

The Leaflet  
June 2010



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FRONT PAGE

## Third Cohort of Mellon-Hawai‘i Fellows Named

**Photo:** “I am excited and honored to receive this Fellowship from The Andrew W. Mellon Foundation, Kamehameha Schools, the Kahiau Foundation, and The Kohala Center. Their support of Native Hawaiian Scholars to achieve our dreams by obtaining our doctorate degrees is a remarkable testimony to the organization’s commitment to excellence in education and the well-being of our island communities,” says Noe Noe Wong-Wilson, Mellon-Hawai‘i Doctoral Fellow.

*It is wonderful to experience Hawai‘i producing such great writers and thinkers for Hawai‘i—and the world!* –Matt Hamabata, Executive Director, The Kohala Center

Five Hawaiian scholars have been selected as 2010–2011 Mellon-Hawai‘i Doctoral and Postdoctoral Fellows in recognition of their commitment to the advancement of scholarship on Hawaiian cultural and natural environments, Hawaiian language, history, politics, and society.

Receiving the doctoral fellowships are:

- **Keao NeSmith**, doctoral candidate in Applied Linguistics at the University of Waikato in Hamilton, New Zealand;
- **Hiapokeikikāne Kichie Perreira**, doctoral candidate in the Hawaiian and Indigenous Language and Culture Revitalization Program at the University of Hawai‘i at Hilo; and
- **Noe Noe Wong-Wilson**, doctoral candidate in the School of Maori and Pacific Development, University of Waikato, New Zealand.

Postdoctoral Fellows are:

- **Leilani Basham**, Ph.D., Political Science (2007), University of Hawai‘i at Mānoa; and
- **Noelani Goodyear-Kā‘opua**, Ph.D., History of Consciousness (2005), University of California, Santa Cruz.

Fellowship applicants were evaluated on their leadership potential as well as their demonstrated commitment to the advancement of Hawaiian scholarship. They were selected by a distinguished panel of senior scholars and *kūpuna* (elders) comprised of Robert Lindsey, Jr., The Kohala Center board of directors and Office of Hawaiian Affairs



trustee; Dr. Shawn Kana'iaupuni, Kamehameha Schools; Dr. Dennis Gonsalves, Pacific Basin Agricultural Research Center; Dr. Pualani Kanahale, Edith Kanaka'ole Foundation; and Dr. James Kauahikaua, U.S. Geological Survey Hawaiian Volcano Observatory.

The Mellon-Hawai'i Fellowship program provides scholars the opportunity to complete their dissertations or to publish original research. Postdoctoral fellowships amount to \$50,000 each, and doctoral fellowships, \$40,000. Read more about each of this year's fellows in "Our Ways of Knowing" on the Back Page.

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## Paddling One Canoe



**Photo:** Grace Ha "crossing" Waiakamali Stream in Kohala.

provides participants—chosen for their academic merit and leadership potential—with the opportunity to study, teach, and conduct research, to exchange ideas and contribute to finding solutions to shared international concerns.

**Photo:** Grace planting 'ākia seeds at the State tree nursery in Waimea.

Is there something special about spending a semester living and learning on Hawai'i Island that encourages students to pursue international education? "I think so," says Program Director Alexandra Moore. "On campus, on the mainland, students are challenged to show what they can do. And while we issue that same challenge here, many of our island mentors also challenge our students to find out who they are, and to figure out what is their special *kuleana*—what is the area in which each of them can make a difference in the world. There is no doubt that Hawai'i, the *'āina* (land), and our *kumu* (teachers) here inspire all of us, and encourage us to view the larger world as an island—as a canoe—in which we all need to work together," explains Moore.

Read more about Grace Ha's journey in "The Diving Women of Jeju Island" on the Back Page.

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## Reflections on EES 2010

By Alexandra Moore, Cornell EES Program Director

**Photo:** A rainbow arches over Wai‘aka House, home to *Kumu pa‘a i ka ‘āina*, the Cornell University environmental science field program.



As we pack to return to the mainland we pause to gaze at the beautiful *ānuenuē* (rainbow), and to reflect on the past five months. Amazing! We are indeed fortunate to be able to spend time here, learning from the island itself and from so many generous people, especially those who *mālama* (care for) this extraordinary place.

2010 marks the second year we have undertaken the challenge of living as a carbon-neutral program. This year we were able to fine-tune our carbon-neutral strategy, and to measure the results of our first year's efforts. Learn more about how we did in "Re-growing a Forest or Two" on the Back Page.

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## Hawai‘i Island Seed Exchange

**Photo:** Some of the seeds grown on Nancy Redfeather's Kawanui Farm. Lettuce, potatoes, corn, beans, black eyed peas, *uhi* (yam), *‘ōlena* (ginger), popcorn, and sweetcorn. Photo by Julia Rosekrans.

Seed savers from around the island are invited to the 8<sup>th</sup> Annual Hawai‘i Island Seed Exchange from 9:00 am to noon on Saturday, June 19, at the Amy B.H. Greenwell Ethnobotanical Garden in Captain Cook. "This year's exchange will be very different from the previous years," says Coordinator Nancy Redfeather. "Since we just hosted the Seed Symposium last month which created a statewide seed working group comprised of representatives from UH Mānoa, UH Hilo, and the various islands, this year's Seed Exchange will be more of a planning meeting than a festival," she says.

