

## Gulf of the Farallones National Marine Sanctuary

# SEAS - Beach Watch

### 20-Years of Monitoring the Shoreline Habitats of the Sanctuary

Since 1993, Gulf of the Farallones National Marine Sanctuary has monitored the shoreline habitats of the Gulf of the Farallones and northern portion of Monterey Bay National Marine Sanctuaries through the Sanctuary Ecosystem Assessment Surveys – Beach Watch program. SEAS – Beach Watch utilizes over 120 citizen-scientists to monitor beaches, spanning 150 miles (240 km) of coast from Point Año Nuevo in San Mateo County north to Bodega Head in Sonoma 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 Farallones Marine Sanctuary Association (FMSA) 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 has been used to secure restoration dollars in excess of \$52 million. Restoration projects target improving foraging and nesting habitats for birds, reduce disturbance to wildlife and improve recreational activities along the shoreline.



Map: T. Reed, GFNMS

The SEAS-Beach Watch program, surveys 42 beaches within GFNMS and MBNMS, including beaches within Bolinas Lagoon and Tomales Bay.



Photo: J. Roletto, GFNMS

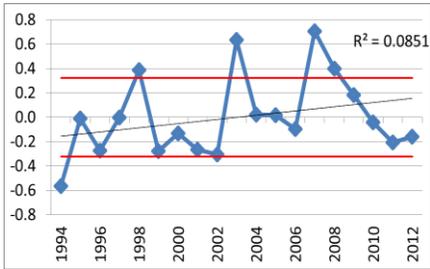
Beach Watch volunteers conducted shoreline assessment surveys during the 2007 M/V COSCO BUSAN oil spill.

### Connecting Science and Education at Gulf of the Farallones National Marine Sanctuary

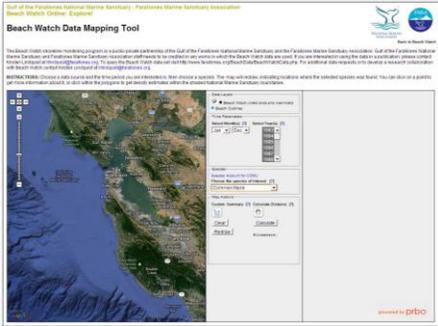
Sanctuary Ecosystem Assessment Surveys (SEAS) – Beach Watch monitoring data are integrated into the sanctuary's web site, classroom programs and new visitor center exhibits. Future exhibits on climate change will include predicted changes and impacts to the sandy beach ecosystem. Exhibits will depict

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 20-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.



The rate (#/km surveyed) of dead birds was below average in 2012, but shows a steady but slow increase since 1994. Average is denoted along the 0.0 standard deviation line.



The public can access Beach Watch data three ways: 1) from a mapping tool sponsored by Point Blue, 2) through a data query program hosted by FMSA, and 3) contacting Beach Watch for more detailed data queries.



Photo: GFNMS

Beach Watch recruited and trained 24 new volunteers in 2012. They underwent 80 hours of training before beginning to collect monitoring data.



Photo: GFNMS

Endangered and threatened species, like this Snowy Plover, are monitored through Beach Watch surveys.

## 2012 Findings

- Beach Watch staff calculated baseline levels of oil pollution for most beaches in the sanctuary. These data are used to determine when clean-up efforts from oil pollution events are completed.
- Encounter rates (#/km surveyed) of tarballs and oiled bird depositions continued to decline in 2012.
- Encounter rates of live pinnipeds, dead birds and dead marine mammals were below average and rates of live cetaceans were above average.
- Beach Watch data were used to assess damages from oil spills since 1994 and help determine the types of restoration projects, worth over \$52 million, increasing protection to natural resources and enhancing lost recreational uses from oil pollution.
- 24 new volunteers were recruited and trained in 2012.

## Addressing Management Issues

- Dead bird and mammal data provide annual, seasonal, and geographic trends in mortality rates including trends in age, sex, and cause of death, indicating the health of the shoreline habitat.
- Live bird and mammal data provide baseline rates on seasonal, annual, and geographic trends and indices and resources at risk from coastal human activities such as oil spills, vessel groundings, and disturbance.
- 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

- Farallones Marine Sanctuary 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