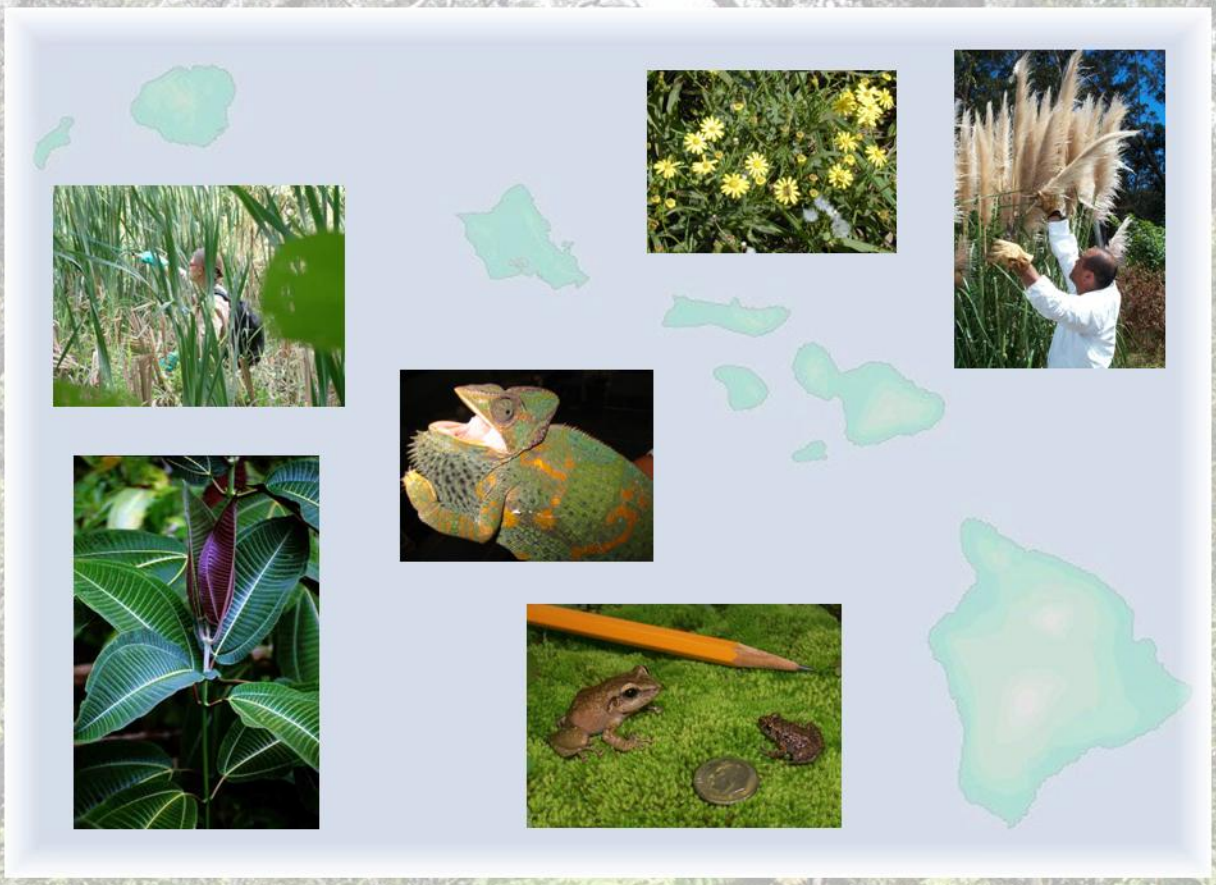
# Island-based Partnerships & Statewide Coordination to Protect Hawaii

## Report for the 2003 Calendar Year



BIISC
BIG ISLAND INVASIVE SPECIES COMMITTEE

cgaps
STOP THE SILENT INVASION
COORDINATING GROUP ON ALIEN PEST SPECIES

OISC
O'AHU INVASIVE SPECIES COMMITTEE

KISC
KAUAI INVASIVE SPECIES COMMITTEE

MISC
MAUI INVASIVE SPECIES COMMITTEE

MoMISC
MOLOKA'I/MAUI INVASIVE SPECIES COMMITTEE

## 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 economical 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 for incipient pests around ports of entry, and incipient pests in natural areas, and public and private lands.

3. Ongoing control of existing pests: Some pests that are considered too widespread to eradicate are left to spread. Management of established, widespread pests is necessary.

The Coordinating Group on Alien Pest Species (CGAPS) was formed in 1995 to bring agencies and organizations together to work on prevention, early detection and rapid response issues. Representatives of the major agencies and organizations involved in invasive species work meet regularly to bring about policy change, improve communications and collaborations, and to help build capacity and coordinate funding for early detection and rapid response capabilities, primarily via the Invasive Species Committees of Hawaii.

CGAPS addresses issues at the administrative level, yet there remained a lack of committed participation of individuals at the executive-level to institute necessary policy changes until recently. The Hawaii Invasive Species Council (HISC) was created in 2003 to provide cabinet-level coordination among the agencies, departments and other entities that need to be involved in creating a comprehensive invasive species program. The HISC is under the co-leadership of Hawaii Department of Land and Natural Resources (DLNR) Chairman Peter Young and Hawaii Department of Agriculture (HDOA) Chairperson Sandra Kunimoto.

