



# Pacific Island Network Quarterly

Quarterly Newsletter of the  
Pacific Island Network (PACN)  
Inventory & Monitoring Program  
Jan. - Mar. 2009, Issue no. 15



## Special Edition PACN Coral Reefs, part 1

### Kalaupapa National Historical Park & National Park of American Samoa

Inventory Update...3  
Update & Calendar...2  
Featured Staff...3

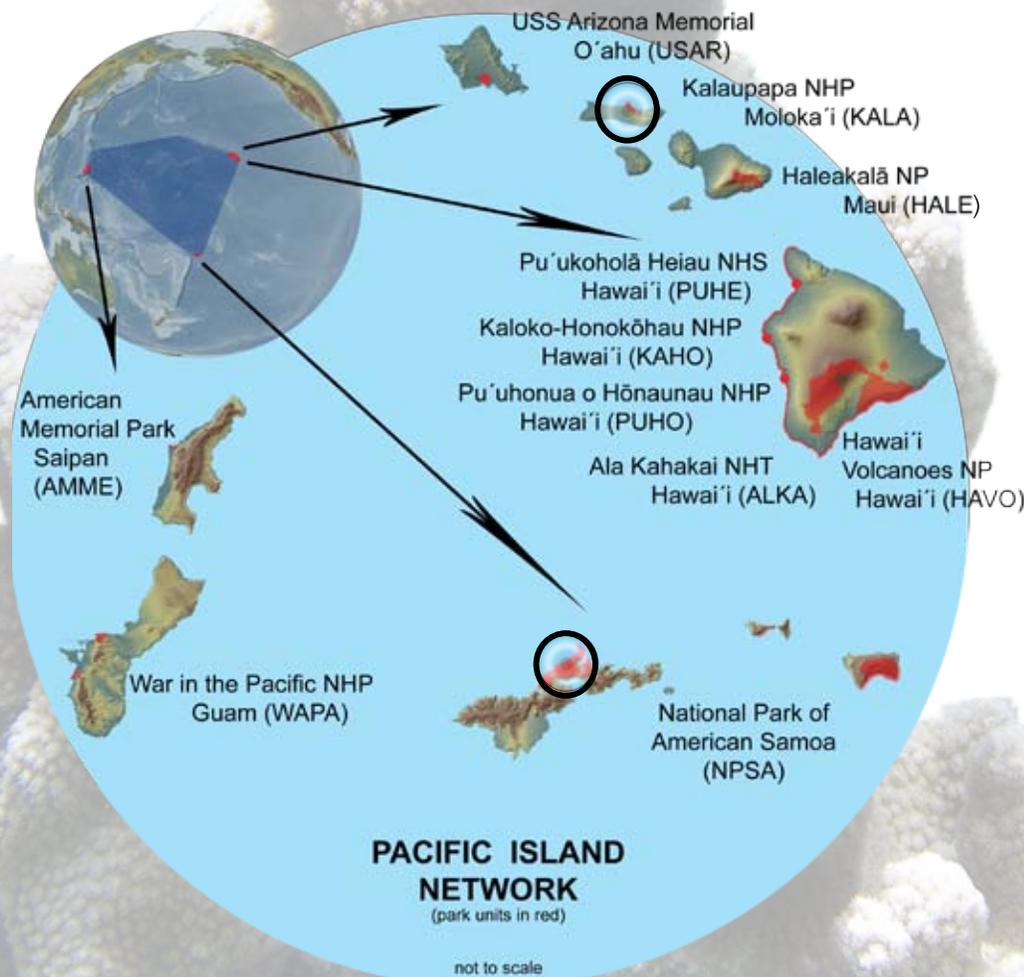
**PACN Coral Reefs, part 1** begins with Kalaupapa National Historical Park and the National Park of American Samoa.

We take you on a quick and easy journey to a basic understanding of resources, issues, and threats facing two of the National Park Service's most splendid coral reef parks.

**Featured Resources pages 4-7**

**David Benitez** shares his **journal notes** from vegetation mapping fieldwork he conducted with other NPS staff in the Northern Marianas Islands.

**Notes from the Field page 8**





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The National Park Service has implemented natural resource inventory and monitoring on a service-wide basis to ensure all park units possess the resource information needed for effective, science-based management, decision-making, and resource protection.

