Kia`i Moku
guarding the island

WHAT'S INSIDE?

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A PUBLICATION OF THE KAUA`I INVASIVE SPECIES COMMITTEE

Notable Quote

"A true conservationist is a man who knows that the world is not given by his fathers but borrowed from his children."

-Audubon

EARLY DETECTION: KISC GETS PROACTIVE

By Kristin Hall, KISC Project Facilitator

The Kaua`i Invasive Species Committee (KISC) has increased their focus on Early Detection in 2007-2008 and are employing a proactive approach to weed control. Early detection strategies, such as roadside and nursery surveys, enable conservationists to identify threats before they become widespread and out of control. By adding early detection to their toolbox, KISC has taken an aggressive step towards preventing new and destructive invasive species from establishing on Kaua`i.

Using the Maui Early Detection Roadside Survey as a guide, KISC collaborated with area experts from State, Federal and private organizations to develop a list of plant species that were either not known to occur on Kaua`i or only known to occur in limited numbers. The list consisted of 65 plants. A survey guide of the target species was developed as a training tool for the survey crew who were also encouraged to document other species of concern, not necessarily included on the list, while surveying.

Photo by Jackie Kozak: NTBG "Rock Star" Botanists Natalia Tangalin and Clay Trauernicht diligently surveying.

The Early Detection roadside and nursery surveys were conducted under a contract agreement with the National Tropical Botanical Garden (NTBG). The survey team consisted of NTBG botanists Natalia Tangalin and Clay Trauernicht, with logistical support from Margaret Clark. The contract was fulfilled on November 30th, 2007.

During the project, 473 miles of road were surveyed and 738 locations for 60 potentially new invasive species were recorded on Kaua`i. Twenty nursery surveys were also conducted. Results of the Early Detection Survey provide a baseline of data for future early detection research on Kaua`i. Survey results will likewise be used by KISC to refine their current target list, guide future partnership collaborations, and enhance outreach education. To access the complete Early Detection Report online please click on: http://www.hear.org/kisc/pdfs/2007kiscroadsidesurvey.pdf . You can also find a link at KISC's website www.hear.org/kisc/.

Spotted knapweed

Costly consequences

Early detection of incipient invasions and quick coordinated responses are needed to eradicate or contain invasive species before they become to widespread and control becomes technically and/or financially impossible.

Populations that are not addressed early may require costly ongoing control efforts. Spotted knapweed was introduced to Montana in the 1920s, and by 1988, had infested more than 4.7 million acres. The economic impact is approximately **$42 million annually** (Westbrooks 1998).

See more on this at: http://www.invasivespeciesinfo.gov/council/actionc.shtml

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

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

Most of the time my greatest accomplishments are a direct result of the accomplishments of others.

An example of this is our ongoing coqui eradication project in Lawai. This project has been a collaboration of many people; agencies, volunteers, contractors, cooperators, neighbors, and our own hard-working KISC crewmembers.

All of these partners have helped me to step back and take a better look at strategies and communication.

The result of this has been tremendous in moving this project forward. We have developed a strong Coqui Working Group, better communication with the county of Kaua`i, an example-setting work-notification system, and a methodical timeline for success. Tracking our progress has become more efficient and has even involved developing new methods of measuring calling frogs with digital recorders.

Everyone's participation helped to promote this coqui eradication project as not only my accomplishment, but theirs as well.

"Working with what you have" increased capacity and is making this project a great success.

Ho`o manawanui. Look around. Take a deep breath. See the beauty.

BLACK WATTLE (*Acacia mangium*)

This is the first of a series of articles from the botanists of National Tropical Botanical Garden on new potential weeds discovered on the recent KISC Early Detection Roadside Survey.