As the HISC and CGAPS work on policy and funding issues, work is being conducted on-the ground. This report focuses on some of the major achievements of the Invasive Species Committees during the calendar year 2003, 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 (MISC) was the first ISC to form, evolving in 1998 from an informal partnership called the Melastome Action Committee, which coalesced in 1991 after miconia (*Miconia calvescens*) was found in Hawaii. After years of working together to address the unusually aggressive plants in the melastome family (including miconia, *Clidemia hirta* and *Tibouchina herbacea*), partners realized that there was no clear agency mandate for early detection, rapid response 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 into the Big Island Invasive Species Committee (BIISC) in 1999, the change of the Fountain Grass Working Group into the Oahu Invasive Species Committee (OISC) in 2000, the formation of the Molokai subcommittee of MISC (MoMISC), and the Kauai Invasive Species Committee (KISC) in 2001.

Each island ISC has a different mix of agencies, organizations, businesses, interest groups and individuals that have come together in a grassroots effort to control the greatest threat facing the State (miconia) and function as early detection and rapid response teams for new plant and animal pests. The ISC structure consists of the committee for decision-making and guidance, a chairperson, and paid staff including a coordinator and field crew. Some ISCs are able to support additional staff to assist with community outreach, data management and administrative duties.

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, through grants and other soft-money sources. One steady source of funds has been through the Department of Land and Natural Resources (DLNR) line item, LNR 402, though 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 also 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 selected invasive species.
2. Recognition of and preparation for rapid response to new alien species not yet present.
3. Education of community members, legislators, and businesses about invasive species.
4. Support efforts by other ISCs, CGAPS and the HISC to affect changes in policies related to invasive species (e.g. plant importation screening, 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. 22.

Each committee selects the species they will target using the best available information on current 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

The need for public outreach about invasive pests has prompted statewide and island-based initiatives. The ISCs and CGAPS hired a central Public Information Officer (PIO) to educate the public, public officials and special interest groups such as the landscape and nursery industry about invasive species issues, and to promote CGAPS and the ISCs as viable solutions that aid in the battle against invasive pests.

A statewide awareness campaign conducted in 1997 titled "The Silent Invasion" used television commercials, print ads and dramatic pamphlets to educate the public about invasive species. Currently, CGAPS is planning a second media campaign to address three major statewide issues: the lack of reporting of pests, the use of invasives as ornamentals, and the movement of high-risk items into the state without declaration and inspection by officials. The print and television media campaign will air starting in June 2004, based on the messages, "Report a Pest", "Don't Pack a Pest" and "Don't Plant a Pest."

Island-based outreach is also conducted by ISC staff and partners, although two ISCs have been able to focus dedicated staff on outreach. MISC has a Public Relations and Education Specialist who has been particularly successful in gaining media attention, public support, and the support of Maui County officials, and BIISC has been able to build support and capacity through their work with community associations.

With or without designated outreach staff, each ISC conducts community outreach through television and radio, news articles, press releases, booths at community events, classroom visits, public presentations, pest alerts, and other forms of outreach.

## Contact Information

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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 ecosystems and 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.


**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.

**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.

**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.

**Barbados Gooseberry (*Caesalpinia decapetala*)**

- Climbing, leafy cactus that starts as a woody shrub when young, becoming vine-like when older. Native from the West Indies to Central America and Brazil, possibly introduced as an ornamental.
- Spread by birds or broken stem fragments.
- Potential range is unknown.
- Priority Target for MoMISC.

**Coqui Frog (*Eleutherodactylus coqui*)**

- Small, quarter-sized frog native to Puerto Rico, accidental introduction via infested plants.
- Spread in infected nursery materials.
- Priority Target for BIISC, KISC, MISC, MoMISC, OISC.

**Little Fire Ant (*Wasmannia auropunctata*)**

- Small, slow moving red ant native to Central and South America, accidental introduction via infested plants.
- Spreads in infected nursery materials, particularly palms.
- Priority Target BIISC, KISC.

**Veiled Chameleon (*Chamaeleo calyptratus*)**

- Large chameleon, up to 24 inches. Native to Yemen, illegal introduction for the pet trade.
- Spread intentionally 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 work conducted between January 1, 2003-December 31, 2003. A statewide miconia control report follows.

## Big Island Invasive Species Committee

BIISC Members: DLNR-Division of Forestry and Wildlife, USDA-Forest Service, US Fish and Wildlife Service, Hawaii Department of Agriculture, USGS-Biological Resources Division, Hawaii Volcanoes National Park, UH-Department of Botany/Pacific Cooperative Studies Unit, UH-College of Tropical Agriculture and Human Resources, The Nature Conservancy of Hawaii, Kamehameha Schools, Malama O Puna, the USDA-Natural Resource and Conservation Service, County of Hawaii, and Forest Solutions, Inc. Additional participation is received from the Hawaii County Farm Bureau.

BIISC Priority Target Species

BIISC has the largest land area in the state to survey and care for, and the largest infestations of miconia (*Miconia calvescens*), coqui frogs (*Eleutherodactylus coqui*), little fire ants (*Wasmannia auropunctata*) and other invasive pests. The sheer magnitude of the problem, combined with a dire lack of adequate funding, has resulted in the need for partnerships like BIISC to search for outside funds to conduct the necessary work.

BIISC's first priority is controlling miconia. Additional priority targets include the coqui frog (in the Volcano area), assisting in the control of the little fire ants, plume poppy (*Bocconia frutescens)* and other pests of limited distribution.

Miconia is estimated to infest approximately 111,000 acres of moist and wet forest on the Big Island. The perimeter of the infestation must be surveyed every three years to destroy plants before they reproduce, thereby containing the spread of miconia. BIISC's objective, at current funding levels, is to prevent the spread of miconia into upper elevation watersheds and high-quality native forests such as Hawaii Volcanoes National Park. BIISC surveyed over 24,000 acres and controlled close to 21,000 miconia plants, over 1,900 of which were mature or seeding.

