



# Kia'i Moku

guarding the island



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## Notable Quote

"I think the environment should be put in the category of our national security. Defense of our resources is just as important as defense abroad. Otherwise, what is there to defend?"

~Robert Redford  
Yosemite National Park  
dedication, 1985

## Collaboration and Communication is Key

### *KLIC Provides Educational Workshop on Preventing Horticultural Invasions and Joins Statewide Initiative*

By Jacqueline Kozak, HISC Outreach Programs & Community Relations Specialist

This year, the Kaua'i Landscaping Industry Council (KLIC) joined a statewide invasive species initiative introduced by the Hawai'i Chapter of the American Society of Landscape Architects (HASLA) with the endorsement of the Landscaping Industry Council of Hawai'i (LICH) to prevent the introduction and spread of invasive species by the industry.

In 2006, KLIC signed on to the Voluntary Codes of Conduct, a national program born from the summit "Linking Ecology and Horticulture to Prevent Plant Invasions" held at the Missouri Botanical Garden in December 2001. Almost seven years to the date, KLIC held its own workshop entitled "Preventing Horticultural Invasions on Kaua'i" on December 3, 2008 hosted at the National Tropical Botanical Garden (NTBG). KLIC invited every nursery and landscaper on the Garden Island to participate in the discussion about adopting the extensive species list as part of the statewide initiative. The Voluntary Codes of Conduct species list totaled fourteen species to remove from the industry, including the infamous Australian tree fern. HASLA's statewide list, which was com-

posed using information from the Hawai'i Weed Risk Assessment (WRA) and input from professionals in the industry, went above and beyond the original codes totaling 168 species to no longer use or to



Photos: Forest & Kim Starr

Mules-foot fern (left) and Australian tree fern (above) are both plants that KISC agreed to put on the "Do Not Use" list.

"plant with caution" due to invasive risks.

KLIC provided the December workshop as a forum to go over the list, specifically addressing seventeen species still commonly used in the industry that were suggested to remove. At the end of the day, KLIC members voted on the seventeen species in question and

(Continued on page 7)



## Upcoming Events!

- ◆ Aviation Safety Training (TBA)
- ◆ Snake Training (OAHU) June 8-11
- ◆ Banana Poka Roundup (Kokee) Sunday, June 21
- ◆ Hawaii Conservation Conference July 28-30
- ◆ Kauai County Farm Bureau Fair August 27-30
- ◆ Aquatic Invasive Species Workshop (TBA)
- ◆ KISC Strategic Planning Meeting (TBA)
- ◆ Arbor Day Event Nov 7
- ◆ Bowling for Biodiversity II (TBA)

## Mark Your Calendars!

## Ho`omanawanui (be patient and work with what you have)

By Keren Gundersen, Kaua`i Invasive Species Committee Project Manager

In these uncertain and strained financial times, it is easy to loose focus on what the big picture actually is. Everything we do is put under a microscope to analyze effectiveness, merit, value, and leveragability.

Stepping back and looking at what we have already accomplished, I am struck with the fact that, with the help of our very valuable partners, we have had many successes.

It has been 3 1/2 years since fireweed (*Senecio*

*madagascariensis*) has been detected, we have not detected a mature miconia (*Miconia calvescens*) plant since 2004, there have been many populations of false kava and *Arundo* that have been eliminated, and we are nearing completion of the coqui frog eradication project.

We have had, and still have, many outstanding people working for KISC. We also have the pleasure of working with great partners (some of them past KISC

employees) on many exciting projects.

Defining the value and merit of KISC to potential funders has made me realize that working at a “grass-roots” level has resulted in many successful projects, created many friends, and benefited many areas of this precious island.

**Ho`omanawanui. Look around. Take a deep breath. See the beauty.**

## A hui hou, Jackie Kozak!

### Aloha nui loa . . .

I'll never forget Jackie's arrival to Kaua`i. Fresh from working at Kalaupapa, on Moloikai, she was eager to learn all she could and embrace everyone she met with open wonder and charm.