The Exchange will open with a short meeting to discuss the creation of seed working groups around the island, for the purpose of sharing knowledge, building a network of seed savers, and conducting variety trials and field days at various farms. Redfeather will then demonstrate cleaning and saving lettuce seed, and participants will have the opportunity to exchange seeds with one another. "If you have seed you have saved from food crops that do well on your farm or in your garden, and you would like to offer some to the gardening community in exchange for taking home seed from others, please join us and there is no charge," says Redfeather. Participants are also invited to bring cuttings and roots, but no potted plants, so as to avoid spreading the Little Fire Ant. Participants who do not bring material to exchange will be charged a \$10 entry fee. Proceeds will help fund the next Seed Exchange in 2011. Participants who would like to stay for lunch are invited to bring their own lunch or to purchase lunch and join the group from noon to 1:00 p.m. For more information, contact Redfeather at [nredfeather@kohalacenter.org](mailto:nredfeather@kohalacenter.org).



## Sharing Big Ideas

**Photo:** 2009 Hawai'i Island School Garden Network Summer Conference participants on the porch of Nancy Redfeather's Kawanui Farm.



Garden teachers from around the island and across the state will gather at The Mala'ai Culinary Garden of the Waimea Middle School on July 16–18 for the annual Summer School Garden Conference. Staff from the Center for Ecoliteracy in Berkeley, California, will share their practical, hands-on school garden curriculum, "Big Ideas," with our garden teachers. This garden curriculum connects with classroom curriculum and State benchmarks to bring learning alive for students. Presenters from the Center for Ecoliteracy include Executive Director Zenobia Barlow, Director of Education Carolie Sly, and Creative Director Karen Brown. Learn more about this summer's "Smart by Nature - Growing School Garden Curriculum" at [www.ecoliteracy.org](http://www.ecoliteracy.org).

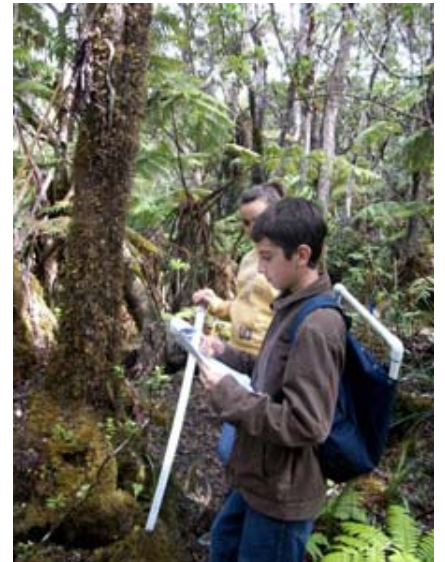
The Hawai'i Island School Garden Network (HISGN) recently received a letter of commendation from Governor Linda Lingle for its role in the *Green Thumb Challenge*, a nationwide effort to establish 10,000 school/community gardens by year's end. Read the full text of the governor's letter at The Kohala Center's Web site at [http://www.kohalacenter.org/Leaflet/Jun10/images/governors\\_letter.pdf](http://www.kohalacenter.org/Leaflet/Jun10/images/governors_letter.pdf).

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## Wonderful Questions

**Photo:** Waikoloa Middle School students worked in the Kohala rainforest. Their research questions included: *How does elevation affect the amount of moss, the water quality of water from moss, and water quality in the stream?* among others.

*On one of the first field trips with the Waikoloa Middle School kids, I did a "squeeze the water out of the moss" demonstration. Not only did this generate wonderful questions about how much water the moss was holding, but also got the kids thinking about the water itself. Can you drink it? Does it have living things in it?* –Melora Purell, Coordinator, Kohala Watershed Partnership and HI-MOES Outdoor Educator



Over the past year, roughly 400 students and 12 teachers were engaged in designing and implementing their own science projects in the *ahupua'a* (watersheds) of Kahalu'u, Kohala, and Kūki'o through The Kohala Center's NOAA-funded HI-MOES (Hawai'i Island Meaningful Outdoor Experiences for Students) Program. Students looked at how environmental variables affect everything from the variety of critters inhabiting tide pools along the Kona Coast to the moisture content of mosses in the wet forests of Kohala. On May 4, students from nine West Hawai'i schools gathered at the Gateway Center at the Natural Energy Laboratory of Hawai'i Authority to share the results of their scientific research with their peers. Their teachers report that having the opportunity to do "real" science motivated their students to look deeper and analyze their findings. "Students absolutely loved it—looking forward

to next year!” wrote one teacher on her year-end evaluation. “Many students said it was their favorite science experience for the year,” said another.

Read “Real Research” on the Back Page.

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## Farming for a Living

### By Una Greenaway



**Photo:** Una Greenaway (left), owner of Kona Old Style Coffee, took first place at the 2007 Gevalia Kona Coffee Cupping Competition.

**Editor’s Note:** *Una Greenaway is a nationally recognized sustainable farmer. Una is President of the Kona Country Farm Bureau, a member of the Hawai‘i County Agricultural Development Plan Health Impact Analysis team, Western SARE (Sustainable Agriculture Research and Education) Advisory Board member, and owner of Kuaiwi Farm (<http://www.kuaiwifarm.com/about.html>) in South Kona for the past 33 years. She was just selected as a 2010 Sustainable Farming Mom of the Year by the Women, Food, and Agriculture Network.*

I moved to Kona with my husband and one-year-old daughter in 1977. We were part of the “back-to-the-land” movement and wanted to farm and live off of the land. We were lucky to find a beautiful piece of land in Captain Cook with lots of soil. Our farm also had old coffee trees that were planted in about 1900. I learned a lot about coffee farming from my Japanese neighbor, whose grandfather had planted our old trees. From the start we were committed to using only organic methods to help to heal the land from years of herbicide use. Read more in “Work Hard, Compost, and Other Farm Survival Skills” on the Back Page.

