



Point Blue
Conservation
Science

Our Oceans, Our Priorities

A Briefing

March 2020



About this Brief

This brief summarizes the findings of a longer report,
**“Ocean Research and Management: Priorities off the
U.S. West Coast.”**

The report was completed on December 20, 2019 by Mer-
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To read the full report, please visit:
www.pointblue.org/west-coast-ocean-priorities

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Front cover: CA Sea Lions on the Farallon islands/Maps for Good
Inside: Humpback whales/Sophie Webb; Intertidal habitat with anemone/
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USFWS; Rocky reef habitat/Rick Starr, CBNMS, NOAA; Kelp forest/Camille Pag-
niello, CA Sea Grant; Scientist sampling eel grass/Joe Tyburczy, CA Sea Grant
Back cover: Gulls at sunset on the Farallon islands NWR/Annie Schmidt

Point Blue Conservation Science – Point Blue’s 180 staff and
seasonal scientists conserve wildlife and ecosystems through
scientific research, partnerships, and outreach. At the core of our
work is ecosystem science, studying wildlife and other indicators
of nature’s health. Visit Point Blue on the web www.pointblue.org.



Introduction

The marine environment along the west coast of the United States is known as the California Current Ecosystem; this eastern boundary system is highly productive due to coastal driven upwelling. In addition to hosting biologically important species, these waters also host important economies and an increasing human population. There is a need to understand the conservation priorities in the California Current, and how these priorities align or conflict with industrial activities and other threats.

In an effort to clarify marine conservation priorities, we reviewed 33 documents that focused on ocean research and management issues along the U.S and compiled a report that identified:

- Key benefits and value that ocean ecosystems provide
- Key direct and indirect threats to habitats and species
- Habitats and species most at risk from key threats
- Key management & research recommendations

In this brief, we provide a truncated version of the original report.

Please find the full report at:

www.pointblue.org/west-coast-ocean-priorities.



Benefits & Value

How do we value and use the ocean off the US West Coast? For each of these ocean benefit and value areas, dive in to the full report to learn more about current and future threats and implications for ecosystems and economy.

Recreation

Recreation encompasses a large variety of activities which bring humans in close contact with the natural environment. These activities include things like wildlife viewing, boating, kayaking, hiking, camping, recreational fishing and diving, and surfing. Many of these activities are encouraged or promoted, even within protected areas, since they provide educational and outreach opportunities for the general public, in turn fostering a desire to keep these areas protected. While these activities can be considered non-commercial in nature, commercial industries have formed to support them and recreation can be a key economic driver, especially at the local level.

Oil

This resource includes oil and gas development projects, which are currently limited to Southern California. National Marine Sanctuaries prohibit oil and gas development, and oil and gas extraction activities are prohibited in California state waters; however, Oregon and Washington state waters have no prohibitions, and the moratorium that once covered the outer continental shelf off the U.S. West Coast expired in 2017.

Fisheries

The ocean is valued for food by people and commercial fisheries abound in the California Current Ecosystem. Prominent fisheries in the region include Pacific hake, market squid, Pacific sardine, salmon, and rockfish. The Dungeness crab fishery is the most valuable fishery on the U.S. West Coast. Recreational and tribal fisheries are also included as points of value for this system.

Aquaculture

Aquaculture, or farming in the ocean, can include the cultivation of fish, oysters, clams, mussels, or marine plants for human consumption. This industry provides jobs and food to local economies and is helping to meet future seafood demand.

Shipping

The movements of goods and people across the world is dependent on shipping over the ocean. Shipping can include commercial shipping, cruise, passenger ships, and any other vessel traffic. Shipping can also encompass ports, terminals, and shore-based equipment associated with shipping.

Threats

Direct Human Impacts encompass the threats that are directly attributed to human activities, while Indirect Human Impacts include those threats more related to climate change. Submerge yourself in more details by reading the full report.

Direct

Fishing, pollution, and disturbance are the main human-related direct threats to the California Current Ecosystem. Fishing includes overfishing, high bycatch, destruction to habitat, impacts to biodiversity, and a lack in transparency in fisheries. Pollution comes in the forms of urban, nonpoint source, and industrial. Urban pollution consists of marine debris, trash, and plastic, but also includes light pollution, noise pollution, nutrient input from land, and urban runoff. Nonpoint source pollution include pollutants deposited in the ocean from the atmosphere, inorganic pollutants, ocean dumping, sediment pollution, and toxics. Industrial pollution includes oil spills, ocean-based marine debris, ocean dumping (e.g., toxic materials, shipwrecks, fishing gear), coastal industrial facilities, radioactive waste, and aquaculture pollution. Direct disturbance includes trampling nests and breeding sites, flooding nests and habitat via boat wakes, beachgoers interfering with nesting activities, attracting or assisting predators, noise interrupting wildlife communication, and aircraft and vessel traffic scaring wildlife away from young or areas of protection.