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# Outreach and Staffing Update

**Outreach**

The PACN is planning the first annual Science Day on May 6 in the Kilauea Military Camp lehua room to share research and monitoring highlights and trends among parks. Staff and superintendents from all network parks as well as park partners will be invited to present and learn about what is new in National Park Service related natural and cultural resources.

Two landmark science communications publications have been produced and are nearly ready for distribution. The first is the Pacific Island Network Science Communications Plan which sets the course for communicating I&M work for the next five years. The second publication was a joint effort between the PACN and the South Florida and Caribbean Network to produce a snapshot of the coral reefs in national park units where monitoring occurs.

**Staffing Update**

**NPS:** The PACN welcomes Alison Ainsworth as staff Vegetation Biologist in charge of the vegetation monitoring protocols. She has previously worked with I&M as a CESU cooperator aiding in the development of two plant monitoring protocols. She has a solid understanding of botany in the Pacific Islands and will apply that knowledge to this long-anticipated position with the park service. Alison will begin work on May 11.

As the network endeavors to solidify the vegetation monitoring program, we also expect

to bring on a Vegetation Biotech to aid Alison with the vegetation monitoring protocols. This position will be filled soon.

Finally, joining us freshly from Antarctica, Chis Seliga has begun a stint volunteering with the I&M wildlife protocols.

**CESU:** Anne Farahi has finished her temporary position with the aquatic monitoring team and is now volunteering for the NPS in a similar position.

Graduate student Chris Todd parts ways with the I&M Program. Chris aided with the collection and analysis of Hawaiian Hoary Bat data for the protocol as he worked on his degree.

Also, after nearly four years of working for the network with the endangered Hawaiian Hoary Bat, Heather Fraser will be leaving Hawaii for the alluring summer climes of the Midwest. The PACN wishes to thank her for all of her hard work and hopes the best for her in the future.



## Calendar & Upcoming events

March 24-27 = Trimble GPS training in KAHO  
April 21-23 = Data management conference in Tucson, AZ  
May 6 = First Pacific Island Network Science Day at HAVO for sharing science among network parks  
May 11 = Alison Ainsworth begins work as PACN botanist  
July 21-23 = Program review

# Inventory Update

## Seabird Surveys in two Hawaii Parks

Two reports detailing survey efforts at Haleakalā (HALE) and Hawai'i Volcanoes (HAVO) National Parks have recently been published in the Pacific Cooperative Studies Unit technical report series. In both parks daytime and nighttime surveys were carried out at numerous locations ranging from sea-level to 2000 m (HALE) and 2700 m (HAVO). Haleakalā surveys confirmed the presence of 'Ua'u, Koa'e Kea, 'Iwa, and Noio. Although 'A'o were not detected, this species is often

heard in Kīpahulu Valley. 'Akē'akē were not detected during the surveys, but are likely to occur at HALE. 'Ua'u, 'Akē'akē, and 'A'o were confirmed by visual or audio observations, and maps showing flight corridors for these species were created. One possible 'Akē'akē nest location was identified, but only continued monitoring will confirm nesting.



An 'Iwa gliding overhead

'Ua'u = Hawaiian Petrel = *Pterodroma sandwichensis*  
Koa'e kea = White-tailed Tropicbird = *Phaethon lepturus dorotheae*  
'Iwa = Great Frigatebird = *Fregata minor palmerstoni*  
Noio = Hawaiian Noddy = *Anous minutus melanogenys*  
'A'o = Newell's Shearwater = *Puffinus auricularis newelli*  
'Akē'akē = Band-rumped Storm Petrel = *Oceanodroma castro*

## Inventory Update Extra *Trinomial by any other name*

Scientists are finding it necessary to learn three or more names for each plant and animal species in the PACN. Many research scientists prefer the scientific or Lynnean name for a species such as *Oceanodroma castro*. But when scientists communicate with the rest of us, these pseudo-Latin names mean very little.

The *lingua franca* among the America-associated islands of the Pacific is English, so it is useful to know the English names of plants and animals. For example, the words *Pan troglodytes* may not be known by very many people, but many would understand the English equivalent, chimpanzee.

Finally, it is very important to learn the Hawaiian, Samoan, or Chamorro names of local or regional species when discussing those species with the people of that area. For example, if you want to talk about the native Low-fin Chub with Hawaiian anglers, they will probably not know which fish you are referring to. However, if you ask them a question about the eneneue they can relate immediately. Knowing the 'language' of your audience is key to communicating natural resources information.