By Natalia Tangalin, NTBG Field Botanist

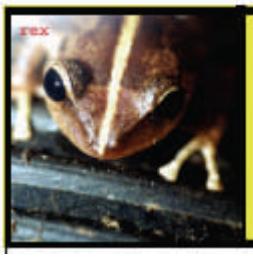
Acacia mangium (Fabaceae) (photo) is one of nearly thirty plants discovered as newly naturalized by surveyors during the KISC Early Detection Roadside Survey. This extremely fast growing medium-sized tree is native to northern Queensland in Australia, Papua New Guinea, Irian Jaya, and the Moluccan Islands in Indonesia. Common names for it include Black Wattle, Hickory Wattle, Mangium Wattle and Mangium.

Acacia mangium can be recognized by its wide phyllodes and distinctive coiled pods that split to reveal shinny black seeds hanging by bright orange pulpy funicles (see photo). *A. mangium* produces numerous seeds that are probably dispersed by birds. It has been known to naturalize in Puerto Rico, Brazil, Saipan, Pohnpei, Yap, Sabah, Africa, Melville, Island, and northern Australia. This species was probably cultivated as a forestry tree and has escaped from plantings in the Wailua Homesteads area.

Natalia Tangalin can be reached at ntangalin@ntbg.org

Sources:
Forest Starr, Kim Starr, and Lloyd Loope, USGS--Biological Resources Division
John K. Francis, International Institute of Tropical Forestry, USDA Forest Service

Unique curly pods of *Acacia mangium*



Coqui News

Online at www.hear.org/kisc/coqui_news!

Kauai Invasive Species Committee

Work Notification

By: Keren Gundersen, KISC Project Manager

It is 7:30 pm and the sharpness of the day is fading as the sun sinks lower toward the horizon. The KISC crew is working quickly and quietly to clean white hydrated lime residue out of the 200 gallon sprayer. Their goal is to prep the tank for a load of mixed citric acid for their first foliar spray of the night. Their target: *Eleutherodactylus coqui*.

KISC crew mixes citric acid

This tiny arboreal frog from Puerto Rico invaded roughly 15 acres of steep and heavily vegetated wild-land near a residential community in Lawai, on Kaua`i, in 1999. Since they were reported to the Hawai`i Department of Agriculture in 2001, efforts have been underway to eradicate this population before it becomes out of control and spreads elsewhere across Kaua`i.

Hindered in the past by lack of funding and manpower, efforts at this infestation site were sporadic and ineffective. Heavy vegetation provided ample hiding places for the frogs and prevented direct contact with the citric acid.

In 2005, after formation of the Kaua`i Coqui Frog Working Group, a work-plan was formulated with major input from neighboring residents and Kukuiula Development (a nearby concerned developer). Other partners in this working group include Hawai`i Department of Agriculture, DLNR Division of Forestry and Wildlife, KISC, and the College of Tropical Agriculture and Human Resources (CTAHR).

Funding was secured from the state legislature and the County of Kaua`i. Purchase of a shipment of 88,000 pounds of citric acid directly from China garnered considerable savings. During the summer of 2007 a crew of 6 members, led by KISC Field Supervisor, Joseph Aguon-Kona, was hired to work at the site 40 hours per week.

www.hear.org/kisc/coqui_news

The primary methods of control for this project have included vegetation removal, ground drenches of a 3% solution of hydrated lime, and foliar applications of a 16% citric acid solution.

Tiny coqui frog

This increase in work effort at the site continued into November, 2007 when the temporary crew completed their term. All of these efforts seem to be indicating substantial progress at eliminating the frogs from this site.

Very few calling frogs have been heard as the KISC crew continues to work at the site keeping vegetation at bay and spot-treating calling frogs.

Work notification and updates can be found at KISC's website at www.hear.org/kisc/coqui_news.

Remember to report coqui to 643-PEST!

