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Contact:

Jennifer Roth

Phone:

(707) 781-2555 x305

E-mail:

jroth@prbo.org



Common Murre prey consumption in the California Current System

Seabirds are top predators in marine ecosystems and need substantial amounts of krill and forage fish in order to survive and reproduce each year. In addition, commercial fisheries and other top predators, including predatory fish and marine mammals, often rely on the same prey species. The combined effects of predators and commercial fishing on forage fish populations can be substantial in some areas. Understanding how much prey top predators require is important for managing marine resources sustainably.

Common Murres are one of the most abundant seabird species in the region, are resident in the area throughout the year, and feed primarily on juvenile rockfish, market squid, northern anchovy, Pacific hake, shiner surfperch, and midshipman. We developed a bioenergetics model for murres between Cape Blanco, Oregon and Point Conception, California using population and diet data from the mid- to late 1980s and compared the 1980s estimate to projected prey consumption in the mid-2000s based on recent population counts. We estimated that the population consumed 172,313 metric tons of these species annually in the mid- to late 1980s and 225,235 metric tons by the mid-2000s due to murre population increases.

Our results demonstrate that murres require a substantial amount of prey on an annual basis. Including this type of information in fishery management plans could help to determine

sustainable harvest levels of commercially important species. Understanding the interactions between seabirds, commercial fisheries, and other top predators and assessing the impact of the combined harvest on prey populations is important to an ecosystem-based approach to management of marine resources that ensures healthy populations of both predators and prey.

Main Points

- Common Murres require substantial amounts of forage fish to survive and reproduce each year.
- The combined effects of predation by seabirds, marine mammals, predatory fish, and commercial fisheries on forage fish populations can be substantial.
- Incorporating prey consumption estimates into fishery management plans would contribute to the sustainable harvest of commercially important species.

Paper Citation

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