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## 500 Light Bulbs

**Photo:** Here’s what the Hilo 4-H group did with the 500 incandescent light bulbs they collected.

The Kohala Center’s compact fluorescent light (CFL) bulb exchange was a runaway success at two locations in Hilo. Folks lined up to trade in their old incandescent bulbs for new CFL bulbs at the 4-H exchange at Kino‘ole Farmers’ Market and at Waiakea High School. Groups earn \$1 per bulb exchanged through this island-wide initiative sponsored by TKC and Blue Planet Foundation. Learn more about the CFL Light Bulb Exchange at <http://www.kohalacenter.org/bulbexchange2010.html>.



## Our Ways of Knowing: Meet the 2010 Mellon-Hawai‘i Fellows



**Leilani Basham, Ph.D., Political Science (2007), University of Hawai‘i at Mānoa**

**Photo:** 2010 Mellon–Hawai‘i Postdoctoral Fellow Leilani Basham.

*‘O ka pono ke hana ‘ia a iho mai nā lani. This ‘ōlelo no‘eau (Hawaiian proverb) encapsulates my feelings about receiving the fellowship; it is truly a gift, a blessing, a privilege, and an opportunity. It will allow me to continue learning and producing knowledge for this and future generations of Hawaiians that is centered on our ways of knowing, our ways of being, and our ways of understanding our world in terms of our language, history, politics, and culture. I hope that my work will contribute to our collective body of knowledge not only in theoretical terms, but also in terms of action and practice, and that it will continue to be expanded and built upon by the next generation of Native Hawaiian scholars and practitioners. –Dr. Leilani Basham*

Dr. Leilani Basham received her doctorate degree in political science in 2007 from the University of Hawai‘i at Mānoa, where she also earned a bachelor’s in Hawaiian studies and a master’s in the history of the Pacific Islands. She is an assistant professor in the Hawaiian-Pacific Studies program at the University of Hawai‘i – West O‘ahu, teaching both Hawaiian language and Hawaiian studies. Her research centers on understanding Hawaiian history, political and cultural knowledge, and practice from a Hawaiian perspective, using predominantly Hawaiian language resources. Specific areas of research include *mele lāhui*, Hawaiian identity and value systems, as well as Hawaiian sexuality. Her book project is entitled “*Nā Mele Lāhui: E Mau ke Ea o ka ‘Āina i ka Pono*,” and it analyzes hundreds of *mele lāhui* (nationalist poetic texts) published between 1893 and 1898. In addition to her university studies, Basham spent fifteen years studying hula under her *kumu* (teacher), graduating as an *‘ōlapa* (dancer) and a *kumu hula*. Currently, she is the *kumu hula* of her own *hālau* (private hula academy).

**Photo:** Leilani Basham (top row, far left) with students of Hālau Kupukupu Ke Aloha at Kē‘ē, Kaua‘i.

Basham’s mentor is Dr. Noenoe K. Silva, assistant professor in the Department of Political Science at the University of Hawai‘i at Mānoa. “Basham is doing cutting edge research that combines a deep knowledge of Hawaiian language, mele, hula, and history with incisive political analysis,” Silva said. “Basham’s work has thus pushed Hawaiian studies up to a higher level by combining research in Hawaiian language and mele with historical-political analysis. Her research, for example, gives us new (and old!) ways of thinking of key concepts in Hawaiian political thought, such as *ea* (breath, life, sovereignty) and *pono*. Currently, the dissertation is only available to those fluent in Hawaiian, so it is very important that she write an English version as a book that will be accessible to everyone.”



*The Mellon-Hawai‘i Fellowship Program is making an important difference in the lives of everyone in Hawai‘i. By providing fellowships they are helping Kanaka Hawai‘i complete their dissertations and go on to do important work in higher education and other arenas. Their post-doctoral fellowships are providing the precious time needed for*

our Kanaka scholars to turn their dissertations into books, which everyone in our communities can read, learn from, teach from, and enjoy. The Mellon-Hawai'i Fellowship program is allowing these advances in scholarship to happen much faster than they ordinarily would. –Dr. Noenoe K. Silva

**Noelani Goodyear-Kā'opua, Ph.D., (2005), University of California, Santa Cruz**

*I strive to be an educator and public intellectual who will foster visions of a world based in ecological balance, justice, constructive intercultural engagement, and life-long learning. High on my list of professional goals is to make education relevant to students' lives and to guide them in developing useful skills for academic and political intervention, as well as intercultural communication.*  
–Dr. Noelani Goodyear-Ka'ōpua

**Photo:** Mellon-Hawai'i Postdoctoral Fellow Noelani Goodyear-Ka'ōpua and her daughters, Hina (age 10) and La'i (age 1).



Dr. Noelani Goodyear-Ka'ōpua is an assistant professor of political science at the University of Hawai'i at Mānoa, where she teaches courses in Hawaiian politics, indigenous politics, and decolonial futures. Goodyear-Ka'ōpua earned a doctorate degree at the University of California, Santa Cruz's History of Consciousness program in 2005. She is also a graduate of Kamehameha Schools and received a bachelor's Magna Cum Laude from the University of Hawai'i at Mānoa in Hawaiian studies and political science.



