

# GULF OF THE FARALLONES NATIONAL MARINE SANCTUARY

The Gulf of the Farallones National Marine Sanctuary encompasses 948 square nautical miles of water off the California coastline north of San Francisco. Designated in 1981, the Sanctuary consists of an offshore marine region of the Gulf of the Farallones and the nearshore waters of Bodega Bay, Tomales Bay, Drakes Bay, Bolinas Bay, Estero de San Antonio, Estero Americano, Duxbury Reef and Bolinas Lagoon.

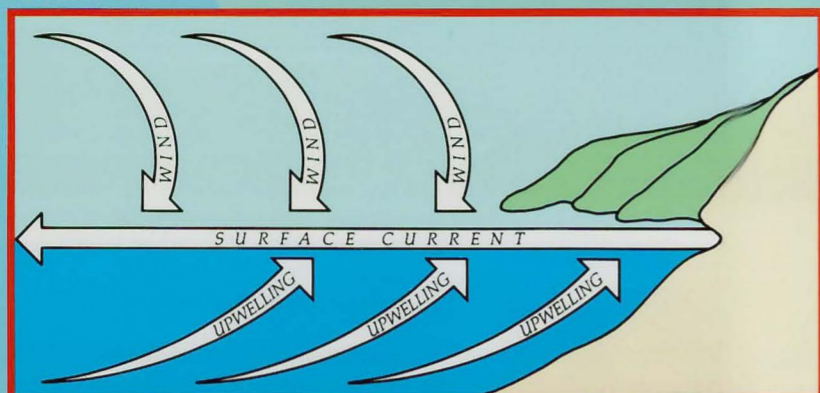
The National Marine Sanctuary Program, administered by the Sanctuaries and Reserves Division of the National Oceanic and Atmospheric Administration, provides special protection and management for marine areas of national significance to benefit the public and the oceans.

Gulf of the Farallones  
National Marine Sanctuary  
National Oceanic and Atmospheric Administration  
GGNRA, Fort Mason  
San Francisco, California 94123  
(415) 561-6622

Sanctuaries and Reserves Division  
National Oceanic and Atmospheric Administration  
Department of Commerce  
SSMCIV, Building 4  
1305 East-West Highway  
Silver Spring, MD 20910  
(301) 713-3125

National Marine Sanctuary Program

## UPWELLING



Spring in the Gulf of the Farallones is the most productive season, just as it is on land. Northwest gales and southerly ocean currents combine with the earth's rotation to move warm surface water off-

shore, drawing cold water up from the depths below. These upwelled waters contain vast quantities of nutrients. Billowing up within reach of sunlight, the nutrients fertilize microscopic plant life. Marine algae blooms quickly appear.

Swarms of young fish, squid and shrimp feed on the algae, becoming food in turn for larger creatures. Upwelling is the core of a rich and resilient marine food web interwoven with the many forms of ocean life.

## RECREATION AREAS

- Marina
  - Viewing Area
  - Launching Ramp
- ## ADJACENT LAND AREAS
- Federally Managed Parks
  - State and Locally Managed Parks
  - Private Land

## DUXBURY REEF MARINE RESERVE

Although fishing is legal, the removal of mussels, clams, starfish or any other tidepool life is illegal. To report a violation, contact: the California Department of Fish and Game at (707) 944-2011.

## FARALLON ISLANDS

Due to the sensitivity of marine birds and mammals, the Farallon National Wildlife Refuge is not open to the public. The island's wildlife can be viewed and photographed from boats. For further information on the refuge contact: U.S. Fish and Wildlife Service P.O. Box 524 Newark, CA 94560 (415) 792-0222

## SANCTUARY BOUNDARIES

Located between 38° 18' N and 37° 29' N latitude, the seaward boundary of the Sanctuary follows the mean high tide line between Bodega Head (Sonoma County) and Rocky Point (Marin County) except along the Point Reyes National Seashore where it follows the seaward boundary of the park that extends a quarter mile offshore. The seaward Sanctuary boundary exists 6 nautical miles offshore between Bodega Head and Point Reyes Headlands. It then extends westward encompassing the waters within 12 nautical miles of the Farallon Islands and arcs back to shore.