Jackie, the Kaua`i Outreach Programs & Community Relations Specialist with the Hawaii Invasive Species Council, has played an integral part in making sure the community of Kaua`i is informed, educated, and enthused about the threats that invasive species pose. She has been tireless in her involvement with every conservation group possible: Garden Island Resource & Conservation Development, Kauai Landscaping Industry Council, the Department of Land and Natural Resources Division of For-

estry and Wildlife, US Fish and Wildlife, and many others. Jackie also looked for other avenues to interested people in conservation, such as with the Garden Island Arts Council, exploring ways to show children how to envision a landscape covered with invasive species.

One of Jackie's earliest outreach displays is still one of my favorite; she found a tiny pair of hiking boots (small enough to fit a toddler) and painstakingly glued dirt and weed seeds to the bottom of them in an effort to show how important it is to clean boots after (and before) hiking on our beautiful and precious island.

We will miss Jackie, her creativity, and her unwavering devotion to preserving Hawai`i,

as she pursues a state-wide outreach work located on Maui. We wish her all the best.

Malama pono, Jackie Kozak. We will miss you!





# Coqui News

Online at [www.hear.org/kisc/coqui\\_news](http://www.hear.org/kisc/coqui_news)

Kauai Invasive Species Committee

Work Notification

**By: Keren Gundersen, KISC Project Manager**

Efforts at the coqui frog infestation area in Lawai continue weekly. Ground-drenching with citric acid followed up with hand-capturing accessible frogs has reduced this population to only a few calling frogs a month.

Meanwhile, HDOA has been successfully clearing vegetation and debris from private property neighboring the site; altering coqui habitat.



Mugs Kaneholani using the spray gun to apply citric acid

Weekly work notifications are available online at [www.HEAR.org/kisc/coqui\\_news](http://www.HEAR.org/kisc/coqui_news).

KISC is committed to not only fighting to ensure eradication of this population in Lawai, but also works closely with HDOA to survey nurseries island-wide looking (and listening) for new introductions to Kauai.

Thanks go out to the Kauai Coqui Frog working group and especially to the neighboring residents of this infestation area who are our reporting “eyes and ears” as well as collaborators on this project.

Great job, everyone!

## REPORT COQUI FROGS!

## Nun’s Orchid - *Phaius tankervilleae*

**By Natalia Tangalin, NTBG**

*Phaius tankervilleae* is a large terrestrial orchid that has naturalized on Kauai in a wide ecological range, from Lowland Wet Forest to Montane Bogs. It is abundant along the North Fork of the Wailua River (Blue Hole) and on the roadsides below. It has wide pleated leaves, drooping white to cream colored petals and sepals that are tan to red-brown on the front. The lip of the flower is shaped like a funnel with reddish to purple markings. *Phaius* is one of the first Asiatic orchids plant explorers brought to Britain, arriving at the Royal Botanic Gardens Kew 1778. Its natural range extends through Southeast Asia, China, India, Peninsular Malaysia, Australia, and some Pacific Islands. It is named for a 19th century English orchid enthusiast, Emma Lady Tankerville. In the 1860’s Chinese emigrants brought the orchid to Hawaii. *Phaius* is recorded as naturalizing on Oahu by 1931 and was first collected by Tim Flynn as **naturalizing on Kauai in 1985**. *Phaius* has also naturalized in Florida’s swamps and on tracts of forested land that rise above them and at higher elevations on some Caribbean islands. *Phaius* seed are spread

by wind, but can also produce plantlets from old flowering stems. It is commonly known as the “Chinese Ground Orchid” or “Nun’s Orchid,” as the flowers are said to resemble a nun’s hood at prayer.



Sources:

Gettleman, Alan. The Rhyzome. April 2009. Platinum Coast Orchid Society. [http://www.platinumcoastorchidsociety.org/PDFs/RHYZ\\_April2009.pdf](http://www.platinumcoastorchidsociety.org/PDFs/RHYZ_April2009.pdf)

PTBG Herbarium

Reinikka, Merle. A History of the Orchid. Coral Gables: University of Miami Press, 1972.

