Meeting Hawai‘i’s natural resource challenges with unmanned aerial vehicles

by Chancellor Don Straney

We are in the planning stages of a proposed international flight training center and associated aeronautical training program at the University of Hawai‘i at Hilo and Hawai‘i Community College. Among various aeronautical specialties such as piloting aircraft, a major component of the collaborative program involves unmanned aircraft systems, the importance of which I’d like to share with you in this column.

Hawai‘i provides a world-class setting for doing research in ecology, volcanology, marine science, and tropical agriculture. Much of the research requires the repeated collection of fine-scale spatial data. Traditional data collection uses satellite or manned aerial systems, which are lacking in resolution or too expensive to be widely used. On-the-ground field studies provide fine spatial detail, but have very limited coverage and can be extremely expensive and problematic in dangerous, inaccessible or sensitive areas.

Unmanned Aerial Vehicles (UAVs) provide a means of overcoming these limitations while generating very large datasets that will revolutionize our ability to meet the natural resource challenges facing Hawai‘i.

UH Hilo’s UAV Research Team is a collaborative group across disciplines — marine science, geology,
success of animals have evolve through natural and sexual selection in conditions that greatly differ from today’s ecological environment.

A third team will examine Dynamic Interactions between Symbioses and Environment (DISE), or how symbiotic relationships between macro and micro organisms can shift in response to environmental changes.

The results of the research is expected to produce a deeper understanding of the impacts climate change will have on the geographic ranges as well as social and symbiotic interactions of species in Hawai‘i and the broader Pacific region.

“Hawai‘i’s unique natural resources are our heritage, and it is our kuleana to be effective stewards to provide for future generations,” said Chancellor Don Straney. “The CREST: TCBES project will provide the next generation of scientists and professionals with the depth of knowledge and the interdisciplinary perspective required to both study and effectively manage those spectacular, yet fragile, resources.”

Beyond its discovery value, the CREST Project is expected to enhance faculty research capacity and attract students from groups traditionally under-represented in the sciences, whose participation will open up opportunities in Ph.D. programs and professional careers. As involvement from students of native Hawaiian and Pacific Island ancestry grows, so too should the application of indigenous knowledge to environmental issues as they forge ties with federal and state agencies, along with researchers from Ph.D. granting institutions throughout Hawai‘i and the U.S. mainland.

“In the span of its 10-year history, TCBES has established itself as a truly outstanding graduate program with both national and international distinction,” said Vice Chancellor for Academic Affairs Matt Platz. “Through the CREST project, the program is taking another important step in its development as a center of excellence for research and training throughout Hawai‘i and the Pacific region.”

(Ken Hupp is a public information officer.)

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**Ka Lono Hanakahi**

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The researchers combine their expertise in data analytics, informatics, modeling, data integration and visualization in several local projects.

The team is currently looking at early detection of Banana Bunchy Top Virus at Richard Ha’s farm at Hamakua Springs. The applications with UAVs for precision agriculture include collecting imagery to assess crop health, yield prediction, and other factors that may be impacting a farmer’s field. It’s often difficult for a farmer to get an overall idea of how well their crops are doing from just walking the fields. Our researchers have been using a multi-rotor platform UAV to capture the imagery over the banana fields.

Another focus for the research team will be on environmental monitoring. There are a multitude of UAV applications for natural resources from mapping the spread of invasive species to creating vegetation health.

Last month, the Federal Aviation Administration granted a Certificate of Authorization to our UAV Research Team to do flights over native dry forest habitat in Kona. Roughly 90% of native dry forests have been destroyed in Hawai‘i over the last century. The team will be using high-resolution imagery to identify rare endemic plants such as the Wililii tree, which will help to better understand how their population numbers are doing and how they might have been impacted by the Gull wasp, for example.

UH Hilo has purchased a small fixed-wing UAV in support of this research. The aircraft will be operated by a two person crew during flight operations, and has a flight endurance of about 30 minutes.