## SANCTUARY REGULATIONS

- Oil and gas exploration and development activities within the Sanctuary are prohibited.
- Discharges are prohibited with the exception of vessel cooling waters, effluents from marine sanitation devices and fish wastes and bait.
- Seabed alteration or construction is prohibited.
- Oil tankers, barges and other merchant vessels are prohibited within two nautical miles of the Farallon Islands, Bolinas Lagoon and Areas of Special Biological Significance. Fishing, recreational and enforcement vessels are not included in this prohibition.
- Aircraft within one nautical mile of biologically sensitive areas must maintain an altitude of at least 1000 feet to avoid disturbing marine mammals and seabirds.
- Damaging or removing historical or cultural resources is prohibited.

## LATERAL AIDS AS SEEN ENTERING FROM SEAWARD

- Port Side-left  
Green light only  
Odd numbered aids
- Lighted Buoy
  - Can Buoy
  - Special Purpose Buoy
- Starboard Side-right  
Red light only  
Even numbered aids
- Lighted Buoy
  - Nun Buoy
  - Lighthouse



## MARINE MAMMAL STRANDINGS

It is illegal to remove or disturb any stranded marine mammal.

A marine mammal out of its element is considered stranded. However, a seal or sea lion hauled out on a remote beach should be carefully observed for a period of time before being considered stranded. After resting, an animal often returns to the sea on its own. Any dead marine mammal lying on a beach or floating in the water is considered to be stranded.

Many agencies, institutions and individuals cooperate in a stranding network to salvage live marine mammals and collect scientific data from both live and dead stranded animals.

If you observe a live, sick or injured marine mammal contact: California Marine Mammal Center at (415) 289-7325, a park ranger or a California Fish and Game Warden.

If you observe a dead marine mammal contact: California Academy of Sciences at (415) 221-5100, a park ranger or a California Fish and Game warden.

## WHALE WATCHING GUIDELINES

To protect marine mammals from harassment, the National Marine Fisheries Service has developed guidelines for whale watching off the coast of California.

- VESSELS: should not approach whales closer than 100 yards;
- should not separate a whale from her calf;
- should not perform any action that substantially disrupts the normal behavior pattern;
- should approach whales slowly from the side, travel parallel to them and at the same speed as the slowest whales;
- AIRCRAFT: should not fly lower than 1000 feet over marine mammals.

YOUR COOPERATION IN OBSERVING THESE GUIDELINES IS ESSENTIAL TO THE PROTECTION OF MARINE MAMMALS.

## ON THE COAST

The headlands, beaches, reefs and coastal wetlands adjacent to the Sanctuary offer easy recreational access to the ocean environment. The coast north and south of San Francisco hosts spectacular national, state and local parks with public information facilities. Visitors are invited to explore the edge of the Sanctuary from these many coastal access points.

For information on coastal parks adjacent to the Sanctuary, call Golden Gate National Recreation Area (415) 556-0560 Point Reyes National Seashore (415) 663-1092 Mount Tamalpais State Park (415) 388-2070 Tomales Bay State Park (415) 669-1140

California State Park Camping Information (800) 444-7275  
Marin County Parks and Recreation (415) 499-6387  
Doran Park, Bodega Bay (707) 875-3540  
Westside Park, Bodega Bay (707) 875-2640  
James V. Fitzgerald Marine Reserve (415) 728-3584

Remember... Whether fishing, hiking or exploring, always be aware of tidal conditions. Tides change every six hours.

Incoming tides can cut off your return route. Do not turn your back on the ocean. Sneaker waves can wash you into the water. When hiking along coastal cliffs, stay back from the edge. Keep on the trail. Climbing the cliffs from the beach and taking shortcuts is dangerous. Coastal rock is loose and is unsafe for climbing. Swim only at beaches with lifeguards. Rip

currents along this coastline can carry you dangerously far offshore. At marine reserves, fishing is legal with a California Department of Fish and Game license, but tidepool life may not be removed. Respect the fragility of intertidal organisms. Avoid disturbing seals and sea lions hauled out on the beach. These marine mammals are wary, and harassment is illegal.