BIISC provided assistance to HDOA in surveying and controlling populations of little fire ants (*Wasmannia auropunctata*) on more than 80 acres, mostly in nurseries. Control of this pest is important, as nurseries in this area supply plants throughout the state and Guam. BIISC assistance has slowed the spread of this pest. Little fire ants have localized infestations in small areas on only two islands, the Big Island and Kauai.

BIISC also conducted survey work on plume poppy (*Bocconia frutescens*), a plant pest believed to be an escaped ornamental, and a major threat to dry forests. BIISC assisted an existing volunteer group with initial survey and control work and collaborated with Hawaii Volcanoes National Park with a comprehensive survey of the infestation, in order assess the extent of the infestation and develop an effective management plan. Over 12,700 acres of land were surveyed in 2003, revealing three rapidly expanding populations. A management plan has been developed, and BIISC is working to secure funding and assistance from project partners to implement the plan.

BIISC also worked to protect special management areas like Hawaii Volcanoes National Park and Hakalau Forest Reserve from pests that are not on BIISC's priority target list for control, such as Australian tree fern and other invasive ornamentals. In one project, BIISC partnered with Hawaii Volcanoes National Park to conduct outreach to area residents, many of which do not realize that the plants they are planting in their yards escape into nearby native forests. Survey work on Australian tree fern in 2003 covered 9,500 acres.

BIISC maximizes the amount of control work conducted on pests like miconia and coqui by alerting private landowners and community associations to the presence of pests on their land and providing information on prevention, control and available assistance. In addition, BIISC has formed collaborative relationships, and received support and commitments from private landowners, such as Kamehameha Schools, for them to conduct control work on their lands. Partnerships with Malama O Puna, Leilani Estates, Kaohe Homesteads, Wood Valley and others have resulted in community work days controlling miconia, coqui and plume poppy.

Table 1: BIISC survey, control and rapid response conducted in the 2003 calendar year

| Type | Scientific Name | Common Name | Type of Target/Action | Acres Surveyed | Total Individuals Controlled |
|---|---|---|---|---|---|
| **Plants** | *Bocconia frutescens* | plume poppy | Survey for Control | 12,728 | 48 |
| | *Miconia calvescens* | miconia | Target | 24,157 | 20,966 |
| | *Sphaeropteris cooperi* | Australian tree fern | Public Ed. | 9,503 | 18 |
| **Animals** | *Eleutherodactylus coqui* | coqui frog | Public Ed./RR to new pops | 4220 | N/A |
| | *Wasmannia auropunctata* | little fire ant | Target/Assist HDOA | 87 | N/A |
| | | | **BIISC Total** | **50,695** | **21,032** |

N/A: Not applicable. The data category is not usable for the situation or species.

Map 1: BIISC Target Species Distribution as of December 2003

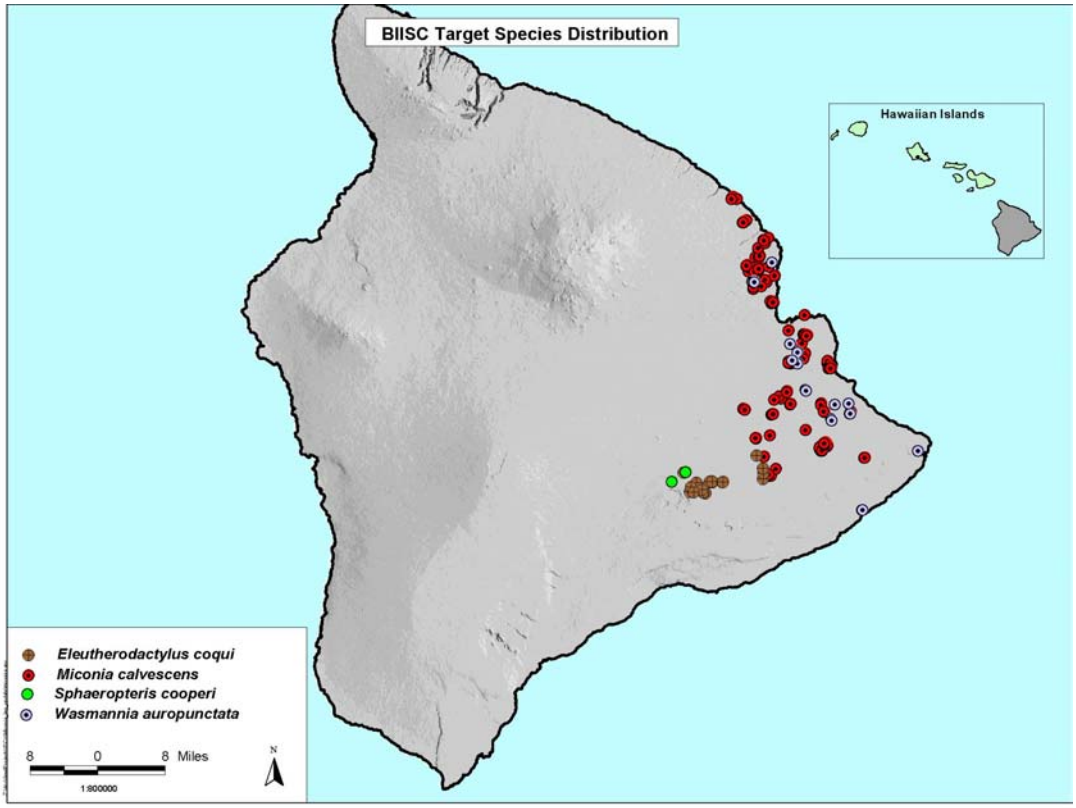


Photo 1, left: BIISC crew leader Cheyenne Perry maps a new miconia infestation. Photo 2, right: The BIISC crew gears up for a miconia survey and control operation.

