

CTAHR RESEARCH NEWS

November 2009
Volume 5, Issue 9 (43)



Creighton Litton uses a laser range finder to measure tree height in Hawai'i Volcanoes National Park.

**Protecting
Hawaii's ecological
heritage**

**CTAHR's new
website**

**The future of
NIFA-funded
research**

In this issue

Protecting Hawaii's
ecological heritage p 3

CTAHR's new
website p 10

2009 Farm Manager's
meeting p 11

Comments by NIFA's
Dr Roger Beachy p 12

New funding p 13

Bushe win's award . . . p 16

New publications p 16

From the Associate Dean and Associate Director for Research

As the Thanksgiving holiday is in progress, we must count our blessings! Although we have been seriously challenged by the budget woes, and we still do not have final resolution regarding faculty contracts, we need to be thankful that we still have a job that pays our bills! We hope UHPA contract negotiations will end soon and return some of the salary saving to the units for our operation expenses. We had decided early on to reduce our operational expenditures and to shift funds to save every position we have. It was a tough decision for most of our units as we really do not have much fat to give up; but, it was a conscious decision supported by the CTAHR leadership. If faculty salary savings are returned to our units, we will be able to breath a bit easier for the current fiscal year. We can only hope that this will happen soon!

Dr. Rajiv Shah, the new USDA deputy secretary, was nominated by President Obama earlier this month to head the USAID. Dr. Shah's departure will be a great loss to the land grant institutions. His departure makes the role of Dr. Roger Beachy, the new USDA National Institute of Food and Agriculture director, even more critical. Dr. Beachy attended the APLU annual meeting last week and provided some clues on programming emphasis in the coming years. Dr. Mike Harrington, former MBBE faculty and CTAHR administrator, wrote a piece for the agricultural experiment station directors and has agreed to share his writing with CRN. Dr. Beachy's comments signal that the direction for future USDA competitive grant programs will be on larger awards and longer durations with a focus on USDA's new five priority areas. I would be interested to hear your comments on this new approach at USDA.

One of the five priority areas is climate change. CTAHR has made a substantial investment in the areas of natural resources and environmental management during the last several years. One of our new faculty members in the Natural Resources and Environmental Management Department is Dr. Creighton Litton. Although Creighton has been with CTAHR only two plus years, he has built an active team to study the impact of climate change on the ecological integrity of Hawaii. Dr. Litton has been successful with winning competitive grants, publishing refereed journal papers, as well as collaborating with scientists from other institutions. He has established a successful program in a very short period of time and we are looking forward to future growth in this.

Farm managers from all of the research stations meet once a year to exchange ideas, provide input, and seek solutions for ways to increase the efficiency of managing their stations. Since these research stations use a lot of resources, a periodic review of farming practices is critical to control the increasing expenditures and to insure their success. A short summary of this meeting is provided to give you an update of what was discussed.

Happy Thanksgiving everyone! Keep healthy, and we will see you back here next month.