Safe Handling

Use rubber gloves

Place each bird in a bag

Fill out a reporting form

Christy Martin *is the Public Information Officer for the statewide Coordinating Group on Alien Pest Species (CGAPS), a public/private partnership working to protect Hawai`i from invasive species.*

"Got Dead Bird?" An unusual request for help

By: Christy Martin, CGAPS Public Information Officer

If you're looking for an unusual way to give back to your community, consider dead birds. Reporting them for disease testing, that is. The Hawai`i Department of Health, U.S. Fish and Wildlife Service and KISC are asking for everyone's help in the early detection of two diseases – West Nile Virus and bird flu (avian influenza). These two diseases are not yet present in Hawai`i, but they could arrive. If either disease were to arrive, experts believe that the health of local birds would be affected. Since both diseases can sicken and kill birds, Hawai`i's birds can serve as a sentinel for either disease; the proverbial canary in the coalmine.

Finding a dead bird could mean that West Nile Virus or bird flu is present. Anyone finding a dead bird that is fairly fresh (not decomposed), and not flattened (a run-over flat bird is not testable) is asked to call 211 to report it for testing, or report it online at www.gotdeadbird.org.

The toll-free 211 number may be dialed direct from any island and most cell phones, and it is answered by Aloha United Way operators. The operators will make sure the bird is appropriate for testing, and will send trained agency staff to pick up the bird and deliver it to the Hawai`i Department of Health State Laboratory for disease testing.

West Nile Virus is a disease that spreads to people, birds and other animals when mosquitoes bite infected birds. West Nile Virus was introduced to New York in 1999, and has spread across the U.S., Canada and Mexico with migrating birds. To date, Alaska and Hawai`i are the two states that do not have the virus, and Hawai`i officials are working to prevent the disease from arriving here. Since 1999, West Nile Virus has killed 967 people, and sickened more than 24,000 in the U.S. The virus has also caused some populations of birds such as crows to decline as much as 45%. Should the West Nile Virus arrive and become established in Hawai`i, human illnesses can be expected and possibly some deaths, along with the possible extinction of many of our remaining native birds. Bird flu is a virus that usually affects birds and can be passed from bird-to-bird, much like our human flu virus is passed from person to person. Bird flu is highly contagious between birds, and has caused millions of deaths in wild and domestic birds in areas where the virus has spread. So far, areas where the virus has been found include Asia, parts of Europe, Africa, and the Near East. Although it is rare for people to catch bird flu, there have been roughly 200 cases to date, most cases were caused when people came into direct contact with excretions or fluids of infected birds, or contaminated surfaces.

Although these are two separate and different diseases, the role that we each play in protecting our communities is the same: Report dead birds to 211 or www.gotdeadbird.org.

Dead bird picked up by Joshua Fisher, U.S. Fish and Wildlife Service avian influenza specialist

Long Thorn Kiawe: Machine vs. nature

A partnership project with PMRF and NAVPAC to remove *Prosopis juliflora*

By: Keren Gundersen (KISC), John Burger (PMRF), Vanessa Pepi (NAVPAC)

What plant has 3" long thorns with toxin on the tips, has thorns so hard that they can puncture car tires, grows in the hottest spots on Kaua`i, and is almost impossible to kill? If you guessed Long Thorn Kiawe (LTK) (*Prosopis* juliflora), you would be correct.

When the Kaua`i Invasive species Committee was just a newborn, at the end of 2001, herbicide trials were conducted at the Pacific Missile Range Facility (PMRF) on their large and impenetrable population of LTK. Partnership agencies participating in this experiment included the College of Tropical Agriculture and Human Resources (CTAHR), Hawai`i Department of Agriculture (HDOA), DLNR Division of Forestry and Wildlife (DOFAW), Army Environmental, Koke`e Resource Conservation Program (KRCP), Kaua`i Invasive Species Committee (KISC), and PMRF personnel. These experiments proved several things: LTK was hard to kill, what proved most successful was later found to be undesirable in that environment, and, most importantly, this target would forever be destined to be a partnership project.

