

## TECHNICAL NOTE NO. 13--ACCEPTABILITY AND KEEPING QUALITY OF PACIFIC OCEAN PERCH FILLETS

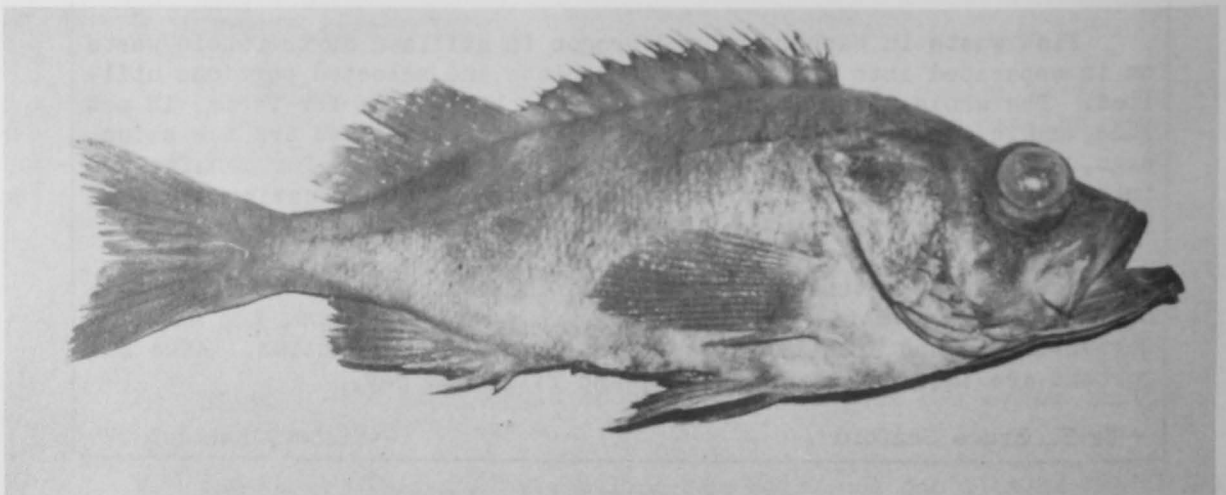
Recent developments which permit Sebastes alutus to be marketed as "Pacific ocean perch" raise the possibility of the creation of a new commercial fishery in the Pacific Northwest. This species resembles the Atlantic Coast ocean perch or rosefish (Sebastes marinus) more nearly than it does the other rockfishes.

Until recently Sebastes alutus was a little known member of the rockfish group of fishes. During the past few years a number of otter trawl vessels increased the length of their trawling gear in order to drag in depths approaching 100 fathoms. When this gear was used in certain areas adjacent to the Oregon coast, huge schools of rockfish, often made up almost completely of Pacific ocean perch (Sebastes alutus), were encountered. Prior to this time, the widespread occurrence of this species at considerable depths had not been suspected.

Further evidence as to the widespread occurrence of Pacific ocean perch was obtained by the Service's exploratory vessel, John N. Cobb (Alverson and Welander). During exploratory operations in 1950 it was observed that small fish of this species were an important part of the diet of albacore tuna caught from the northern end of the Queen Charlotte Islands to Cape Blanco, Oregon, and from 30 to 380 miles offshore.

During the summer of 1950, the Seattle Technological Laboratory collected samples of Pacific ocean perch (Sebastes alutus), ocean perch (Atlantic) (Sebastes marinus), and several species of commercially-important Pacific Coast rockfish. The purpose of this collection was to determine the relative initial palatability and the cold-storage life of these species. All samples were put up commercially by regular packing procedures. They were frozen and then stored at 0° F. Organoleptic observations were made on the fillets immediately after freezing and after various storage intervals. The fillets were examined by a testing panel for appearance, flavor, and texture.

The initial palatability of the Pacific ocean perch was superior to that of any of the other Pacific Coast rockfishes. Texture especially was more tender.



PACIFIC OCEAN PERCH (SEBASTODES ALUTUS)

Before any cold-storage period had begun, all rockfishes, and the ocean perch (Atlantic) were of good flavor and color. The Pacific ocean perch had less dark meat in the surface layer beneath the skin than the other Pacific Coast species.

When the Pacific ocean perch was compared with the ocean perch (Atlantic) before cold storage had begun, a slight preference was expressed by the testing panel in favor of the Atlantic species. This was based upon a more tender texture. However, the difference was quite small.

When the various species were held in cold storage at 0° F., all underwent changes resulting in slow to rapid deterioration. The texture tended to become tough. The flavor indicated varying degrees of rancidity. The color of the fillets, especially of the dark layer beneath the skin, became still darker. These changes were most extreme with the various species of Pacific Coast rockfish other than Pacific ocean perch. Sebastes pinniger (a red or orange rockfish extensively packed commercially) had undergone considerable change after four months of storage and after five months was considered of dubious salability. Sebastes ruberrimus (commonly referred to in the Pacific Northwest as red rockfish or "red snapper") showed especially rapid initial deterioration, being definitely and adversely altered after only two months at 0° F. Fillets from this fish were considered unsalable, or nearly so, after six months of storage.