## Kauai Invasive Species Committee

KISC Members: USDA Forest Service, USDA-Natural Resource Conservation Service, USDA-APHIS, USDA APHIS Wildlife Services; US Fish and Wildlife Service, Department of Defense-Pacific Missile Range Facility, Hawaii Army National Guard, DLNR-Division of Forestry and Wildlife, DLNR-State Parks, HDOA, UH-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, 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

KISC is the newest ISC, having formed in October 2001. A coordinator was hired in April 2002, a second staff person was hired soon after, and a third staff person will start in March 2004. KISC recently gained additional capacity from its DLNR-Division of Forestry and Wildlife (DOFAW) partner, with the dedicated help of two AmeriCorps Vista volunteers for a year.

Miconia (*Miconia calvescens*) 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 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 reported that miconia was spreading. DOFAW resumed searches of the area, assisted by Kokee Resource Conservation Program volunteers and staff. In 2002 KISC assumed responsibility for surveying, mapping and controlling miconia on Kauai.

Between January and December 2003, KISC and its partners conducted aerial and ground surveys over 2,421 acres of state and private lands in the Wailua Game Management Area and Wailua Homesteads, resulting in 266 non-seeding miconia, and four seeding plants found. Since its formation, KISC has found a total of 277 miconia, four of which were seeding. Approximately 100,000 acres of wet forest and over 70 endangered and threatened species on Kauai are being protected by KISC, as wet forest is prime miconia habitat.

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. KISC has surveyed over 43 acres of thorny kiawe and controlled 69 plants.

Serious headway has been made to control fireweed (*Senecio madagascariensis*). When control efforts began, the infestation covered about 10 acres, and 1,000 plants were pulled each month. Control efforts have reduced seeding plants with an average of 8 plants pulled per month. In addition, KISC worked on invasive plants that clog wetlands and drainages. KISC surveyed 3.5 acres for giant reed (*Arundo donax*), controlling more than 10,300 plants, and 118 acres of cattails (*Typha latifolia*), helping to protect habitat for native waterbirds and lo`i for taro farming.

KISC conducted animal projects including helping HDOA monitor and treat the little fire ant (*Wasmannia auropunctata*) site in Kalihiwai. KISC also provided staff to help DOFAW trap populations of rabbits descended from escaped or released pets. A total of 13 rabbits were captured. KISC staff responds to mongoose reports and has been trained for rapid response in the event of a snake sighting on Kauai.

Table 2: KISC survey, control and rapid response conducted in the 2003 calendar year

| Type | Scientific Name | Common Name | Type of Target/Action | Acres Surveyed | Total Individuals Controlled |
|---|---|---|---|---|---|
| **Plants** | *Arundo donax* | giant reed | Target | 3.5 | 10,352 |
| | *Coccinia grandis* | ivy gourd | Target | 14.5 | 280 |
| | *Cortaderia* sp. | pampas grass | Target | 68.3 | 325 |
| | *Miconia calvescens* | miconia | Target | 2421.5 | 266 |
| | *Pennisetum setaceum* | fountain grass | Target | 1816 | 0 |
| | *Piper auritum* | false kava | Target | 5 | 59 |
| | *Prosopis juliflora* | long-thorn kiawe | Target/Assist HDOA | 43 | 69 |
| | *Senecio madagascariensis* | fireweed | Target/Assist HDOA | 58.9 | 545 |
| | *Typha latifolia* | cattail | Target | 118.3 | 1,158 |
| **Animals** | *Eleutherodactylus coqui* | coqui frog | Public Ed./RR to new pops. | N/A | C/O |
| | *Eleutherodactylus planirostris* | greenhouse frog | Public Ed. | N/A | C/O |
| | *Misc. vertebrates* | rabbits mongoose snakes | Rapid Response/ Trapping | N/A | C/O |
| | *Wasmannia auropunctata* | little fire ant | Target/Assist HDOA | 2 | N/A |
| | | | **KISC Total** | **4551** | **13,054** |

N/A: Not applicable. The data category is not usable for the situation or species.

