

# TKC Leaflet: December 2006 Newsletter

## Front

### Winter Solstice



**Photos:** Seahorse chess piece (**left**) and "United We Grow" mural (**lower right**) created by students in the Hidden Jewels Program at Kohala Elementary School.

*"In the early part of this century people used up resources and dumped waste as if there were no end to anything, whereas today even the smallest children have genuine concern for the quality of the air and the water and the forests and animals....There is a new consciousness in the world, a new sensitivity to reality. Based on that, I am confident that the next century will be better than this one."* – Dalai Lama Interviewed by Robert Thurman, November/December 1997 Issue of **Mother Jones**



As we approach the seasonal passing of one year and beginning of a new one, it is common to reflect. When one reflects on the first five years of The Kohala Center and the collaboration that is at the center of its work, one cannot help but be inspired. The Center is an unconventional idea that has taken root and become something of significance. The Kohala Center (TKC) is not a branch of any university, but rather a wholly community-driven,

community-based organization which works through partnerships. Over the years, TKC's partnerships have connected world-class cultural and scientific expertise on the island with universities and research agencies of the very highest quality from the State of Hawai'i, the U.S. Mainland, and beyond. TKC consciously connects these partners to the wisdom of Island communities – resulting in a series of conversations which are mutually beneficial, conversations that generate new knowledge that helps communities on the island and around the world thrive. Serious issues such as energy management, food production, and economic development are now on the table. We have much to be thankful for.

Read [The Kohala Center Story](#), a presentation to the Kona-Kohala Chamber of Commerce by Matt Hamabata, Executive Director.

## Natural Laboratories



**Photo:** 2005 Hawai'i Field Ecology course participants in Kealakekua Bay, diving to survey for coral diseases. Photo courtesy of Professor Drew Harvell.

The amazing “natural laboratories” of Hawai'i's diverse endemic ecosystems are the focus of *Hawai'i Field Ecology*. This winter break course is sponsored by Cornell University's Department of Ecology & Evolutionary Biology, in collaboration with The Kohala Center. A group of fourteen graduate students and three professors will visit Hawai'i Island in January 2007. The course will investigate important unanswered questions about Hawai'i's endemic ecological systems and build skills in the techniques of ecological field research. The course is designed around three independent research projects which are developed collaboratively by the students and their professors and which will expose the students to three of the major ecosystems found on the Island of Hawai'i: coral reefs, anchialine ponds, and oh'i'a forests. This is the second time this course has been hosted by The Kohala Center – the inaugural offering of the course was in January 2005. [Learn more.](#)

## A Paradigm Shift



**Photo:** Brown student reflecting in Hawai'i Volcanoes National Park. Photo by Vanessa Parker-Geisman.

When Dr. Robin Rose, Director of [Leadership Programs at Brown University](#), was on Hawai'i Island a few years ago, she bumped into the concept of the *ahupua'a*, a framework for understanding the watershed as a living organism which stretches from the mountains and into the sea. The Hawaiian concept of *ahupua'a* management is a systemic, complex, and rigorous way of understanding nature that Western science is only beginning to approach. (Note, for example, the traditional Western intellectual "silos" of the terrestrial and ocean sciences.) The Western environmental concept of stewardship is challenged by the Hawaiian sense of kinship, in which the forest, the streams, the ocean, and the creatures which inhabit them are integrally related to people.

The Hawaiian worldview inspired Dr. Rose to develop a new undergraduate program at Brown University: [Ahupua'a: Life Systems of Traditional Hawai'i](#). For The Kohala Center, this program enhances the national and international public's understanding of Hawaiian science and culture. Brown students are introduced to the Island's spiritual and cultural landscapes by members of the Edith Kanaka'ole Foundation, starting with appropriate protocols. They visit [Ni'aulani Forest](#) at Volcano Art Center, hike into [Kilauea Iki Crater](#), learn about traditional arts and some of the fundamental aspects of Hawaiian culture, and explore Hawaiian approaches to managing resources and the land. Students even participate in the annual Hawaiian Islands Humpback Whale National Marine Sanctuary [Ocean Count](#). The goal of the course is to show students how Hawaiian concepts of resource management can enlighten Western science.