C.Y. Hu
Associate Dean
and Associate
Director for
Research



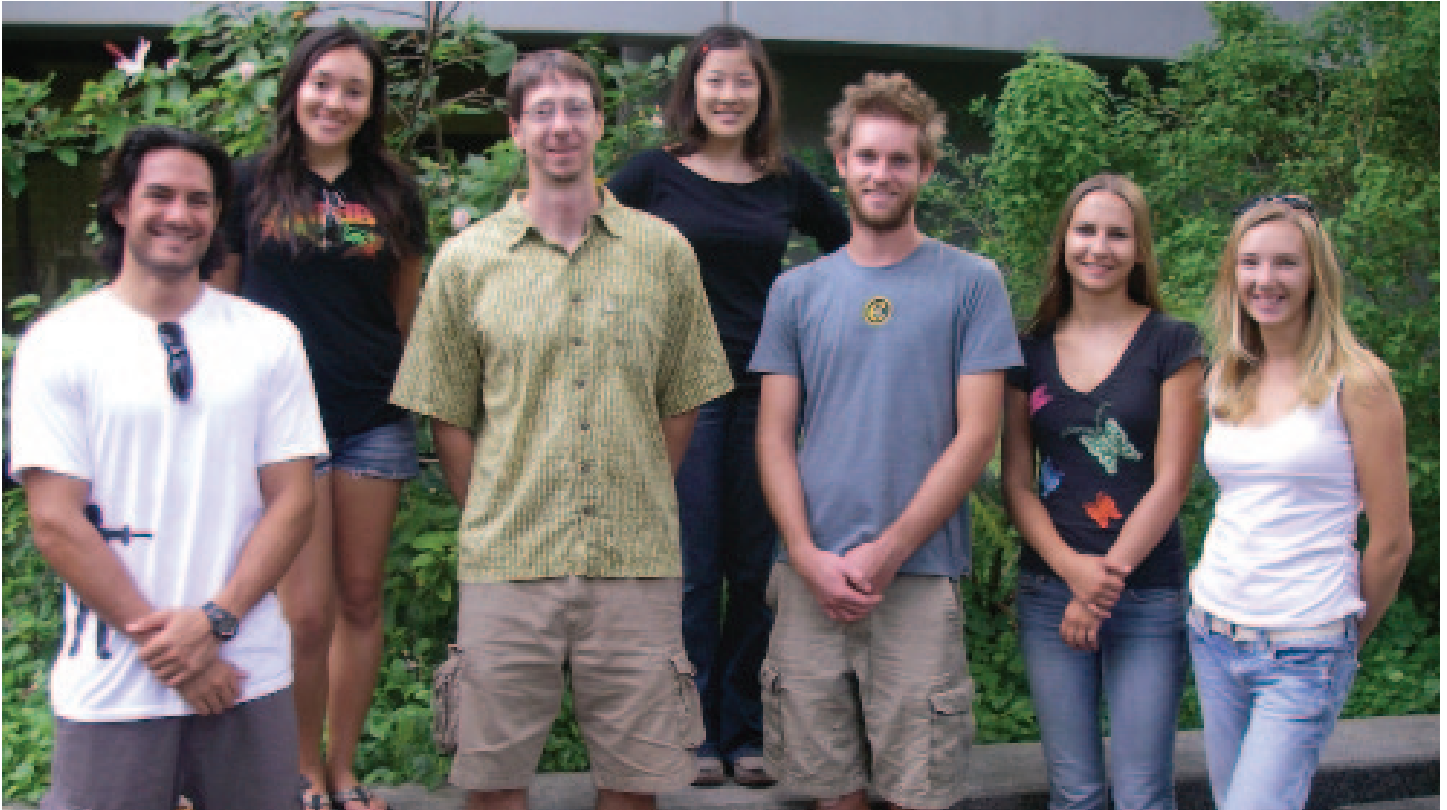
CTAHR Office of Research

College of Tropical Agriculture
and Human Resources
3050 Maile Way
Gilmore Hall 202
University of Hawaii at Manoa
Honolulu, HI 96822 USA
ph 808.956.4142
fx 808.956.9150
research@ctahr.hawaii.edu
www.ctahr.hawaii.edu

CRN staff
James R. Hollyer
Sharee Pepper

Understanding and protecting Hawai‘i’s unique ecological heritage in the face of global change

By Creighton Litton, Assistant Professor
Department of Natural Resources and Environmental Management



L-R. Jeremy Albano (Hawai‘i), Angela Stevens (Washington), Creighton M. Litton (Virginia), Darcey Iwashita (California), Mark Chynoweth (New York), Selita Ammond (Montana), and Lisa Ellsworth (Oregon) of the Ecosystem Ecology Laboratory. Students not pictured are Benjamin Laws (Georgia), Endri Martini (Indonesia), Mataia Reeves (New Mexico), and Bryson Luke (Hawai‘i).

Ecological systems across the globe are increasingly being subjected to a veritable smorgasbord of change, from climate change to nonnative species invasions to alterations in natural disturbance regimes, just to name a few. Ecological systems have an inherent ability to adapt to change. In fact, spatial and temporal variability and change are defining characteristics of all ecological systems. Evolution and natural selection equip these systems to respond to changes in their biotic and abiotic environment, and while the faces may vary through time (i.e., some species come, others go) ecological systems go on doing what they have been doing for

millions of years – adapting to change. Importantly, this historical adaptation to change occurred over thousands to millions of years, allowing organisms to slowly adapt via subtle shifts in their genetic make-up and/or simply by redistributing themselves across the landscape such that they continued to survive and reproduce in those environments in which they were most adapted. So, if ecological systems have adapted to change in the past and will continue to do so in the future, why should we worry now? The variables that are collectively called global change biology today (e.g., climate change, nitrogen deposition, nonnative species invasions, etc.) differ from the sort of historical changes described



Jeremy Albano and Darcey Iwashita measure biodiversity in the Hakalau Forest National Wildlife Refuge to predict how species composition will change with rising temperatures.

above in four key aspects: (1) current changes are largely anthropogenic (human-caused); (2) they are occurring over incredibly rapid, unprecedented time scales (tens to hundreds of years); (3) they fundamentally alter the composition, structure and function of ecological systems; and (4) they often operate in concert.

The research and educational activities in my lab center on understanding how global change impacts native Hawaiian terrestrial ecosystems, primarily forests. A better understanding of the impacts of global change on these ecological systems will allow scientists and land managers to better predict how a suite of important ecosystem goods (e.g., timber production) and services (e.g., air and water purification) that are the base of human existence will be affected, and ultimately how these systems can be managed to minimize detrimental impacts. Science is at the core of these activities. By definition, science is the creation of new knowledge and its dissemination in a format useful for other scientists, land managers, and the general public. There is no better place to conduct science than in the Hawaiian Islands. Hawai‘i provides an incredibly valuable “model” system

in which to ask important questions about the impacts of global change, and I feel privileged to have the opportunity to work here with the faculty, students, and staff of my department and college. I hope that it will be obvious from reading this article that none of this work would be possible without the top-notch collaborators from within and outside of CTAHR, undergraduate and graduate students and field technicians in my lab, and faculty and staff in NREM that I have the pleasure to work with on a daily basis.

For more details on the work that we are doing in my lab and the people that are involved please visit <http://www.ctahr.hawaii.edu/LittonC/>.

Hawaiian ecosystems under a changing climate

The current scientific consensus is that climate is changing, and that this is a direct result of human activities that release greenhouse gases like CO₂ into the atmosphere. What is not known, however, is just how much climate is going to change and what the impacts of that change will be for the goods and services provided by ecological systems. An



Dr. Christian Giardina (USDA Forest Service) and Mike Long (NREM forest technician) measure soil respiration, one component of a forest carbon budget, in the Laupahoehoe unit of the Hawai'i Experimental Tropical Forest.

explosion of research on the impacts of climate change on ecological systems is beginning to provide a better understanding of how they will be altered, but there is still much that remains unknown. Of particular importance to our research team is the role that ecological systems play in cycling carbon. Terrestrial ecosystems constantly cycle carbon across the plant-soil-atmosphere interfaces. Atmospheric CO_2 is fixed into an organic form during photosynthesis and this fixed carbon is used to grow new biomass and maintain existing biomass. Eventually this carbon is returned to the atmosphere via ecosystem respiration, but much of it is stored in forests for hundreds to thousands of years as live and dead biomass, and soil organic matter. As such, terrestrial ecosystems play a crucial role in controlling atmospheric CO_2 concentrations.

