

Seafood Watch Seafood Report



MONTEREY BAY AQUARIUM®

Pacific Halibut

Hippoglossus stenolepis

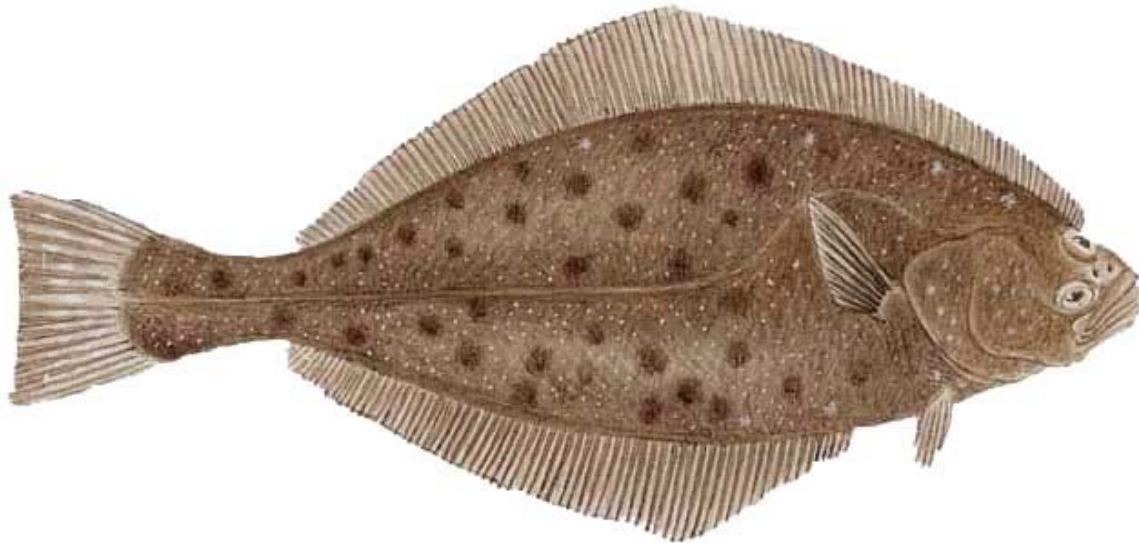


Image courtesy of NMFS

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About Seafood Watch® and the Seafood Reports

Monterey Bay Aquarium's Seafood Watch® program evaluates the ecological sustainability of wild-caught and farmed seafood commonly found in the United States marketplace. Seafood Watch® defines sustainable seafood as originating from sources, whether wild-caught or farmed, which can maintain or increase production in the long-term without jeopardizing the structure or function of affected ecosystems. Seafood Watch® makes its science-based recommendations available to the public in the form of regional pocket guides that can be downloaded from the Internet (seafoodwatch.org) or obtained from the Seafood Watch® program by emailing seafoodwatch@mbayaq.org. The program's goals are to raise awareness of important ocean conservation issues and empower seafood consumers and businesses to make choices for healthy oceans.

Each sustainability recommendation on the regional pocket guides is supported by a Seafood Report. Each report synthesizes and analyzes the most current ecological, fisheries and ecosystem science on a species, then evaluates this information against the program's conservation ethic to arrive at a recommendation of "Best Choices", "Good Alternatives" or "Avoid." The detailed evaluation methodology is available upon request. In producing the Seafood Reports, Seafood Watch® seeks out research published in academic, peer-reviewed journals whenever possible. Other sources of information include government technical publications, fishery management plans and supporting documents, and other scientific reviews of ecological sustainability. Seafood Watch® Fisheries Research Analysts also communicate regularly with ecologists, fisheries and aquaculture scientists, and members of industry and conservation organizations when evaluating fisheries and aquaculture practices. Capture fisheries and aquaculture practices are highly dynamic; as the scientific information on each species changes, Seafood Watch's sustainability recommendations and the underlying Seafood Reports will be updated to reflect these changes.

Parties interested in capture fisheries, aquaculture practices and the sustainability of ocean ecosystems are welcome to use Seafood Reports in any way they find useful. For more information about Seafood Watch® and Seafood Reports, please contact the Seafood Watch® program at Monterey Bay Aquarium by calling 1-877-229-9990.