Other projects will look at sediment in the Kawaihae watershed, canopy structure in restored hybrid ecosystems, submarine groundwater plumes in the coastal ocean around Hawai‘i Island, pāhoehoe lava flows, and shoreline analysis in high-risk areas along the Hawai‘i Island coast.

We are looking forward to completing the necessary planning required for the international flight training center and aeronautical training program. The program will prepare students to help address the future needs of our island economy.

UH Hilo views our collaboration with Hawai‘i Community College as an important component in being able to successfully provide higher education and career options to the people of Hawai‘i Island.

Aloha,

Donald O. Straney
UH Hilo students awarded Adopt-A-Beehive with Alan Wong Scholarship

Three UH Hilo students were awarded the Adopt-A-Beehive with Alan Wong Scholarship at the third annual Bee-coming Sustainable event sponsored by the Adopt-A-Beehive with Alan Wong program held on March 8 at the UH Hilo Farm Laboratory in Panaewa. The program is a collaborative partnership with Chef Wong and UH Hilo to bring greater awareness to the importance of honey bees and support the educational beekeeping activities at UH Hilo.

This year’s scholarship recipients are Stephen Zilch, Kawehi Lopez and Kirsti Vedenoja. Chancellor Don Straney and Marketing Director for Alan Wongs, Nicole Ng, presented the recipients with a check for $1,000 each.

The event also showcased the advanced beekeeping students who presented walking tours through Mapuhonehone, the bee garden, van tours to the apiaries, educational demonstrations and displays of honey extraction, honey sampling, frames, and a live observation hive. In addition, Chef Wong’s staff treated adopters to food samplings made with honey, such as pizza, pulled pork sliders, ice cream and salad dressing with Hawai’i Community College-grown greens.

To learn more about the program, visit: http://hilo.hawaii.edu/adoptabeehive/.

Miss Saigon at UH Hilo this month

The UH Hilo Performing Arts Department presents Miss Saigon, the award-winning musical written by Claude-Michel Schönberg and Alain Boublil, opening April 10 at 7:30 p.m. for a two-weekend run at the UH Hilo Performing Arts Center.

A cast of 37 performers and conductor Armando Mendoza bring to life the story of an American G.I. who experiences war’s emotional choices when he falls in love with a Vietnamese girl just as Saigon is besieged by the North Vietnamese.

Advanced student choreographers and directors have joined faculty choreographer Celeste Staton and stage director Jackie Pualani Johnson to create several dances and scenes. They include Dance majors Kawehi Kanoho-Kalahiki and Kawai Soares, who devised original choreography for The Fall of Saigon and The Heat is on in Saigon, two iconic numbers that set the backdrop of the war.

The dances feature College of Agriculture, Forestry and Natural Resource Management faculty member Norman Arancon as The Engineer; Rachel Edwards, a Performing Arts Department Senior in her final semester as a music concentration major as Kim; community member Scott Wuscher as the American GI; and UH Hilo students Lili-noe Kauahikaua, Angeline Jara, Bailey Woolridge, and Kanoho-Kalahiki as the working girls of the Dreamland Bar: Gigi, Mimi, Yvette and Yvonne.

Miss Saigon also marks the full-scale musical debut of Performing Arts graduate Kimo Apaka and senior Denyse Woo-Ockerman, who completed the University’s stage directing course and will stage several songs in the production.

Tickets are available by calling 932-7490 or can be purchased online at artsctr@hawaii.edu.

For more information, contact Johnson at 932-7491 or email jpjohnso@hawaii.edu.
Hats off to...

Jeffrey Smith, Assistant Professor, History, co-authored “Lincoln and the ‘Cannibals,'” an online article that recently appeared in the New York Times Disunion. The article is about a little episode in the Marquesas Islands of “blackbirding” pirates, American sailors, Hawaiian missionaries, and the saga’s eventual connection with President Abraham Lincoln a little over 5,000 miles away. Research assistance was provided by two UH Hilo students.


