



# Navigating the Future

## Management Plan Review



### Kelp Research and Monitoring

Kelps thrive in the sanctuary's cold, nutrient-rich water and are among the most biologically productive marine habitats. Giant kelp (*Macrocystis integrifolia*) and bull kelp (*Nereocystis leutkeana*) are the dominant kelp species in the sanctuary. Giant kelp is one of the fastest growing of all plants. Kelps are found in nearshore waters, can grow up to 20 meters (66 feet) in length, and form dense patches known as kelp forests.

Kelp forests are often compared to tree forests on land since both have distinct layers: a sunny canopy at the surface, a dimly lit middle, and a dark forest bottom. This pattern of vertical zonation provides a variety of microhabitats or niches that support a large and diverse assemblage of biological species.



Kelp forest at mid-water column

The complex structure of this living habitat buffers nearshore areas from the force of waves, surges and currents, thereby creating a relatively protected environment. Sea otters often forage and rest in kelp canopies, while many fish and invertebrate species find safe cover within the intricate structure of the kelp forest.



Kelp as fish habitat

Annual monitoring and quantification of the floating kelp canopy has been conducted by Washington's Department of Natural Resources since 1989 and in collaboration with the sanctuary since 1995. The canopy is dynamic and changes each year, yet these kelp forests are generally considered stable. In fact, the total area covered by floating kelp has been increasing along the outer coast and western portion of the Strait of Juan de Fuca. This increase may be influenced by changes in oceanographic conditions and a growing population of sea otters, which feed on the sea urchins that graze on kelps.

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