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

Map 2: KISC Target Species Distribution as of December 2003

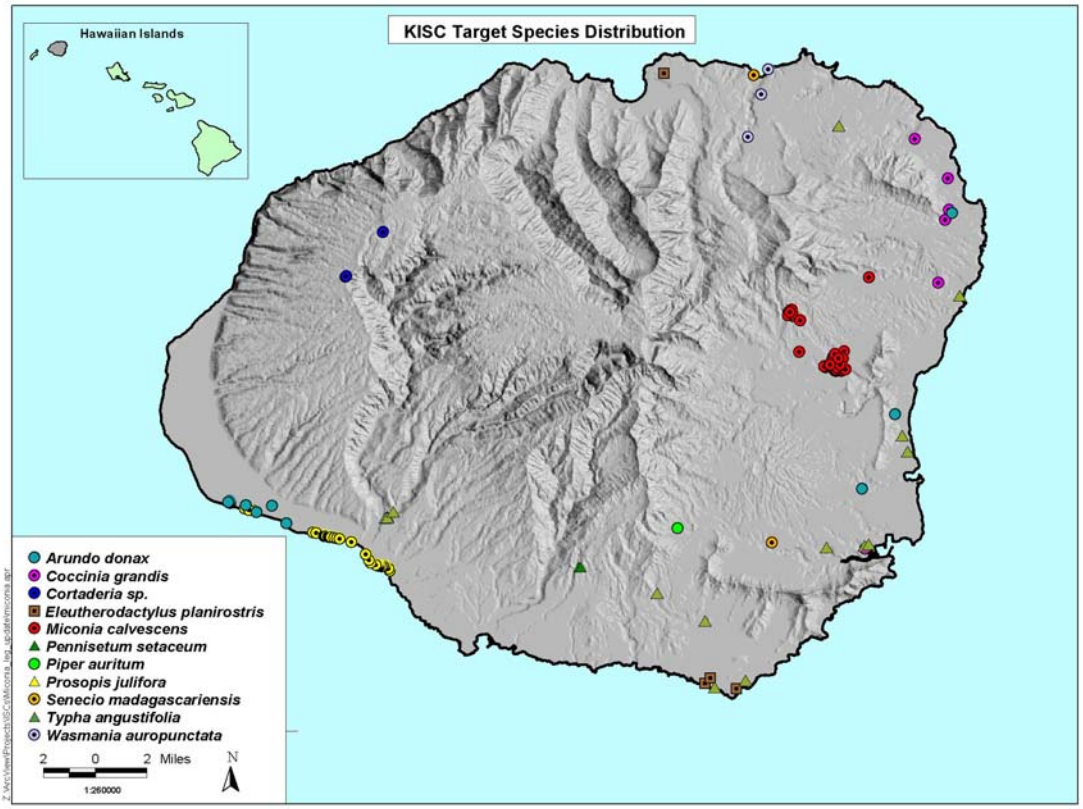


Photo 3, left: A KISC volunteer finds a 7-ft. miconia in Waialua. Photo 4, right: KISC crewmember Sarah Newton sets a small mammal trap for rabbits.

## Maui Invasive Species Committee

MISC Members: Haleakala National Park, NPS-Pacific Islands Exotic Plant Management Team, USGS-Biological Resources Division, USDA Forest Service, USDA APHIS, USDA APHIS Wildlife Services, US Fish and Wildlife Service, Hawaii Army National Guard, DLNR-Division of Forestry and Wildlife, HDOA, UH-College of Tropical Agriculture and Human Resources, UH Pacific Cooperative Studies Unit, Maui County Office of Economic Development, Maui County Department 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. Participation is also received from the Maui Association of Landscape Professionals, Haleakala Ranch and Hana Ranch.

MISC Priority Target Species

MISC was the first ISC to form, with staff first hired in September 1999. MISC receives over half of its funding from Maui County and is able to employ ten full time staff.

MISC's top priority target is miconia, which was introduced as an ornamental to nurseries in East Maui in the late 1960's. It was discovered spreading in Hana in 1988 and volunteer efforts to contain it looked promising until large stands of miconia were spotted above Hana in 1993. A 5-person crew supervised by DOFAW worked to control the 2,000-acre known infestation, but it had already spread beyond these boundaries by the time MISC hired a field crew in 1999. Today, an estimated 25,000 acres require searching by ground crews every 2-3 years. This acreage includes 1-km rings around all seeding trees and .5 km rings around immature trees. In 2001, the status of miconia and the discovery of two plants in the national park at Kipahulu Valley prompted action from National Park Service officials at Haleakala National Park. Haleakala National Park and NPS-Pacific Islands Exotic Plant Management Team have allocated resources and a 7-person crew that works exclusively on miconia in Hana. This joint MISC/NPS force has resulted in over 32,000 acres surveyed and 50,000 plants controlled.

MISC continues to make progress on pampas grass (*Cortaderia jubata and C. selloana*). Aerial and ground surveys covered 8,600 acres in neighborhoods and natural areas, and over 2,600 plants were controlled. MISC also surveyed and monitored known fountain grass (*Pennesetum setaceum*) sites, with the ground crew covering over 300 acres and controlling close to 500 plants.

MISC's rapid response to incipient invaders like downy rose myrtle (*Rhodomyrtus tomentosa*) has been successful. USGS-Biological Resources Division staff found and reported three populations to MISC in 2002, and all 150 known plants were controlled. Follow-up surveys in 2003 covered 1.3 acres and 13 plants were controlled. All populations of ruby saltbush (*Enchylaena tomentosa*), Jerusalem thorn (*Parkinsonia aculeata*), and Indian rhododendron (*Melastoma candidum*) were controlled in 2002. Monitoring for regrowth and new locations of these species will continue.

The MISC crew also works on incipient vertebrates, and is part of the rapid response team when snakes are sighted. In May 2002 MISC received a report of a dead veiled chameleon (*Chamaeleo calyptratus*), a species not known to Hawaii and illegal to import. Media attention by MISC led to the report of several veiled chameleons from a residential area centered around a wooded gulch. To date, MISC and partner agencies have removed

over 110 of these pests. Illegal poaching in the area and information from sources suggest that this is not the only population on the island, and that they are being harvested for the black market pet trade. Without adequate legal authority for agencies, and a cost-effective method for control, stopping the spread of new invasive vertebrates, such as veiled chameleons, is difficult.

MISC continued to document and investigate new reports of coqui frogs (*Eleutherodactylus coqui*) and to verify the presence or absence of frogs at previously reported sites. At present, funding is not available for the control of coqui frogs on Maui.

