and has controlled 6556 plants to date.

MoMISC, with partners DOFAW and TNC, surveyed and controlled the only known populations of New Zealand flax (*Phormium tenax*) on Molokai, in the Molokai Forest Reserve and Puu Kolekole, areas dense with native species. MoMISC was also responsible for alerting property owners to the presence of pampas grass (*Cortaderia* sp.), which was subsequently controlled by the landowner.

As a rapid response crew, MoMISC was alerted to the presence of a single calling coqui frog in a nursery. MoMISC staff responded and captured the frog. MoMISC also documented the arrival of a gold dust day gecko (*Phelsuma laticauda*) aboard an interisland barge, and subsequently confirmed that the species was already established in some areas of Molokai.

Map 4: MoMISC Target Species Distribution

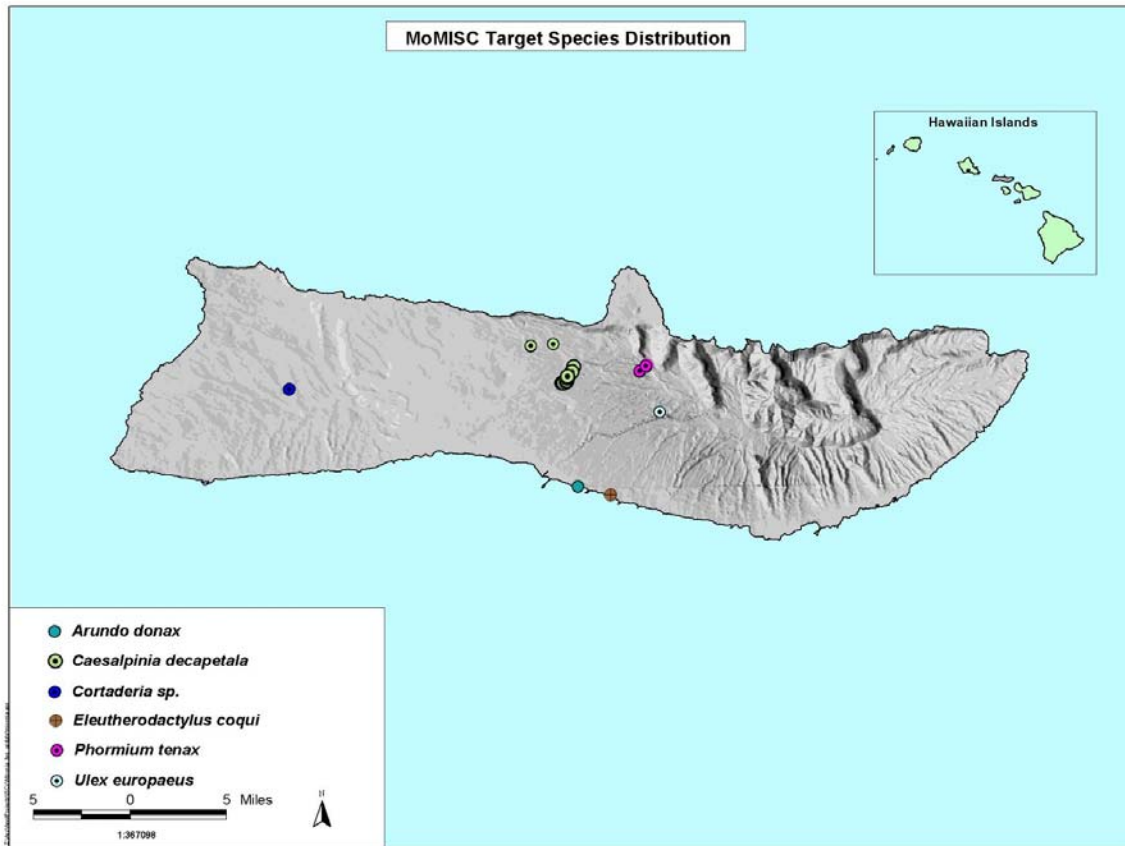


Photo 5, 6: MISC field crew leader Jamie Bruch uses a pole to capture a veiled chameleon while Teya Penniman and Erik Barnard look on (left). MoMISC staff Lori Buchanan and Chair Tina Lau prep herbicides for spot-spraying of cat's claw (right).