With Dr. Christian Giardina (USDA Forest Service) and **Dr. Susan E. Crow** (NREM), we are conducting a study to ask how carbon cycling in tropical rainforests will respond to rising temperature.

Specifically, we are testing two important hypotheses that have arisen recently from global syntheses of the scientific literature: (1) rising temperatures will not impact total ecosystem carbon storage in forests because any losses in carbon stored in soils will be mitigated by increased carbon storage in trees (Raich et al. 2006); and (2) forest ecosystems will shift partitioning of carbon from aboveground to belowground with rising temperatures (Litton & Giardina 2008). If true, both of these hypotheses have very important implications for how the carbon sink strength of forests will be altered by rising temperatures.

We are using an elevational gradient in the Hawai'i Experimental Tropical Forest and Hakalau Forest National Wildlife Refuge on the Big Island that represents a temperature gradient of 5°C (temperatures globally are expected to rise by $2\text{--}5^\circ\text{C}$ over the next 100 years). Temperature is a primary controlling factor for the development and function of ecosystems, so it is easy to imagine that changes in temperature will have

large impacts on the structure and function of forests. Tropical forests, in particular, play a predominant role in global carbon cycling and storage. Hawai‘i provides a unique model system in which to ask these questions because other factors that influence carbon cycling (e.g., substrate type and age, precipitation, and overstory species composition) can be held constant, allowing us to isolate temperature as the primary driving factor behind any differences that we see. Our approach for this research has been to establish a series of permanent plots across our temperature gradient within which we build “carbon budgets”. Much like a financial budget, building a carbon budget entails measuring all of the inputs of carbon into the system, how carbon is partitioned within the system, and the outputs of carbon from the system. This approach, while not easy, provides a powerful framework within which to ask all sorts of questions about how climate change will impact tropical forests. This work has been greatly facilitated by a fantastic crew of research technicians (**Michael Long, Kevin Kaneshiro, Rachel Moseley, Mike Koontz, and Jennifer Johansen**). In addition, two NREM undergraduate students, **Jeremy Albano** and **Darcey Iwashita**, are conducting independent research projects within this study with funding from the NSF-REU and UH-PIPES programs that provide undergraduate students with first-hand research

experience. It takes time to build carbon budgets, so stay tuned for the results of this work over the next several years. Preliminary results indicate that both of the hypotheses that we are testing are supported by the results of our study.

Nonnative plants and animals invade the Hawaiian Islands

A nonnative, invasive plant or animal is one that arrives, intentionally or accidentally, to a new area with the help of humans, is reproducing and establishing viable populations, and is causing ecologic and/or economic harm. Organisms have been dispersing themselves across the globe naturally since there were organisms and a globe, but what makes invasive species unique is that humans typically provide the initial colonization. Only a very small percentage of nonnative organisms introduced to a new area become invasive, but the few that do often cause a variety of detrimental changes estimated to cost the United States >\$120 billion annually. Island ecosystems like Hawai‘i are particularly vulnerable to nonnative invasive organisms as a result of their long history of evolutionary isolation and high rates of endemism.

Work in my lab is focused on understanding the ecological implications of these invasions. A considerable body of work has been done over the past



Dr. Jonathan Price (UH Hilo) and Ben Laws (NREM M.S. Student) survey a native forest in the Kohala Mountains on the Big Island as part of a study to quantify the impacts of feral cattle on Hawaiian forests.



L-R, Lisa Ellsworth, Bryson Luke, Angela Stevens, and Mataia Reeves get ready to sample a recently burned guinea grass stand at the Ka'ena Point Natural Area Reserve.



Selita Ammondts prepares a greenhouse trial to study competition between native species and guinea grass at the Magoon Greenhouse facility.

several decades on the population and community-level impacts of invaders, but much less attention has been paid to the ecosystem-level impacts of invasions. I first came to Hawai'i in 2002 as a postdoctoral ecologist to study how fountain grass (*Pennisetum setaceum*) impacts carbon cycling and water and nutrient dynamics in Hawaiian dry forests. Working with Drs. Darren Sandquist (California State University Fullerton) and Susan Cordell (USDA Forest Service), we found that fountain grass invasion: (1) virtually eliminates native plant establishment; (2) reduces the sink strength of these forests by shifting carbon from long-term storage in wood to short-term storage in fountain grass; and (3) reduces carbon sequestration by altering water and nutrient availability. While I still work on this question today, my research has taken on additional projects aimed at providing information on the ecosystem-level impacts of invaders.