Table 3: MISC survey, control and rapid response conducted in the 2003 calendar year

| Type | Scientific Name | Common Name | Type of Target | Acres Surveyed | Total Individuals Controlled |
|---|---|---|---|---|---|
| **Plants** | *Arundo donax* | giant reed | Target | 248.01 | 139 |
| | *Coccinia grandis* | ivy gourd | Target | 111.9 | 5,142 |
| | *Cortaderia* sp. | pampas grass | Target | 8612.2 | 2,625 |
| | *Cryptostegia* sp. | rubber vine | Target | 2.96 | 17 |
| | *Enchylaena tomentosa* | ruby saltbush/ Australian chenopodium | RR Target | N/P | N/P |
| | *Melastoma candidum* | Indian rhododendron | RR Target | N/P | N/P |
| | *Miconia calvescens* | miconia | Target | 32873.2 | 50,581 |
| | *Parkinsonia aculeata* | Jerusalem thorn | RR Target | N/P | N/P |
| | *Pennisetum setaceum* | fountain grass | Target | 304.45 | 498 |
| | *Rhodomyrtus tomentosa* | downy rose myrtle | RR Target | 1.5 | 13 |
| **Animals** | *Chameleo calyptratus* | veiled chameleon | Target/Survey for Control | 3 | 110 |
| | *Eleutherodactylus coqui* | coqui frog | Target/Survey for Control | N/A | N/A |
| | | | **MISC Total** | **76931.2** | **59,015** |

N/A: Not applicable. The data category is not usable for the situation or species.
N/P: Species not known to be present.

## Molokai-Maui Invasive Species Committee

MoMISC Members: Kalaupapa National Historic Park, USDA Forest Service, USDA Natural Resource Conservation Service, US Fish and Wildlife Service, DLNR-Division of Forestry and Wildlife, DLNR-Division of Aquatic Resources, Hawaii Department of Agriculture, UH-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 formed as a subcommittee of MISC in 2001 and hired one field staff in March 2002. MoMISC relies heavily on volunteer support and in-kind services from its partners like The Nature Conservancy of Hawaii and the Maui County branch of DOFAW.

Molokai does not have established populations of miconia, fountain grass (*Pennisetum setaceum*), or coqui frogs. However, due to MoMISC's efforts in community education, early detection and rapid response, MoMISC detected and successfully eradicated a recent ornamental planting of fountain grass in 2003 and was responsible for intercepting a coqui in a nursery in Sept. 2001. Single plants of *Tibouchina herbacea*, (a plant in the melastome family which also includes miconia) were also detected in remote areas and controlled in 2003.

In 2003, MoMISC has made progress surveying and reducing all known populations of Barbados gooseberry (*Pereskia aculeata*) and 2 populations of giant reed (*Arundo donax*). MoMISC surveyed 34 acres of high-quality native forest for New Zealand flax (*Phormium tenax*), controlling over 100 plants in 2003. Work conducted on this species in 2002 covered less than an acre, yet yielded 1,800 plants.

Prior eradication efforts on gorse (*Ulex europaeus*) and pampas grass (*Cortaderia jubata*) also continue to be monitored for regrowth.

Control work on cat's claw (*Caesalpinia decapetala*), reduced the population by over 9,000 plants. However, additional surveys and mapping of cat's claw revealed a much larger population than was originally known. It was decided that with limited staff and funding, MoMISC would continue to monitor the population, control new infestations, but would not keep the core population of cat's claw as a priority target for control.

MoMISC's activities are crucially important in protecting the island, as there is no HDOA office on Molokai, and no on-island staff dedicated to invasive species prevention and control. The invasive species technician for DOFAW is based on Maui and spends an average of one week per quarter on Molokai. At the October 2003 MoMISC meeting, the committee agreed that MoMISC will act as the primary response agency to accept calls from the public and other agencies regarding invasive species reports. MoMISC facilitates an investigation and control work when needed.

Table 4: MoMISC survey, control and rapid response conducted in the 2003 calendar year

| Type | Scientific Name | Common Name | Type of Target | Acres Surveyed | Total Individuals Controlled |
|---|---|---|---|---|---|
| **Plants** | *Arundo donax* | giant reed | Target | 3.4 | N/A |
| | *Caesalpinia decapetala* | cat's claw | Target/Concern (past control) | 32.3 | 9,048 |
| | *Cortaderia* sp. | pampas grass | Target | 119 | 0 |
| | *Miconia calvescens* | miconia | Public Ed./RR to new pop. | N/P | N/P |
| | *Pennisetum setaceum* | fountain grass | Public Ed./RR to new pop. | 4 | 3 |
| | *Pereskia aculeata* | Barbados gooseberry | Target | 6.1 | N/A |
| | *Phormium tenax* | New Zealand flax | Target | 34 | 103 |
| | *Tibouchina herbacea* | tibouchina | Rapid Response | 5.7 | 2 |
| | *Ulex europaeus* | gorse | Target | 14 | 36 |
| **Animals** | *Eleutherodactylus coqui* | coqui frog | Public Ed./RR to new pop. | N/P | N/P |
| | Aves | Parrots/Parrot-like birds | Public Ed./RR to new pop. | 6.5 | 0 |
| | | | **MoMISC Total** | **225** | **9,192** |

N/A: Not applicable. The data category is not usable for the situation or species.

N/P: Species not known to be present.