*Pterodroma sandwichensis*



Hawaiian Petrel

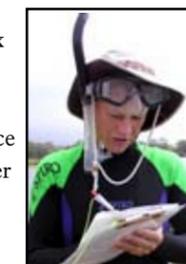


'Ua'u

# Featured Staff

**Mariska Weijerman**, CESU Marine

Resource Research Specialist, came to Hawaii six years ago leaving behind friends and family in the Netherlands, and has since worked with the NPS. Her background is in tropical rainforest and coastal ecosystems. Although she loves the rainforest, she married a coral reef biologist and has lived on nine different islands ever since. Consequently most of her work has been in coastal ecosystems. She worked for Kaloko-Honokōhau NHP on a range of different projects. She started on an anchialine pool inventory project followed by a project searching for a solution to control an invasive marine algae in Kaloko Fishpond. Her next project was a baseline study of the reefs close to Honokōhau Harbor. She then started working with I&M to develop an anchialine pool animals monitoring protocol. Last Christmas the family moved to island number nine, O'ahu, where she continues to work for I&M.



**Sarah Nash**, CESU Ecological Monitoring Database Applications

Specialist, moved to Hawaii in 2004 to work for the USGS Palila restoration project where she got her data legs in MS Access and GIS. She joined the I&M data management team in 2007 to organize the digital library, edit inventories, and add to NatureBib resources for the PACN. In ancient times she earned her BA in zoology and Latin American studies at Miami University (Ohio) and later a MSc at the University of East Anglia (UK) in applied ecology and conservation. Her thesis work focused on nest-site selection and the effects of poaching on the yellow-headed Amazon parrot, an endangered species in Belize. Prior to that she acted as co-steward for the Nature Conservancy in Illinois, served 2.5 years in Morocco as a Peace Corps volunteer, and worked as a science textbook editor for Scott Foresman Publishing Co. in Chicago. In her spare time, Sarah plays with her energetic son, Lochlan, teaches Irish step dance, and attempts ultimate frisbee on the Big Island.



# Coral Reefs at Kalaupapa National Historical Park

Kalaupapa National Historical Park, established in 1980, preserves the story of the isolated Hansen's disease (leprosy) community by preserving and interpreting its settings and values. Kalaupapa Peninsula is isolated from the outside world by sheer cliffs of over 600 meters. The 25 km of coastline and offshore islands surrounding the park hold a rich and abundant fish assemblage that is among the most diverse in the main Hawaiian Islands. Encounters with rare fish and unique coral species not commonly observed in the main Hawaiian Islands can occur in the shallow waters of this windswept north coast.



Underwater oceanographic observatories measure currents, waves, temperature, and water clarity at several parks in the Pacific

## Major Threats

- Overfishing
- Climate change
- Strong waves

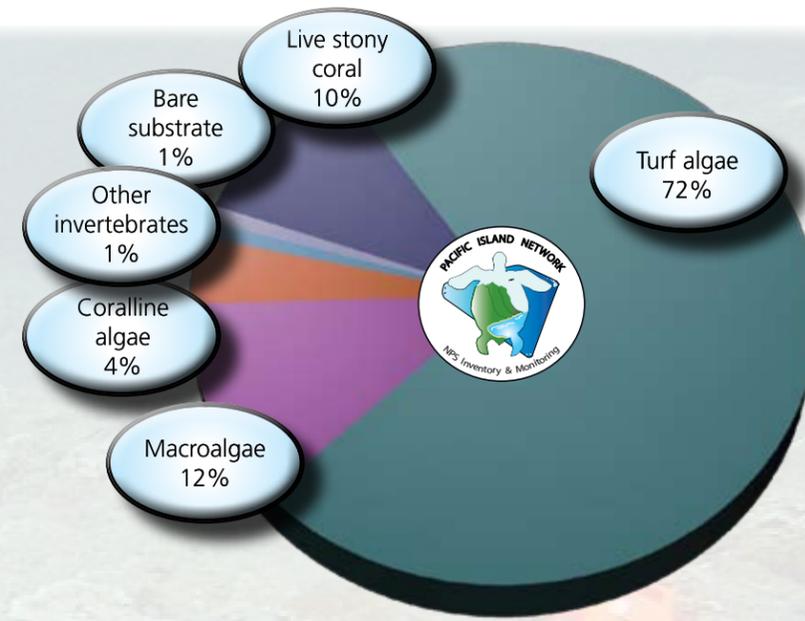
**Status and Trends:** Coral reef monitoring began in 2006. Since then, coral cover at 30 monitoring sites appears to be relatively low (10%), but stable at 15 permanent monitoring sites. The low coral cover is not surprising since coral habitat along the north shore of Moloka'i Island is subjected to extremely high wave action each winter, causing damage to existing coral colonies and limiting the number of coral species that can thrive under these conditions. There has been a very low incidence (<2%) of coral bleaching or disease. Natural coral replenishment is low compared to other north shore environments in the state of Hawaii. Monitoring data have detected a low (4%) cover of crustose coralline algae, a critical settlement surface for juvenile corals and many other reef organisms and important for maintaining reef structure. Low macroalgal cover of 12%, however, suggests that the abundant herbivorous fish populations may be helping to keep algae in check. Fishing activity in the park is limited to local residents and occasional fishing vessels.



