



Where the Wild Plants Are

PACIFIC ISLAND VEGETATION MAPPING
CHALLENGES CONQUERED THROUGH
COOPERATION

Pacific island national parks present unique vegetation and land use mapping challenges due to geographic isolation, high endemism, sensitive cultural landscapes, and lack of vegetation classifications and legacy data. Accurate, vegetation base maps are necessary to inform natural and cultural resource management within parks. In 2007, the Pacific Island Network Inventory and Monitoring Program, in collaboration with the NPS National Vegetation Inventory Program, developed an innovative strategy to address mapping needs relying on park cooperation, regional vegetation experts, vegetation classification specialists, and two mapping contractors.

Mapping methods differed between small and large parks. For five smaller parks in the Pacific Island Network, manual image interpretation and intensive field work were efficient. In the four larger parks, field work was combined with large landscape-scale techniques. Field work for all parks was conducted jointly by park and I&M staff. Once completed, draft maps were presented to park staff for review which included an explanation about the methods and vegetation type classification. Involving park staff throughout the process increased the park buy-in and usefulness of the mapping products to park management.

Vegetation Mapping Aids Park Management:

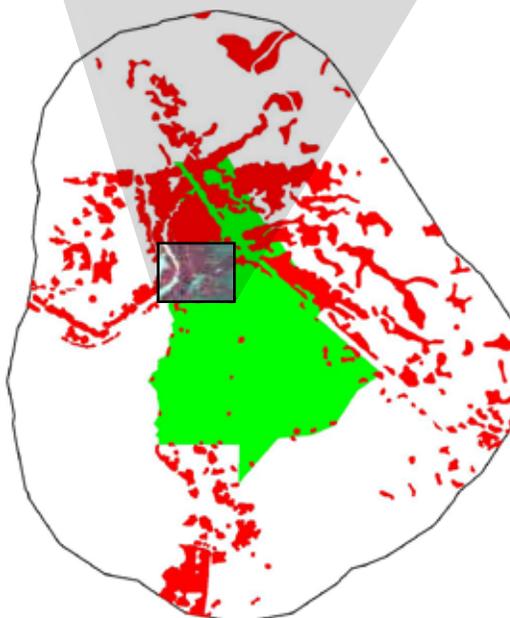
Pu'ukoholā Heiau National Historic Site (PUHE) encompasses approximately 80 acres on the western coast of the island of Hawai'i. The park was established to preserve and protect important ancient Hawaiian heiau (temples) and other historical and cultural features. PUHE is situated on a lava field and supports 104 vascular plant species including examples of coastal strand and wetland native plants that are actively managed. Most of the upland vegetation has been extremely altered over the years



Biotechnician Corie Yanger sampling vegetation within the abundant kiawe community.



Photographic signature of kiawe in a section of PUHE. The red boundary lines correspond with the kiawe communities in the image below.



PUHE boundary depicted in green with the kiawe communities in red.

and invasive species and vegetation types dominate. Invasive plant species are considered a threat for some cultural resources. The two most abundant invasive plant species within the park are buffelgrass (*Pennisetum ciliare*) a bunchgrass, and kiawe (*Prosopis pallida*) shrubs and trees. Buffelgrass has the capacity to quickly cover and obscure cultural rock features. The buffelgrass plant community occurs on over 50% of the landscape. The kiawe community is also widespread. The roots of kiawe trees threaten cultural resources by damaging the integrity of rock walls and house structures. Both communities are fire-prone and are attractive to feral goats.

Plant community boundaries were delineated by identifying photographic signatures for each type (middle map) and generating polygons (lower map). Community boundaries allow park staff to prioritize sites for management and provides a starting point to document further invasive species encroachment. This project represents the best efforts put forth by a multi-disciplinary team including: GIS contractor Dan Cogan (Cogan Technology, Inc.), classification ecologist Keith Schulz (NatureServe), and many NPS resources staff.

Accurate and current vegetation maps aid park managers in the prioritization of resource protection by identifying sites or habitats likely to contain key resources (e.g., rare plants, wildlife habitat, or petroglyphs) and/or key threats (e.g., wildland fire potential or likely vector areas for invasive species).

The vegetation mapping inventory is a snapshot in time, and a baseline where current plant communities are described and mapped. By comparing these data with future products, park managers will be able to quantify vegetation changes in and around parks.

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