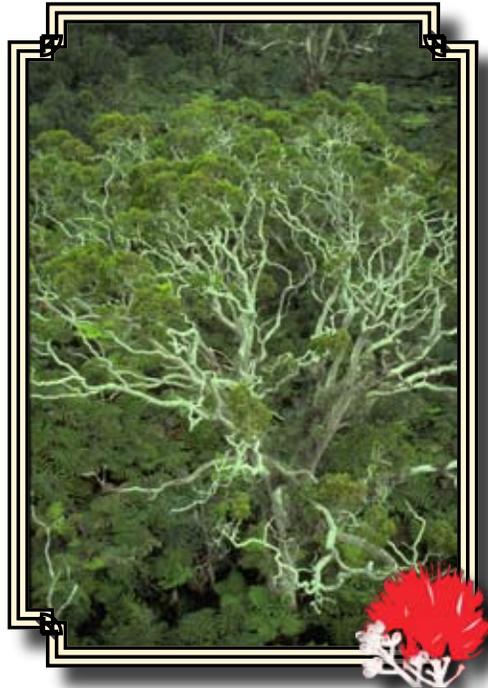




## Terrestrial Plant Communities

**Description:** Of the numerous terrestrial plant communities located within Pacific Island National Parks, scientists and resource managers have identified five plant communities of fundamental importance to the National Park Service's (NPS) Pacific Island Network (PACN). Experts selected these five communities based on their relative intactness, high species diversity, prevalence across parks, uniqueness to their respective areas, and usefulness as indicators of environmental change. The five communities include: (1) the wet forest plant community found within Hawai'i Volcanoes National Park (HAVO), Haleakalā NP (HALE), Kalaupapa NHP (KALA) and the NP of American Samoa (NPSA), (2) the subalpine shrublands of HAVO and HALE, (3) the limestone forests within War in the Pacific NP (WAPA), (4) the mangrove forests/wetlands of American Memorial Park (AMME), and (5) the coastal strand plant communities of KALA and Kaloko-Honokōhau NHP (KAHO).



Often playing a leading role in the composition of the canopy, Koa trees (*Acacia koa*) are recognized as essential cultural and ecological components of the plant communities in three PACN parks.

**Significance:** Each of the selected plant communities is significant in its own way. For example, the mangrove (*Bruguiera gymnorhiza*) forest of AMME is a scarce community in the Northern Mariana Islands that provides critical habitat for two endangered bird species and a rare tree snail. Within WAPA in north-central Guam, the limestone forest represents a unique and highly diverse assemblage of plants that contains a multitude of native trees, shrubs and ferns, many of which are found only in the Mariana Islands. In the parks of Hawaii and American Samoa, the wet forest communities lack the diversity of the Southeast Asian or South American rainforests. However, due to their geographic isolation, these communities have extraordinarily high rates of endemism (e.g., nearly 90% of Hawaii's native flowering plants are endemic species). Additionally the wet forests of Hawaii's parks contain numerous endangered plant species as well as plants used for traditional gathering (e.g., *Alyxia oliviformis* or maile used for lei making), while the wet forests of American Samoa contain plants of ethnobotanical value and provide food

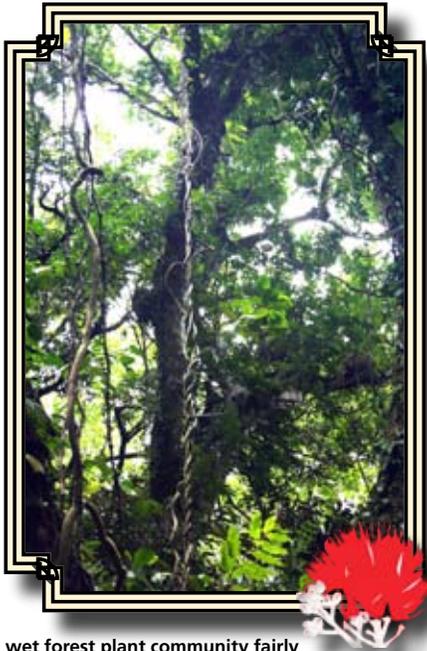
for two rare fruit bats (*Pteropus samoensis* and *P. tonganus*). Similarly, the subalpine shrublands and coastal strand communities within Hawaii's parks contain many plant species and assemblages found nowhere else in the world, including plants such as the spectacular 'Āhinahina, or Haleakalā silversword (*Argyroxiphium sandwicense* subsp. *macrocephalum*).