Read more about the [2006 Program](#).

## Call for Volunteers



**Photo:** Sara Peck (**wearing a hat**) assists students with tide pool monitoring along the coast south of Kealakekua Bay. Sara is the UH Sea Grant Extension Agent for Hawai'i Island, and she helped start the ReefTeach Program at Kahalu'u Bay in 1999.

In any given year, thousands upon thousands of people use Kahalu'u Bay. We need to reach them and teach them about the life of reefs, so that our precious and beautiful bay can be around for many more generations to enjoy. We need your help as teachers. Join the [ReefTeach Program](#) as a volunteer. Contact the marvelously gifted and marvelously fun, Cindi Punihaole, who is organizing the work at Kahalu'u Bay. Cindi can be reached at [HanoHanopuni001@aol.com](mailto:HanoHanopuni001@aol.com) or at 808-895-1010. You can also volunteer through [info@kohalacenter.org](mailto:info@kohalacenter.org). Come and join us at the beach, and help us do some good.

## Call for Students



**Photo:** BELL students assist with capturing, weighing, measuring, assessing, and tagging green sea turtles (*honu*) in Kiholo Bay, then release them unharmed back

into the wild.

The Kohala Center is offering four scholarships for Island high school students to the [Brown Environmental Leadership Labs \(BELL\)](#) on Hawai'i Island this April. Substantial need-based assistance is available. The rewards for student participants are equally substantial. Students make new friends from across the country and around the globe. They participate in a national leadership program from right here on Hawai'i Island. They learn about challenges to the Island's natural and cultural resources, and they consider how these challenges can be extrapolated to a global environmental context. They visit unique places and experience new facets of the Island. They work with over a dozen outstanding environmental and cultural leaders. And, most importantly, they are introduced to systems thinking and the concept that everything on this Island is connected. "I understand now that Hawai'i is a delicate ecosystem which must be taken care of," says a former scholarship recipient. The deadline to submit BELL applications is January 31, 2007.

Download the [BELL application forms](#). Read the next story, "Buckets for Good," which tells what one Island girl did after attending BELL.

## Buckets for Good



**Photo:** Junior class Secretary Chelsey Utemei (**left**) and Vice President Kiana Kometani (**right**) emptying a recycling bin at Kohala High School.

Kiana Kometani returned home from Providence, Rhode Island this summer with a mission. Kiana attended the [Brown University Environmental Leadership \(BELL\)](#) Program at Narangansett Bay as one of two Hawai'i Island scholarship recipients. For the past two years, The Kohala Center and Brown University have partnered to create pathways to excellence for Island youth, by offering substantial scholarships to both Hawai'i-based and Rhode Island-based BELL programs. While in Rhode Island, Kiana was challenged to create an action plan to carry out upon her return home. Kiana's plan was to implement a recycling program at Kohala High School, where, she says,

“many kids are too lazy to walk over to the school’s outdoor recycling bins.” Tired of seeing so many cans being thrown into the trash, Kiana undertook an ambitious project to install and monitor recycling buckets inside the classrooms at the school. Proceeds from the project benefit Kiana’s entire junior class. [Read more.](#)

## Art in the Tent



**Photo:** Hidden Jewels art class meets in the tent at Kohala Elementary School. Gabrielle Cinelli (**left**) leads Calin Duke’s (**right**) second grade class through a series of experiments to explore the tactile properties of clay. Photo by Peter Kowalke.