**Photo:** Noelani Goodyear-Ka'ōpua with baby daughter La'i, working with a lo'i and wetland restoration project, Mahuahua 'ai o Hoi, in He'eia. Led by members of the community and Ko'olaupoko Hawaiian Civic Club (Rocky and Jerry Kaluhiwa, Mahelani Cypher, and Alice Hewett) with Kanekoa Shultz, the project aims to restore the health of the ahupua'a by putting the wetland mauka of He'eia fishpond back into kalo production. "I was raised in He'eia, and I hope to support this community-based project in the coming years," says Goodyear-Ka'ōpua.

Her dissertation, "*Ku i ka Mana: Building community and nation through contemporary Hawaiian schooling*," examined emergent efforts of educators at Kamehameha Schools and Hālau Kū Māna charter school to disarticulate schooling from its colonial history and rearticulate schools within growing movements for *Kanaka Maoli* (Native Hawaiians) self-determination and well-being. During her fellowship year, she will be revising that work as a book manuscript entitled, "Teaching Nation: Struggles for Hawaiian Schools and Sovereignty." "Teaching Nation" provides a critical history of Hawaiian education as it emerges out of the work of Kanaka Maoli educational innovators of the nineteenth, twentieth, and early twenty-first centuries. She is mentored by Charles R. Lawrence III, J.D.,

William S. Richardson School of Law, Centennial University Professor, University of Hawai'i at Mānoa, and Professor of Law, Georgetown University Law Center in Washington, D.C.

Goodyear-Ka'ōpua says the ethics and practices of *aloha 'āina*, which she defines as "love for land and country, Hawai'i," guide her academic and community work. Over the last 15 years, she has worked alongside other Kanaka to change the cultural and political aims of education in Hawai'i and to stand for Hawaiian self-determination and sovereignty. She is a co-founder of Hālau Kū Māna public charter school and currently serves as the local school board chair.

**Keao NeSmith, doctoral candidate in Applied Linguistics at the University of Waikato in Hamilton, New Zealand**

**Photo:** 2010–2011 Mellon-Hawai‘i Doctoral Fellow Keao NeSmith at the University of Waikato in Hamilton, New Zealand.

*The most driving thought of mine as I pursue my Ph.D. is how exactly I can support my home community in Kekaha, Kaua‘i, and help ensure that the language of native speakers of Hawaiian continues in as true a form to the original as possible as it is taught to Hawaiian language learners.*

–Keao NeSmith



Kaua‘i-born Keao NeSmith attended Kekaha Elementary School, Waimea Canyon School, and Waimea High School and graduated from Kamehameha Schools. He earned a bachelor’s degree in Hawaiian studies with an emphasis on language at the University of Hawai‘i at Hilo, and an M.A. in Pacific Islands studies at the University of Hawai‘i at Mānoa. His area of interest is Hawaiian language continuity in the era of Hawaiian language revitalization. He is currently a doctoral candidate in applied linguistics at the University of Waikato in Hamilton, New Zealand.

His doctoral dissertation is entitled, "The teaching and learning of Hawaiian

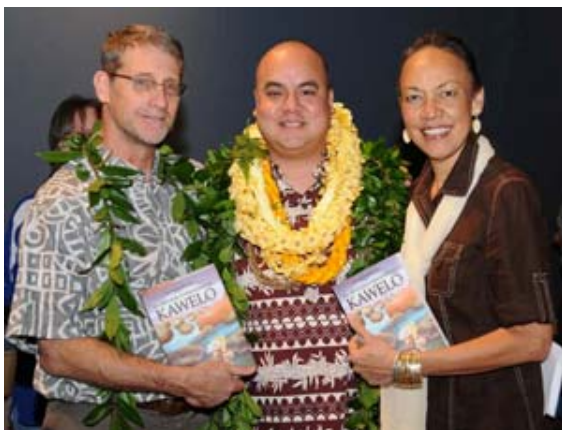
language and culture in public high schools and tertiary level schools in Hawai‘i: Issues relating to linguistic and cultural continuity and discontinuity." The main question driving his doctoral thesis is how Hawaiian is being taught in classrooms today and what are the best methods for teaching additional languages. NeSmith is mentored by Winifred H. Crombie, Ph.D., Associate Professor (Language and Language Education), School of Māori and Pacific Development (SMPD), Te Pua Wānanga ki te Ao, University of Waikato in New Zealand.

**Photo:** Keao participating in an ‘awa ceremony at Nu‘alolo Kai, Kaua‘i in July 2005.

“The main focus of Keao’s research is the teaching and learning of Hawaiian language and culture but his findings thus far are likely to have very important implications for the teaching and learning of indigenous languages throughout the world,” Crombie said.



**Hiapoikeikikāne Kichie Perreira, doctoral candidate in the Hawaiian and Indigenous Language and Culture Revitalization Program at the University of Hawai‘i at Hilo**



**Photo:** Hiapoikeikikāne Kichie Perreira at a recent book signing event with Dr. William “Pila” Wilson (left) and 2009–2010 Mellon-Hawai‘i Doctoral Fellow Kauanoē Kamanā (right).