These corals are adapted to survive, grow and reproduce in areas exposed to extreme forces from winter storm waves



**Action:** Marine algae, invertebrate, and fish inventories have yielded new scientific records and identified unique habitats within the park. Monitoring and research on targeted fisheries are providing valuable information for park and state-wide fisheries management. Park staff and cooperators are continuing to monitor sea floor communities and reef fish assemblages along with natural coral replenishment. Physical parameters such as currents, tides, temperature, and water quality are also being monitored within the park to provide scientific information to resource managers.

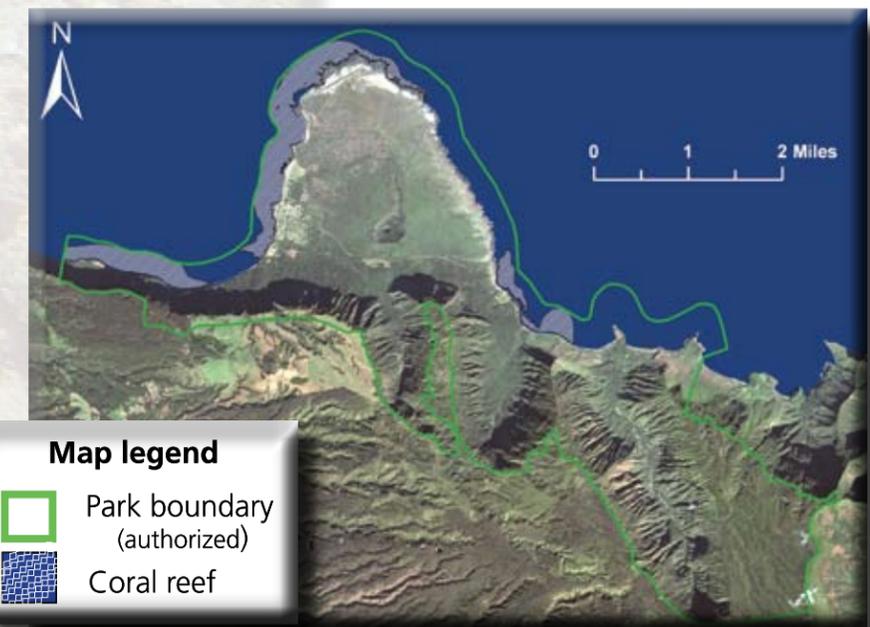


## Composition of coral reef habitat

## Fast Facts

- Unique marine boulder habitat provides ideal environment for fish populations
- Fishing pressure from outside sources
- The park is engaged with the local community in marine resources management
- A primary pupping area for the Hawaiian monk seal in the main Hawaiian Islands

Endangered Hawaiian monk seals use the beaches at Kalaupapa to rest and pup their young



# Coral Reefs at the National Park of American Samoa

The National Park of American Samoa has some of the greatest marine biodiversity of any U.S. park with over 975 fish and 250 coral species. Large table corals (*Acropora* sp.) over three meters in diameter, and mound corals (*Porites* sp.) standing up to seven meters tall and 25 meters long can be found in nearshore marine waters. The marine boundaries of the park contain nearly 20% of American Samoa's nearshore waters. The park was created on three islands to preserve and protect the cultural and natural resources of American Samoa.