Innovative art projects are one way The Kohala Center is kindling a love of science at Kohala Elementary School. Creative solutions to challenges, such as a lack of classroom space, are another way that The Kohala Center transformed a crisis into an opportunity for innovation. The recent 6.7 magnitude earthquake damaged five classrooms at the school, forcing five classes to find alternative space until repairs can be completed. Kohala Center [Hidden Jewels](#) artist Peter Kowalke assisted with finding a solution: an outdoor classroom inside a spacious tent. Kowalke has moved the Hidden Jewels art classes into the tent, and he will be meeting with second, third, and fourth graders, as well as students in the after school program, for art in the tent from now through the end of the year. During their first day in the tent, second graders began work on a 500-pound coral reef model. Kowalke and Assistant Gabrielle Cinelli also strung lights on the roof of the tent in the shape of a shark – to complement the undersea theme. More hands-on marine, forest, and celestial art projects await over 100 students at Kohala Elementary. “Most of these kids will tell you that science is their favorite subject,” says Matt Hamabata, The Kohala Center’s Executive Director.

A special mahalo to Bob Simms of Big Island Tents for offering the school a substantial discount on the tent, and to Kohala Elementary School Principal,

Eleanor Laszlo, who says, "we are being flexible and positive."

## Hawai'i Wildlife Center's New Home



**Photo:** "As you can see we made a desk from a shelving unit and door and it is working well," says Center President Linda Elliott, shown sitting at her new desk. Linda's wish list to outfit her new office includes file cabinets, bookshelves, a printer/fax/scan machine, a computer, paper, a stapler, a fan, door mats, and area rugs.

The [Hawai'i Wildlife Center](#) now has an office! The [New Moon Foundation](#) has generously donated the use of "The Infirmary Cottage" at the historic Girls School on the Bond Estate in Kapa'au. The temporary office provides a place for meetings and development operations while the Center is under design and construction. The permanent Center will be housed on land donated by Surety Kohala Corporation, at a two-acre site located next to Kohala Middle School. The Center will provide a world-class facility for the care and rehabilitation of injured and orphaned native wildlife – as well as research, training, and educational programs for the community. This is the first facility of its kind in the State of Hawai'i.

"Hawai'i is the endangered species capital of the U.S., and 80% of the remaining species of native birds are threatened with extinction. I get calls weekly for birds in need. There are currently a good many animals going without care," says Linda. To help out or learn more, phone Linda at 808-889-5180 or email her at [hawaiiwildlifecenter@mac.com](mailto:hawaiiwildlifecenter@mac.com).

## Back

### The Kohala Center Story

By Matt Hamabata, Executive Director

Photos by [Diane Repp](#)

The story begins in the late 1980s and early 1990s with the massive shutdowns of the plantations in Hawai'i. On Hawai'i Island, O'ahu, and Lana'i there are no plantations left. There is only one surviving on the Island of Kaua'i. When the plantations closed, most of the Islands were completely unprepared. Unemployment rates skyrocketed.

The departure of mass-production agriculture threw the State's rural economy into a tailspin. But while the post-plantation environment left island society economically vulnerable, it also opened up new possibilities: socially, culturally, economically, and ecologically. The land itself, with the departure of mass-production agriculture, remained a valuable asset.

With the plantations gone, we were given the opportunity to realize the natural environment as an intellectual asset: as intellectual capital, as it were. The land, in and of itself, became extraordinarily valuable for the development and dissemination of new knowledge. This idea fits beautifully with the Native Hawaiian understanding of the Earth, which views the land itself as a sentient being, an intelligent source of knowledge.



It also fits beautifully with recent theorizing about multiple forms of capital and about capital interconvertibility. The land itself, without much built infrastructure, can attract sustainable dollars in the form of teaching and research programs that enhance our understanding of the natural environment. Thus, our natural capital is converted into intellectual capital which is then converted into financial capital -- in ways that are sustainable and respectful to our communities, our culture, and our land. The community and the land replenish and nourish themselves as the economy thrives. This is SO different from a plantation economy, which is often viewed as an extractive industry.



Back in 1999-2000, there were extensive forums held in North Hawai'i, where The Kohala Center's administrative offices are based. These forums were for residents of small towns like Honoka'a, Waimea, Kapa'au, Hawi, and also for focus groups of professionals. The forums were called to address disturbing community health issues in the region: such as high rates of poverty and disease, increasing income disparities, and lack of educational opportunities. The question was asked: "How do we make this a healthier, happier place to live?" The top three choices were: 1) create more educational opportunities for our children; 2) ensure that adults are qualified for new jobs beyond the service jobs provided by the tourist industry; and 3) diversify the economy.