## Preliminary observations of guava rust on Isenberg bush

By **Jeri J. Ooka, Ph.D., Associate Plant Pathologist**  
**Univ. Of Hawai'i Manoa, CTAHR, PEPS, KARC**



Figure 1. Guava rust (*Puccinia psidii*) lesions on Isenberg bush (*Rhodomyrtus tomentosa*).



Figure 2. Defoliated and dead Isenberg bush



Figure 3. *Puccinia psidii* infected *Rhodomyrtus tomentosa* with dead plants and replacement weeds in the background.

Guava rust, *Puccinia psidii*, first described from Brazil, was discovered on Oahu in April 2005 infecting nursery grown `ohia (*Metrosideros polymorpha*). Within the year it was also found on Hawai'i, Maui and Kaua'i. Reports of the rust from Moloka'i and Lana'i were received in 2007. The rust is macrocyclic. All spore stages occur on a single host. It has a wide host range mostly in the family Myrtaceae. Judging from the conspicuous epiphytotics during the last 4 years guava rust probably was introduced within five years or less of its recognition in 2005. The biotype introduced here is particularly virulent on rose apple (*Syzygium jambos*). Repeated defoliations and killing of the young leaves resulted in nearly complete elimination of plants throughout Hawaii.

Initially, Isenberg bush, *Rhodomyrtus tomentosa*, a prominent weed of hillsides on Kaua'i, appeared to be moderately susceptible to guava rust. Relatively few lesions were produced and only minor deformation of young leaves was evident (figure 1). Spore production did not reach the huge numbers seen in the rose apple epiphytotics. However, from 2007 to early 2009 environmental conditions apparently became ideal for epiphytotics in the pure stands of Isenberg bush over much of the windward side of Kaua'i. Like the rose apple, most severe infections occurred on the young foliage. The leaves were effectively killed and lost before becoming functional. Young terminal stems were also infected and killed. During the heights of the epiphytotics mature leaves may also be infected and severely damaged.

In April 2009, a preliminary road survey of the areas from Wailua to Kalaheo was undertaken to assess the extent of the damage to stands of Isenberg bush. Visually estimating mortality as function of canopy cover was attempted. The categories used were: trace, low, moder-

ate and high. The trace rating is where most plants appeared healthy and canopy cover was full. The low rating was given where a 25% thinning of the canopy was estimated. Moderate and high ratings were given for 50% and 75% or more canopy loss respectively.

Eight infested areas on the Kauai Agricultural Research Center (KARC) in the Wailua Homesteads were examined to begin quantifying host mortality. Ten plants about 15 mm diameter at the base per plot were examined close-up according to the criteria for the remote sensed observations above. If a plant appeared dead the bark was scraped off of the stem to see if it was living or dead. The species replacing dead and moribund Isenberg bush were also noted in these observation plots.

The road survey indicated most Isenberg

Table 1. Isenberg bush (*Rhodomyrtus tomentosa*) road survey observation points between Wailua Homesteads and Kalaheo, Kauai 16 April 2009

Site	Location	Assessment <sup>1</sup>
1	KARC North	Low to Severe
2	KARC South	Severe
3	Puu Pilo	Severe
4	Nounou Mt	Severe
5	Kipu Rd	Severe
6	Halfway bridge	Moderate
7	Maluhia Rd	Severe

<sup>1</sup> Ratings: low = 25%, moderate = 50% and severe = 75+% canopy thinning.

bush stands visible from public roads between Wailua Homesteads and Kalaheo were adversely affected (figure 2). The areas observed and their ratings are listed in table 1.

The condition of 80 plants at 10 plants-per-observation-site on the Kauai Agricultural Research Center is shown in table 2 below. Twenty five percent of the plants were dead and 67.5 % were rated as severely defoliated.