Table 4: MoMISC Priority Target Species

Type	Scientific Name	Common Name	Acres		Individuals Controlled		Total Individuals Controlled 7/1/01-12/31/02
			FY 02	FY 03 (7/02-12/02)	FY 02	FY 03 (7/02-12/02)	
Plants	<i>Arundo donax</i>	giant reed	0	1.7	0	N/A	N/A
	<i>Caesalpinia decapetala</i>	cat's claw	120	53.6	3627	2929	6556
	<i>Cortaderia</i> sp.	pampas grass	2	2	C/O	N/P	C/O
	<i>Miconia calvescens</i>	<i>Miconia</i>	4.7	N/P	N/P	N/P	N/P
	<i>Pennisetum setaceum</i>	fountain grass	N/P	N/P	N/P	N/P	N/P
	<i>Pereskia aculeata</i>	Barbados gooseberry	1.2	1	0	0	0
	<i>Phormium tenax</i>	New Zealand flax	0	.6	0	1826	1826
	<i>Ulex europaeus</i>	gorse	0	5.6	0	24	24
Animals	<i>Eleutherodactylus coqui</i>	coqui frog	N/A	N/A	1	N/P	1
Sub-Total			127.9	64.5	3628	4779	8407
MoMISC Total			190.7		8407		

N/A: Not applicable. The data category is not usable for the situation or species. Acres: species cannot be measure by acres; Individuals controlled: unable to count number of individuals controlled.

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Oahu Invasive Species Committee

OISC Members

US Department of Agriculture (USDA)-Forest Service, USDA-Animal and Plant Health Inspection Service, APHIS Wildlife Services, US Fish and Wildlife Service, Marine Corps Base Hawaii, US Geological Survey (USGS)-Biological Resources Division, USGS Water Resources Division, US Army-Environmental, Hawaii Army National Guard, Hawaii Department of Land and Natural Resources-Division of Forestry and Wildlife, Hawaii Department of Agriculture (HDOA), Hawaii Department of Transportation, University of Hawaii-College of Tropical Agriculture and Human Resources, UH Pacific Cooperative Studies Unit, Harold L. Lyon Arboretum, Honolulu Board of Water Supply, Hoomaluhia Botanical Garden, The Nature Conservancy of Hawaii, Sierra Club-Oahu Chapter, Hawaii Audubon Society, Hawaii Natural Heritage Program, Bishop Museum, Pono Pacific, Hawaii Trail and Mountain Club and Pisces Pacifica. Additional participation is received from the Koolau Watershed Partnership and the UH Departments of Botany, Zoology and Geography.

OISC Priority Target Species

OISC evolved from the Fountain Grass Working Group in August 2000, hired a coordinator in January 2001 and is currently operating with five staff.

OISC's top priority target is *Miconia*. Since July 2001 OISC has covered over 2429 acres and eliminated 3358 *Miconia* plants, 37 of which were seeding. Approximately 6000 acres need to be searched every 2-3 years, an area that includes half kilometer buffer zones around non-seeding *Miconia* and one kilometer around mature trees.

OISC has also conducted extensive survey and control work on Himalayan blackberry (*Rubus discolor*), treating more than 2,400 plants over 70 acres.

Bushy beardgrass (*Schizachrium condensatum*) was spotted growing next to H-3 and reported by OISC partners. This fire-promoting grass has invaded Hawaii Volcanoes National Park and other sensitive areas, and requires intensive control work. OISC has covered over 50 acres controlling this plant and the work is ongoing.