I have recently become involved with several studies looking at the impacts of nonnative, feral ungulates on native Hawaiian ecosystems. With **Benjamin Laws** (NREM M.S. student), **Dr. J.B. Friday** (NREM), and Dr. Jed Sparks (Cornell University) we are collaborating with the Kohala Watershed partnership to study the impacts of feral cattle on native forest structure and function in the Kohala Mountains on the Big Island. Results from this work show that feral cattle substantially alter the structure of these forests, promote nonnative plant invasions in the

forest understory, and accelerate nutrient cycling and availability that promotes nonnative invasive plants over native species. In addition, with **Dr. Chris Lepczyk** (NREM) and **Mark Chynoweth** (NREM M.S. student) we are collaborating with Dr. Susan Cordell (USDA Forest Service) to study the behavioral ecology of feral goats on the Big Island. The goal of this work is to provide information to enhance the restoration and conservation of dry forest ecosystems by investigating seasonal movement patterns of feral goats, and their response to inter-annual vegetation dynamics. We will be collaring and satellite tracking ~15 goats for a year beginning in January 2010. Finally, a recently funded grant will explore the impacts of nonnative, feral pigs on vegetation dynamics and carbon and nitrogen cycling in Hawaiian rainforests. This work will involve Dr. Jed Sparks (Cornell University), Dr. Christian Giardina (USDA Forest Service), and a new postdoctoral ecologist. Stay tuned for results from the goat and pig projects over the next several years.

Fire in Hawai'i as a not so natural disturbance

Fires are a natural disturbance in terrestrial ecosystems worldwide. Organisms that have evolved with disturbances such as fire typically have a suite of adaptations to ensure survival or colonization in the postfire environment. Recent studies have indicated that even very wet, tropical ecosystems like those in Hawai'i have historically experienced fire as a natural



Creighton Litton downloads a microclimate station in a recently burned forest in Hawai'i Volcanoes National Park.

disturbance. The time between fires (i.e., mean fire return interval) for a natural fire regime can be as short as 1-3 years (e.g., temperate grasslands) to ≥ 500 years (e.g., tropical rainforests). Recently, however, the natural fire regime in many ecological systems has changed drastically, largely as a result of human activities that provide ready ignition sources, invasive plants that create large, continuous fuel loads, and/or climate change that alters microclimate and promotes fire. All of these factors have been at play in Hawai'i over the past several decades, and have arguably led to larger and more frequent fires.

Of particular concern is the invasive species-wildfire cycle, where nonnative species invade an ecosystem and change fire dynamics (e.g., increase the severity and/or intensity of fires) that then further promote the dominance of the invaders to the detriment of native species. This sort of positive feedback loop makes eliminating invaders and restoring native species assemblages extremely difficult. My lab is involved in two projects to study the invasive species-wildfire cycle in Hawai'i and, ultimately, provide information

and techniques to help break the feedback loop and restore native species assemblages to the landscape.

In collaboration with Dr. Boone Kauffman (USDA Forest Service) and **Dr. James Leary** (NREM), we are studying guinea grass (*Urochloa maxima*) invasion in dry lowland ecosystems on military lands and surrounding areas on Oahu. This work involves two primary focal areas. First, **Lisa Ellsworth** (NREM Ph.D. student) is quantifying spatial and temporal variability in fuel loads to help refine existing fire models to more accurately predict the occurrence and spread of fires in these systems. These models were developed in temperate ecosystems on the mainland and do a poor job predicting fire occurrence and spread in the tropics, making them ineffective for planning and management activities in Hawai'i. As such, this work stands to greatly improve our capacity to model fire, improve habitat, and reduce the costs associated with preventing and fighting wildfires. Second, **Selita Ammond** (NREM M.S. student) is exploring options for restoring this highly degraded ecosystem by testing the capacity of a suite of native species to outcompete

guinea grass and reduce fuel loads and fire activity by acting as greenbreaks to slow or stop fire occurrence and spread.

With Dr. Boone Kauffman (USDA Forest Service), Alison Ainsworth (U.S. National Park Service) and **Dana Ogle** (NREM M.S. Student; graduated in May 2009), we have been working in Hawai'i Volcanoes National Park in a series of forests that burned in the large, lava-ignited wildfires of 2002-2003. We are comparing burned vs. unburned forests, and those with understories dominated by native vs. nonnative species. Specific objectives are to quantify how invasion by a variety of grasses in drier forests and Asian swordfern (*Nephrolepis multiflora*) in wetter forests impacts post-fire community succession, aboveground carbon storage in live and dead biomass, and potential fire occurrence and behavior. This work is providing important information to land managers on the impacts of fire in Hawaiian forests. While

most Hawaiian species have adaptations to survive or colonize following fire, the explosion of nonnative understory species creates an important barrier to the recovery of these systems. Since fire shifts biomass from live to dead storage pools, reduced establishment and growth of woody native species will greatly reduce carbon storage in these systems. In addition, the large quantity of fine fuels associated with these invaders makes these forests more likely to reburn in the future.

The way forward

Global change biology can seem like an overwhelming challenge for understanding and managing natural resources. But it is a challenge that our society must confront if we are to responsibly manage our biosphere and provide a sustainable future for generations to come. Research in my lab is designed to provide meaningful information to that end.

Creighton M. Litton

Hometown: Buchanan, VA

Joined CTAHR: 2007

Educational History:

B.A., Environmental Sciences,
Emory and Henry College, 1991;
M.S., Forest Resources, North
Carolina State University, 1994; Ph.D., Botany, University of
Wyoming, 2002



Specialization: Terrestrial Ecosystem Ecology and
Biogeochemistry

Current Work: Quantifying the impacts of climate change on the storage and flux of carbon in native Hawaiian rainforests; Evaluating the impacts of nonnative plant and animal invasions on native Hawaiian ecosystem structure and function; Investigating the impacts of nonnative plant invasions on fire dynamics in Hawaiian ecosystems; Elucidating strategies for restoring native species assemblages and ecosystem function to degraded Hawaiian ecosystems

Languages Spoken: English, Spanish

Recent Publications:

Litton, C.M. and Giardina, C.P. 2008. Belowground carbon flux and partitioning: Global patterns and response to temperature. *Functional Ecology* 22: 941-954.