## ON THE WATER

Sport fishing for salmon, striped bass, halibut and rockfish is popular in Sanctuary waters along the coast. Party boats for charter or individual fishing trips are available at local marinas in San Francisco, Half Moon Bay, Sausalito and Bodega Bay. A fishing license from the California Department of Fish and Game is required, and regulations on size, number, season and method of take must be observed.

Whale watching trips and excursions to view the Sanctuary and the Farallon Islands also depart from local marinas and are scheduled by environmental education and conservation groups including the Oceanic Society. For further information contact these groups and others: Oceanic Society Expeditions Fort Mason Center, Building E San Francisco, CA 94123 (415) 441-1106

## Remember...

Weather conditions can change quickly. Fog makes navigation difficult. Take precautions when boating on the ocean. Always carry a U.S. Coast Guard approved personal flotation device for each passenger, signaling equipment and enough fuel for a round trip. Alert family or friends of your trip plans.

Do not rely on this map for navigation. Refer to NOAA/NOS nautical charts 18640 and 18645 which show the Sanctuary in detail.

FOR EMERGENCIES IN SANCTUARY WATERS; CONTACT UNITED STATES COAST GUARD: Channel 16 VHF-FM/156.8 MHz (Distress and Calling Frequencies) Dial 911 or (415) 556-2103 United States Coast Guard, Group San Francisco.

FOR EMERGENCIES ON LAND: In GGNRA, United States Park Police—(415) 561-5656 In Point Reyes National Seashore—(415) 663-8525 In Marin County—911 In Sonoma County—911

Within the ocean swells beyond the Golden Gate is a thriving world underwater. Few ocean regions on earth host the multitude of marine species found in California's Gulf of the Farallones; even fewer regions possess such a fortunate combination of natural features and forces. Winds, waves and ocean currents converge over the Gulf's wide continental shelf—shifting waters, circulating nutrients, mixing fresh and salt water, creating a resource-rich environment. In the Gulf of the Farallones, marine life flourishes in such abundance that the federal government designated part of the region a National Marine Sanctuary.

The Gulf of the Farallones National Marine Sanctuary coordinates protection of the region's extraordinary resources—the thousands of seabirds,

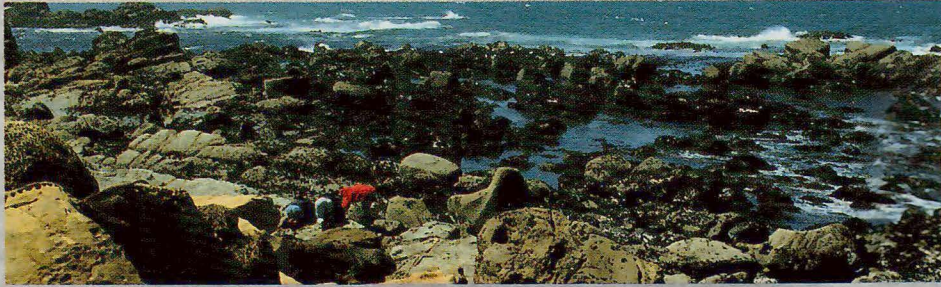
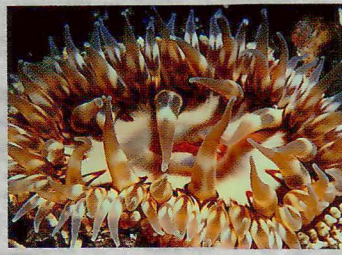
the leaping dolphins, the barnacles, whales and sunken ships, and especially the medium that makes this world possible, the water. Many people pursue livelihoods and recreational activities in the Sanctuary, sharing use of these protected waters with the wildlife. Ocean-going vessels traverse the Sanctuary on international shipping lanes. Commercial fishing boats trail nets and lines into the water from their decks. Sleek sail-

boats run with the wind along one of the most pristine coastlines in the nation. Whale-watchers search the seas for migrating mammals. The purpose of the Sanctuary is to manage these many uses while maintaining a commitment to ocean protection. To reach this goal, the Sanctuary actively conducts research and public education programs, involving the community in marine conservation efforts.