Disclaimer

Seafood Watch® strives to have all Seafood Reports reviewed for accuracy and completeness by external scientists with expertise in ecology, fisheries science and aquaculture. Scientific review, however, does not constitute an endorsement of the Seafood Watch® program or its recommendations on the part of the reviewing scientists. Seafood Watch® is solely responsible for the conclusions reached in this report.

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Executive Summary:




Pacific halibut are found on the continental shelf of the North Pacific Ocean and Bering Sea. They are demersal, living on or near the bottom, and prefer water temperatures ranging from 3 to 8 ° Celsius. Maturity varies with sex, age, and fish size. Females grow faster but mature slower than males. Most males are mature by eight years of age, whereas females on average mature at about 12 years of age. Fishers traditionally fish for halibut using units of leaded ground line in lengths of 100 fathoms, which are referred to as “skates.” Each skate has approximately 100 hooks and is anchored to the ocean bottom for 2 to 20 hours. The groundlines have no appreciable impact on marine habitats and are selective to groundfish, minimizing bycatch. In 2000 the U.S. landed 33,739 metric tons (mt) of Pacific halibut, just under a decade high of 35,970 mt landed the year before. U.S. landings have been above 30,000 mt seven out of the last ten years. The U.S. and Canada manage Pacific halibut jointly through a bilateral commission known as the International Pacific Halibut Commission (IPHC), which was formed in 1924. U.S. management is based on Individual Fishing Quotas (IFQs), whereby each licensed fisher is given a share of the annual catch limit based on the individual’s past production. Canadian management is similar, but is based on Individual Vessel Quotas (IVQs), whereby annual catch limits are allocated among the licensed vessels in relation to the vessels’ size and past production. Each year, the IPHC sets total allowable catch (TAC) levels for halibut in the U.S. and Canadian Exclusive Economic Zones (EEZs). TAC is recommended by IPHC staff after assessing the abundance and potential yield of Pacific halibut using data from both fishery-dependent and independent surveys. The criteria analyzed in this seafood report lead to an overall recommendation of “Best Choice” for Pacific halibut caught in U.S. and Canadian fisheries.

The U.S. North Pacific Halibut fishery (AK, WA, OR) has been certified as sustainable to the Marine Stewardship Council (MSC) standard. The MSC is an independent non-profit organization, which has developed an environmental standard for sustainable and well-managed fisheries. It uses a product label to reward environmentally responsible fishery management and practices (<http://www.msc.org/>).

Table of Sustainability Ranks

Sustainability Criteria	Conservation Concern			
	Low	Moderate	High	CRITICAL
Inherent Vulnerability		√		
Status of Stocks	√			
Nature of Bycatch		√		
Habitat Effects	√			
Management Effectiveness	√			

Overall Seafood Recommendation:

U.S./Canada **Best Choice**  Good Alternative  Avoid 

Market Information:**Market Names:**

Pacific halibut is commonly sold as “halibut.” When used for sushi or sashimi, Pacific halibut is commonly sold as *hirame*.

Seasonal Availability:

Fresh, wild Pacific halibut is usually available between March and November. Frozen Pacific halibut is available year-round. The International Pacific Halibut Commission (IPHC) is in the process of extending the fishing season so fresh Pacific halibut will be available year-round.

Product Forms:

Pacific halibut is sold as steaks, fillets, or roasts (IPHC 1998).

Import/Export Sources and Statistics

The U.S. imports and exports Pacific halibut (NMFS 2001a). In the year 2000, imports totaled 7,284 mt and most (85%) came from Canada in both fresh and frozen forms (Fig. 1) (NMFS 2001a).

Exports of halibut in 2000 were 9,309 mt, which included a mix of Pacific, Atlantic, and Greenland halibut (NMFS 2001b). Eighty percent of U.S. halibut exports in the year 2000 were shipped to Canada (NMFS 2001b).