**Current community health studies show a VERY strong positive relationship between education and physical health and a negative relationship between income disparity and physical health.**

We had tapped into our community's needs AND wisdom. This whole Kohala Center project is community driven, based on the community's desire to invest in education. Our story is really one about a community, taking on its own development, relying on the resources it has.

Given the remarkable island environment, the next step was for the island community to actively engage the land as a source of knowledge. We invited a select group of the global scientific community to Hawai'i Island to learn and discover with the land. We spent the entirety of our start-up budget, which was \$10,000, to sponsor a meeting of 13 senior scientists. From these scientists, we learned that this island has long been identified by the world's scientific community as a SPECTACULAR site for research. Hawai'i Island is an ideal site to study everything from evolutionary biology to volcanology to biogeochemistry, not to mention ocean sciences of all sorts. This meeting also involved an orientation for the scientists to the Island's spiritual and cultural landscape, and we learned that Western scientists are inspired by the depth of knowledge about the environment embedded in Hawaiian culture.



**We are a microcosm of the planet: much better than the Biosphere, since we're the real thing.**

As an organization, we have been and are very careful about the individuals, with whom we choose to work. We spend a lot of time with them: we work with them closely to introduce them to our work, our dreams, our vision for ourselves and for our island. These individuals are part of fairly dense networks of their own; and they have drawn to us others who share their values, and therefore, ours. They are truly, truly decent folks; we like and trust them, and we are getting to know their families and friends; they bring their children with them, and we help care for them. I think that that is where it all started.

Of course, in addition to these shared values, we only work with those whom we feel can participate in a fair exchange. For example, when a university faculty, such as Cornell's, poses the possibility that we work with them to develop research projects that deploy high school students and teachers as research assistants, we understand that this improves the quality of Cornell's project because of the possibility of ongoing data gathering and monitoring of the environment. With co-publication opportunities and direct experience in scientific research, this means that our students and our teachers are given a fantastic opportunity to engage in inquiry-based scientific learning. We like this sort of exchange: it's fair -- nobody is doing us any favors. In terms of what's "in it" for the scientific community, they tell us that Hawai'i Island is among the world's most vibrant living classrooms and laboratories; and we can help them gain access to this remarkable environment.

The research and teaching programs that we work with either depend upon a pristine environment OR they address the challenges to the Island's environment. For example, because we have the highest energy costs in the

U.S.; an antiquated, poorly functioning and isolated grid; and an abundance of wind, solar, ocean, and geothermal possibilities -- this island is an IDEAL site for the testing and deployment of alternative energy technologies.



These programs bring scientific talent that this small community once could never dream of affording. The scientists not only develop proposals for research programs that address island needs and concerns (which overlap perfectly with global environmental concerns), but they offer professional development programs for island professionals. AND they are developing research programs that engage high school teachers and students in cutting-edge research with ample opportunity to serve as lab assistants, field assistants, and to participate in early data analysis and opportunities for co-publication.

We are building science and engineering pathways for island youth through these programs, creating ways to easily access the best universities in the country and the best programs at the University of Hawai'i. That work has started. Four years ago we launched an environmental leadership laboratory with Brown University for high school kids. I can't tell you how happy we are to see kids from the island, interacting with a select national leadership group, all thinking through their roles as scientists and leaders, inspired by the spectacular environment and a native culture whose worldview is fully integrated with the natural environment. It is moving to see our kids proudly sporting their Brown t-shirts. We are raising the bar. We are hoping to inspire kids to excel, personally and intellectually.

Also, the dollars that research and teaching programs bring in are tremendously powerful in our economy. The Bank of Hawai'i recently published a study that showed that dollars spent in research and teaching have a tremendous multiplier effect.

