THE SABLEFISH

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INFORMATIONAL REPORT - SABLEFISH

INTRODUCTION

The sablefish has made a modest contribution to Oregon's commercial foodfish landings since the early part of this century, usually incidental to the halibut longline fishery. Trawl caught sablefish now dominate landings, but in recent years a pot fishery has developed off Astoria and Newport.

Sablefish were first used by a few Pacific coast Indian tribes. They fished lines constructed from the long stipes (supporting stocks) of kelp and with hooks fashioned from hemlock knots. The fish were prepared for eating by sun-drying and smoking. In 1885 some fish salted at an Indian village were shipped to Victoria where samples were favorably received. By 1888 schooners were outfitted to fish for limited local markets. Its popularity as a smoked product began about 1910 when leading hotels and restaurants in the Puget Sound region featured sablefish as "Barbecued Alaska Black Cod".

The sablefish is a long sleek fish with a conical shaped head, small teeth and eyes and a very small caudal peduncle or "handle" (area just in front of the tail). The shape, like that of the albacore tuna, appears to be designed for speed. The back and side is slate black to greenish gray with light gray to white below.

The accepted common name is sablefish, but it is also called blackcod, coalfish, skilfish and candlefish. Smoked fish are marketed as "smoked cod" in California, and small filleted fish may be marketed as butterfish.

REPRODUCTION

Sablefish spawn once a year in deep water between 140-400 fathoms (260-730 m). Spawning generally occurs from December to April and peaks in January and February. A small female will produce about 100,000 eggs while a large 40 in. (102 cm) female will produce 1,000,000 eggs. About 50% of the males are mature at 5 years, 23.5 in. (60 cm) and 4-lb (1.8 kg) while 50% maturity for females is at 7 years, 28 in. (71 cm) and 6½ lb (3.0 kg).

EARLY LIFE HISTORY

Eggs and Larvae

Eggs apparently are buoyant and rise to the surface. They are small, 0.08 in. (2.05-2.10 mm) in diameter, and lack the oil globule which is usually apparent in fish eggs. Spawn and larvae live a pelagic existence (at the mercy of ocean currents) for about one year, and are usually carried inshore by surface waters.

Juveniles

Juveniles are found in surface and inshore waters down to about 82 fm (150 m) usually in shallow waters along the coasts, in straits and in inland marine waters. Juvenile sablefish form large schools, and occasionally great schools come into inshore harbors. In Alaska, concentrations of juveniles move into shallow water arms of bays and inlets during the summer months.

ADULT LIFE HISTORY

Distribution

Sablefish range from Baja California to the Bering Sea and eastward to the northeastern coast of Japan. Adults live on the bottom and appear to prefer blue clay and hard mud bottom within or near submarine canyons or basins.

Adults tend to inhabit depths greater than 82 fm (150 m) and are found in concentrations or as individuals. They are most abundant in 200-500 fm (366-914 m), and probably move into very deep water during the winter (beyond 830 fm or 1,525 m). Adults shift into somewhat shallower water during the summer, but larger fish are generally found in deeper water. Sablefish generally move up in the water column during the day and return to the bottom at night. This movement is believed to be related to light and feeding.

Age and Growth

Length of sablefish is determined by measuring from the tip of the snout to the fork of the tail (fork length). Average length by age is shown in the following table.

Table 1. Mean length in inches of Oregon sablefish.

Age (years)	Males Mean length	Females Mean length
1	13.7 (34.8 cm)	13.8 (35.1 cm)
3	19.7 (50.0 cm)	21.5 (54.6 cm)
5	23.0 (58.4 cm)	24.6 (62.5 cm)
7	26.1 (66.3 cm)	27.4 (69.6 cm)
9	-	29.9 (75.9 cm)

Scales are used for age determination. Closely spaced circuli (concentric markings on the scale) represent periods of retarded growth. This method of aging is based on the belief that fish, like trees, grow throughout life and annuli ("rings") are formed yearly and at about the same time each year.

For the first two years, males and females grow at about the same rate; thereafter, females grow at a faster rate. Maximum size is about 42 in. (107 cm) at about 20 years old. Most sablefish weigh less than 30 lbs, and fish weighing 50 lb (22.6 kg) are rare. One fish (head on, eviscerated) was reported to weigh 126 lb (57 kg).