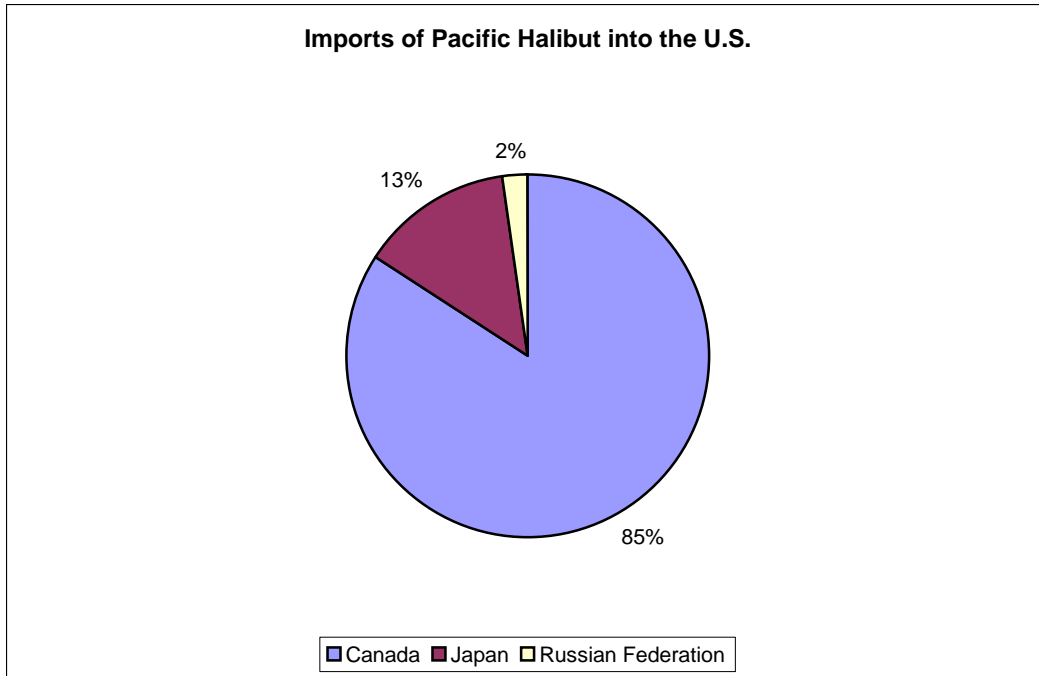


Figure 1. U.S. imports of halibut in 2000 by country (NMFS 2001a). Less than 1% of Pacific halibut imports came from China and Mexico.

Life History Information

Pacific halibut are found on the continental shelf of the North Pacific Ocean and Bering Sea (Fishbase 2003; IPHC 2000). They have been recorded on the North American coast from Santa Barbara, California to Nome, Alaska and are also found along the Asiatic coast from the Gulf of Anadyr, Russia to Hokkaido, Japan (Fishbase 2003).

Pacific halibut are demersal, living on or near the bottom, and prefer water temperatures ranging from 3 to 8° Celsius (IPHC 2000). Although halibut have been caught as deep as 549 meters, they are most often caught in waters from 27 to 274 m in depth (IPHC 2000).

Pacific halibut belong to a family of flounders called Pleuronectidae (IPHC 2000). They are among the largest teleost fishes in the world with reported lengths up to 2.7 m (IPHC 1998; IPHC 2000). Pacific halibut have flat, diamond-shaped bodies and are able to migrate long distances (IPHC 1998). Most adult fish tend to remain on the same summer feeding grounds year after year, however they make regular seasonal migrations from more shallow feeding grounds in summer to deeper spawning grounds in winter (IPHC 2000). These spawning migrations can cover hundreds of miles in north-south or east-west directions (IPHC 1998).

Halibut spawn in deep water (IPHC 1998; IPHC 2000). As larvae develop, they drift slowly upward in the water column (IPHC 1998) and drift great distances with the ocean currents in a counter-clockwise direction around the Northeast Pacific Ocean (IPHC 1998). After spending two or three years in nursery areas in the Northeast Pacific, young halibut tend to migrate to more southerly and easterly waters (IPHC 1998).

Halibut size is not age-specific, but rather tends to follow a cycle related to halibut abundance (IPHC 1998). Average fish size reflects density dependence in growth rate, where slower growth is associated with higher halibut abundance (Leeman 2003). The current trend is one of decline due to high stock abundance, and fish today are smaller than fish of the same age 10 years ago (IPHC 1998; IPHC 2000; Leeman 2003).