Fountain grass (*Pennisetum setaceum*) is OISC's fourth priority target. There are 14 known populations of fountain grass on Oahu, including major infestations at Diamond Head and Punchbowl craters and in Lanikai. OISC has controlled close to 19,000 fountain grass plants over 504 acres.

Survey, monitor and control work for other species such as hiptage (*Hiptage bengalensis*), fire tree (*Morella faya*), manuka (*Leptospermum* sp.), and long thorn kiawe (*Prosopis juliflora*) are conducted with assistance from volunteers and partner agencies.

Coqui frog work is focused on reducing the spread of this species by targeting garden shops and new, small populations. With the help of OISC, a large garden retailer was able to treat an infested area with citric acid and eliminate the population.

Map 5: OISC Target Species Distribution

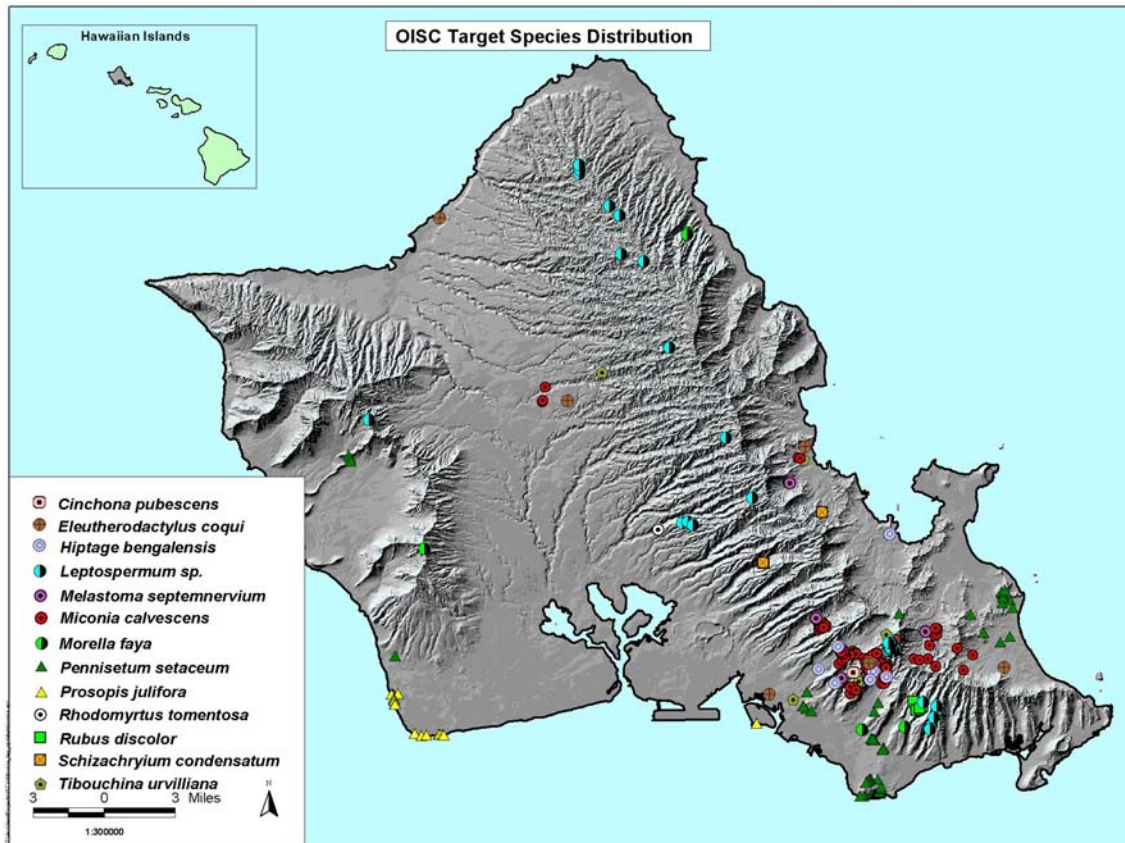


Photo 7, 8: OISC field staff work with the Sierra Club to run *Miconia* service trips with volunteers, most of which are from the Hawaii Trail and Mountain Club (left). OISC crew members Ryan Smith and Meghan Halabisky participate in plant sales and community events to educate people about invasive species (right).