Litton, C.M., Sandquist, D.R. and Cordell, S. 2008. A non-native invasive grass increases soil carbon flux in a Hawaiian tropical dry forest. *Global Change Biology* 14: 726-739.

Litton, C.M., and Kauffman, J.B. 2008. Allometric models for predicting aboveground biomass in two widespread woody plants in Hawaii, U.S.A. *Biotropica* 40: 313-320.

Recent Grants:

Litton, C.M. 2009-2011. Impacts of ungulates on nonnative plant invasions and ecosystem structure and function in native forests of Hawai'i. USDA-CSREES-TSTAR Pacific. \$135,122.

Litton, C. M. and Giardina, C.P. 2008-2010. An experimental test of the impacts of rising temperature on carbon input, allocation, and loss in model forests. National Science Foundation-Ecosystems. \$146,800.

Litton, C.M. and J.B. Kauffman. 2008-2012. The invasive species/wildfire cycle: Fuel loads, microclimate, fire potential, and fire behavior in dominant grasslands and adjacent forests on military lands of Oahu, Hawaii. Department of Defense – U.S. Army Garrison, Oahu (via a USDA Forest Service Research Joint Venture Agreement). \$298,983.

CTAHR's website now has a new look, a new structure, and enhanced accessibility

By Miles Hakoda
Director, CTAHR Office of Communication Services

The redesigned site was quietly unveiled recently (<http://www.ctahr.hawaii.edu>). The new site is a complete overhaul of the old one and features improvements in functionality and logic, allowing for greater efficiencies in navigation and ease of site maintenance.

One of the major design objectives for the new site was to improve its appeal to potential students and aid in CTAHR's recruiting efforts. Brighter colors, design accents of island floral patterns, photographs, videos, and graphics are used to help attract new students to CTAHR.

The site redesign project actually began in late 2007 with the revamping of the CTAHR Extension website.

The Academic section of the new site is one the most recent sections of the site to be completed.

Now that the site has a better-designed foundation, future site revisions will be easier to implement. Due to the dynamic nature of web technology and visitor preferences, the site will continue to evolve to stay current with the ever-changing needs of our many stakeholders.

Much, if not all, of the credit for the site redesign goes to Kathy Lu, of CTAHR's Office of Communication Services. Kathy has literally been putting in double duty for several years, since she's had to maintain the old CTAHR site while constructing the new site. If you have any questions about the site, please contact Miles Hakoda at mhakoda@hawaii.edu.

University of Hawai'i at Mānoa

College of Tropical Agriculture and Human Resources (CTAHR)
The founding college of the University of Hawai'i, established 1907

Site Search | Directory

Our College | Academics | Research | Extension | Departments & Units | International | Publications & Videos

Picture yourself

• conducting research and training to help local farmers and producers
• inspiring students to utilize science-based approaches to find practical solutions
• developing disease-resistant crops or new high-value varieties
• designing, installing, or maintaining golf courses, public parks, and hotel grounds

More on this program | See our other programs

Information for: prospective students | current students | community | employees

UPCOMING EVENTS

"Take Charge of Your Money3!" Financial Education Television Series
Sunday, August 30, 2009 - Sunday, December 13, 2009 (see website for schedule)

Konoeha Research and Extension Complex Dedication
Friday, November 20, 2009 1:30 p.m. - 3:30 p.m.

Second Saturday at the Garden - Poinsettias!
Saturday, December 12, 2009 9:00 am - 12:00 pm

CTAHR NEWS

Green Point Nursery won two ribbons from CTAHR-developed varieties of anthuriums from the Society for American Florist 2009 outstanding varieties competition. A blue ribbon was given for the "Marian Seefurth" pink anthurium that CTAHR's Dr. Haruyuki Kamamoto (TPSS) helped to develop, and a red ribbon for "Tropic Ice," a white and green anthurium also developed by Dr. Kamamoto, with Dr. Adelheid Kuehnle (TPSS). — Society of American Florists, 11/2/2009

NEW WEBSITES

'Ōhāna Caregivers

Hawaii Foods

CTAHR eXchange

Soil Nutrient Management for Maui

Biological Nitrogen Fixation (BNF)

2009 CTAHR Farm Manager's meeting

By CY Hu

Associate Dean and Director for Research

Not unlike other colleges of agriculture around country, CTAHR operates many research stations scattered throughout the state. CTAHR has branch stations at 15 different locations (<http://www.ctahr.hawaii.edu/site/Map.aspx>). It is very costly to operate these stations, and unlike on campus units which do not pay any utility bills, our stations are responsible for all expenditures, including water, electricity, and janitorial service. With the rapid increase in utility rates, our recent budget cuts present a much bigger challenge to our branch stations. County administrators and farm managers from our branch stations come together once a year to discuss pressing issues, share their experiences, and find solutions to their financial and personnel issues. Annette Change, our new Director of Administrative Services, attended the meeting to provide the latest fiscal and personnel news and to help troubleshoot any issues raised by

the farm managers. This year's meeting was hosted by the staff in Kauai, led by Roy Yamakawa, county administrator, and Jonny Gordines, farm manager. Roy has prepared a meeting summary that is being reviewed by the participants and will be put into a working document for us to follow throughout in the next 12 months (http://www.ctahr.hawaii.edu/crn/files/2009_Farm_Managers_Workshop_Summary.pdf). A similar document was assembled after last year's meeting. Many suggestions have been adopted and implemented, and questions answered. To see how this process works you can read the group memory from the 2008 farm managers' meeting at the following links: (<http://www.ctahr.hawaii.edu/vincent/Farm-Managers-Mtg-GroupMemory-11-6-08-rev-send.pdf> and more detail here: http://www.ctahr.hawaii.edu/crn/files/2008-farm-managers-mtg-groupmemory-11-6-08_responses.pdf).