Maturity varies with sex, age, and fish size (IPHC 1998; IPHC 2000). Females grow faster but mature slower than males (IPHC 1998). Most males are mature by eight years of age, whereas females on average mature at about 12 years of age (IPHC 1998).

From November to March, mature halibut concentrate annually on spawning grounds along the edge of the continental shelf at depths from 183 to 457 m (IPHC 1998). Major spawning sites include Cape St. James, Langara Island, and Frederick Island in British Columbia; and Yakutat, Cape Suckling-Yakataga, Portlock Bank, and Chirikof Island in Alaska (IPHC 1998). Other reported spawning locations include Goose Islands, Hecate Strait, and Rose Spit in British Columbia; and Cape Ommaney, Cape Spencer, and Cape St. Elias in Alaska (IPHC 1998). Spawning concentrations also occur in the Bering Sea (IPHC 1998). In addition to these major spawning grounds, spawning is thought to be widespread and occurs in many areas, although concentrations are not as dense as those at grounds mentioned above (IPHC 1998).

The number of eggs produced by female halibut is related to size (IPHC 1998; IPHC 2000). A 23 kilogram female will produce about 500,000 eggs, whereas a female over 113 kg may produce 4 million eggs (IPHC 1998). Eggs hatch after 15 to 20 days at 5-6° C (sooner in warmer water) (IPHC 1998). Eggs and larvae are heavier than the surface sea water and drift passively in deep ocean currents (IPHC 1998).

Statement on the Availability of Science:

There have been many scientific studies conducted on Pacific halibut. All scientific papers, reports, and technical publications produced by the IHPC are available on their website (<http://www.iphc.washington.edu>) or directly from the IHPC. Selected data sets used in stock assessment, including standardized survey data, are also available online.

Fishery Information:**Fishing Methods and Bycatch:**

Pacific halibut fishers traditionally use gear that consists of units of leaded ground line in lengths of 100 fathoms, which are referred to as “skates”(ADF&G 1994). Each skate has approximately 100 hooks attached (ADF&G 1994) via lines known as “gangions,” which are either tied or snapped to the ground line (ADF&G 1994). A "set" consists of one or more baited skates tied together and laid on the ocean bottom, with anchors at each end and a float line and a buoy attached (ADF&G 1994). Hooks are typically baited with frozen herring, octopus, or other fish (ADF&G 1994). Depending on the fishing ground, water depth, time of year, and bait used, skates are set for 2 to 20 hours (ADF&G 1994). Pacific halibut ground line gear is relatively selective and results in minimal bycatch (IPHC 2002). When it does occur, most bycatch consists of other groundfish species.

Fishery Range and Distribution:

Fishing for Pacific halibut is mostly concentrated in the Gulf of Alaska and the Bering Sea, off the West Coast of Canada (IPHC 2001a). Small halibut catches are also reported in coastal Washington, Oregon, and California (IPHC 2001a). Pacific halibut is broken up into ten regulatory management areas, as shown in Fig. 2 (IPHC 2001a).