The Pacific ocean perch did not show any extensive changes until after six months storage at 0° F., and was considered of marketable quality until it had been in storage for eight months. The ocean perch (Atlantic) had nearly as great a storage life as the Pacific ocean perch and had reached the same stage of deterioration after seven-and-one-half months at 0° F. as the Pacific ocean perch reached in eight months. There was very little difference between the Pacific ocean perch and the ocean perch (Atlantic) as to general acceptability. Before extensive cold storage there was a slight preference for the ocean perch (Atlantic), but after several months at 0° F. the Pacific ocean perch received a slight preference. Contrasted to this, the common red rockfish species (S. pinniger and S. ruberrimus) had lower initial palatability and much shorter cold-storage life.

When Pacific ocean perch are caught in depths of about 100 fathoms, they are usually found in schools which contain few other species of rockfish. Two rockfish species which most frequently accompany Pacific ocean perch are S. diploproa (no common name) and an unidentified species known locally in Oregon as "idiot." These are small red rockfish resembling fairly closely the Pacific ocean perch. The S. diploproa occurs more frequently with Pacific ocean perch than does the "idiot." In table 1 are tabulated results of storage tests on the Pacific ocean perch and the S. diploproa and "idiot" species as well as two other species of rockfish (S. ruberrimus and S. pinniger) which are handled quite extensively in

Table 1 - Cold Storage Life of Several Species of Rockfish (Sebastes) and Ocean Perch (Atlantic) (Sebastes)

Species of Rockfish		Cold Storage Life at 0° F.
Scientific Name	Common Name	Months
<u>S. alutus</u>	Pacific ocean perch	8
<u>S. _____</u> (unidentified)	"idiot"	7
<u>S. diploproa</u>	none	6
<u>S. ruberrimus</u>	"red snapper"	6
<u>S. pinniger</u>	orange rockfish	5
<u>Sebastes marinus</u>	Ocean perch (Atlantic)	7½

the commercial fishery. Pacific ocean perch had the longest storage life (eight months) at 0° F., closely followed by the "idiot" species (seven months). The S. diploproa had a storage life of only six months (equal to that of S. ruberrimus). At the bottom of the list is the orange rockfish (S. pinninger) which is one of the most frequently handled rockfish in the commercial fishery.

In view of the superior cold-storage life of the Pacific ocean perch as contrasted to that of the species of rockfishes ordinarily packed commercially on the Pacific Coast, it would appear that it should be possible to market frozen Pacific ocean perch without any great technological difficulties arising with respect to deterioration in cold storage. If the species will withstand intensive fishing, it may be possible to develop an extensive commercial fishery for Pacific ocean perch.

## LITERATURE CITED

ALVERSON, DAYTON L., AND WELANDER, ARTHUR D.  
 \_\_\_\_\_. NOTES AND KEY TO THE SPECIES OF ROCKFISH SEBASTODES OF WASHINGTON AND ADJACENT AREAS. (UNPUBLISHED MANUSCRIPT)

--M. E. Stansby, Chief,  
 Pacific Coast and Alaska  
 Technological Research,  
 Seattle, Washington.



THE EFFECT OF A SEAFOOD DIET ON THE RED CELL COUNT,  
 HEMOGLOBIN VALUE, AND HEMATOCRIT OF HUMAN BLOOD

Seafood products are of major importance for their nutritional value. It is reasonable to suppose that marine animals living in a medium containing all the mineral elements needed by the human body would be a highly nutritious class of food. Since the minerals may be supplied to us in a usable form, by marine animals, we can get iron and copper to prevent nutritional anemia, iodine to prevent goiter, as well as phosphorous, copper and magnesium which are needed to regulate other body functions.

Oysters, shrimp, and crab meat, in addition to being rich sources of iron, copper and iodine contain one-half as much calcium, three times as much magnesium, and much more phosphorus than an equal quantity of milk. The oyster is comparable to liver and to milk, in its rich sources of nutrients. One pound of oysters provides about 12 percent of the energy needed by a man for one day; also, 50 percent of the protein, 26 percent of the calcium, 40 percent of the phosphorus, over 184 percent of the iron, and about 110 percent of the iodine, as well as vitamin A, thiamine, riboflavin and ascorbic acid.

Fish, as well as shellfish, are good sources of protein, phosphorus, iron, and iodine. The protein content of fish is comparable to beef and liver, and is higher than that of milk.

--By Shirley J. Wilson

--Fishery Leaflet 334