Dr Russell Nagata, Hawaii County Administrator, leads a discussion at the 2009 Farm Manager's meeting.

NIFA's Roger Beachy's comments at the annual APLU meeting

By H. Michael Harrington
Executive Director, WAAESD

At the APLU (Association of Public and Land Grant-Universities) and ESCOP (Experiment Station Committee on Organization and Policy) meetings earlier this week, the experiment station directors had a number of opportunities to listen to Roger Beachy, NIFA Director. During the ESCOP meeting, we heard his thinking and interacted with him on a number of issues, particularly related to AFRI. Clearly we are going to see significant changes as NIFA evolves.

He communicated a profound change in how research will be funded from USDA in the future. Dr. Beachy will be focusing NIFA funding on large scale issues facing agriculture in the US. His primary focus areas will be the Secretary of Agriculture's five priorities: [1] Climate change, [2] Bioenergy - feed stocks and bioproducts [3] Human Nutrition, [4] Food Safety, and [5] International food security.

There will be larger grants of longer duration, in the range of \$10 million per year for five years and renewable for another five. The grants must be multidisciplinary, multi-institutional, or even regional in participation and highly focused to address critical issues facing the Nation. He indicated that there would be some 120 or so individual scientist awards.

The large, long-term grants will involve fundamental and applied research, extension, and/or education. He said these large grants will focus on climate change and bioenergy in the 2010, with food safety and nutrition being added in 2011, and international food security later.

Beachy expects USDA grants to be carrying increased overhead or indirect costs in the future and will work to ramp this up incrementally over the next few years. In response to university financial needs, he fully expects faculty to put their salary onto grants.

He will expect all grant programs to feed into the Secretary's priority areas by answering key questions regarding these major program directions. Watch for



USDA NIFA's new director, Dr Roger Beachy. (photo: NIFA)

the AFRI grants program and processes to take on a definite "NIH" feel over the next few years. Many grant awards now will be "mortgaged forward", i.e. out-years funded by future appropriations, similar to NSF and NIH. He indicated that there would be some "\$600 million" awarded in 2010.

NIFA will be seeking outstanding integrated grant proposals. Large grants will need to have significant extension and/or teaching objectives clearly integrated into the research activities - not simply added on as an after thought

The AFRI RFA will likely be delayed to at least mid January 2010, but there will be a pre-RFA notice sent out in December that will contain preliminary information needed to begin developing proposals.

Grant season open!

By Sharee Pepper
Grant coach

The following list includes some current funding opportunities that may be of interest to CTAHR faculty. If the deadline is too short for this year, it is still a good indication of the likely due date for next year. Let us know if we can be of any assistance with developing and editing your grant application.

For information on submitting grants electronically on grants.gov the following publication may be useful. USDA, NIFA Grants.gov Application Guide – A guide for the preparation and submission of NIFA applications via grants.gov.

http://www.nifa.usda.gov/funding/grant_forms/electronic_app_guide.pdf

Agriculture, Rural and Community Development Grants

\$ - USDA, NIFA - Agriculture and Food Research Initiative (AFRI) Competitive Grants Program (Note: includes prior NRI grants)

Deadline: all have expired (use as guide for 2010)

http://www.nifa.usda.gov/funding/afri/pdfs/program_announcement.pdf or <http://www.nifa.usda.gov/funding/afri/afri.html>

\$ - USDA, NIFA - Business and Cooperative Programs Value-Added Producer Grant Program

Deadline: November 30, 2009-10-08

<http://www.rurdev.usda.gov/rbs/coops/vadg.htm>

\$ - USDA, Western Sustainable Agriculture Research and Education (SARE) -

Farmer Rancher Grant (FRG)

Deadline: Dec 04, 2009

https://wsare.usu.edu/grants/RFA/FRG_10.pdf

\$ - USDA, Western Sustainable Agriculture Research and Education (SARE) -

Professional + Producer Grant (PPG)

Deadline: Dec 04, 2009

https://wsare.usu.edu/grants/RFA/PPG_10.pdf

\$ - USDA, NIFA - Regional Integrated Pest Management Competitive Grants Program - Western Region

Deadline: December 17, 2009

http://www.nifa.usda.gov/funding/rfas/ipm_western.html

\$ - USDA, NIFA - State and Regional AgrAbility Program

Deadline: December 18, 2009

<http://www.nifa.usda.gov/funding/rfas/agrability.html>

\$ - Monsanto Fund Grant

Deadline: January 1, 2010

http://www.monsantofund.org/asp/Qualifications_and_Procedures/Main_Menu.asp

\$ - U.S. Environmental Protection Agency (EPA) - Approaches to Assessing Potential Food Allergy from Genetically Engineered Plants

Deadline: January 7, 2010

http://www.epa.gov/ncer/rfa/2010/2010_star_biotech.html

\$ - USDA, NIFA - Specialty Crop Research Initiative

Deadline: January 14, 2009

http://www.nifa.usda.gov/funding/rfas/specialty_crop.html

\$ - USDA, NIFA - Extension Integrated Pest Management - Coordination and Support Program