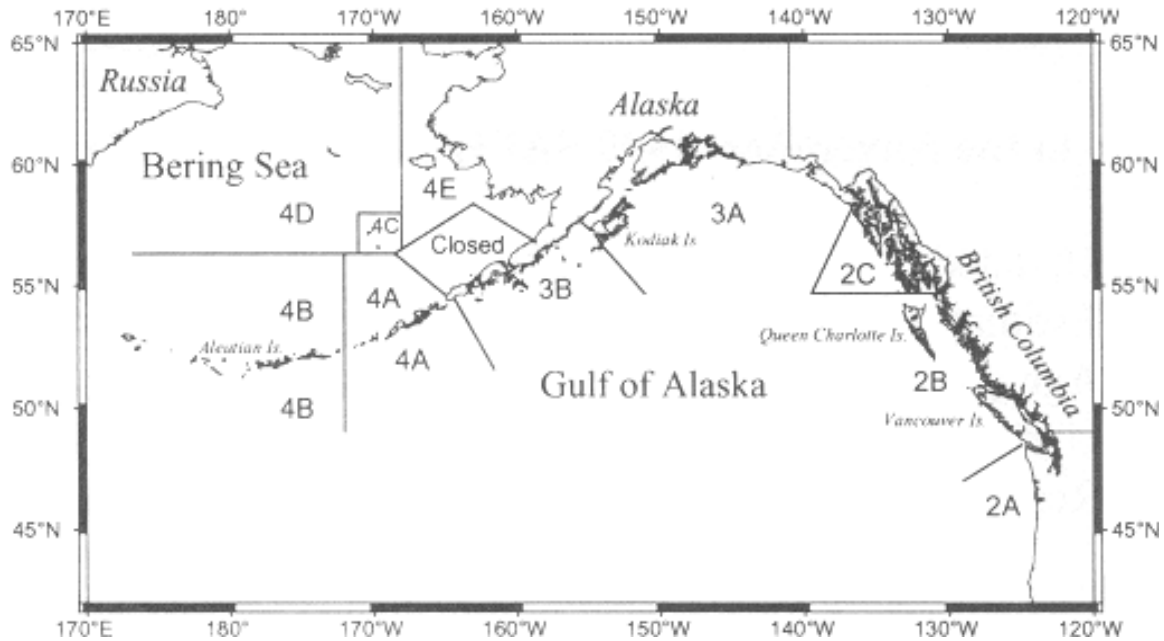


Figure 2. IPHC management areas for Pacific halibut (IPHC 2000)

Landings and Biomass:

In 2000, U.S. Pacific halibut landings totaled 33,739 mt, just under a decade high of 35,969 mt landed in 1999 (NMFS 2002). U.S. landings of Pacific halibut have been above 30,000 mt seven out of the last ten years (Fig. 3) (NMFS 2002). In 2000, Alaskan fishers landed 97% of the annual U.S. Pacific halibut catch (NMFS 2002). The other 3% was landed by Washington and Oregon fishers during a six-day, 10-hour/day fishing season (NMFS 2001b).

According to the IPHC (2001), estimates of halibut abundance and available yield in 2002 at a harvest rate of 20%, were about 47,628 mt coastwide, up from 43,092 mt in 2001. However, the IPHC has announced that recruitment of the stock has declined in recent years from the record high levels seen from 1985-1995 (IPHC 2001b). Year classes originating during 1989-1993 appear below average in numbers, and while the 1993-1995 year classes have appeared generally stronger in trawl surveys, they have not yet recruited to the exploitable stock (IPHC 2001b).

IPHC scientists also note that oceanographic indices normally associated with halibut recruitment indicate poor conditions for generation of halibut year classes in the 1998-2000 period (IPHC 2001c). Stock biomass is therefore expected to decline from current record levels although the magnitude and rate of this decline cannot yet be assessed (IPHC 2001c).

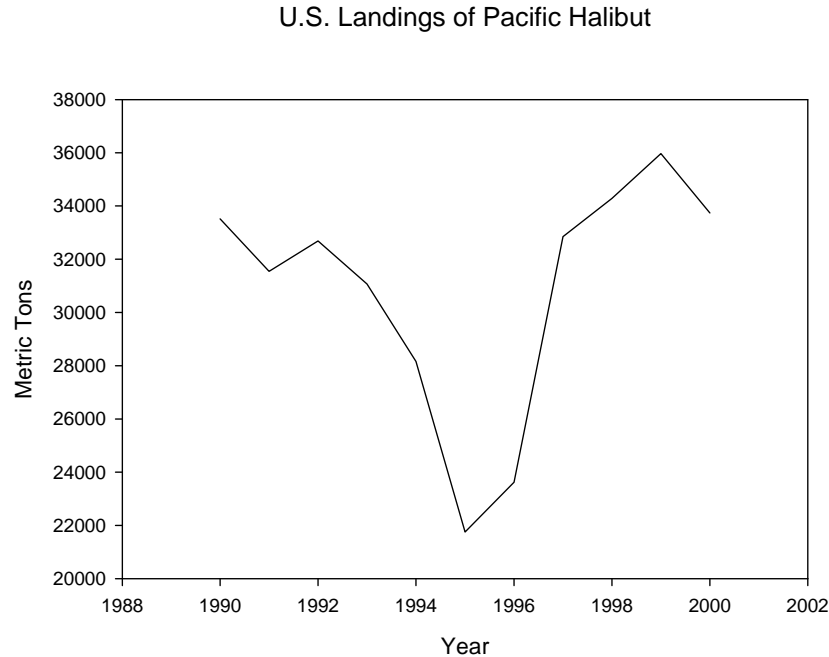


Figure 3. U.S. landings of Pacific halibut in metric tons by year (NMFS 2002)