Eradication of Long Thorn Kiawe from Kaua`i seemed to loom in the distant future when looking toward the large (and predominantly politically inaccessible) population at the Department of Defense's Pacific Missile Range Facility on Kaua`i's west side.

Outside of the base, the back-breaking manual labor of cutting the stump with chainsaws and painting it with herbicide seemed to be the only solution to a horrible 65+ acre problem.

In 2006, this all changed. With a vision of environmental responsibility, John Burger, PMRF Environmental Liaison, and Vanessa Pepi , Fish and Wildlife Biologist with the Naval Facilities Engineering Command, stepped in with a radical idea: grind the trees down with a hydro-axe, scrape the debris away with a bulldozer, and then manually cut the stump clean and treat with herbicide.

This dream has become a reality and after three removal projects, approximately 16 acres have been cleared, with a contractor expense of nearly $75,000. KISC and HDOA crews are the manual labor portion of these projects; cutting the stumps and then later following up to monitor the sites.

`Ilima (*Sida fallax*)

An unexpected bonus of this project has been the recruitment of native plants in areas that have been cleared. Selective clearing with the hydro-axe as well as careful and responsible herbicide treatment on re-sprouts will help to re-populate this once inhospitable section of coastal strand.

Of the approximately 13,000 alien species of plants that have been introduced to Hawai`i, only about 1%

1%

(**130 species**) of those have become invasive so far. Biological evidence suggests another 200-300 species already present in the state may become problems in the future.

http://www.state.hi.us/dlnr/dofaw/hortweeds/

DO NO HARM

Implementing Hazard Analysis and Critical Control Point (HACCP) planning in natural resource work in the Hawai`ian Islands

By: Jeffrey J. Herod, U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office

My request is to practitioners of conservation in the Hawai`ian Islands - please make every effort to do no harm. Specifically, be aware of the potential to unintentionally move plants, animals, and pathogens from one work area to another. Toward this end, I would like to point out a helpful tool: Hazard Analysis and Critical Control Point (HACCP) planning.

HACCP was developed in the 1960s by Pillsbury and NASA to address food quality in outer space. It has been refined for industry, and you can find HACCP models and approaches in the poultry, seafood, and dairy industries. HACCP has also been adapted to natural resource management. The U.S. Fish and Wildlife Service adopted and modified a version of HACCP that was being used by Sea Grant.

Five-step HACCP is used by the U.S. Fish and Wildlife Service for fisheries, aquatic habitat conservation, and restoration projects. Executive Order 13112 can be satisfied in spirit and intent through the development and implementation of HACCP plans. The goal is to prevent and control organisms that were not intended to be part of the process from entering into or persisting in the process. It is necessary to move people and equipment from work area to work area, but HACCP can help to make sure you move only what you intended to move. Developing HACCP plans for monitoring and treating invasive species, surveying for rare species, and implementing habitat restoration projects will help to ensure that you do no harm.

USFWS biologist, Chris Metcalf, taking stream habitat measurements
Photo credit: Theresa Thom

I invite you to visit the national website: http://www.haccp-nrm.org/ or contact me at 808-792-9462, or email jeffrey_herod@fws.gov.

WON'T YOU BE MY NEIGHBOR?

By: Jackie Kozak, HISC Kaua`i Community Outreach Specialist

With the introduction of the Hawai`i SuperFerry to our state's travel options, greater awareness and concern was raised about the inter-island transport of invasive species. As one of the central issues in the public discussion, it also brought more attention to air-traffic and container shipments as potential vehicles for invasive species as well.

Yes, Hawai`i is one state, but as an archipelago each island has evolved its own unique character. This is especially true from an ecological standpoint. Each of the islands hosts species that are only found on that particular island. And, just as there are native flora and fauna that are single-island endemics (botanically, Kaua`i has the greatest number of single-island endemics clocking in at 225 species found on our island alone), there are also invasive species that reside on each of the islands that are either not found or in lesser numbers just one neighbor away. This means that each island has its own, special species to protect and pests to prevent.