Table 5: OISC Priority Target Species

Type	Scientific Name	Common Name	Acres		Individuals Controlled		Total Individuals Controlled 7/1/01-12/31/02
			FY 02	FY 03 (7/02-12/02)	FY 02	FY 03 (7/02-12/02)	
Plants	<i>Cinchona pubescens</i>	quinine tree	0	53.4	0	0	0
	<i>Hiptage benghalensis</i>	hiptage	N/T	5.5	N/T	100	100
	<i>Leptospermum</i> sp.	manuka	45	165.1	500	3859	4359
	<i>Melastoma septemnerium</i>	Indian rhododendron	0	7	0	0	0
	<i>Miconia calvescens</i>	<i>Miconia</i>	1639	790.3	3070	288	3358
	<i>Morella faya</i>	fire tree	0	40.8	0	223	233
	<i>Pennisetum setaceum</i>	fountain grass	155	349.7	9142	9779	18,921
	<i>Prosopis juliflora</i>	long-thorn kiawe	1.6	0	649	0	649
	<i>Rhodomyrtus tomentosa</i>	downy rose myrtle	0	2.7	0	100	100
	<i>Rubus discolor</i>	Himalayan blackberry	20	45.9	500	1904	2404
	<i>Schizachyrium condensatum</i>	bushy beardgrass	N/T	50.8	N/T	1606	1606
	<i>Tibouchina urvilleana</i>	glorybush	N/T	9.1	N/T	20	20
Animals	<i>Eleutherodactylus coqui</i>	coqui frog	N/A	N/A	283	195	478
Sub-Total			1860.6	1520.3	14,144	18,084	32,228
OISC Total			3380.9		32,228		

N/A: Not applicable. The data category is not usable for the situation or species. Acres: species cannot be measure by acres; Individuals controlled: unable to count number of individuals controlled.

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N/T: Species not on the Priority Target list at this time.

Table 6: Statewide Control Report for *Miconia calvescens*

Numbers are reported for State FY 2002: July 1, 2001 – June 30, 2002, and half of State FY 2003: July 1- December 31 2002.

Invasive Species Committee	Method	Acres		Immature		Mature		Total 7/1/01 – 12/31/02
		FY 02	FY 03 (7/02-12/02)	FY 02	FY 03 (7/02-12/02)	FY 02	FY 03 (7/02-12/02)	
Big Island	Ground	10,510.1	3275.9	50,370	1186	311,347	20,282	383,185
	Air	7369	6118	0	0	0	0	
Kauai	Ground	30.5	238.3	0	10	0	1	11
	Air	0	0	0	0	0	0	
Maui	Ground	1299.2	97.7	245,220	2374	2004	18	252,486
	Air	14,692.6	7961.7	435	2208	116	111	
Molokai	Ground	4.7	0	N/P	N/P	N/P	N/P	0
	Air	0	0	N/P	N/P	N/P	N/P	
Oahu	Ground	447	361.2	3037	284	33	4	3358
	Air	1192	429.1	0	0	0	0	
Sub-Total		35,545.1	18,481.9	299,062	6052	313,500	20,416	639,040
Total		54,027		305,114		333,916		639,040

N/P: Species not known to be present on the island, monitoring will continue.

Acknowledgements

This report was prepared in May 2003 by Christy Martin, Public Information Officer for CGAPS and the ISCs, with contributions from staff and members of each of the ISCs. Maps were produced by Mike Walker, the MISC GIS database specialist. Questions or comments may be directed to CGAPS at (808) 722-0995. Mahalo to all of our partners for your continuing support.