Map 3: MISC and MoMISC Target Species Distribution as of December 2003

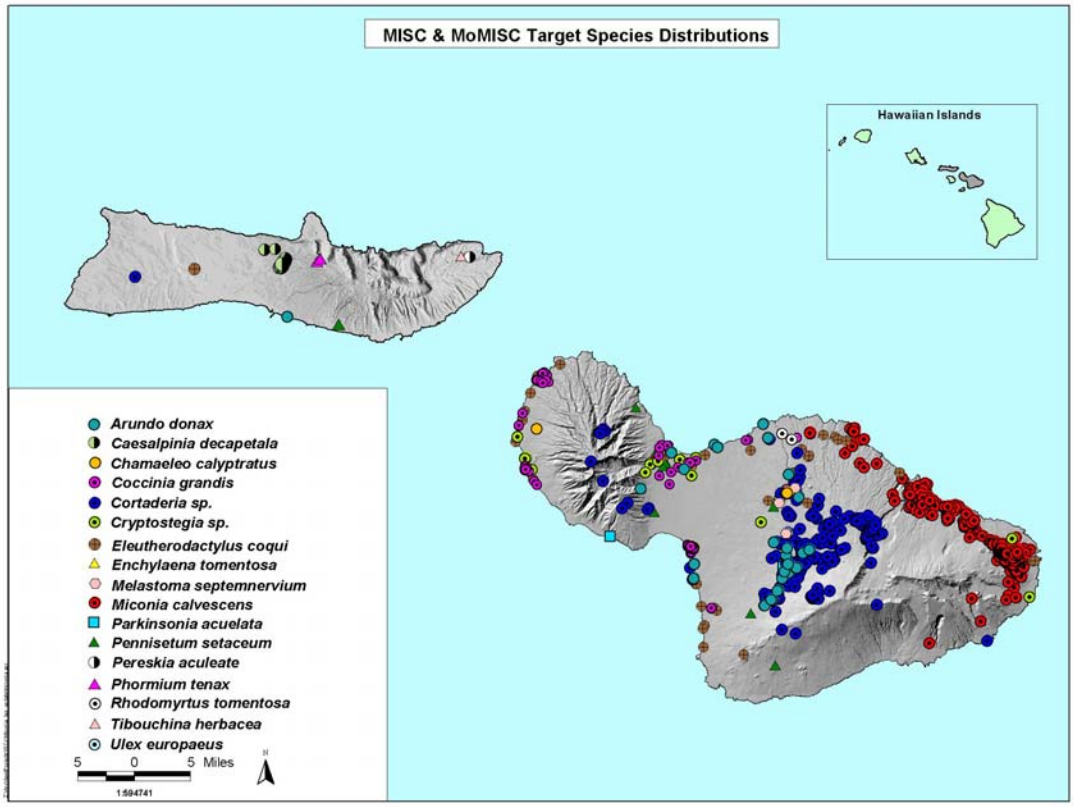


Photo 5, left: MISC staff Shannon Wianecki (left) and Mele Fong (middle) discuss invasives with Maui County Mayor Arakawa. Photo 6, right: MoMISC staff Lori Buchanan guides volunteers on a fountain grass survey in the Molokai Forest Reserve.


## Oahu Invasive Species Committee

OISC Members: USDA Forest Service, USDA-APHIS, APHIS Wildlife Services, US Fish and Wildlife Service, Marine Corps Base Hawaii, USGS-Biological Resources Division, USGS Water Resources Division, US Army-Environmental, Hawaii Army National Guard, DLNR-Division of Forestry and Wildlife, Hawaii Department of Agriculture, Hawaii Department of Transportation, UH-College of Tropical Agriculture and Human Resources, UH Pacific Cooperative Studies Unit, Harold L. Lyon Arboretum, Honolulu Board of Water Supply, Ho`omaluhia 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 Ko`olau Watershed Partnership and the UH Departments of Botany, Zoology and Geography.

OISC Priority Target Species

OISC evolved from the volunteer organization, Fountain Grass Working Group in August 2000, later hiring a coordinator in March 2001, and is currently operating with five staff.

Miconia is OISC's top priority target. During aerial and ground surveys in 2003, OISC found 526 plants, only three of which were seeding. Since July 2001 OISC has surveyed over 4,700 acres and eliminated close to 3,900 miconia plants, 37 of which were seeding. The reduction in the number of seeding miconia is encouraging. However, miconia has been found outside the 1-km diameter search range around known seeding trees, necessitating a larger search area.

OISC has also conducted extensive surveys for Himalayan blackberry (*Rubus discolor*) over 40 acres and has controlled more than 2,000 plants. Work also continued on bushy beardgrass (*Schizachrium condensatum*) in two main locations. OISC has surveyed over 100 acres and controlled more than 13,000 plants in 2003. One of the infestations occurs in a neighborhood. Therefore, OISC conducts outreach and education to gain access and to solicit reports.

Work on Indian rhododendron (*Melastoma candidum*) resulted in 2,100 plants controlled and 270 acres surveyed, and control of manuka (*Leptospermum scoparium*) is also ongoing, with OISC surveying over 430 acres and controlling 16,600 plants.

Work on fountain grass has continued in the 14 known populations, including major infestations in Lanikai and Diamond Head. However, with additional surveys and mapping covering over 320 acres, it is now believed that fountain grass may be beyond OISC's ability to control. OISC has therefore modified its actions to surveying and controlling new or eradicable fountain grass populations, with a major objective being to conduct surveys in an effort to remove and keep it out of the Waianae Range.

OISC assists HDOA and DLNR in controlling coqui frogs, with particular emphasis going towards controlling the one known wildland population in Wahiawa. OISC contributed over 50 hours in the multi-agency control effort that used a combination of habitat modification and spraying with a 16% citric acid solution.