*The knowledge unselfishly given from kūpuna of the Ni‘ihau community, coupled with my experience of the desire of Hawaiian immersion children to learn, grew in me an unrelenting zeal to constantly develop into the best that I can be for the benefit of generations to come.*

–Hiapoikeikikāne Kichie Perreira

Doctoral Fellow Hiapoikeikikāne Kichie Perreira was raised in Kapahulu and Waiiau on O‘ahu. A 1992 graduate of Kamehameha



Schools, he received a bachelor's degree in Hawaiian studies from the University of Hawai'i at Hilo (UH Hilo) and was the first UH Hilo graduate student to receive a master's degree in Hawaiian language and literature. Since 1996, he has lectured at Ka Haka 'Ula O Ke'elikōlani College of Hawaiian Language (UH Hilo), where he is currently an assistant professor. He has also taught Hawaiian language arts at Ke Kula 'O Nāwahīokalani'ōpu'u Hawaiian Language Laboratory School since 1997. Based on Perreira's master's thesis, the ancient epic of *Ka Mo'olelo Hiwahiwa o Kawelo* was recently published by Bishop Museum Press.

Perreira is a doctoral candidate in the Hawaiian and Indigenous Language and Culture Revitalization program at UH Hilo. His dissertation is entitled "*He Ha'i 'ōlelo Ku'una: Nā Hi'ohi'ona Me Ke Ki'ina Ho'āla Hou I Ke Kākā'ōlelo Ma Ke Aukahi 'Ana O Kēia Wā* (Traditional Hawaiian Oratory: Aspects and Revitalization of Classical Hawaiian Speechmaking)." Perreira says his educational passion "is analyzing classical Hawaiian literature to ensure its contemporary relevance." Perreira is mentored by Charles M. Langlas, Ph.D., Associate Professor at the UH Hilo Ka Haka 'Ula o Ke'elikōlani Hawaiian Language College.

Langlas describes Perreira as "a young scholar of great promise in the field of Hawaiian literature. His project, to reconstruct and teach traditional Hawaiian oratory, is unique as well as important for the ongoing revitalization of Hawaiian language and culture."

***Noe Noe Wong-Wilson, doctoral candidate in the School of Maori and Pacific Development, University of Waikato, New Zealand***



**Photo: 2010-2011 Mellon-Hawai'i Doctoral Fellow Noe Noe Wong-Wilson.**

*The largest population of Native Hawaiians in the entire University of Hawai'i system is at HCC, where they make up 40.2 percent of the student population. It serves not only as my research site, but allows me to make the largest impact and contribution for my own people and their future. I have been able to bring the focus of my lifework, scholarly pursuit, and passion together in this one effort to help Native Hawaiian students succeed in college and in whatever pursuits they choose for themselves in life. –Noe Noe Wong-Wilson*

Doctoral Fellow Noe Noe Wong-Wilson is currently the Native Hawaiian Student Success Coordinator at Hawai'i Community College (HCC) on Hawai'i Island. She has been instrumental in establishing the Paepae 'Ohua Student Success Center at the college and has served as the College's Coordinator of the Achieving the Dream initiative, a movement to address the success of underserved, underrepresented populations enrolled at Community Colleges across the nation.

Wong-Wilson is a graduate of Kamehameha Schools. She received a certificate of achievement in Hawaiian lifestyles from Hawai'i Community College, a bachelor's in anthropology from the University of Hawai'i at Hilo and a master's in Pacific Island studies from the University of Hawai'i at Mānoa.

Wong-Wilson will complete her doctoral program in residence at the University of Waikato's School of Maori and Pacific Development in Hamilton, New Zealand. Her thesis topic is "Achieving the Dream at Hawai'i Community College: An Initiative for Native Hawaiian Student Success." University of Hawai'i professor Hamilton I. McCubbin, Ph.D., is her mentor.

*Building on her mastery of culture and language and dedication to teaching, Wong-Wilson exemplifies the vision of the Mellon-Hawai'i Fellowship program in her commitment to publish her doctoral research on improving academic achievement and success of Native Hawaiians in higher education. The Mellon-Hawai'i Fellowship*

*program, by its dedication to providing opportunity and core support to the academic advancement of future leaders with a passion for science and culture, will insure the well-being of indigenous people in Hawai'i and the world. –Dr. Hamilton I. McCubbin*

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## The Diving Women of Jeju Island

By Grace Ha, Fulbright Scholar and 2009 Cornell EES Program graduate

**Photo:** Grace (right) at the blessing of the HPA school garden.

I originally joined the EES program to learn more about environmental science and marine biology. I did not expect to become fascinated by traditional Hawaiian stewardship of the land and ocean. My own heritage is Korean, and when I came across a blurb about the diving women of Jeju Island (an island off the southern tip of the Korean peninsula, and also coincidentally called the “Hawai‘i of Korea”), my curiosity was piqued about what traditional Korean understanding of the ocean could be. I was curious as to how other maritime island cultures approached the ocean, using their own very limited natural resources. The Fulbright Fellowship seemed to be the perfect venue for me to explore my interest, and my teachers from Hawai‘i were very supportive of my proposal. I will be spending my Fulbright year in South Korea, doing a research project on indigenous understanding and utilization of the ocean on Jeju Island. After I finish school and my Fulbright year, I would like to pursue a Ph.D. in marine ecology.



**Photo:** Grace examining a sea cucumber.

I really only know the very basics about the diving women on Jeju Island—they dive for sustenance, including algae, marine invertebrates, and other edible seafoods. This tradition does still continue, but it is dying out—the median age for *haenyo* (the Korean word for these women) is over fifty now, largely because the younger generation of women on the island are choosing other careers. These women, as well as the Korean culture's approach to the ocean and using the ocean, are who and what I wish to study. There is very little published in English on traditional Korean use and understanding of marine resources. At the same time, the Asian market is often targeted as a major cause of human disruption of ocean ecosystems, whether via whale hunting, shark fin hunting, or even hagfish hunting (they are used to make “eel skin” products which are popular in Asia). There seems to be a large disconnect between American marine conservation and Asian demands for sea products, at least from an American perspective. Jeju Island is known for its distinct maritime culture and its historical connections with the ocean; it is also currently a place in transition as the tourism industry has taken hold on the island, very similar to what has been happening in the Hawaiian Islands. I am going to the island to learn about the marine nature that is there, both

from a scientific and a local/traditional perspective, and to better understand how the people there view the changes that are happening to their environment, especially in relation to the perspective their ancestors may have had to their environment.