Indirect

The top indirect threats are: changes in natural processes (namely upwelling); changes in ocean chemistry (ocean acidification at the top of the list); sea level rise (particularly in estuaries); increased temperatures; and invasive species. Upwelling and temperature changes will have implications for vertical mixing of the water and how nutrients are delivered to the base of the marine food web - phytoplankton. The spread of invasive species will make it more challenging for native species to survive and remain in their habitat.



Species & Habitats at Risk



- Chinook Salmon
- Coho salmon
- California halibut
- Pacific sardine
- Northern anchovy



- Blue Whale
- Humpback whale
- Steller sea lion
- California sea lion
- Southern sea otter



- Cassin's auklet
- Western snowy plover
- Common murre
- Black oystercatcher
- Brandt's cormorant



- Dungeness Crab
- Olympia oyster
- Red abalone
- California mussel
- Red sea urchin



- Macroalgae
- Sea palm
- Eel grass
- Surf grass

The species shown at left represent those that are most at risk of harm from the threats listed on the previous page. The groups are fish, mammals, birds, invertebrates, and plants. Dive deeper into each species by exploring the full report at pointblue.org/west-coast-ocean-priorities.

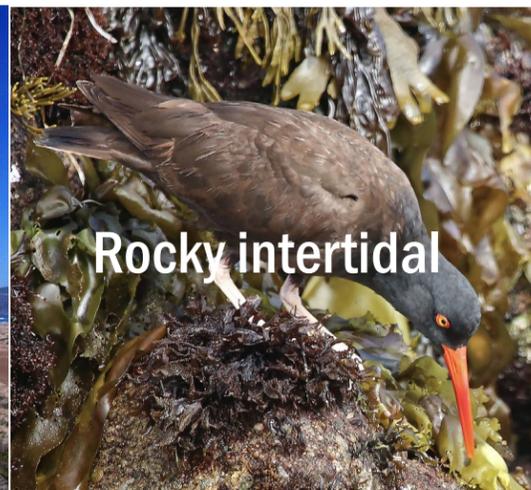
Habitats that are closer to human infrastructure are at highest risk. The habitats shown below are in order of more severe (left) to less severe (right) risk.



Seagrass



Beaches



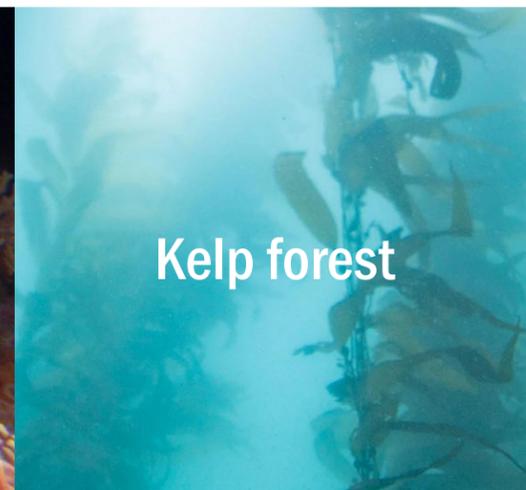
Rocky intertidal



Estuaries



Rocky reefs



Kelp forest

“Resilience is the capacity of a system to absorb disturbance and reorganize while undergoing change so as to still retain essentially the same function, structure, identity, and feedbacks.”

-Walker et al. (2004)

Report Recommendations

If we focus on resilience in our conservation and management efforts, we can help our marine ecosystems rebound and thrive. We know that people and wildlife depend on healthy, functioning natural systems for our economic and basic well-being. We highlight four key common priority areas below that have emerged from our literature review.



Sustainable Fisheries & Harvest

- Create better, environmental data-driven harvest guidelines, especially for forage and sensitive species
- Calculate predator needs into management plans
- Improve knowledge of stock structure
- Improve biomass estimates
- Improve management of shellfish mariculture



Shipping

- Slow ship speed
- Modify shipping lanes using ecological data
- Modify ships to reduce noise pollution
- Improve vessel management plans
- Minimize dredging and other development projects



Restoring & Protecting

- Restore and protect kelp and eelgrass to ameliorate ocean acidification
- Continue restoring riparian habitat
- Protect mature oyster beds
- Reduce human disturbance and trampling in intertidal and beach areas
- Protect upland habitat for future migration of species



Needed Research Topics

- Climate and ocean chemistry-driven species predictions
- Marine portion of the life cycle of protected species
- Role of red sea urchins in bull kelp beds
- Noise pollution effects on marine organisms
- Impacts of sea level rise on eelgrass habitat, beaches and dunes, and rocky intertidal habitats
- Age-specific survival rates for recovering species
- Monitoring for sustainable harvest and all species and habitats

This project was completed in collaboration with the Central and Northern California Ocean Observing System (CeNCOOS) and the West Coast Ocean Alliance.

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