Table 5: OISC survey, control and rapid response conducted in the 2003 calendar year

| Type | Scientific Name | Common Name | Type of Target | Acres Surveyed | Total Individuals Controlled |
|---|---|---|---|---|---|
| **Plants** | *Hiptage benghalensis* | hiptage | Concern | 1 | 314 |
| | *Leptospermum* sp. | manuka | Target | 439 | 16,621 |
| | *Melastoma candidum* | Indian rhododendron | Target | 270 | 2181 |
| | *Miconia calvescens* | miconia | Target | 2339 | 526 |
| | *Morella faya* | fire tree | Target | 138 | 15 |
| | *Pennisetum setaceum* | fountain grass | Target | 321.3 | 18,878 |
| | *Rubus discolor* | Himalayan blackberry | Target | 40 | 2059 |
| | *Schizachyrium condensatum* | bushy beardgrass | Target | 100 | 13,041 |
| | *Senecio madagascariensis* | fireweed | Concern | 1.3 | 976 |
| | *Tibouchina urvilleana* | glorybush | Concern | 3 | 0 |
| **Animals** | *Eleutherodactylus coqui* | coqui frog | Target/Assist HDOA | 41.5 | N/A |
| | | | **OISC Total** | **3694.1** | **54,611** |

N/A: Not applicable. The data category is not usable for the situation or species.

Map 4: OISC Target Species Distribution as of December 2003

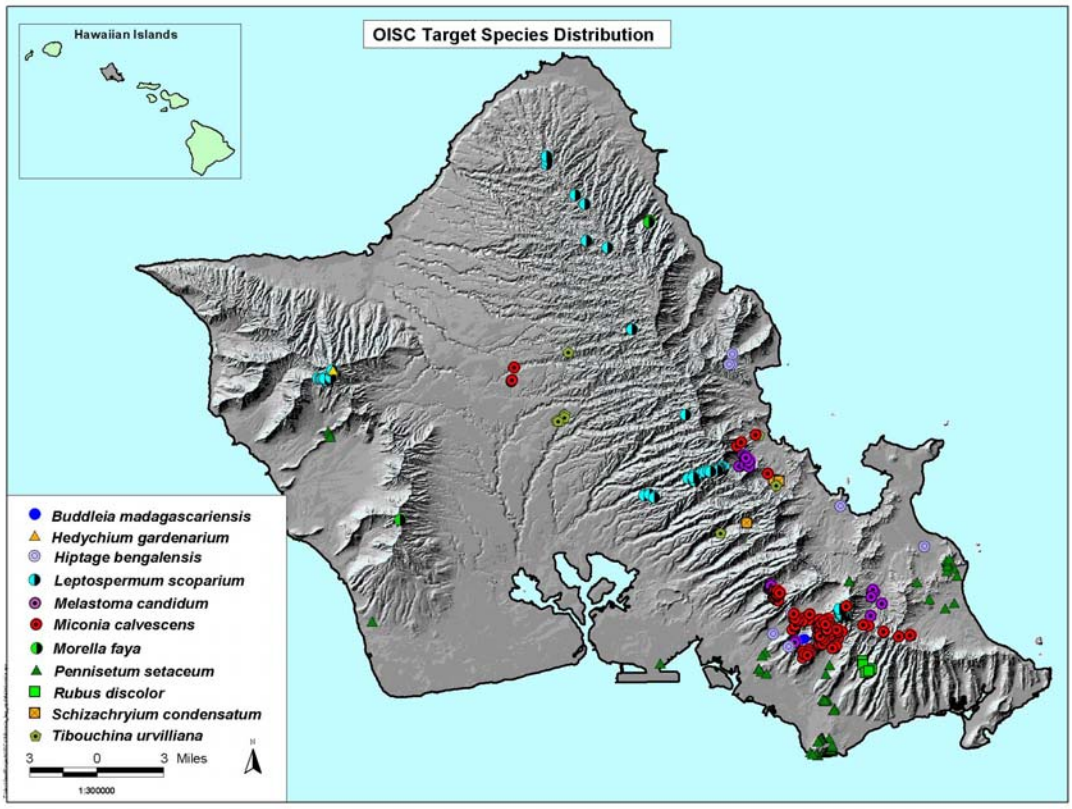


Photo 7, left: The OISC crew briefs MCBH Marines before a miconia hunt in Nuuanu.
Photo 8, right: OISC crewmember Meghan Halabisky controls Himalayan blackberry above Palolo Valley.

Table 6: Statewide Control Report for *Miconia calvescens* for the 2003 calendar year.

| ISC | Method | Acres Surveyed | Immature Controlled | Mature Controlled | Total Controlled |
|---|---|---|---|---|---|
| Big Island | Ground | 9,044 | 19,014 | 1,952 | 20,966 |
| | Air | 18,003 | | | |
| Kauai | Ground | 236.5 | 262 | 4 | 266 |
| | Air | 21,185 | | | |
| Maui | Ground | 107.1 | 49,790 | 791 | 50,581 |
| | Air | 32,766.12 | | | |
| Molokai | Ground | 0 | N/P | N/P | N/P |
| | Air | 0 | | | |
| Oahu | Ground | 857 | 523 | 3 | 526 |
| | Air | 1,482 | | | |
| **Statewide Total** | | **83,681** | **69,589** | **2,750** | **72,339** |

N/P: Miconia is not known to be present on Molokai. However, MoMISC conducts outreach and investigates reports of miconia. No surveys were conduced in 2003.

## Acknowledgements

This report was prepared in February 2004 by Christy Martin, Public Information Officer for CGAPS and the ISCs, with contributions from staff of each of the ISCs. GIS survey and control data were compiled by the ISCs. Maps were produced by Mike Walker, GIS database specialist for the Maui Invasive Species Committee. Questions or comments may be directed to CGAPS at (808) 722-0995.

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