Sometimes you just need to look down at your feet to see interesting plant communities like this coastal strand community in Hawaii.





## Plants continued — A Fundamental Resource



A wet forest plant community fairly typical of the Pacific Island Network.

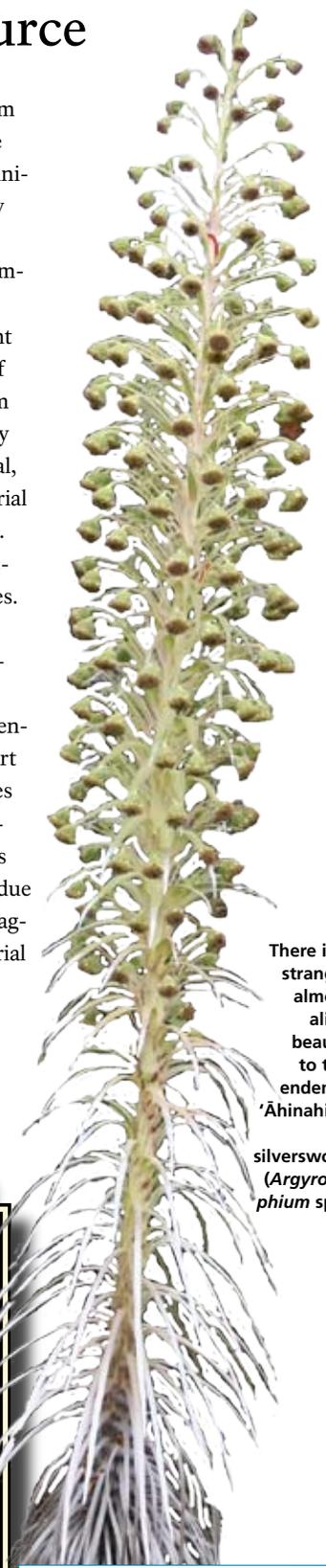
**Inventories:** Although plant inventories or vegetation surveys exist for some portion of each PACN park, few vegetation monitoring studies have been conducted in the identified focal terrestrial plant communities. Of these studies, many were short-term and focused on changes in the wet forest community in response to feral pig removal. The wet forests of HAVO, HALE and NPSA have been studied most extensively while the other communities and parks have received less attention.

**Monitoring:** Currently the PACN is developing a long-term monitoring protocol to assess the status and trends of the five previously listed terrestrial plant communities. These communities are important to monitor for a variety of reasons: (1) they are key indicators of ecosystem health, (2) they represent important habitat for other biota (e.g., forest birds), (3) plant communities reflect the dynamic relationship between native and invasive plant species, and (4) they often indicate management needs as well as reflect management effectiveness. The goal of this monitoring effort is to determine the status and long-term trends in plant species diversity, cover, density, and frequency within each of the identified communities. To achieve this goal, scientists will allocate a series of random plots in each terrestrial plant community and survey these plots once every five years. Based on the data collected, they hope to determine the direction and magnitude of any changes in these plant communities.

**Conservation and Management:** Ultimately the information gathered from this monitoring protocol will help NPS resource managers determine the health and needs of each identified plant community. More specifically, this monitoring effort has the potential to identify a wide range of management issues such as rapid increases in weed abundance, native species die-backs due to disease, plant recoveries after catastrophic events (e.g., fires or hurricanes) or shifts in community composition due to climate change. With the aid of long-term monitoring, managers will be better equipped to protect and enhance the terrestrial plant communities in PACN parks now and in the future.

— P. Berkowitz, RCUH & J. Jacobi, USGS

Biologist Joan Yoshioka mucking through the mangrove (*Bruguiera gymnorrhiza*) forest at American Memorial Park.



There is a strange, almost alien beauty to the endemic 'Ahinahina or silversword (*Argyroxiphium* sp.).

**For more information:**  
[http://www1.nature.nps.gov/im/units/pacn/monitoring/vs\\_plant\\_community.cfm](http://www1.nature.nps.gov/im/units/pacn/monitoring/vs_plant_community.cfm)