Plants replacing the Isenberg bush as its stands

## Statewide Invasive Species Committees Join Forces in Koke`e

*By: Jackie Kozak, Outreach and Community Relations, Hawaii Invasive Species Council*

Lihue, HI—For the first time in their history, statewide Invasive Species Committees, also known as “The ISCs,” gathered together on Kaua`i for a collaborative, four day service trip in one of Hawai`i’s most treasured natural areas, Koke`e State Park. Sixty-three staff members from Kaua`i (KISC), O`ahu (OISC), Maui (MISC), Moloka`i (MoMISC), and Big Island (BIISC) started their trek up the mountain on September 9, with the goal of making a significant impact on the invasive species that threaten Kaua`i’s native ecosystems, where many endangered flora and fauna call home.

The introductory safety briefing was given by Dr. Cliff Smith, who has been a pioneer in the invasive species field through his work with the University of Hawai`i. Since conception, the Invasive Species Committees have grown tremendously over the years. Thirty years ago, Dr. Smith

rapid response team that would have the resources to tackle incipient invasive species that pose the highest threat to our environment, agriculture, economy, and/or health. The target incipient species vary from ISC to ISC, with population numbers that make island control or elimination possible. Miconia has not yet been detected on Moloka`i, and so MoMISC concentrates on other species like Australian tree fern, which is in much smaller numbers there than on neighbor islands.

Even though these committees are fairly new (the oldest, MISC, formed in 1997, the newest, KISC, formed in 2001), they have had a lot of quantifiable successes since their inception. Populations of things like coqui frogs, miconia, little fire ant, and fountain grass would be at drastically increased population levels and more widely distributed without the ISC teams. They have prevented the spread of



Crewmembers from KISC, OISC, MISC, MoMISC, and BIISC

was among those who believed that we could make a real difference when it comes to invasive species in Hawai`i. He was amazed to see that now the idea has developed into formidable teams on each island that are supported by innovative and committed partnerships, each adapted to address their own unique island-based invasive species targets and issues.

The ISC partnerships are composed of federal and state government agencies, non-government organizations, and private business all working together with paid dedicated ISC staff. Invasive species know no boundaries, and so they demonstrate the necessity of statewide and island-wide collaboration and coordination. The ISCs do not have base funding and so grants and these partnerships are vital to their sustainability. The ISCs were created to serve as a

many high profile invasive species, contained them in limited numbers, and/or removed them completely from their island. Because of the ISCs, fireweed populations did not explode after being introduced on Kaua`i, fountain grass has not spread to the dry forests of Waianae on O`ahu, pampas grass was removed from gardens before spreading on Moloka`i, miconia has not taken over East Maui’s native forest, and community groups and landowners have joined BIISC to help control plume poppy on the Big Island.

The service trip to Koke`e presented another opportunity to make a difference. The focus on incipient species often leads the ISC field crew’s work into lowland areas, which are often dominated by alien species. Working in Koke`e showed them the connection between their efforts and native species.

*(Continued on page 8)*

# rust:

A plant disease caused by a fungus of the class Urediniomycetes. The characteristic symptom is the development of spots or pustules bearing masses of powdery spores which are usually rust-colored, yellow, or brown. Infected plants may also show distortions or gall-like swellings.

MICHAEL ALLABY. "rust." *A Dictionary of Ecology*. 2004. Retrieved May 19, 2009 from Encyclopedia.com: <http://www.encyclopedia.com/doc/1O14-rust.html>

## Guava rust on Isenberg bush (Continued from page 4)

thin and die usually are those already nearby. These include waiawi (*Psidium cattleianum*), uluhi, sword fern, Melastoma, albizzia, and many other exotic weeds (Figures 3 and 4).

While these rudimentary observations indicate that *Puccinia psidii* biocontrol of Isenberg bush is occurring naturally much more data are needed to determine the long term efficacy of the fungus for biological control of Isenberg bush. Furthermore, both rose apple and Isenberg bush epiphytotics need to be examined in relation to the conservation of 'ohia lehua and other native plants.



