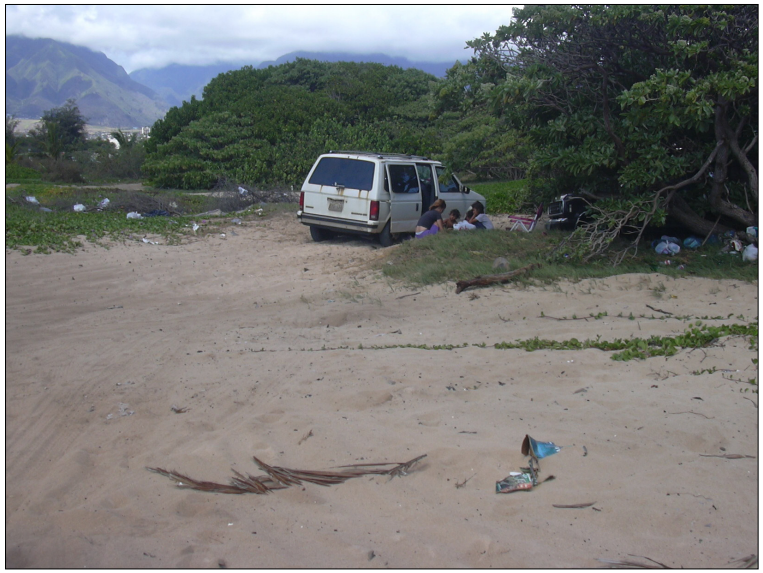
USGS
science for a changing world

WILD COASTS:
RESTORATION OF KANAHA BEACH, MAUI

FOREST STARR[1,2], Kim Starr[1,2], and Lloyd L. Loope[3]

[1]Pacific Cooperative Studies Unit, Dept. of Botany, University of Hawaii, Honolulu, HI 96822
[2]Hawaii Cooperative Studies Unit, Pacific Aquaculture & Coastal Resources Center, University of Hawaii, Hilo, HI 96720
[3]U. S. Geological Survey, Pacific Island Ecosystems Research Center, P.O. Box 369, Makawao, Maui, HI 96768



BEFORE

AFTER

ABSTRACT

Kanaha Beach Park, on the island of Maui, is an example of a shift in the paradigm of management of coastal beach parks. These crown jewels of Hawaiian ecosystems have historically either become neglected dumping grounds or highly urbanized concrete jungles. "Wild coasts" is a management approach that maximizes both conservation value and recreational opportunity. Coastal areas offer many advantages for restoration, including harsh growing conditions that favor native plants, unique substrates, hardy indigenous species, and ease of access. The four main steps in restoration of wild coasts are protection, removal of non-native plants, planting of native plants, and maintenance. We have found that after the initial establishment phase, maintenance costs decrease dramatically in restored areas. Additionally, native plants and animals begin to flourish. Native Hawaiian coastal species benefiting from restoration include plants such as ohai (*Sesbania tomentosa*), popolo (*Solanum nelsonii*), and mao (*Gossypium tomentosum*); insects such as long-horned beetles (*Plagithmysus* sp.) and moths (*Omiodes* spp.); and birds such as black-necked stilts (*Himantopus mexicanus knudseni*) and numerous species of shorebirds. Over the past four years, a mile and a half of coastline at Kanaha Beach, with about 75 acres of coastal dunes and wetlands, has been restored using volunteer labor. Wild coasts offer a biologically sensitive alternative to management of coastal resources, and Kanaha Beach can serve as a successful model that can be replicated elsewhere.

MATERIALS AND METHODS

There are four main steps in restoration of wild coasts.

- Protection: The main tool for protecting the sensitive areas of Kanaha Beach Park was a post and rail vehicle barricade. The vehicle barricade used 6 inch by 6 inch reinforced concrete posts spaced 8 feet apart, connected together with 6 inch by 2 inch by 16 foot boards. This is by far the most effective way to delineate parking areas and to keep vehicles off sensitive areas, while allowing ample public access to the area.

- Removal of non-native plants: There were many native plants at Kanaha Beach, but there were many more non-native plants. Once the area was secure, non-native plants were removed using predominantly volunteer labor. The main plants removed were kiawe (*Prosopis pallida*), pluchea (*Pluchea* spp.), and buffel grass (*Cenchrus ciliaris*). The disposal of debris can be very expensive, but local municipalities and companies helped with this.

- Planting native plants: Once the area was secure and the non-native plants had been removed, native plants were planted. The native plants were collected from as near as possible to Kanaha Beach. In general all the species are from Maui, with a few notable exceptions such as the popolo (*Solanum nelsonii*) which has presumably gone extinct on Maui, so material from the Maui Nui island of Molokai was used. Species that have done well include popolo, akiaki (*Sporobolus virginicus*), ohai (*Sesbania tomentosa*), naio (*Myoporum sandwicense*), and mao (*Gossypium tomentosum*).

- Maintenance: The maintenance costs have decreased dramatically in areas that are secure, weed free, and have been re-planted with natives. The main maintenance tasks in restored areas are weed control after the winter rains, rubbish pick-up, and occasional repair of the vehicle barricade. Phase I at Kanaha Beach, an area of about 12 acres, can now be maintained by one person spending about 4 hrs. per month.

RESULTS

Since 2001:

- 75 acres of coastal wetlands and sand dunes have been protected by installation of vehicle barricades.
- 50 acres have had the non-native plants removed.
- 25 acres have been replanted and are now almost covered with 100% native plants.
- All the areas are open to public access, with ample free parking day and night.

DISCUSSION

Some of the critical items that allowed the "wild coast" strategy to work at Kanaha Beach include:

- Existing ownership of land (County of Maui, State of Hawaii).
- Existing native plants (pockets of coastal strand and wetland plants).
- A dedicated volunteer force (Maui locals that are at Kanaha Beach virtually everyday).
- A progressive umbrella organization (Community Work Day).
- Assistance from government programs (USFWS, USGS, Americorps, Emergency Environmental Workforce, Maui Police, Tri-Isle RC&D, County of Maui).
- Assistance from private companies (Goodfellow Construction, Hoolawa Farms, and many more).

CONCLUSION

We are in a race to save the last great places of Hawaii. "Wild coasts" is a new form of land management that has proven to be cost-effective and have broad based support. Kanaha Beach can serve as a model for others attempting to keep their favorite coastal areas of Hawaii open and accessible, and at the same time have the biological resources protected and even restored.

See website or contact info. for more (www.hear.org/naturalareas/kanahabeach) fstarr@hawaii.edu, (808)572-4472

Vehicle barricade.

Americorps volunteers ready to clear non-native brush.

Ohai (*Sesbania tomentosa*)

Mao (*Gossypium tomentosum*)

Hawaiian long horned beetle (*Plagithmysus* sp.)

Aeo, Hawaiian stilt (*Himantopus mexicanus knudseni*).