## Major Threats

- Overfishing
- Sedimentation and habitat degradation
- Climate change



Modern fishing techniques have replaced many traditional methods, and have resulted in unsustainably high fish yields

**Status and Trends:** Coral reef monitoring began in 2007. Live coral cover at 30 monitoring sites was found to be moderately high (22%) in 2008. This likely reflects high coral biodiversity, relatively fast coral growth rates, and large areas of suitable shallow habitat for corals. Bleaching events occurred in 1994, 2002, and 2003, which affected both shallow and deep corals. There has also been minor bleaching in back reef pools and lagoons for the past three years. Crustose coralline algae is critical settlement substrate for juvenile corals and many other reef organisms, and is important for maintaining reef structure. Fortunately, monitoring data have shown a fairly healthy 19% cover of this algae. Two percent cover of macroalgae suggests that herbivorous fish populations are maintaining low levels of algal abundance. Overall fish biomass is roughly 1/3 the levels occurring on unfished reefs in the Pacific, and large fish are extremely rare.



## Fast Facts

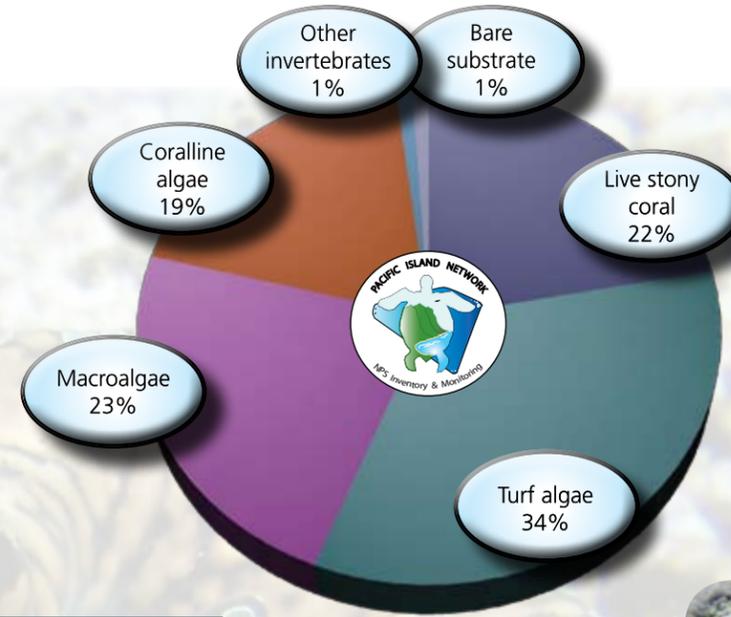
- The park contains over 250 species of corals and a very high diversity of other marine invertebrates, fishes, and plants
- Some of the most immense coral colonies in the world live at NPSA
- Some coral populations in park waters seem resilient to high ocean temperatures and may serve as 'refuge populations'



Plate corals and these algae have calcium-based skeletons threatened by rising ocean temperature, and acidification



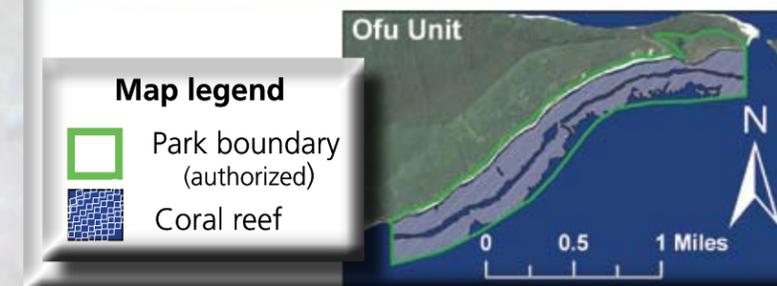
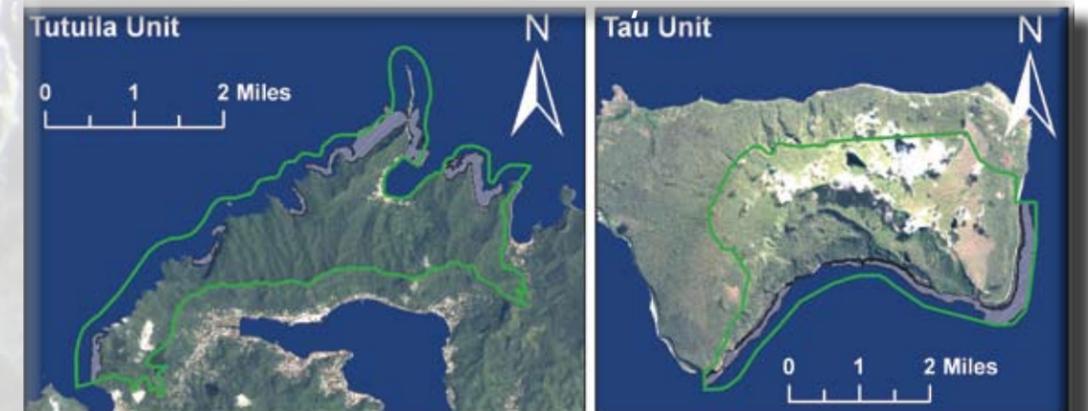
Reefs are important nursery habitats for juvenile fish