Figure 4. Replacement weeds around dying plants.

Table 2. Condition of Isenberg bush (*Rhodomyrtus tomentosa*) with guava rust (*Puccinia psidii*) on the Kauai Research Center, University of Hawaii Manoa, Wailua Homesteads, Kauai, Hawaii, April 2009.

Site	Location	Defoliation Rating <sup>1</sup>				Total
		Low	Moderate	Severe	Dead	
1	KARC	1	1	8	0	10
2	KARC	0	0	9	1	10
3	KARC	0	0	9	1	10
4	KARC	0	0	1	9	10
5	KARC	0	0	10	0	10
6	KARC	0	0	9	1	10
7	KARC	0	2	4	4	10
8	KARC	0	2	4	4	10
	Total	1	5	54	20	80
	Per Cent	1.25	6.25	67.5	25	

<sup>1</sup>Low = 25% defoliation, Moderate = 50% defoliation, Severe = 75% or more defoliation, Dead = dry wood under bark, no viable buds.

# Collaboration and Communication is Key (Cont. from page 1)

signed onto the list and statewide program at their first meeting of the new year in January of 2009. The discussion on the species included justifications from the WRA about potential for invasiveness, field observations of



Photo: Forest & Kim Starr

Paperbark is another species still commonly used in landscaping that was voted onto the "Do Not Use" list.

invasiveness from NTBG botanists and others in conservation, and benefits of the plants from nursery owners and landscapers. It demonstrated the importance of a continuing dialogue as new species are screened by the WRA, detected in remote areas and/or roadside surveys, and introduced either accidentally or intentionally for ornamental use.

In addition to the HASLA list species discussion, workshop participants listened to

presentations about the role of botanical gardens and the green industry in preventing horticultural invasions by the director of NTBG, Chipper Wichman and KLIC president and owner of Kaua'i Nursery and Landscaping, Lelan Nishek. Both agreed that education is the key; a role that botanical gardens and the industry can fill. Attendees who were new to the process learned about the history of the voluntary codes of conduct and the WRA from Christy Martin, Public Information Officer for the Coordinating Group on Alien Pest Species, who, with Chris Dacus of HASLA, have been working with the green industry for years to come up with collaborative approaches to invasive species issues, including this innovative and progressive statewide initiative.

At the end of the day, Trae Menard from The Nature Conservancy presented about the Kaua'i program's new weed mapping and control technology. The images, maps, and information demonstrated the enormous re-

sources and efforts that go into controlling species that have "jumped the fence" and invaded natural areas from landscaped and home garden sites. It was Menard's presentation at the 2006 Kaua'i Conservation Conference with distribution maps and photos that spurred the local industry's response to removing Australian tree fern from the shelves and landscaping projects. A report that mule's foot fern had popped up in a remote area in Wainiha Valley inspired KLIC to agree that it should make the "do not use" species list.

A consistent communication network connecting scientific information from WRA, field observations, and input from nursery and landscaping professionals will be crucial in preventing horticultural invasions, and the workshop was an important step in strengthening the link. "This has been a great team effort," said Chris Dacus of HASLA, "a nice example of conservation and industry working together, gaining a better understanding of each others concerns."

For more information on HASLA's statewide program and the complete species list, please visit the LICH website at <http://lichawaii.com/invasive-species.asp>. Mahalo to everyone who presented at and participated in the December workshop that led to KLIC adopting the HASLA list! Mahalo to KLIC for once again being a leader in the industry by setting a standard of stewardship and collaboration! Stay tuned for information on future KLIC workshops. If you are interested in getting involved in KLIC you can contact Vicki Bilderback at [Vicki\\_aloha@hawaiiantel.net](mailto:Vicki_aloha@hawaiiantel.net).