The most obvious of these cases are among KISC's top priority targets. Kaua`i is known for its absence of mongoose, enjoying the only growing nene population in the state and boasting several other healthy species of ground-nesting seabirds. After years of hard work, KISC's crew has entered a monitoring phase at Kaua`i 's only known established coqui site (which is nice and quiet these days), whereas our ohana on the Big Island have over 200 sites with some populations reaching densities of over 15,000 frogs per acre!

Miconia changed the way that the Pacific, and even the world, viewed the potential of a plant to destroy whole watersheds. Unfortunately, Tahiti, with over 75% of its forest surrendered to what is known as the green cancer, serves as the warning call. In three years, KISC has not found a flowering miconia, despite active ground and aerial surveys. Not to say that we have achieved eradication, but our friends in Hana, on Maui, who have lots of Miconia to contend with and are pretty amazed that we have to actually search for something that has claimed over 100,000 acres on the Big Island alone. Speaking of the Big Island, coffee field-workers have left their jobs due

(continued on page 8)

5 ways to be a Good Neighbor

1. Keep it Clean!

A muddy car, truck, motorcycle or ATV is the perfect vehicle for weed seeds and other critters hiding in the caked dirt. It is confirmed that coqui frogs can and have hitchhiked. Each Hawaiian Island is different and special, which is why you want to visit. By washing up, you can help to keep it that way.

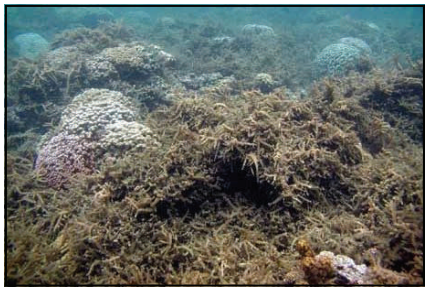
2. Check your Gear!

Going fishing? Plan to dive at a new reef? Check your gear for invasive algae (limu). It takes only one small piece of algae to start a new infestation. Make sure the gear is clear and you will help to save our beautiful reefs from these marine invaders.

3. Scrub your Boots!

Just like tire treads, the bottom of your boots can carry a lot of junk. Use a boot scrubber so that you don't take any weed seeds on the hike. Miconia seeds are as small as tiny poppy seeds, so they could easily get tracked. Check out DOFAW & KISC's new scrubber at the Moalepe trailhead!
***Special note to hunters:** Protect the forest by cleaning your clothing, gear and animals of any stowaways prior to your next hunting trip.

(Continued on page 8)



Invasive limu, gorilla ogo

Tiny little red fire ant

Young miconia plant

5 ways to be a Good Neighbor

(Continued from page 7)

4. Get those Plants Inspected!

Help support our local farmers by preventing the spread of agricultural pests. Inspectors at the Hawai`i Department of Agriculture must inspect your plants and produce prior to your trip. This helps avoid the accidental transport of something that could result in millions of dollars of crop damage in the future.

4. Learn More and Be on the Lookout!

Listen to what a coqui frog sounds like. Identify the major invasive species on your home island (sign up for KISC announcements and visit www.kauaiisc.org). When visiting a new island, find out which invasive species it is trying to keep out. Visit the Hawaiian Ecosystems at Risk website at www.hear.org for more information.

Won't you be my neighbor?

Continued from page 7

to the stings from a tiny guy known as *Wasmannia auropunctata*, or little fire ant. Easily spread through plant material, little fire ants are only known to be present in one contained population on Kaua`i in Kalihiwai.

And let's not forget about underwater invaders. As the state's hub, O`ahu has more populations of several different species of invasive algae (or limu) than any of its neighbors. Volunteers remove tons and tons of alien algae like *Gracilaria salicornia*, or gorilla ogo, from the shores, while this species has yet to be found on Kaua`i. Alien algae not only smother the reefs and displace native, edible kinds of limu, but it also piles up on beaches. It costs $20 million of losses and for removal on Maui alone.