We need to shift perspectives here. We are proving that natural assets are valuable for the development of new knowledge, and that natural assets as intellectual assets can be converted into economic assets that sustain the natural and cultural environment. It's a simple formula.

**We are having fun. We have proven that great intellectual centers do not have to reside in cities. We have shown that those centers can respectfully reside in small rural communities, like ours. We have shown that the land itself, in its pristine condition, is of enormous economic value, not for extractive industries but for knowledge-based industries that enhance the well-being of the land and its people.**

Of course, we are in regular conversation with entities like Hawai'i Community College. We are building a strong relationship so that we can work together to educate (which is different from "training") island residents, so that they can participate in knowledge-based industries. Knowledge-based jobs involve the recognition of the employee's intelligence and decision-making capabilities and the ability to engage in continuous and life-long learning. At our resorts we support a "green technologies" agenda, which involves learning science and deploying science in our service industry.



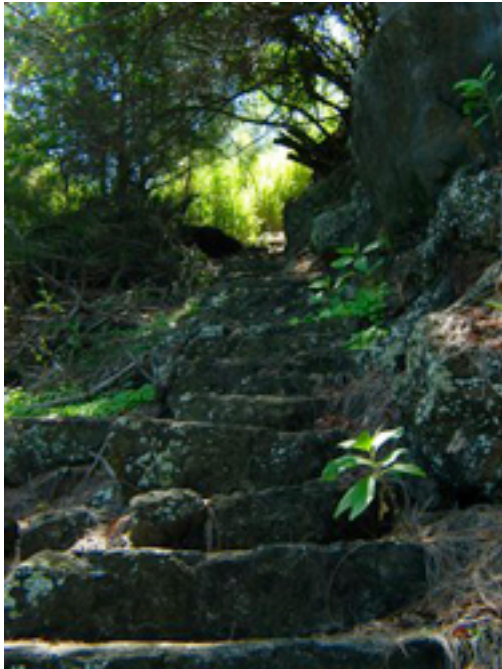
Our remote rural community has begun to connect with the global knowledge economy. Hawai'i Island is inspiring scientists by its unique culture and connecting scientists with living communities through their sense of responsibility to those communities.

For example, a few years ago we hosted a symposium of leaders from GEF-World Bank Worldwide Coral Reef Project. I do think that this team is truly concerned about the state of the health of reef systems. They know that if they do not somehow develop relationships with living communities that impact the life of reef systems on a daily basis, their science will sit on shelves and will have little effect. Through an active and respectful exchange of knowledge and through the co-development of new knowledge, everyone is hopeful that culture and science can be integrated to make real and positive changes in the way human and natural systems interact.

The scientific community (which overlaps with but is different from the world of universities and research agencies) is rather highly organized. Scientists actually like to collaborate, and independent organizations like ours can help scientists collaborate. Since we are on the "margins," on the periphery of the traditional academic world, there may be room for a great deal of creativity, freedom, innovation, and for the sharing of new scientific knowledge.

**When most agencies think of "science incubation" in the traditional sense (or knowledge industry development), they think of building mega-science parks with lots of infrastructure, and lots and lots of marketing and promotional dollars. Yet we went directly from the**

**raw land and our own culture -- right into engaging the global knowledge industry. It's a new model altogether: a rural community hard hit by globalization, suddenly turns globalization on its head.**



I know that many will find this a naive notion, but I think that the folks we are working with really appreciate the fact that they are connecting their lives and their work with a small community. They can see that what they do, as individuals who happen to be senior scientists, actually has an impact on the life of a community. We have experienced the power of smallness.

When Rocky Mountain Institute experts present best practices and information, it has an IMMEDIATE impact on the energy environment on this island. Or, when 150 to 230 Island residents show up for scientific talks, the scientists' sense of responsibility and connection to their work, to communities, and to the future is heightened. We are engaging in issues of meaning here and what it means to lead meaningful lives. In our own small and unplanned way, perhaps we are bringing meaning back to science -- a science that is ethical and practical, and respectful of cultures and communities, both human and natural.