**Photo:** Victoria Wells (**left**) and Grace Ha (**right**) hiking in Haleakala Crater in spring 2009.

My time in Hawai‘i was actually what inspired the idea that became my Fulbright proposal. I had many amazing experiences while in Hawai‘i, but among the most memorable was hiking across Haleakala Crater and interning with John Pipan of the Mauna Kea Soil and Water District and Yvonne and Keoki Carter of Ka‘ūpūlehu Dry Forest Preserve. The EES program gave me a chance to step out of my comfort zone and to experience first-hand the natural phenomena so many others only learn about through textbooks. Most people think of sun and beaches when they hear Hawai‘i, and for many who come to these islands, that is all they bother to see. The EES program challenged me to explore, physically and intellectually, not only the unique natural history of the Hawaiian Islands, but also to appreciate the context of the Hawaiian culture and the issues that threaten the environment. For me, it was a life-changing experience that continues to enrich my studies back on the Cornell campus.



**Photo:** Grace (**seated on left**) collecting ‘akia seeds in Waiakamali Watershed.

Tracking carbon emissions in Hawai‘i—actually counting up the amount of carbon our group expended in our daily lives, calculating the number of trees it would take to reduce our contribution of greenhouse gases, and then planting that many trees (something like 500)—made the idea of a “carbon footprint” and how large mine was a reality for me. Previously, I knew the American lifestyle was not environmentally sustainable, but the idea that change needed to happen was still just a concept that didn't have a great deal of impact on my daily life. Having returned from Hawai‘i, I am much more conscious about how certain choices I make could have an

unexpectedly largely impact on the environment. For instance, transportation of food products across vast distances is a major source of carbon emissions; therefore, when I get the chance, I try to buy locally grown products. Also, whenever I can, I try to talk to people about why sustainability is important and why they should care about the fate of our planet.

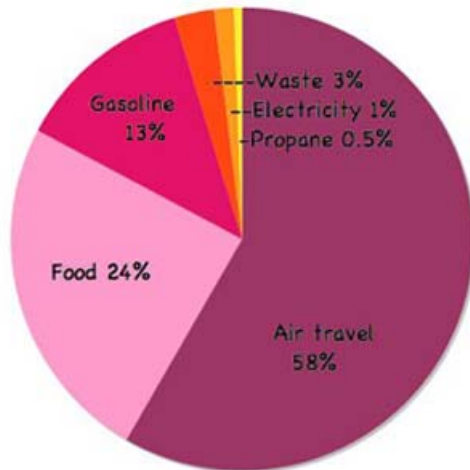
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## Re-growing a Forest or Two

Story and Images by Alexandra Moore, Cornell EES Program Director

### Carbon Footprint 2010 = 57 metric tons CO<sub>2</sub>

Air travel = 33 tons  
Food = 14 tons  
Gasoline = 7 tons  
Waste = 1.5 tons  
Electricity = 0.8 tons  
Propane = 0.3 tons



Defining our carbon footprint was the first challenge undertaken by the 2010 EES class. First, we define our terms. “Carbon-neutral,” in current usage, refers to a balance of carbon dioxide emissions and uptake. If we were to concern ourselves with other greenhouse gasses or effects we would be “climate-neutral.” Next, the students quantify the CO<sub>2</sub> emissions associated with the operation of our program. The best strategy is always to reduce or eliminate CO<sub>2</sub> emissions. Those emissions that cannot be eliminated are then offset. We break down our total emissions into six categories: air travel, ground travel, electricity, propane, food, and waste.

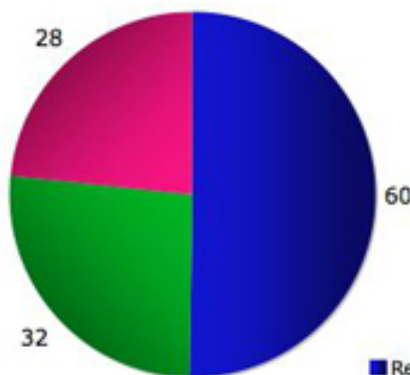
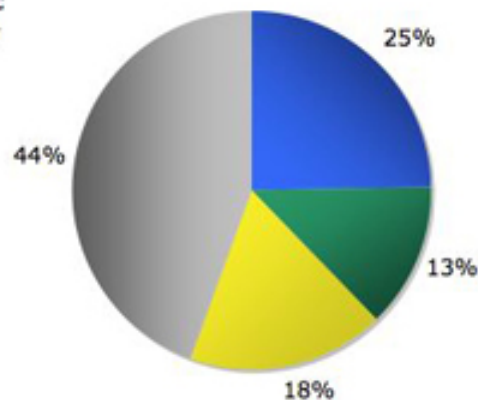
### Food Purchases and Waste

31% of the food we purchase is organic  
38% of our food is local

Of the 100+ pounds of waste that our household generates on a weekly basis, 50% is recycled and 26% is composted. Only 24% of our waste goes to the landfill.