### INTERTIDAL ZONE

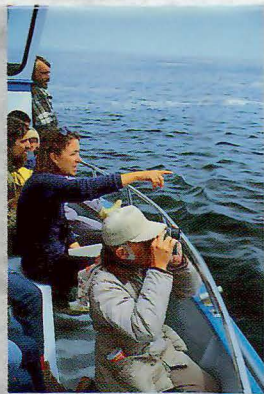
A ribbon along the coast extending from the wave spray of high tides to the rocks and reefs exposed by low tides.

As the tides ebb and flow twice daily, intertidal organisms live through pounding waves, constantly changing temperatures and salinity levels, dehydrating air and sun, and the fresh water run off from the land in winter.



To withstand waveshock, mussels and barnacles fasten themselves to the rock. Urchins and clams burrow in for protection. To survive hot temperatures and dry spells, anemones cover themselves with pebbles while limpets clamp their shells to the rock, conserving moisture within. Hoards of creatures compete for space, claiming homes among and on top of each other or even inside another's shell. Despite these challenging conditions, life flourishes in the intertidal zone, fed by the plentiful supply of food drifting in the water.

Duxbury Reef is an extensive intertidal area of the Sanctuary, rich in unusual shapes and sights. As the tide retreats over the reef, visitors discover bright green anemones, sea stars, purple urchins and tiny sea slugs among the wave-shaped terraces and tide-pools bridging land and sea.



### PELAGIC ZONE

Vast reaches of open ocean flooding the sunlit shallows over the continental shelf and filling the dark fathomless depths beyond.

The pelagic zone is an immense, three-dimensional, fluid environment devoid of rock and shelter. Tiny plants and animals called plankton drift with the currents. Migrating whales, porpoises and sea lions find their way through huge regions of water. Sun-



light penetrates only ten meters below the surface; darkness reigns below. Creatures rely on senses other than sight: common dolphins use sound to locate prey; salmon smell their way home to coastal rivers.

Across the wide shallows over the continental shelf, upwelled nutrients rise up in patches, triggering local chain reactions in the marine food web. Tiny drifting plants begin to grow and multiply, attracting many forms of marine life. Swarms of animal plankton graze these rich aquatic pastures. Anchovies, herring and rockfish school around the animal plankton. Seabirds flock to feast on the fish. Seals and sea lions also come to feed, sometimes followed by their own predators—the killer whale and white shark. Below this flurry of surface activity, deep-water fishes tolerant of the frigid temperatures and sheer weight of the water scavenge leftovers falling from above.

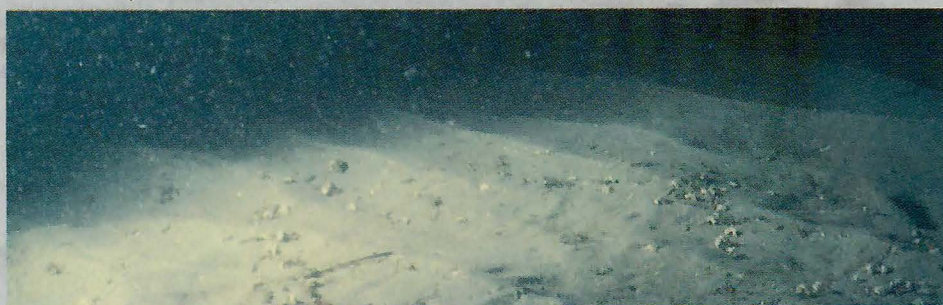
A whale-watching expedition through the vast pelagic reaches of the Sanctuary promises fresh new sights of seabirds, seaweeds, dolphins and the most awe-inspiring of marine mammals—the great whales.

### BENTHIC ZONE

The ocean floor.

Cold, dark and under great pressure from the weight of water above, the benthos is unlike any other habitat on earth. The season never changes, so benthic organisms can reproduce year-round. No plants live on the seafloor due to the absence of light. Though food is scarce, bacteria in the marine ooze nourish a surprising variety of worms, brittle stars, sea cucumbers and other bottom-dwellers adapted to these extreme conditions.