**Visit <http://lichawaii.com/invasive-species.asp>**

# ISCs in Koke`e (Continued from page 5)

“It is good to experience different landscapes and see native plants that you don’t get to see,” says Lori Buchanan, Manager of MoMISC, “It inspires us to continue working under challenging conditions to preserve Hawai`i’s biodiversity.” Buchanan also said that she knows her sole field crew staff member from Moloaka`i, Kamalani Pali, truly appreciated the chance to meet others who do the same type of work.



*Tibouchina urvilleana*

The ISCs partnered with the local Koke`e Resource Conservation Program (KRCP), who is dedicated to managing some of the invasive species in this precious area. KRCP, who is sponsored by the Garden Island Resource Conservation & Development, Inc., is a collaborative project with DLNR’s Division of State Parks and Division of Forestry and Wildlife. It involves coordination of volunteers to remove invasive weeds from selected areas of Koke`e’s native forest. KRCP’s use of volunteers gets a larger job done, as well as raises community awareness about the need for partnerships and community-based management of the unique ecosystems of Koke`e and the Alaka`i Wilderness Preserve.

The impressive lineup of ISC and KRCP staff working hand in hand to remove weeds from the forest attained the goal of making a significant impact. The total numbers of weeds removed were astounding: 28,927 Himalayan ginger, 891 privet, 4682 strawberry guava, and 1701 smokebush.



*Buddleia madagascariensis*

Total acreage covered was 25.4 in the Buddleja area and 2.4 in the ginger area. Total work hours were 972! Katie Cassel, Coordinator for KRCP, said, “the donation of this much time is a tremendous boon for Koke`e, as we were able to tackle weeds and areas that would not have been otherwise very feasible with our small staff. The *Buddleja madagascariensis*, in particular, has been noted by local leaseholders to be spreading much further and more rapidly than ever before. This ISC project allowed us to treat the entire large core area.”

The native forests on the Koke`e plateau in northwest Kaua`i represent some of the most diverse and botanically rich forests in Hawai`i. Ensuring the continued existence of native dominance and regeneration in these plant communities is crucial to preserving local and global biodiversity, as well as preserving a cherished cultural resource.

The entire native plant communities exist nowhere else on earth. “We really appreciate all the hard work of the ISC’s, and particularly the public outreach work they do to raise awareness of the devastating effects of invasive weeds on our ecosystems,” Cassel said.

In addition to removing this magnitude of weeds from the heart of the Garden Isle, the ISCs also concentrated on teambuilding activities, exchanging information and strategy techniques, and deepening the `Ohana connection that is felt between these stewards of the `aina across the archipelago. “It helped us realize that we are a part of a statewide movement and reaffirmed for the field crews that what they do is really important,” said OISC Manager Rachel Neville, “seeing Koke`e and being reminded of what a Hawaiian forest is supposed to look like, reminded me of why we get up every morning.”

Many of the participants, although some born and raised in Hawai`i, had never had the opportunity to visit Koke`e, so they also enjoyed their hike on Pihea Trail for the breathtaking view of Kalalau Valley, an image that is synonymous with Kaua`i.

When asked what this experience meant to him, Joe Kona, KISC Field Operations Leader said, “This trip gave all of the ISC workers a chance to meet each other, which we’ve never been able to do before. It was a great idea for getting the field crews together to hear about work being done on other islands.” Neville agreed and added, “The field crews are dedicated and work really hard because they love Hawai`i and want to make sure our unique environment is still around for the next generation.”

Results of ISC Survey	
<b>Facility/Location*</b>	
Housing.....	4.1
Meals.....	4.0
<b>Work Activities*</b>	
Targets .....	3.9
Work Challenge .	3.5
Terrain.....	3.8
Location .....	4.1
<b>ISC Interaction*</b>	
Evening activities	4.2
Team Bldg event	3.5
<b>Participate Again? Yes 100%</b>	
<b>Which event? ..ISC 87%</b>	
*on a scale of 5	



# Kaua`i Lagoons Golf Club - Marriott International

The Kaua`i Marriot and the Kaua`i Invasive Species Committee (KISC) teamed up to remove the island's only known pampas grass population located at the Kaua`i Lagoons Golf Club. The partnership project was an important step in an ongoing, long-term program dedicated to habitat protection and restoration on the property.