Todd Belt, Professor, Political Science, had his article “How to Replace a Lion: Hawaii Prepares for Budget Life after Dan Inouye” accepted for publication in the peer-reviewed journal the California Journal of Politics and Policy. He was also invited to be a contributor at the roundtable on “Lessons of the Obama Presidency” at the Western Political Science Association conference.

Nina Buchanan, Professor Emeritus, and Robert Fox, Professor Emeritus, recently had their book, Proud to be Different: Ethnocentric Charter School in America, published by Rowman & Littlefield.

Michael Marshall, Professor, Art, has two works currently in a group exhibition entitled “Concrete Poetry” at the Midkiff Learning Center, Kamehameha Schools Kapalama campus on O’ahu. These works, “Watch a Plume” and “Reducing Rubbish,” complete Marshall’s visual print imagery initiated in his spring 2013 sabbatical series of print investigations.

Jiren Feng, Assistant Professor, Chinese, was invited by the Office of Metropolitan Architecture (OMA), Rotterdam, The Netherlands, to collaborate as a specialist in Chinese architecture and shares the “Academic Committee Award” with OMA for its workshop on “Working on Yingzao Fashi” at the 2013 Hong Kong/Shenzhen Bi-City Biennale of Urbanism and Architecture. The outcome of the workshop will be on display at the 14th International Architectural Exhibition, Venice, Italy, June-November 2014.

Matt Platz, Vice Chancellor, Academic Affairs, recently received the 2014 James Flack Norris Award for his contributions to physical organic chemistry. The award is sponsored by the Northeastern Section of the American Chemical Society.

Enrollment begins for UH Hilo Summer Art Institute

Enrollment for UH Hilo’s 2014 Summer Art Institute begins April 1. The six-week program offers participants opportunities to interact with world-class visiting artists and faculty, view special exhibits, attend artist lectures, and participate in focused art workshops.

The three-credit SAiH courses are offered through the UH Hilo Art Department in the areas of printmaking, mixed media, digital photography, and art appreciation. Registration is open to both college students and the community.

More information is available at: http://hilo.hawaii.edu/~art/summer-art-institute/.

Contact Michael Marshall at mdmarsha@hawaii.edu or 974-7524 with any questions.
A collaboration between the UH Hilo Daniel K. Inouye College of Pharmacy and Wilcox Hospital has formed Hawai‘i’s first interdisciplinary Anti-microbial Stewardship Program (ASP) to help combat infectious diseases on Kaua‘i.

ASPs are programs designed to improve the utilization of appropriate antibiotics with the goals of improving patient outcomes and lowering healthcare associated costs, as well as slowing the development of antimicrobial resistance.

“The management of infectious diseases is a constant arms race, and, as medication experts, pharmacists are uniquely qualified to help drive ASPs,” said Roy Goo, assistant professor in the Department of Pharmacy Practice, who is based on Kaua‘i. “As new antimicrobial agents are developed, bacterial, viral and fungal organisms evolve with new resistance mechanisms that confer immunity to even our best medications. Even with proper medication, it is estimated that 50 percent of antibiotics are used inappropriately.

“The practice of infectious diseases is the art of using only what is necessary to cure the infection and nothing more,” added Goo. “One of the basic principles of infectious diseases is the more antimicrobial agents we use, the faster resistance develops.” He points out that in recent years multiple strains of bacteria have arisen that are resistant to all currently available antibiotics.

In Hawai‘i, Goo shows how the College of Pharmacy has played an integral role in the development of these programs across the State. With support from Wilcox Hospital’s inpatient pharmacy department and the hospital’s infectious disease physician Dr. Jimmy Yoon, students screen for patients who are on high-cost or high-risk antimicrobials. They then assess the appropriateness of the antimicrobial regimen for each patient and present their recommendations to the entire infectious disease team, who makes changes to optimize therapy.