The benthic zone deep within the Sanctuary is remote and unknown. Scientists now descend in submersibles through the fathoms of darkness to find new life forms never before seen by the human eye.



### COASTAL WETLANDS

Lagoons, estuaries, salt marshes and tidal flats where salt water brought by the ocean tides mixes with fresh water drained from the land.

In coastal wetlands, the water's salt content changes with the tides and seasons. Many organisms thrive in these conditions, regulating their body



salt levels to accommodate the variations in salinity. The variety of habitats available in coastal wetlands encourages the abundance and diversity of life. Cordgrass and pickleweed grow lush in salt marshes. Dense communities of clams, tube-dwelling worms, ghost shrimp and other invertebrates nestle in the sediment, waiting for the tide's bounty of nutrients. As the waters rise, schools of herring deposit their eggs in quiet wetland waters and young salmon linger, gathering strength before departing for the open sea. Bat rays fan the mud with their fins, uncovering feasts of small crustaceans. Shorebirds and waterfowl descend from the skies to rest and feed, drawn to these natural oases along their migration routes.

Bolinas Lagoon, a wetland inlet of the Sanctuary, is a wonderful place to watch ducks, snowy egrets, sandpipers, herons and other birds as they feed and fly. Not so obvious are the many tiny and fascinating creatures which thrive in the muddy creeks and tidal flats, another level of life in the lagoon.

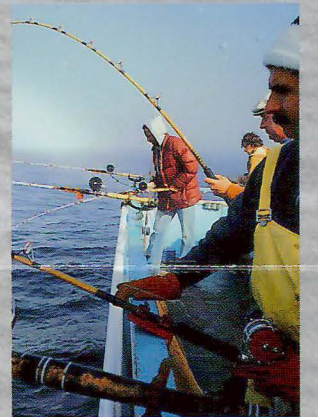


### BAYS AND COASTAL WATERS

Marine waters near the shore where coastal and ocean systems overlap.

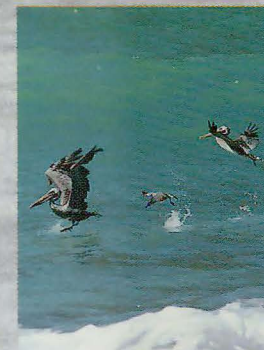
Buffered by prominent headlands, the calm nearshore waters of bays shelter wildlife from the brunt of ocean storms. Food is plentiful. Inland watersheds infuse these coastal waters with food-rich sediments—sparking growth of marine organisms throughout the water column from surface to seafloor.

Deep down, worms, clams and snails colonize the bottom sediments. Above, skates, starry flounder and halibut hover over sandy shoals. On



the surface, common murre chicks practice catching small fish while pelicans and terns churn the water foraging for food. In the low surf close to the beaches, harbor seals commute between feeding and resting areas. Loons and gray whales pass through during seasonal migrations.

Tomales, Bodega, Bolinas and Drake's Bays, at the Sanctuary's edge, are prime places for fishing. Sport fishermen, casting lures and lines into bay waters reel in salmon, striped bass and other prize catches.



### ISLANDS

Isolated land, refuge for marine wildlife, surrounded by the sea.



At the center of the Sanctuary, 27 miles west of the Golden Gate, lie the Farallon Islands, a National Wildlife Refuge. The islands offer undisturbed resting and breeding sites for seals, sea lions and seabirds, far from mainland predators and near the food-rich waters of the Gulf of the Farallones.

The Farallon Islands host close to 300,000 breeding seabirds and 7000 seals and sea lions every year. In the spring dense colonies of cormorants, auklets, common murres and western gulls nest on the rocky slopes and in underground burrows. Elephant seals and sea lions crowd the pocket beaches and marine terraces in fall and winter.

A refuge for marine wildlife encircled by the Sanctuary, the Farallon Islands offer exceptional research opportunities. Biologists visit the islands to study the seabirds and marine mammals—visible indicators of changes in ocean cycles.