Management:

The U.S. and Canada manage Pacific halibut jointly in a bilateral commission known as the International Pacific Halibut Commission (IPHC), which was formed in 1924 (IPHC 1998).

The 1990s have seen a change in the management regime employed by the U.S. and Canada in managing their commercial halibut fleets (IPHC 2000). In 1991, Canada instituted an Individual Vessel Quota (IVQ) system, whereby the annual catch limit was allocated among the licensed vessels in relation to the vessels' size and past production (IPHC 2000). In 1995, the U.S. followed with a similar system termed Individual Fishing Quota (IFQ), in which each licensed fisher was given a share of the annual catch limit based on the individual's past production (IPHC 2000). Both systems have resulted in much longer seasons (currently March 15 through November 15) and have also kept catches within the prescribed limits (IPHC 2000).

Each year, the IPHC sets total allowable catch levels (TACs) for halibut caught in the U.S. and Canadian Exclusive Economic Zones (EEZs) in the Northeastern Pacific Ocean (NMFS 2002). Catch limits are recommended by IPHC staff after assessing the abundance and potential yield of Pacific halibut using biomass data from both fishery-dependent and independent surveys (IPHC 2002).

A biological target level for total removals is calculated by applying a fixed harvest rate (presently 20%) to the estimate of exploitable biomass (IPHC 2002). This target level is called the constant exploitation yield (CEY) (IPHC 2002). The corresponding target level

for directed setline catches, called the setline CEY, is calculated by subtracting from the total CEY an estimate of all other removals (sport catches, bycatch of legal-sized fish, discard of legal-sized fish in the halibut fishery, and fish taken for personal use) (IPHC 2002).

Staff recommendations for catch limits in each of the ten regulatory areas are based on the estimates of setline CEY but may be higher or lower depending on a number of statistical, biological, and policy considerations (IPHC 2002).

Conclusion:

Pacific halibut are found on the continental shelf of the North Pacific Ocean and Bering Sea. They are demersal, living on or near the ocean bottom, and prefer water temperatures ranging from 3 to 8 ° C. Maturity varies with sex, age, and fish size. Females grow faster but mature slower than males. Most males are mature by eight years of age, whereas females on average mature at about 12 years of age. Fishers traditionally fish for halibut using units of leaded ground line in lengths of 100 fathoms, which are referred to as “skates.” Each skate has approximately 100 hooks and is anchored to the ocean bottom for 2 to 20 hours. The groundlines have no appreciable impact on marine habitats and are selective to groundfish, minimizing bycatch. In 2000, the U.S. landed 33,739 mt of Pacific halibut, just under a decade high of 35,970 mt landed in 1999. U.S. landings have been above 30,000 mt seven out of the last ten years. The U.S. and Canada manage pacific halibut jointly in a bilateral commission known as the IPHC, which was formed in 1924. U.S. management is based on IFQs, whereby each licensed fisher is given a share of the annual catch limit based on the individual’s past production. Canadian management is similar, but is based on IVQs, whereby annual catch limits are allocated among the licensed vessels in relation to the vessels’ size and past production. Each year, the IPHC sets TAC levels for halibut catch in the U.S. and Canadian EEZs. Catch limits are recommended by IPHC staff after assessing the abundance and potential yield of Pacific halibut using data from both fishery-dependent and independent surveys. The criteria analyzed in this report lead to an overall seafood recommendation of “Best Choice” for Pacific halibut caught in U.S. and Canadian fisheries.

Overall Seafood Recommendation:

U.S./Canada Best Choice  Good Alternative  Avoid 

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