Migrations

Extensive tagging studies indicate that movement is usually localized and only a few fish make long migrations. However, some interchange of fish occurs between the Bering Sea, the Gulf of Alaska and off the Pacific Northwest. Sablefish tagging studies

in the principal fishing areas from central Vancouver Island, British Columbia to Monterey, California indicated that north-south migrations were fairly well balanced in all areas, and no relationship was seen between size of fish and direction or extent of migration.

A study based on meristic counts[1/] (number of vertebrae, gill rakers, fin rays and spines) indicated sablefish did not intermingle freely. This study indicated that there were four major stocks between central Washington and southern California, and that one of the stocks extended from central Washington to northern California.

THE FISHERY

In 1914-15, the U.S. Bureau of Fisheries survey vessel *Albatross* reported a reasonable abundance of sablefish on Heceta Bank, Oregon and off the Washington coast from Grays Harbor to Cape Flattery. A setline fishery was soon established between Destruction Island, Washington and Cape Beal, British Columbia. A few Seattle boats started fishing off Newport in 1918, and both Seattle boats and Oregon-based setline vessels were fishing on Heceta Bank by 1924. The sablefish fishery developed as a secondary activity to halibut fishing. Original grounds were off Washington and British Columbia, but by the 1920's, effort spread to Oregon, California and Alaska.

Growth of the fishery was stimulated by meat shortages during both world wars, demand for vitamin-rich fish livers, and shortened halibut seasons. Until 1940, over 50% of the U.S. landings came from off Washington. Alaska led in landings during the 1940's, and then Washington recaptured the lead until 1965. Since 1965, California has dominated domestic landings accounting for 56-70% of the catch. Prior to 1969, most U.S. and Canadian-caught sablefish were caught by longline gear. Trawlers became important suppliers of sablefish during World War II, and trawlers now account for most of the domestic landings.

Oregon has maintained a low, but fairly stable domestic production of sablefish with the exception of a sudden peak catch in 1943 of 1.12 million lb (508 m.t.). Recent interest in sablefish resulted in a landing of 1.10 million lb (499 m.t.) in 1976. Today, most of Oregon's sablefish landings come from trawlers. The Coos Bay area now receives the largest Oregon trawl landings. Oregon trap (pot) landings are greatest in Astoria.

Oregon's major sablefish grounds are located off the Columbia River, off Newport and on Heceta Bank. Other fishing areas are off Tillamook and Cascade Head.

Prior to 1958, U.S. and Canadian fishermen carried on the only significant fishery on sablefish with annual catches ranging from 4.4 million lb to 21.0 million lb (2,000-9,500 m.t.). In recent years, sablefish have been heavily exploited by foreign nations, especially Japan, Korea and the U.S.S.R. By 1976, eight foreign nations were harvesting sablefish, principally in the Gulf of Alaska. Foreign catches in the N.E. Pacific and Bering Sea peaked in 1972 at 144.2 million lb (65,400 m.t.).

1/ A stock of fish is often distinguished from another stock by differences in physical characteristics, such as number of vertebrae which may be strongly modified by environment.

Marketing

Sablefish is usually marketed as a smoked product. It is an extremely oily fish that yields a superior quality smoked product. For smoked, salted and pickled products only fish 5 lb (2¼ kg) and larger are used. Increased production of sablefish fillets and steaks has recently occurred. This suggests a potential for expansion in the fresh market and for increased use of small sablefish. Fresh sablefish, while very oily, have pure white flesh and a mild flavor.

Recent domestic consumption has been 77% smoked, 16% fillets and steaks, 6% salted and 1% pickled. This utilizes a net weight of about 4.1 million lb of processed product valued at about 3.8 million dollars.

Sport Fishery

Sport utilization is minor throughout most of the sablefish's range. As a sport fish, it is a feeble fighter at best. Only small fish are found in shallow water. However, sport fishing for sablefish is popular in the Monterey Bay area. Schools of sablefish infrequently concentrate in California waters around public piers where high yields are taken by sport fishermen.

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