We are also investing in multi-generational assets: the health of the people and of the land, the education of the people and valuing the land as a source of knowledge. We believe in a state of pono (being in balance) where people feel inspired to contribute their best to the land, to one another, to their community, and to the planet – in exchange for a happy and meaningful life.

We are moving forward with great determination!

**Wouldn't it be great fun and truly wonderful if science and education were the leading – absolutely the leading – sectors of the Island's economy and society?**

## **Hawai'i Field Ecology**

**By Jason Andras**

This year's course will focus on three projects in distinct ecosystems:



### ***PROJECT 1: Shrimp Behavior in Anchialine Ponds***

**Photo:** 2005 Hawai'i Field Ecology course participants at Kalahuipua'a Fishponds, courtesy of Drew Harvell.

Anchialine ponds are one of Hawai'i's most unique and threatened ecosystems. These brackish coastal ponds are home to several unique plants and animals such as the opae'ula shrimp. These small (~1.5 cm long), bright-red crustaceans are the most abundant brackish water shrimp on the Island of Hawai'i. They are long-lived (up to 20 years!) and feed primarily on algae. In the past two decades, fish have been introduced to the majority of anchialine ponds on Hawai'i Island, and many of these fish prey on opae'ula. Heavy fish predation can eliminate most or all of the opae'ula from a pond, and ponds without opae'ula commonly become quickly overgrown by algae. This observation suggests that the opae'ula function as an important species by controlling algal overgrowth in anchialine pond ecosystems.

Project 1 will study the influence of fish on opae'ula behavior. We will test whether the presence of fish triggers two potential predator avoidance strategies: 1) feeding at night, and 2) changing from bright red to a less visible white color. If these behavioral changes allow opae'ula to survive in

fish-invaded ponds, algal growth may be reduced.

### ***PROJECT 2: Intertidal Coral Physiology***



**Photo:** 2005 Hawai'i Field Ecology course participants in the intertidal zone at Puako Bay, courtesy of Drew Harvell.

A handful of coral species are responsible for building the majority of the beautiful reefs that are found in the waters just off Hawai'i's coast. Some of these species can also be found growing very near to shore, in tidal pools in the lava rock. During low tide on a sunny day, the water in these pools can reach temperatures that would be extremely stressful or possibly lethal to most corals. Yet the corals found in these tide pools remain healthy and continue to grow.

Project 2 will investigate the physiological mechanisms that allow these tide pool corals to thrive under such stressful conditions. We will measure both the a-biotic differences (such as temperature, light, and salinity) between tide pools and sub-tidal reefs -- as well as physiological differences in the corals native to these two environments. Understanding how corals can adapt to changes in environmental conditions is particularly interesting in the context of ongoing global climate change and the devastating effects that rising sea temperatures are having on coral reef ecosystems worldwide.

### ***PROJECT 3: Ohi'a Physiology***





**Photo:** 2005 Hawai'i Field Ecology course participants study an ohi'a forest, courtesy of Drew Harvell.

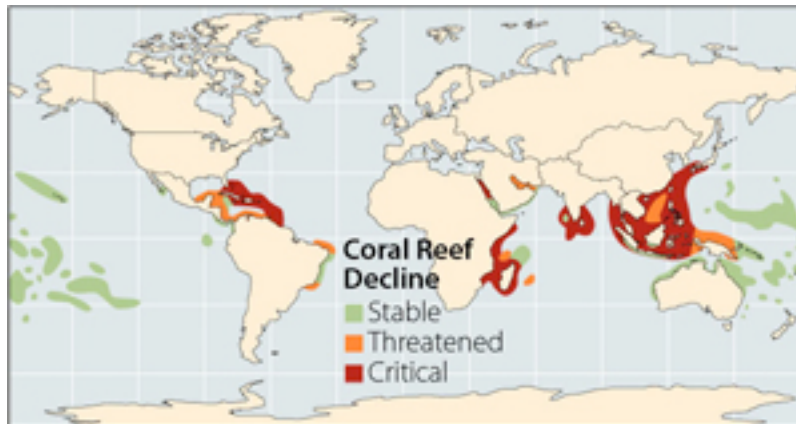
The native Hawaiian ohi'a, (*Metrosideros polymorpha*), is a dominant canopy tree on the island of Hawai'i. Ohi'a trees are found from sea level to the alpine climate zone, and this species experiences vastly different temperature and precipitation regimes across these elevations. While the ohi'a can dominate forests of all ages, it also colonizes recent lava flows with little soil.