Deadline: January 14, 2009

http://www.nifa.usda.gov/funding/rfas/eipm_support_program.html

\$ - USDA - NIFA, AFRI - Agriculture and Food Research Initiative - Soil Processes

Deadline: January 16, 2010

<http://www.nifa.usda.gov/fo/soilprocessesafricfm>

\$ - USDA, NIFA - Integrated Research, Education, and Extension Competitive Grant Program: National Integrated Food Safety Initiative

Deadline: January 19, 2009

<http://www.nifa.usda.gov/fo/foodsafetyicgp.cfm>

\$ - USDA, NIFA - Disaster Resilience for Rural Communities

Deadline: January 20, 2010

http://www.nifa.usda.gov/funding/rfas/pdfs/10_disaster.doc

\$ - USDA, NIFA - International Science and Education Grants Program

Deadline: January 28, 2010

http://www.nifa.usda.gov/funding/rfas/intl_science.html

\$ - USDA, NIFA, AFRI - Plant Biology: Environmental Stress

Deadline: January 29, 2010

<http://www.nifa.usda.gov/fo/plantbiologyenvironmentalstressafri.cfm>

\$ - USDA, NIFA - Organic Agriculture Research and Extension Initiative (OREI)

Deadline: February 9, 2010

<http://www.nifa.usda.gov/funding/rfas/OREI.html>

\$ - USDA, NIFA, AFRI – Microbial Biology: Microbial Associations with Plants

Deadline: February 16, 2010

<http://www.nifa.usda.gov/fo/microbialbiologyplantmicrobeassociationsafri.cfm>

\$ - USDA, NIFA, AFRI - Plant Biology: Growth and Development

Deadline: March 2, 2010

<http://www.nifa.usda.gov/fo/plantbiologygrowthanddevelopmentafri.cfm>

\$ - USDA, NIFA, AFRI - Animal Genome: Genetics and Breeding

Deadline: March 5, 2010

<http://www.nifa.usda.gov/fo/animalgenomegeneticsandbreedingafri.cfm>

\$ - USDA, NIFA, AFRI – Integrated Solutions for Animal Agriculture

Deadline: March 16, 2010

<http://www.nifa.usda.gov/fo/integratedsolutionsforanimalagricultureafri.cfm>

\$ - USDA, NIFA - New Era Rural Technology Competitive Grants Program (RTP)

Deadline: April 14, 2010

http://www.nifa.usda.gov/funding/rfas/new_era.html

\$ - USDA, NIFA, AFRI - Biology of Weedy and Invasive Species in Agroecosystems

Deadline: April 20, 2010

<http://www.nifa.usda.gov/fo/weedyandinvasivespeciesafri.cfm>

\$ - USDA, NIFA - Western Sustainable Agriculture Research and Education Program
Sustainable Agriculture Tours

Deadline: Open until funding is exhausted

http://wsare.usu.edu/grants/docs/RFA_SAT.pdf

\$ - USDA, Rural Development
Community Facilities Loan and Grant Program

Deadline: Applications accepted on an ongoing basis

<http://www.rurdev.usda.gov/rhs/cf/cp.htm>
http://www.rurdev.usda.gov/rhs/cf/brief_cp_grant.htm

\$-Farm Foundation Grants

Deadline: Applications accepted on an ongoing basis

http://www.farmfoundation.org/news/templates/comm_template.aspx?articleid=357&zoneid=67

Education

\$ - NSF - East Asia and Pacific Summer Institutes for U.S. Graduate Students (EAPSI)

Deadline: December 8, 2009

http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5284&org=NSF&sel_org=NSF&from=fund

\$ - NSF – Tribal Colleges and Universities Program (TCUP)

Deadline: December 20, 2009

http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5483&org=NSF&sel_org=NSF&from=fund

\$ - NSF -Research Initiation Grants to Broaden Participation in Biology (RIG BP)

Deadline: January 11, 2010

http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=10676&org=NSF&sel_org=NSF&from=fund

\$ - USDA, NIFA - Secondary Education, Two-Year Postsecondary Education, and Agriculture in the K-12 Classroom Challenge Grants

Deadline: January 15, 2010

http://www.nifa.usda.gov/funding/rfas/sec_challenge.html

\$ - USDA, NIFA - Youth Farm Safety Education and Certification

Deadline: January 21, 2010

http://www.nifa.usda.gov/funding/rfas/youth_farm.html

\$ - Fund for Teachers - 2010 Summer Education Grants

Deadline: January 29, 2010

http://foundationcenter.org/pnd/rfp/rfp_item.jhtml?id=269300007

\$- USDA, NIFA -Higher Education Challenge (HEC) Grants Program

Deadline: February 5, 2010

http://www.nifa.usda.gov/funding/rfas/higher_education_challenge.html

\$ -NSF -Undergraduate Research and Mentoring in the Biological Sciences (URM)

Deadline: March 2, 2010

http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=500036&org=NSF&sel_org=NSF&from=fund

\$ - Human Frontier Science Program – Short Term Fellowship Program

Deadline: rolling – applications accepted year round

http://www.hfsp.org/how/appl_forms_STF.php

\$ - NSF – Active Funding Opportunities

Deadline: Multiple

http://www.nsf.gov/funding/pgm_list.jsp?org=NSF&ord=date

Environment, Water, Energy, Invasive Species Grants

\$ - SeaWorld & Busch Gardens Conservation Fund Offers

Funding for Wildlife Conservation

Deadline: December 1, 2009

<http://www.swbg-conservationfund.org/grantInfoA.htm>

\$ - NFWF, USFWS, BLM, USDA - Bring Back the Natives (BBN): A Public-Private Partnership for Restoring Populations of Native Aquatic Species

