

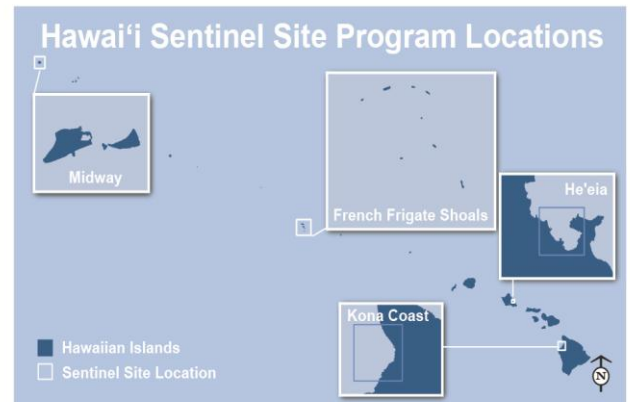
NOAA SENTINEL SITE PROGRAM

Hawaiian Islands Sentinel Site Cooperative

Website:

<http://oceanservice.noaa.gov/sentinelsites/welcome.html>

NOAA Sentinel Site Program: The NOAA Sentinel Site Program (SSP) utilizes existing assets, programs, and resources in a place-based, issue-driven approach to ask and answer questions of local, regional, and national significance that affect both NOAA Trust Resources and the surrounding communities.



Abstract

The Hawaiian Islands Sentinel Site Cooperative is a compilation of sites that includes Midway and French Frigate Shoals in the Papahānaumokuākea Marine National Monument in the Northwestern Hawaiian Islands (NWHI), He'eia Wetland Restoration project (He'eia) on the island of O'ahu, and Kona Coast on the Big Island of Hawai'i. The Cooperative contains some of the most productive and unique ecological sites in U.S. waters and is widely recognized as one of the most valuable ecological locations in the world, which is why Midway and French Frigate Shoals were included in the World Heritage Site designation of the NWHIs.

While separated by great distance, the sites are connected through circulation patterns, species migration, geological origin, and geographic isolation. Midway and French Frigate Shoals have experienced little human impact and remain relatively pristine while He'eia and Kona Coast are more heavily populated and impacted. This human impact gradient provides a unique opportunity to assess how ecosystem health is impacted for both pristine and heavily stressed ecosystems, thus making it possible to extrapolate out the influence of climate change. Geographic separation makes it imperative to have strong, well established partnerships. Long-standing relationships are leading this Cooperative and include NOAA's National Ocean Service in Midway and French Frigate Shoals, the National Marine Fisheries Service in Kona Coast, and the local non-profit Kako'o 'Owi in He'eia. As issues of focus change and the Cooperative matures, partnerships are being expanded.

The strength of the Cooperative stems from each site having direct observation data record from several years to several decades. The reefs are some of the best studied in the world resulting in a strong baseline set of data and recent studies on connectivity and evolutionary time have increased our understanding of reef function and processes. The necessary infrastructure for accurate observations of climate change, including sea level and inundation, is in place and has been actively monitored and utilized for management decisions since installation. Because of the robust understanding of the reefs, sea level, and inundation frequencies and magnitudes, small changes are noticeable and more easily identified and understood.

Available Assets

- U.S. Geological Survey stream gauges
- NOAA tide gauges



- Biochemical baseline data (e.g. salinity, nutrient levels, etc.)
- Land cover and vegetation species data
- Invasive species monitoring and removal
- Coral and biological data
- Spatial carbon chemistry surveys
- High-resolution LIDAR imagery for the entire coastal zone

Internal and External Partners Currently Involved

- NOAA National Ocean Service program offices (Pacific Services Center, National Geodetic Survey, Office of Ocean and Coastal Resources Management, Office of National Marine Sanctuaries)
- Pacific Islands Fisheries Science Center, NOAA
- U.S. Geological Survey
- University of Hawaii
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- Bishop Museum
- Division of Aquatic Resources, State of Hawai'i
- Coastal Zone Management Program, State of Hawai'i
- Hawaii integrated Ocean Observing system
- Data integration program (PIMS)
- Koolaupoko Hawaiian Civic Club
- The Nature Conservancy

Management Goals Addressed

The information obtained in the Sentinel Site Cooperative directly assists in management decisions. Kona Coast is creating an integrated ecosystem assessment with the information obtained feeding back into broader management plans as well as decisions on specific topics, such as aquaculture. He'eia is working with local residents to utilize the data in improving management decisions – such as restoring damaged wetlands by monitoring rainfall, stream flow, and salt water intrusion. Data from French Frigate Shoals and Midway inform management decisions of the Papahānaumokuākea National Monument. Each location is undertaking the studies and management plans in an effort to balance human needs with ecosystem health so both can thrive.

The work undertaken through the Hawaiian Islands Sentinel Site Cooperative is translatable to other areas of Hawai'i as well as the greater Pacific region. Every place on a coast is susceptible to increased coastal inundation and sea level change, but islands are especially susceptible because of a lack of places to move populations, a high percentage of the population dependent on coastal and oceanic ecosystems, and many islands – such as French Frigate Shoals – are low-lying meaning sea level rise can have devastating effects. The NOAA Sentinel Site Program creates a framework relatable to a wide range of locations that cover a wide range of populations, ecosystems, topographies, and because the areas already have a large set of data and management schemes in place.

Point of Contact

Douglas Harper
NOAA's Pacific Services Center
Douglas.Harper@noaa.gov, (808) 525-5353