So what can we do to protect Kaua`i and be good neighbors to the rest of the islands? Molokai, for example, doesn't have miconia or coqui, among others of KISC's targets, so the practice and prevention can work both ways. The sidebar shows five simple ways that each of us can participate in preserving biodiversity and each island's character. This list was submitted to the Hawai`i Super-Ferry from the Hawai`i Invasive Species Council's Public Outreach Working Group to provide to passengers in preparation for their trip. HISC is also in the process of presenting to the staff for all other inter-island transport companies so that they know what to look and listen for as our first defense.

Check out our handy list of how you can be a good neighbor!

1st International Bowling for Biodiversity

February 26, 2008 is a date that went down in history as one which debuted a championship bowling team: the Nature Conservancy, Kaua`i .

Winning with averaged scores, TNC Kaua`i was able to barely pull off the win with less than a tenth of a point over the team from the National Tropical Botanical Garden.

The "Bird" team (comprised of the Seabird project, the bird recovery project, and Koke`e Resource Conservation Program) came in second; with KISC's mighty team coming in last.

Much fun was had by all at this 1st annual tournament. [Pictures are not available due to camera restrictions while league play took place.]

The winning team was presented with a vintage 1956 bowling trophy complete with a brass plated figure and bowling pins and a genuine solid onyx base. A tiny maile lei hung from the diminutive bowler to complete the award.

Thank you to all who participated. We look forward to future tournaments of skill (and luck) in support of unifying Kaua`i's conservation community and ohana.

Coveted vintage 1956 trophy

Most Valuable Partner:

KAUA`I Division of Forestry & Wildlife

What started as a KISC Americorps project ended up being completed by the KISC crew in partnership with Craig Koga and DOFAW's Na Ala Hele program.

The sign was designed and built by KISC with materials mostly donated by Kaua`i's DOFAW. This kiosk also features a custom designed and built boot scrubber.

Outreach materials about miconia as well as a trail map are also featured on this kiosk.

This sign can be found at the trailhead of Kuilau Ridge Trail in Wailua just prior to the Arboretum at the top of Kuamoo Road.

Come and see it!

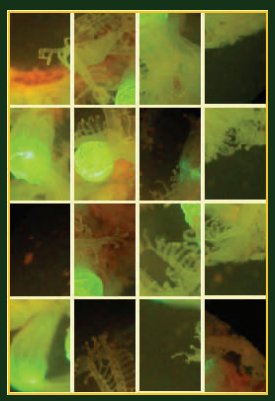
Trailhead sign with boot scrubber at Kuilau Ridge Trailhead

Invasive Species Scramble

Can you guess what invasive species these are?

1

2



3

4

Answers: 1. miconia 2. snowflake coral 3. coqui frog 4. Ivy Gourd

Non-indigenous species [can] harm natives by competing for scarce resources in what ecologists call ***scramble competition***. Invasive species often seem capable of out-competing native species by sequestering water, nutrients or food more efficiently. For example, invasive plants typically outcompete natives by shading them or using scarce water.

When a species interferes with or harms another in the competition for resources, ecologists call it ***interference competition***. Invasive species clearly demonstrate this tactic. For example, many invasive animals exhibit aggressive behavior that drives native animals out of their natural ranges, and invasive plants may produce toxins (phytotoxins) that inhibit the success of native plants.

Check out full article at:
http://nsgl.gso.uri.edu/flsgp/flsgpg05001.pdf

Fireweed (*Senecio madagascariensis*)

Mugs Kaneholani pulling *Salvinia molesta* from Kapa`a Stream

Visit

http://www.lichawaii.com/invasive_species.htm

To learn more about the invasive plant assessment list from the Hawaiian chapter of the American Society of Landscape Architects; what plants ***NOT*** to plant!

***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.*

www.kauaiisc.org

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