With native nene, stilts, plovers, koloa ducks, and

coots watching, the crews worked together over a two day period to rid the area of the infamous invasive, hauling the pulled weeds to the Kaua`i Lagoons green waste site, where KISC will monitor for re-sprouts during the next several years to assure a completely successful eradication.

"This project was a win-win for the environment and community," said Dan Shea, Director of Grounds, "It further dem-

onstrates Marriot's commitment to being stewards of the land. And, this project, in particular, will help Kaua`i Lagoons Golf Club attain certification in Audubon International's program for golf courses and the environment. Besides those benefits, the removal of this invasive species was the right thing to do."

Thank you Kaua`i Lagoons!



# INVASIVE SPECIES SEARCH

*Don't forget to look backwards and diagonally!*

S	U	R	I	V	E	L	I	N	T	S	E	W	E	O	P
P	F	L	V	S	L	M	M	O	G	N	T	E	O	S	P
V	A	I	Y	L	S	Z	A	I	N	O	C	I	M	H	R
C	L	T	G	N	L	A	P	E	W	W	M	E	E	P	N
O	S	T	O	D	N	U	R	A	N	F	P	Y	C	E	M
Q	E	L	U	T	I	X	V	E	D	L	U	J	H	G	W
U	K	E	R	S	S	A	R	G	S	A	P	M	A	P	M
I	A	F	D	L	S	F	C	L	G	K	Z	O	E	E	K
A	V	I	A	N	I	N	F	L	U	E	N	Z	A	P	E
Q	A	R	T	F	Y	I	F	T	Z	C	O	E	S	A	R
E	D	E	E	W	E	R	I	F	Y	O	O	J	I	Y	C
V	R	A	E	L	I	F	T	S	U	R	A	I	H	O	U
B	C	N	S	S	A	R	G	N	I	A	T	N	U	O	F
R	O	T	S	P	O	I	E	O	E	L	N	A	L	O	E
L	O	N	G	T	H	O	R	N	K	I	A	W	E	X	G
N	E	A	K	K	A	L	N	V	G	D	A	M	L	I	T

**Word list:** MICONIA, IVY GOURD, ARUNDO, AVIAN INFLUENZA, WEST NILE VIRUS, SNOW FLAKE CORAL, FOUNTAIN GRASS, COQUI, LITTLE FIRE ANT, PIGS, FLASE KAVA, FIREWEED

The challenges of ridding various places of encroaching invasive species are many and varied with one of the first being trying to find them! Teeny-tiny insects, weeds among other weeds, hidden frogs that "throw" their voices, or even clever vertebrates that avoid detection by camouflage are all obstacles that workers must overcome.

Identifying the culprit is another challenge. Which weed among weeds is the target? Luckily, Kaua`i has the National Tropical Botanical Garden as a resource for identifying plants or potential new invasive species. Check out their website at <http://www.ntbg.org/>

Sometimes in the hunt, you might find something that you weren't originally looking for! It is always important to make note of it (take a GPS point, a picture, or, if possible, a sample). It is often easier to see what shouldn't be there than to spot what you are looking for. Good luck in your search!

# Early Detection:



Photo: Forest & Kim Starr

**Fire Spike**  
**(*Odontonema cuspidatum*)**

During a roadside survey conducted in 2007, this plant was spotted at four sites. KISC crews are conducting delimiting surveys to determine whether this plant can be eradicated from Kaua'i. If you have any information regarding the location of this plant, please contact KISC. **Mahalo**

**The Kaua'i Invasive Species Committee (KISC)** is a voluntary partnership of government, private and non-profit organizations, and concerned individuals working to prevent, control, or eliminate the most threatening invasive plant and animal species in order to preserve Kaua'i's native biodiversity and minimize adverse ecological, economic and social impacts. **KISC is a project of the Pacific Cooperative Studies Unit.**



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