## Composition of coral reef habitat



These soft corals, common on Tutuila Island, are less sensitive to conditions of high sedimentation and poor water quality



**Action:** Research in the park by the NPS and many partners has made important contributions to understanding and managing coral reefs during climate change. Coral reef and reef fish monitoring have been implemented by NPS and cooperators including a nearshore fisheries study.



## Vegetation Mapping in the Northern Marianas

### Notes from the Field

*Tuesday, January 6* — I arrived in Saipan where I was joined by War in the Pacific NHP (WAPA) staff Jenny Coffman and Heather Moulton. We briefly met with American Memorial Park (AMME) staff and then headed out into the field to investigate the different vegetation communities in the park and identify dominant plant species. This was important to help delineate plot and observation locations in the 133 acre park, and made the aerial imagery easier to interpret. The investigation was also important to identify hazards in the work site, including motor vehicle traffic, uneven footing and terrain, heat and humidity, and stinging insects.

A debriefing was carried out at the end of each day to discuss hazards, evaluate progress, and suggest areas for improvement. During briefings, the field crew scrubbed boots, packs, and pants with a brush to remove seeds in an effort to limit the spread of non-native species into new areas.

*Wednesday, January 7* — We began the day with a reconnaissance of the park's wetland area, and covered the mapping protocols and site selection criteria. We also collected plant material to be identified later. Afterwards, we surveyed two vegetation plots in a pandanus forest and an ipomea

herbland in the wetland complex. During the fieldwork, protocols were strictly followed to ensure consistency with data collection instructions and to ensure consistency among observers in species determination, height, and cover.

*January 8 and 9* — Additional field work was conducted in the wetland, coastal, and recreational areas of the park. A total of six vegetation plots and five observation points were recorded and 144 digital photographs were taken during field operations at AMME. We used park workstations to organize our field data, download photographs, and backup all work. I then drove Jenny and Heather to the airport to conclude our workweek.

*Sunday, January 11* — I traveled from Saipan to Guam.

*January 12 and 13* — We began field work in WAPA in the Asan inland and beach units in savannah, leucaena forest, riparian woodland, and coastal forest.

*Wednesday, January 14* — We were joined by NPS Ecologist Mark Capone. We sampled plots and observation points in the Agat Inland unit in savannah, mangifera forest, riparian herbland, grassland, and fernland. Later, we visited the Agat Beach unit to explore more plot locations.

*Thursday, January 15* — We conducted a site visit to investigate



Between January 4th and 16th, 2008, I traveled to Guam and Saipan in the Northern Marianas Islands to train field crews and begin data collection for the vegetation classification and mapping project in the Pacific Island Network.

*D. Benitez*

plot locations in a limestone forest. Field work here will be challenging due to the terrain steepness, density of the vegetation, and abundance of mosquitoes. In the afternoon, we installed a vegetation database on a park computer and began training the crew with the database.

*Friday, January 15* — Training continued as we downloaded all remaining data and set up a directory in a shared workspace. A total of eight vegetation plots and nine observation points were recorded and 280 digital photographs were taken during field operations at WAPA. After a debriefing with the field crew, I began decontamination of all my field gear to prevent transportation of new propagules to Hawaii. Field boots were brushed and then soaked in a 5% bleach solution and air dried.

*Saturday, January 17* — I initiated return travel, arriving at my Hawaii residence the prior day, January 16, having crossed the International Date Line en route.