“The Center for Disease Control strongly recommends that hospitals perform some form of antimicrobial stewardship, and it is likely that it will become mandated by the Center for Medicare / Medicaid Services (CMS) in a couple of years,” Yoon said. “At Wilcox Memorial Hospital, we like to be ahead of the curve. Right now we are lucky that we have very few resistant bacteria, and we want to keep it that way. There is a clear correlation between bacterial resistance and increased morbidity and mortality as well as healthcare costs.”

Recognizing the importance of training pharmacists to fill this growing need, Yoon often spends time with students and tests them on their drug knowledge. Students consult with members of Wilcox Memorial Hospital’s Radiology staff, who also volunteer their time to go over chest X-rays and other imaging studies to point out abnormalities that serve as possible indications of infection.

“The drug pipeline for antimicrobial agents is dry so we need to save the agents that we have,” Yoon said. “My anticipation is that for pharmacists this is going to be a huge area for growth.”

This positive experience has led to other collaborative programs at Straub Hospital and Pali Momi Medical Center (PMMC) on O‘ahu. Pharmacist Melissa Yoneda, a DKICP alumni from the Class of 2013, is currently helping to establish a pharmacy-driven ASP at PMMC in collaboration with the PMMC pharmacy, nursing and physician staff.

The release of an ASP module and guidance statement from the CDC indicates that ASPs will likely become a requirement across the United States. Certain states such as California have already made it mandatory that hospitals that enjoy Medicare reimbursement have an established ASP in place.
UH Hilo receives grant to promote healthy dating relationships

UH Hilo recently received a $5,000 grant from the Avon Foundation for Women through its Speak Out Against Domestic Violence initiative. The grant funds Student Health & Wellness Program’s Men of Strength at UH Hilo to promote healthy dating relationships among college-age women and men. This is the first year UH Hilo has received funding from the m.powerment program.

The grant is one of 25 m.powerment by mark Healthy Dating Relationship College Program grants totaling $125,000 awarded to colleges nationwide to fund programs focused on preventive education on dating abuse and violence, sexual assault, stalking, and the promotion of healthy relationships, as well as offer local resources and provide referrals for community-based domestic violence experts. The grant also supports educator training, materials and support sessions about healthy relationships.

“Women ages 16-24 experience the highest rates of partner violence and dating abuse, which affects millions of people and often results in physical and emotional injuries and even death,” noted UH Hilo Student Health & Wellness Programs Director Dr. Sulma Gandhi. “According to the National Dating Abuse Helpline, one in three girls who have been in a serious relationship say they have been concerned about being physically hurt by their partner. While strides have been made in the fight against this abuse, many victims will not get the support they need.

“We are proud that the Avon Foundation for Women shares our mission and has chosen to support our program,” she added.

Men of Strength (MOS) is a campus organization that is comprised of male students, faculty and staff who are dedicated to ending violence on campus and in the community, especially violence toward girls and women. MOS recently received an award for Innovative Programming through NASPA (Student Affairs Administrators in Higher Education).

The Avon Foundation for Women launched Speak Out Against Domestic Violence in 2004 to support domestic violence awareness, education and prevention programs aimed at reducing domestic and gender violence, as well as direct services for victims and their families. Through the end of 2013, the Avon Foundation for Women has donated $33 million in the United States to support domestic violence programs, services and education.

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**Campus Events**

**April**

1. **“I” removal deadline: Student to Instructor**  
   Last day to apply for Credit-by-Exam for Spring  
   Priority deadline to apply for Summer & Fall 2014 graduation

4. Graduate thesis/dissertation to committee deadline

10, 11, 12. **Miss Saigon, 7:30 p.m., PAC, Admission**

13. **Miss Saigon, 2 p.m., PAC, Admission**

15. **“I” removal and change of grade deadline: Instructor to Ofc of Registrar**  
   Last day to submit Credit-by-Exam results to Ofc of Registrar

17, 18, 19. **Miss Saigon, 7:30 p.m., PAC, Admission**

18. Holiday: Good Friday

21. Graduate thesis/dissertation defense deadline