THE PACIFIC SANDDAB

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INFORMATIONAL REPORT 76-5

Oregon Department of Fish and Wildlife

March 1976

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INTRODUCTION

The Pacific sanddab has been a minor contributor to trawl fisheries off the United States and Canada. Its market potential has never been fully utilized off Oregon, even though such potential was first recognized in 1914. In 1914 the Federal research vessel Albatross caught sanddabs with a beam trawl off Yaquina Light. It was predicted that sanddabs would be one of the most profitable species taken from these banks. Unfortunately the prediction was based on the high demand for this species in the San Francisco area. Until lately the sanddab in Oregon has been in low demand for human consumption and was used mainly as food for mink.

Today, sanddabs maintain a small intermittent demand in Oregon and a small steady demand in British Columbia.

In California this fish has long been regarded as a delicacy. Sanddabs enjoy local importance in the San Francisco region where they are popular and command a high price on the fresh market. A steady demand was cultivated by restaurant owners who feature it on their menus. This is due to the species year around availability as a reasonably assured supply of fresh fish.

The accepted common name is Pacific sanddab. It has been called the "soft flounder" in California and the mottled sanddab and megrim in Canada.

Description

Sanddabs are recognized by their short snout, deep blunt body, large eyes, and large scales. Unlike most flatfish their eyed and colored side is on the left side of their body. Their colored side is a dull brown, irregularly mottled with black. There are often dull orange spots and blotches on live fish. The blind (right) side is solid white to light brown. Like all flatfish, sanddabs have very flat bodies.

Males can be distinguished from females by holding the fish against the light

(candling). Mature females show a long tapering ovary extending towards the tail while males' sex organs don't show when candled. Most sanddabs in the commercial catch are mature.

LIFE HISTORY

In California, sanddabs spawn from July to September with a peak in August. Off Oregon sanddabs are considered summer spawners while spawning occurs from February through May in Puget Sound. They may spawn more than once a year. Females are found containing mature, maturing and immature eggs at the same time and spent females are not usually found during the peak period of spawning.

Mature eggs are transparent and small (.02-.03 inches or 0.57 to 1.0 mm). Eggs and larvae drift with currents (pelagic). The newly hatched young (larvae) are transparent or nearly so and may be found many miles from shore.

Like all flatfish larvae, they metamorphose to the adult form. The body takes on the flattened appearance, one eye migrates to the opposite side of the head and the fish assumes a side swimming behavior.

In California a few of the largest 2-year olds (6-3/4 inches) and over 50 percent of the three year old fish (7½ inches) are mature.

Distribution

Sanddabs are found from Cape San Lucas, Baja California, to the Bering Sea in depths of 5 to 300 fathoms. They are most abundant in 20 to 50 fathoms but are found in 10 to 100 fathoms. They prefer sandy or sandy-mud bottoms. In British Columbia they are generally distributed and fairly common in shallow waters.

Feeding Habits

Sanddabs eat a wide variety of food and show preference for small fish, squid and octopus. At times, sanddabs feed off bottom. Off Grays Harbor in 1966 sanddabs were caught in a midwater trawl during fishing operations for anchovy. Their

stomachs were packed with anchovies in various stages of digestion. They also eat fish eggs, sea squirts, shrimp, crabs and marine worms. Sanddabs are in turn preyed upon by many species of fish.

Age, Growth and Utilization

Sanddabs have been aged by both otoliths and scales. We prefer to use otoliths (earstone or headbones) which are hard-calcareous structures found in the fishes inner ear. These are flat structures which are slightly thicker in the center. Otoliths increase in size as the fish grows and are about 1/4 inch long in the average trawl caught fish. In the summer when growth is rapid, a broad opaque layer is deposited. In winter a small clear band is formed. The otolith is aged by counting the number of clear bands of winter growth.

Length for both males and females increases most repidly during their first year. The rate of growth shows a fairly constant decline with each successive year. Females average slightly larger than males. Off California a one year old averages 3.7 inches while he would be 5.8 inches in two years. Growth is slower off Oregon. The average length in inches for 2 through 7 year olds is 4.8, 6.3, 7.4, 8.1, 8.6 and 9.0 for males and 5.1, 6.8, 8.1, 9.4, 9.7 and 10.2 for females. The average weight for 7 year olds is .24 pounds for males and .38 pounds for females.

Oregon sanddabs are seldom found over 12 years old. This would be 9.6 inches and 0.31 pounds for a male and 11.3 inches and 0.55 pounds for a female. We have found one 14 year old female.

The typical sanddab landed at San Francisco rarely exceeds 1/2 pound. The record is 16 inches and few exceed 2 pounds.

In 1974 Oregon biologists sampled commercial trawl catches at sea. We found that by age seven 50% of the females caught were utilized or kept. Only at their maximum age did they approach full utilization. Males were never utilized over 20%

even at maximum age.

Mortality

Mortality or death is about 50% in our survey area (Columbia River to Cape Blanco, 10-100 fathoms, 1971-1974). This is the annual death rate due to fishing and natural causes.

THE FISHERY

Before 1938, most Pacific coast landings were made at San Francisco. California landings peaked at 2.6 million pounds in 1917 but these fell during the depression due to market conditions, stock depletion and a change to large mesh trawls. Following the depression of 1921 the fishery made a steady increase to two million pounds by 1925. Landings then declined to the present annual average of 600,000 to 700,000 pounds.

Off Oregon the sanddab fishery is of minor importance and they are usually taken incidentally with English sole. Oregon landings come primarily from off the central coast. In 1974 about 240,000 pounds were landed for human consumption, while 99,000 pounds were landed for animal food. In 1975 about 350,000 pounds were landed for human consumption.

In the last five years sanddabs have made up 99,000 to 244,000 pounds of the annual animal food landings. This was about 11% to 19% of the total landings of all species for animal food.

We expect an increased use for human consumption. The sanddab is a fine eating flatfish that is now greatly underharvested. We estimate that there are 23 to 26 million pounds of sanddabs (biomass) on the continental shelf between the Columbia River and Cape Blanco. Of this, about five to nine million pounds is of a size that could be caught by the present commercial trawl gear. We estimate that 1.2 to 2.2

million pounds could be harvested from the Cape Blanco-Columbia area without affecting the present stock (potential sustainable yield). The potential yield will vary with gear changes in the commercial fishery, new markets for small fish and natural population fluctuations.

Our surveys in 1971-1974 showed that the 1966 year class of sanddabs was highly successful. It dominated our survey catches of sanddabs in 1971 through 1973. This year class should have begun to occur in commercial catches in 1973.

Oregon trawlers usually catch sanddabs between 10 and 50 fathoms. Our survey work has shown that in this same depth range a major area of abundance is located between the Siuslaw River and Cape Perpetua. Another much smaller concentration was found between Cape Lookout and the Columbia River at a similar depth.

ACKNOWLEDGMENTS

We thank the commercial fishermen, research vessel crews and the fish processors for their important contribution to studies of the Pacific sanddab.