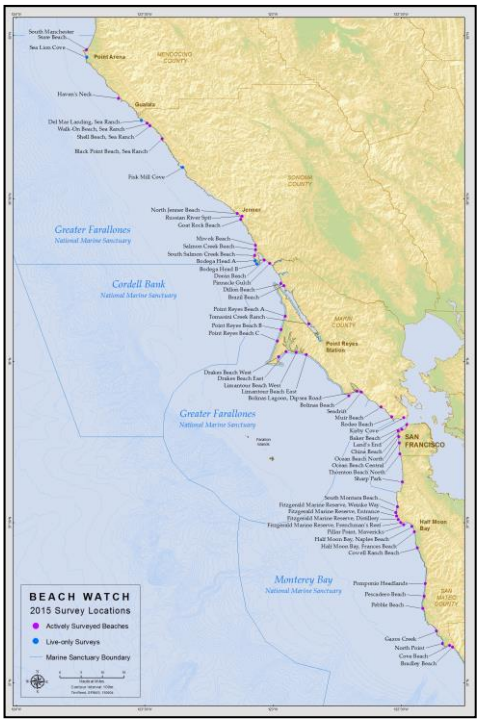
SEAS - Beach Watch

22-Years of Monitoring the Shoreline Habitats of the Sanctuary

Since 1993, Greater Farallones National Marine Sanctuary (GFNMS) has monitored the shoreline habitats of GFNMS and the northern portion of Monterey Bay National Marine Sanctuary through the Sanctuary Ecosystem Assessment Surveys – Beach Watch program (SEAS-Beach Watch). In 2015, in conjunction with the expansion of the sanctuary the Beach Watch project expanded, adding 16 new beaches and 40 new volunteers. Beach Watch now utilizes over 150 citizen-scientists to monitor beaches spanning 210 miles (339 km) of coast from Point Año Nuevo in San Mateo County north to Manchester Beach in Mendocino County.

Surveys are conducted every two weeks, collecting data on abundance and distribution of coastal birds, mammals, entanglement, human activities, oil pollution, beach profiles, violations, and the status of the mouths of streams and lagoons that cross the beach. Data are publicly available on the Greater Farallones Association website, http://www.farallones.org/BeachData/BeachWatchData. Maps of Beach Watch data can be developed by the public using a mapping tool developed by Point Blue Conservation Science at: http://data.prbo.org/cadc/tools/multimap/bwatch.php.

Beach Watch is an award winning project of the federal government providing information on species that are most vulnerable to oil pollution and serves as a model for other cost-effective, citizen-science programs. Data from Beach Watch have been used to secure restoration dollars in excess of $52 million.



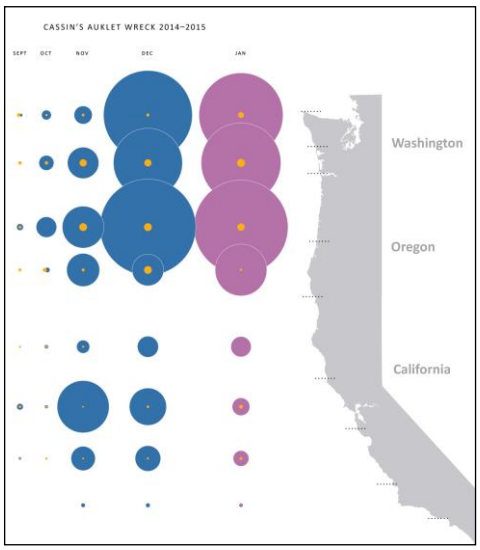
The SEAS-Beach Watch program, surveys 56 beaches within GFNMS and MBNMS, including beaches within Bolinas Lagoon and Tomales Bay.

Map: T. Reed, GFNMS

Connecting Science and Education at Greater Farallones National Marine Sanctuary

Sanctuary Ecosystem Assessment Surveys (SEAS) – Beach Watch monitoring data are integrated into the sanctuary's web site, classroom programs and new visitor center exhibits. Future exhibits on climate change will include predicted changes and impacts to the sandy beach ecosystem. Exhibits will depict how delays and changes to the upwelling patterns and increased storm events in turn change the breeding of forage fish, and correlate with increased frequency and severity of seabird mortality events. Beach Watch also has 22-years of beach profile photographs, illustrating erosion and deposition patterns of sand on the beaches.

Planned visitor centers will use data from the Beach Watch project highlighting where and when visitors can view species of interest through smart phone-applications and tour-by-cell phones. These "apps" will point visitors to areas of recently sighted rarities and seasonal highlights of the sanctuary.



From September 2014-January 2015, Beach Watch surveys showed a dramatic increase in the number of dead and dying Cassin's Auklets. In some areas more 1000's times (blue and magenta) the average number (orange) of dead birds were documented. This was a west coast wide phenomenon attributed to very high success in breeding in the auklets, while warming oceans greatly reduced food resources (krill), resulting in starvation.

Photo: GFNMS

Beach Watch recruited and trained 40 new volunteers in 2015. They underwent 80 hours of classroom and field training to collect monitoring data.

Photo: GFNMS

Endangered and threatened species, like this Guadalupe fur seal, are monitored through Beach Watch surveys.

2015 Findings

- As part of an in-house drill, Beach Watch staff programmed the database to quickly determine beaches of highest risk to oil pollution, developed clean-up end points to know when a beach is truly clean after an oil spill, and automated geo-tagging digital images.
- Encounter rates (#/km surveyed) of tarballs and oiled bird depositions continued to decline in 2015.
- Data sets from several beached bird monitoring programs were combined, e.g. COASST, Beach COMBERS, and Beach Watch to describe the west coast wide Cassin's Auklet mortality event.
- Encounter rates of dead Guadalupe fur seals, was six-times higher than average and was 12 times higher than average for Common Murres. Many died due to emaciation.
- Beach Watch expanded, adding 16 new beaches within the newly expanded sanctuary, north to Manchester Beach, Mendocino County.

Addressing Management Issues

- Dead bird and mammal data provide early alerts to mortality events and indices of the health of the shoreline.
- Live bird and mammal data provide information on resources at risk from coastal human activities.
- Oil and tarball data provide information on the location, amount, source and trends of oil pollution.
- Abundance and distribution of beach wrack provide location and seasonal trends of this important shoreline, biogenic (living structural) habitat.
- Beach profiles provide information on the seasonal and tidal range of the openings of lagoons and streams and long-term trends in beach erosion and deposition patterns.

Productive Partnerships

- Greater Farallones Association – project management, volunteer supervision, staffing and fundraising for GFNMS programs
- California Department of Fish and Wildlife (CDFW), Office of Spill Prevention and Response – oil pollution chemistry lab analysis, chain of custody supplies, emergency response, damage assessment and restoration planning
- California Academy of Sciences – field expertise and data quality and verification
- Department of Interior, US Fish and Wildlife Service, the National Park Service, and CDFW – pathology investigations, field expertise, permitting, logistics, emergency response, damage assessment and restoration planning
- California Department of Public Health – monitoring harmful algal blooms and biotoxins
- NOAA Office of Response and Restoration – damage assessment, restoration planning and logistics