Project 3 will study the features of ohi'a that may allow it to occupy such a wide range of environmental conditions. Because ohi'a must cope with strong environmental gradients related to elevation and soil quality, we want to determine whether this species adapts its physiology to suit local conditions. Specifically, we will examine leaf characteristics related to photosynthesis and nutrient uptake in order to determine whether plants that are nutrient limited (on young lava flows) exhibit different photosynthetic responses to fluctuations in temperature and water. We will compare the responses of plants at low elevations to those at high elevations, and the responses of plants on older, more nutrient-rich lava flows to those on young, nutrient-limited lava flows.

### **COURSE INSTRUCTORS**

**Drew Harvell** is a professor of Ecology and Evolutionary Biology at Cornell University. The current focus of Dr. Harvell's research is on the ecology and evolution of coral resistance to disease. A sub-theme of this work includes

evaluating the impacts of a warming climate on coral reef ecosystems. Her analyses and papers have led to the now widespread acceptance that diseases in marine ecosystems are important, particularly for climate-sensitive coral reef ecosystems. Visit Drew Harvell's [Coral Reef Sustainability Study Room](#) at Cornell University's CyberTower. Please note that a user id and password are required to enter CyberTower. Please [click here to register](#) now for this free online learning portal.



**Photo:** Geographic location of coral reef decline from [www.coralrescue.com](http://www.coralrescue.com).

**Nelson G. Hairston, Jr.** is Frank H. T. Rhodes Professor of Environmental Science and Senior Associate Dean in the College of Arts and Sciences at Cornell University. He studies ecological and evolutionary responses of freshwater organisms to environmental change. His studies have included the multi-decade egg dormancy of zooplankton in lakes as a means of surviving in varying environments, and how zooplankton feed on algae and avoid predation when they are not in dormancy.

**Jed Sparks** is Assistant Professor of Ecology and Evolutionary Biology and the Director of Undergraduate Studies in Ecology and Evolutionary Biology at Cornell University. He studies the exchange of compounds between the atmosphere and biosphere and how this exchange influences ecosystem function, air quality, and global climate.

**Jason Andras** is a Ph.D. student in the Department of Ecology & Evolutionary Biology at Cornell University. His research focuses on the geographic structure of marine invertebrate populations and the genetic responses of marine invertebrates to environmental stress.

## **COURSE PARTICIPANTS**

**Mike Booth** is a Ph.D. student in the Department of Ecology & Evolutionary

Biology at Cornell University. He is interested in how species interact with and change their ecosystems. Currently, he is investigating the role of herbivorous and omnivorous fishes, particularly suckers, in Southwestern desert streams.

**Sara DeLeon** is a Ph.D. student in the Department of Ecology & Evolutionary Biology at Cornell University. She is interested in how human changes to the environment alter animal behavior. Specifically, she studies how bird song and behavior is affected by chemical pollution.

**Scott McArt** is a first year Ph.D. student in the Department of Entomology at Cornell University. He is interested in the ecology and evolution of plant-mediated interactions between herbivores and pathogens.

**Morgan Mouchka** is a Ph.D. student in the Department of Ecology & Evolutionary Biology at Cornell University. She investigates how environmental factors, such as temperature and nutrients, affect coral disease.

**Krista Capps** is a Ph.D. student in the Department of Ecology & Evolutionary Biology at Cornell University. She studies the ways in which fish communities affect decomposition and other biogeochemical processes in Venezuela, Ecuador, and Peru.

**Sarah Arnold** is a Ph.D. student in the Department of Entomology at Cornell University. She investigates the chemical and biological interactions of plants and insects.

