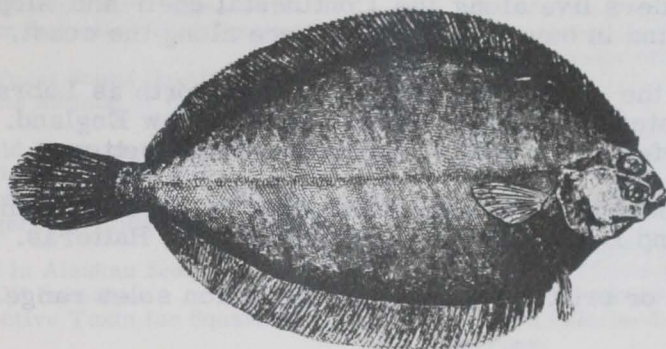


## FOOD FISH FACTS



Gray Sole  
(Glyptocephalus cynoglossus)

Soles are delightful-to-eat members of one of the most clearly defined and distinctive orders of fish (Heterosomata). This order also includes other flatfish such as halibut, turbot, flukes, and flounders; and all of them share a very unusual characteristic. All flatfish begin life swimming about in a normal manner but very soon their behavior patterns change. Their skulls begin to twist and one eye begins to move toward the other side. At the same time, the fish begins to tilt. Very soon both eyes peer from the same side and the fish swims with the eyeless side down. Some twist to the left and some to the right; however, all share the same flying saucer appearance. This change involves a complex modification of the head bones as well as of the nervous and muscle tissues. The underside of these fish is usually white, blending with the light filtering down through the water. The top side is pigmented, resembling the bottom on which the flatfish lives. An interesting fact is that the eyes of these fish can be raised slightly and moved independently, thus increasing vision. In size and other characteristics, flatfish vary greatly.

## DESCRIPTION

Atlantic coast soles include two main species. The gray sole (Glyptocephalus cynoglossus) is also called witch flounder. This sole, which grows up to 25 inches in length, is noted for its fine flavor and is rapidly growing in commercial importance. Approximately 4.9 million pounds of gray sole were caught in 1968.

The lemon sole (Pseudopleuronectes americanus) is called a winter flounder or black-back when it weighs less than  $3\frac{1}{2}$  pounds. Its usual length when caught inshore is around 18 inches. These two Atlantic soles share characteristic small mouths, straight lateral lines on bodies, and eyes on the right sides.

Pacific coast soles include the two following species: The petrale sole (Eopsetta jordani) is also known as brill sole. It averages about 17 inches in length and around  $2\frac{1}{2}$  pounds round weight. It has a wide body, small scales, large mouth, slightly curved lateral line, and is olive-brown in color.

The English sole (Parophrys vetulus) is also known as the lemon sole but as an entirely different species than the Atlantic lemon sole. It is noted for its fine flavor. Smaller than the petrale, the English sole averages about 15 inches in length and slightly over  $\frac{3}{4}$  pound in weight. It is distinguished by a small mouth, a slender shape, and a pointed head.

Other soles of the Pacific include the rex, Dover, and rock.

(Continued following page.)



## HABITAT

Most sole and flounders live along the Continental shelf and slope. Some come into shoal waters and are found in bays and close inshore along the coast.

The lemon soles of the Atlantic range from as far north as Labrador and as far south as Georgia with the greatest abundance off the coast of New England. They live from 1 to 20 fathoms deep and prefer soft muddy to moderately hard bottoms.

The gray soles of the Atlantic live in moderately deep water from the Gulf of St. Lawrence, the southern Grand Banks, and as far south as Cape Hatteras.

The Pacific petrale or brill and the English or lemon soles range from Southern California to Alaska.

## SOLE FISHING

Sole are considered fine sport fish and are taken by hook and line, spears, nets, and seines. The otter trawl is used most extensively in commercial fishing.

## CONSERVATION

The life history, migrations, and habits of many flatfish are not well understood by fishery scientists. To maintain fishery resources at a high level of production for both the fishing industry and the consumer, cooperative State-Federal research and development efforts are needed. In recognition of these needs Congress passed the Commercial Fisheries Research and Development Act of 1964. This act authorizes the Secretary of the Interior to enter into cost-sharing cooperative agreement with the States and other non-Federal interests. This program is administered by the Bureau of Commercial Fisheries. Many projects, designed to better understand fish and their environments, have since been undertaken. Some of these projects, particularly along the Pacific coast, have been specifically designed to learn more about our flatfish resources.

All fishery research, whether State or Federal, has a basic goal to ensure the wise use of renewable resource.

## USES OF SOLE

Sole are fine eating fish. The flesh is firm, white, and delicate in flavor. Most sole are filleted and may be purchased either fresh or frozen. Fillets vary in weight from 2 to 4 ounces and occasionally up to 8 ounces. Some sole are dressed and sold whole for stuffing. Sole adapts readily to a wide variety of preparation methods. (Source: National Marketing Services Office, BCF, U.S. Department of the Interior, 100 East Ohio Street, Rm. 526, Chicago, Illinois 60611.)