Deadline: December 1, 2009 (Pre-proposal)

http://www.nfwf.org/AM/template.cfm?section=charter_programs_list&template=/CM/ContentDisplay.cfm&ContentID=13995

\$ - USDA, NIFA – Air Quality

Deadline: March 5, 2009

<http://www.nifa.usda.gov/fo/airqualityafri.cfm>

\$ - National Forest Foundation: Community Assistance Program

Local Forest Partnerships Fund

Deadline: proposals accepted on a rolling basis throughout year

http://www.natlforests.org/consp_05_cap.html

\$ - National Geographic Conservation Trust Offers Funding to Preserve Earth's Resources

Deadline: Open

<http://www.nationalgeographic.com/field/grants-programs/conservation-trust-application.html>

Families, Youth and Children Grants

\$ - CHS Foundation

Rural Youth and Leadership Development

Deadline: rolling – applications accepted year round

<http://www.chsfoundation.org/programs/ryld.htm>

Financial Grants

\$ - Money Management International Financial Education Foundation,
Financial Education Grants

Deadline: rolling – applications accepted year round

<http://www.mmifoundation.org/GrantSeekers.asp>

\$ - [Hitachi Foundation: Business and Communities Grants Program](http://www.hitachifoundation.org/grants/guidelines/index.html)

Grants Address Economically Isolated Communities

Interested organizations may submit an online inquiry to provide information about project ideas **at any time** and the Foundation's will determine if it fits their priorities.

<http://www.hitachifoundation.org/grants/guidelines/index.html>

Health, Nutrition, Food & Biomedical Grants

\$ - Centers for Disease Control and Prevention (CDC), National Institute for Occupational Safety and Health (NIOSH) - Centers for Agricultural Disease and Injury Research, Education, and Prevention (U50)

Deadline: November 30, 2009

<http://grants.nih.gov/grants/guide/pa-files/PAR-06-057.html>

\$ - FDA & NIH - Center for Food Safety and Applied Nutrition (CFSAN) – SBIR & STTR

Deadline: December 5, 2009

<http://grants.nih.gov/grants/guide/pa-files/PA-09-080.htm>

\$ - Robert Wood Johnson Foundation and Pew Charitable Trusts Announce Health Impact Project

Deadline: Open

<http://www.rwjf.org/applications/solicited/cfp.jsp?ID=20921>

Science Grants

\$ - USDA, NIFA, AFRI – Arthropod and Nematode Biology and Management: Tools, Resources, and Genomics

Deadline: April 1, 2010

<http://www.nifa.usda.gov/fo/arthropodnematodetoolsresourcesgenomicsafri.cfm>

NSF – Active Funding Opportunities

Deadline: Multiple

http://www.nsf.gov/funding/pgm_list.jsp?org=NSF&ord=date

\$ - National Geographic Society – Waitt Grants Program

Deadline: Rolling

<http://www.nationalgeographic.com/field/grants-programs/waitt-grants-application.html>

UH, Hawaii and Regional Grants

\$ - UH, University Research Council - Faculty Travel Funds
Proposal Deadline: rolling – applications must be in >4 weeks before travel.

http://www.hawaii.edu/urc/pdf/factravel_g.pdf
http://www.hawaii.edu/urc/pdf/factravel_f.pdf

Brian Bushe wins State award

By Douglas L. Vincent
Chair, Department of Human Nutrition, Food and
Animal Sciences

Congratulations to Brian Bushe, an APT in Hawaii County. Brian was just recently named 2009 Hawaii State Employee of the Year by Governor Lingle Lingle. Brian is part of the CTAHR 'Ohana, an APT in Hawaii County Komohana Office. Brian is an insect and plant disease diagnostician and works for the Department of Plant and Environmental Protection Sciences and the Agricultural Diagnostic and Service Center. Brian helps Hawaii County residents diagnose plant diseases or identify insect pests eating their crops or gardens. *“Brian has made immeasurable contributions to the University of Hawai‘i and to our local farmers by providing accurate and timely diagnosis and identification of pests to ensure the protection of our plants and the environment,”* Governor Lingle said.



Brian Bushe. (photo: UHM)

Faculty publications

Daniel Rubinoff (PEPS)

Schmitz, P. and D. Rubinoff. 2009. New Species of *Hyposmocoma* (Lepidoptera, Cosmopterigidae) from the remote Northwestern Hawaiian Islands of Laysan, Necker and Nihoa. *Zootaxa* **2272**: 37-53.

Yoshie & Charlie Weems (HNFAS)

Y.S. Weems, D. Johnson, T. Uchima, A. Raney, E. Lennona, K. Goto, G. Bowers, J. Saldana, J. Pang, R.D. Randel, and C.W. Weems. 2009. Is endothelin-1 luteolytic or antiluteolytic in ewes? *Prostaglandins & other Lipid Mediators* 90: 6368-2.

Y.S. Weems, A.W. Lewis, D.A. Neuendorff, R.D. Randel, and C.W. Weems. 2009. Endocannabinoid 1 and 2 (CB1; CB2) receptor agonists affect negatively cow luteal function *in vitro*. *Prostaglandins & other Lipid Mediators* 90:8993.