**Emily Pollina** is a Ph.D. student in the Department of Ecology & Evolutionary Biology at Cornell University. She is interested in the effects of global climate change on the severity and spread of plant disease.

**April Melvin** is a Ph.D. student in the Department of Ecology & Evolutionary Biology at Cornell University. She is interested in how pollution influences nutrient cycling in temperate forests. Specifically, she investigates how individual tree species respond to decreased calcium availability and concurrent increases in carbon and nitrogen.

**Caroline Turner** is a Ph.D. student in the Department of Ecology & Evolutionary Biology at Cornell University. She studies the effects of animals that live in and mix up the sediments at the bottom of the ocean and their influence on how chemicals, including pollutants, are processed in the ecosystem.

**Amy Parachnowitsch** is a Ph.D. student in the Department of Ecology & Evolutionary Biology at Cornell University. She studies how the evolution of flowers is influenced by the competing effects of pollinators, which benefit the plant, and of antagonists, which may be detrimental to the plant.

**Allyson Eller** is a Ph.D. student in the Department of Ecology & Evolutionary Biology at Cornell University. She studies how increasing atmospheric concentrations of carbon dioxide, nitrogen dioxide, and ozone affect the growth and productivity of plants.

**Danica Lombardozi** is a Ph.D. student in the Department of Ecology & Evolutionary Biology at Cornell University. She investigates how ozone pollution changes the amount of water that plants use, and the impacts these changes have on ecosystems.

**Stuart Campbell** is a Ph.D. student in the Department of Entomology at Cornell University. His research focuses on the ecological and evolutionary interactions between plants and the insects that consume them.

## **No Cans Wasted** **By Kiana Kometani**



**Photo:** Junior Class Vice President Kiana Kometani (**left**), President Lavinia Holschuh (**center**) and Secretary Chelsey Utemei (**right**) with cans to be recycled to benefit the junior class at Kohala High School.

My project was inspired by the Brown University Environmental Leadership Lab (BELL) camp I attended last summer because we all had to create an action plan that would benefit the environment in our hometown. We had to list the steps in our plan and set dates for ourselves to complete these steps.

On the last day of camp each person presented their plan to the group. Some of the others' action plans were making compost, switching cars over to using vegetable oil, recycling, and many more.

There is a need for recycling here at Kohala High School, especially with so many kids drinking soda, water, or juice. There are a few recycling bins around our campus but nothing in the classrooms. At the beginning of the year we sent out a flyer to each teacher with a classroom or office at Kohala High School, asking them if they would like a recycling bin in their classroom. We received 13 replies back from teachers who said "yes!"

We bought the recycling buckets from Home Depot and we hope to get sponsors for each of the buckets to cover the purchase cost. With help from other juniors, we plan to collect the cans from each class weekly and store them until we have a sufficient number of cans to redeem for money for the junior class.

I've learned that many kids are too lazy to walk to an outdoor recycling bin, but if the bucket is right in a class that they're in -- then they have no problem utilizing it. So far students have been using the bins because they're in almost every class in school. The cans thrown in the trash were just being wasted. Now they can be put to use instead of taking space in our landfills.

The junior class is in charge of the Junior/Senior Prom that is held every year. We will use the money we raise from recycling for the Prom and also for activities in our senior year. I hope to continue the recycling project during my senior year if it is successful this year.

BELL camp really influenced my decision to do this project at my high school. I gained a lot from BELL and I'm grateful that I had the opportunity to go. I learned so much about myself, about others, and about the environment. I now know how important it is to recycle and how big of an impact that I can have just by doing this project. This project is my way of expressing how important it is to recycle and share what I learned in BELL.

*"It is our hope that Kiana's example will motivate others on the Island (and beyond) to action. That action may be to take steps to help care for our world and our neighbors, to seek out learning opportunities such as the BELL programs, or to offer funding to support young citizens who are interested in attending such programs."* – Carolyn Blake, Kohala Center Program Manager