Species of Concern
NOAA National Marine Fisheries Service

Pacific hake
Merluccius productus
Georgia Basin DPS

Photo credit: NMFS.

KEY INFORMATION

Area of Concern
Puget Sound.

Year Identified as "Species of Concern"
1999

Factors for Decline
- Overfishing
- Decline in age- and size-at-maturity

Conservation Designations
IUCN: Not Evaluated
American Fisheries Society: Vulnerable

Current Status:

Demographic and Genetic Diversity Concerns:
The biomass of Pacific hake in Port Susan during the spawning period has declined by 85% over the past 15 years, yet numbers have fluctuated around 30 million fish until dropping to less than 11 million in 2000. Over the same period, size composition and size-at-maturity for females have also decreased substantially. In contrast, significant declines in biomass, fish size, or maturity for Pacific hake populations in the Canadian portion of the SOG were not evident (Gustafson et al. 2000). Recently, however, the population biomass in the SOG has begun to decline, although population numbers of hake appear to be stable. Although Puget Sound Pacific hake are severely depressed, Strait of Georgia hake are estimated to be ten times as abundant, and are not thought to be at risk of extinction.

At the time of the 2000 status review, the Biological Review Team (BRT) identified several areas of uncertainty regarding the relationship among stocks and effects of potential risk factors. The extent of any mixing of spawning products or spawners among stocks within the Georgia Basin is unknown. A majority of the BRT felt that significant population structuring may exist and that up-to-date studies of the genetics of spawning aggregations would be necessary to define this structure. Information about population structure is also considered crucial to the BRT's decision concerning extinction risk for Pacific hake because its abundance in the SOG has not declined markedly over the past 15 years.

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Existing Protections and Conservation Actions:

The fisheries are managed by state and local management agencies. Pacific hake from Central Puget Sound are a Washington State Candidate Species. The recreational fishery for Puget Sound Pacific hake is closed and there has been no directed commercial fishery on Puget Sound Pacific hake since 1991.

Brief Species Description:

Pacific hake, *Merluccius productus*, also known as Pacific whiting, is a gadiform (cod group) groundfish that is currently the most abundant commercial fish species on the U.S. West Coast (Methot and Dorn 1995). There are three recognized **stocks** of Pacific hake: a highly migratory offshore (or coastal) stock that ranges from southern California to Queen Charlotte Sound, a central-south Puget Sound stock, and a Strait of Georgia (SOG) stock. Recent work by Iwamoto et al. (2004) confirms the genetic discreteness of these three stocks. The Georgia Basin DPS includes both the Puget Sound and Strait of Georgia stocks. Pacific hake are silvery on the back grading to whitish ventrally and can reach up to 36 inches in length and 15 years of age. Their pectoral fin tips usually reach to or beyond the origin of anal fin. The caudal fin is always concave. Pacific hake are nocturnal feeders that undergo diel vertical migrations off the bottom in order to feed on a variety of fishes and invertebrates. They are an important prey item for sea lions, small cetaceans, and dogfish sharks. Pacific hake are common in moderate depths and occur to depths of 3000 ft.

Resident Pacific hake in Puget Sound spawn in Port Susan (Pedersen 1985) and Dabob Bay (Bailey and Yen 1983) from February through April, although Dabob Bay has never supported a fishery. The SOG resident stock aggregates to spawn in the deep basins of the south-central Strait of Georgia where peak spawning occurs from March to May (Shaw et al. 1990). Pacific hake may spawn more than once per season, so absolute fecundity is difficult to determine. Historically, inshore female Pacific hake matured at 15 inches (37 cm) and 4 to 5 years of age. Currently, length at 50% maturity for females in the Port Susan Pacific hake population is approximately 8.5 inches (21.5 cm), compared to 11.7 inches (29.8 cm) in the 1980s. Females of the offshore stock mature at 3 to 4 years of age and 13.4 to 15.75 inches (34-40 cm) and nearly all males are mature by age 3 and as small as 11 inches (28 cm). By age 3, most offshore Pacific hake become available to the mid-water trawl fishery, although Pacific hake between ages 6 and 11 are most commonly caught.

Contact Information

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