■ Local  
■ Local & Organic  
■ Organic  
■ Neither

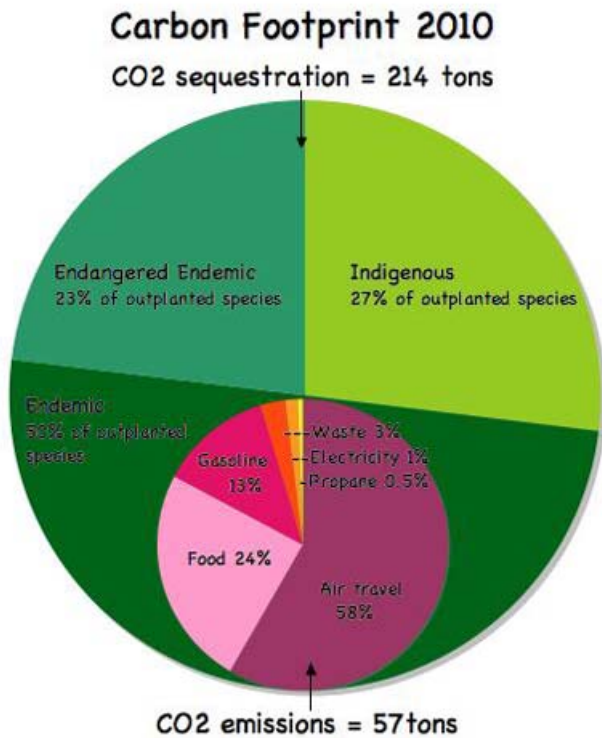
#### Food



#### Waste

■ Recycling (pounds per week)  
■ Compost (pounds per week)  
■ Trash (pounds per week)

Our total CO<sub>2</sub> emissions this year came to 57 metric tons. Not surprisingly, air travel is the single largest source of CO<sub>2</sub> (58%) and the area in which we have few opportunities for reduction. Surprisingly, our second-largest source of emissions was food (24%), followed by ground travel (13%). Domestic energy consumption is less than 2% of our total, thanks to the renewable energy efforts of HPA, our host, as well as our tropical location and Waimea's natural breezes for air conditioning.



So, how do we offset 57 tons of CO<sub>2</sub>? We re-grow a forest, or two. Historically, land-use change and forest clearing have accounted for approximately 20% of the human-caused CO<sub>2</sub> input to the atmosphere. Forests provide a variety of ecosystem services: they reduce erosion and retain water in a watershed, they provide habitat for innumerable plants and animals, and they sequester carbon in soil and biomass. A functioning forest is self-sustaining. As trees grow they add organic matter to the soil and seeds to the surrounding seedbank. As they age and die they create the substrate for the regeneration of new trees. We have already seen these processes in action at our two project sites, which is very encouraging.

When we began this project a year ago we did not fully appreciate the effort required to grow a native Hawaiian forest. We were familiar with the need to fence and weed a forest enclosure. We began our project by collecting seeds of native plants and working in the state tree nursery to clean and propagate the seeds. We laid irrigation lines at the outplant sites and did lots (and lots) of weeding.

This year we worked with our two partners, the Kohala Watershed Partnership and the Dryland Forest Working Group at Ka'ūpūlehu, to outplant native trees, shrubs, and groundcover in two remnant forest enclosures. In 2010, we planted more than 600 individual plants comprising 26 native species. Of these species, 27% are indigenous, while the remaining 73% are endemic to Hawai'i. Of the endemics, 23% are federally listed endangered species, some so rare as to be the offspring of only a handful of wild plants. As the plants grow, each species sequesters variable amounts of CO<sub>2</sub>.

Large trees (e.g., a mature ‘ōhi‘a or koa) are capable of removing and holding more than 20 tons of CO<sub>2</sub>, while an “average tree” accounts for about one ton of sequestered carbon dioxide. On a species-by-species basis we calculate the CO<sub>2</sub> sequestration of our outplants at their mature size, incorporating a mortality rate of 20%. Our 600 outplants are calculated to sequester 214 tons of CO<sub>2</sub> over the course of their lifetimes.

This year we also had the opportunity to monitor our reforestation efforts from 2009. We measured the growth of the trees that were planted last year and were astonished to see how rapidly some of these species have gained mass. Growth rates ranged from 5–150 times the original biomass.

**Photo:** The “forest” on Kohala Mountain. Cornell volunteers work with KWP staff to prepare an outplant site in the restoration corridor.



While the trees are small they grow very rapidly, but as they mature their growth rate will slow. Our initial measurements suggest that the time frame required for our outplants to balance our CO<sub>2</sub> emissions is less than a decade. This time scale is appropriate for carbon-neutrality, as the residence time of CO<sub>2</sub> in the atmosphere is on the order of several decades.



**Photo:** Ka‘ūpūlehu: students monitor the growth of trees planted in 2009.

Since we began, our students have been involved in nearly every aspect of forest stewardship, including working in and around the sites after outplanting. Many of our students have chosen to conduct their capstone volunteer internships with the Dryland Forest Working Group, the Kohala Watershed Partnership, and the Hawai‘i Wildfire Management Organization, working to maintain and mālama these special places. As we pack up and leave, what we take with us is not only a better understanding of sustainable living, but also a very personal connection with the ‘āina and with our friends who live and work here on Hawai‘i Island.

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## Real Research

**Photo:** Kealakehe Intermediate students conducting water quality testing of water samples collected from Kahalu‘u Bay.

*It was pretty incredible to see students in middle and high school doing university-level scientific research projects and data collection. Their questions and experiments were focused on real environmental issues, and posed mental and sometimes physical challenges that were rewarding to both students and teachers. We noticed that some students who don't do that well in school really loved being in the field, and excelled in doing hands-on science.*

–Samantha Birch, Field Educator for The Kohala Center and HI-MOES Outdoor Educator



Participating students have been invited to apply to a week-long HI-MOES Science Camp this summer. Selected students will visit rainforest, reef, tide pool, and stream sites and hone their scientific methodology and data collection skills. “We are hoping these students will then be well prepared to mentor next year’s newer students,” explains Birch.

Schools that participate in the program again next year will be encouraged to improve their science projects, collect longer-term data, and integrate their research with work being done by other HI-MOES schools. Plans for next year include expanding the program to serve Hilo schools. “Adding schools in the Hilo Bay Watershed is exciting, as Hilo is a whole different environment filled with potential study topics,” remarks Birch.



**Photo:** Innovations School students researched the ecological differences between the wet and dry forest on Pu‘u Kawaiwai. Students did a survey of plants and animals, and they also compared the soil composition, soil temperature, soil moisture, soil absorption and percolation, air temperature, and relative humidity of the two forests.

This year’s HI-MOES field research projects included:

***Pu‘u Kawaiwai Ecological Study*** by Innovations Public Charter School

***Hawai‘i Cloud Forest: An Inquiry Into Moss*** by Innovations Public Charter School

***Tide Pool Survey*** by West Hawaii Explorations Academy

***A Field Study Comparing Kahalu‘u Bay and Kūkio Bay, their Substrate and Water Chemistry*** by Hualalai Academy

**Photo:** Hualalai Academy HI-MOES students at Kūkio Bay.

***The Components of a Watershed*** by West Hawaii Explorations Academy

***Po‘o Hawai‘i Restoration Pao‘umi Heiau - Plane Table Mapping*** by Ke Kula ‘o ‘Ehunuikaimalino

***Comparing Kahalu‘u Beach Bark with Kūkio Beach Park: Marine Water Quality, Human Activity and Impact*** by Kealakehe Intermediate School

***Do the Characteristics of Soil, Insect Diversity and Plant Abundance Differ at Three Sites: Pu‘u o ‘Umi, Waiakamali Gulch, and the Koai‘a Reserve?*** by Hawaii Preparatory Academy

***Dissolved Oxygen Changes Over Time*** by Kealakehe High School

***Kohala Rainforest Field Experiments: Moss Diversity in the Kohala Forest; Fern Abundance in the Kohala Forest*** by Waikoloa School



To learn more about each school's project, visit <http://www.kohalacenter.org/himoes/schools.html>. Check out the science conference proceedings and PowerPoint presentations at <http://www.kohalacenter.org/himoes/conference.html>.

Read "Nature, uninterrupted: West Hawaii students examine various ecosystems" (<http://www.westhawaii.com/articles/2010/05/05/local/local01.txt>) by Carolyn Lucas, a front-page story in the May 5 edition of *West Hawaii Today*.

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## Work Hard, Compost, and Other Farm Survival Skills

By Una Greenaway



**Photo:** Una Greenaway holds a bowlful of beans she picked for supper.

In Hawai'i, as with the rest of the U.S., too many of the foods consumed are processed. People have lost touch with growing and eating the kinds of food that we grow in Hawai'i. We need to teach children the importance of their diet to their health.

Over the years, we have worked really hard to create a balance between growing our cash crops—organic Kona coffee and macadamia nuts—and all the other foods that we grow for our own consumption. It takes a lot of coordination to grow, harvest, and process multiple crops. We have also worked hard to become energy self-sufficient. We generate all of our electricity from the sun, and we catch rainwater.

**Photo:** Una's husband, Leon Rosner, feeds the chickens.

In order for farms to be successful, farmers need to create value-added products. To supplement our income we sell coffee, macadamia nuts, macadamia nut butter, jellies, dried bananas, and chocolate candy. I also conduct farm tours. Recently, I have created a small five-family CSA (community supported agriculture) program to sell our vegetables, fruits, avocados, and eggs. The shortage of certified kitchens in the Kona districts makes it difficult for farmers who want to process and sell their own products.



**Photo:** Kuaiwi Farm homegrown organic chocolate candy.

Water has become a huge challenge for farmers in Kona and in other areas of the island. Farmers need to be creative in the ways they use and conserve water. Building more water catchment tanks can really help when the government cannot supply adequate water. It is also extremely important to build up the moisture-holding capacity of the soil with plenty of organic matter, and to hold moisture in with mulch.



Invasive species are also posing serious problems for farmers. The *Varroa* mite is spreading rapidly on Hawai'i Island, killing feral bee hives. Soon the only bees on the island will be those that are in managed hives. The Little Fire Ant also has the potential to devastate tree crops as it spreads across the island, making it impossible to harvest those crops.

**Photo:** Taro.

So, what do you need to know to survive as a farmer? You need to be flexible. Grow what you like first. Work on your marketing. Make sure you have adequate water on your property. Compost. Learn bookkeeping. And, last but not least, make some time to have fun and regenerate!

Learn why Una Greenaway was selected as a 2010 Sustainable Farming Mom of the Year by the Women, Food, and Agriculture Network at [http://wfan.org/News/Entries/2010/5/10\\_2010\\_Sustainable\\_Farming\\_Moms\\_of\\_the\\_Year.html](http://wfan.org/News/Entries/2010/5/10_2010_Sustainable_Farming_Moms_of_the_Year.html).

