



## TECHNICAL NOTE NO. 48 - PACIFIC OCEAN PERCH - PROXIMATE COMPOSITION

### ABSTRACT

The Pacific ocean perch is a fishery resource that could be utilized commercially in Alaska if suitable markets can be developed. This fish has good organoleptic and cold-storage qualities. The average proximate chemical composition of Pacific ocean perch fillets, as determined in the present study on 16 individual specimens, was 17.6 percent protein, 1.3 percent oil, 79.0 percent moisture, and 1.2 percent ash.

### BACKGROUND

The Pacific ocean perch (*Sebastes alutus*) is a species of the rockfish family that ranges from southern California to northwestern Alaska (figs. 1 and 2). It is a bright carmine-red on the dorsal surface and a lighter color on the ventral surface, with a silvery sheen. It has black markings on the dorsal surface and a long lower jaw (Clemens and Wilby 1954).



Fig. 1 - Catch predominantly of Pacific ocean perch.

This species of fish is taken to a limited extent by trawlers (figs. 3 and 4) in waters off Washington and Oregon. It is not utilized commercially from Alaskan waters, although exploratory fishing vessels of the U. S. Bureau of Commercial Fisheries have found Pacific ocean perch to be present in commercial quantities in Prince William Sound and in waters of southeastern Alaska. Schaefer, Smith, and Greenwood (1955), from observations aboard the Bureau's exploratory fishing

vessel John N. Cobb, reported catches up to 6,000 pounds an hour in Prince William Sound and found the area generally to be favorable for drugging. Catches ranging up to 3,150 pounds an hour were made on the M/V Tordenskjold in waters off Prince of Wales Island, in southeastern Alaska, with little damage to gear.<sup>1/</sup>

The Pacific ocean perch has been compared with other species of rockfishes and has been found to have good organoleptic and cold-storage qualities (Stansby 1951). It has an initial palatability that is better than is that of other Pacific Coast rockfishes. The fillets do not have the disagreeable darker surface areas present in many of these species, and they maintain their good color, when properly stored, for a longer period of time than do most other rockfishes. The fillets have a storage

<sup>1/</sup> Cruise Report, Exploratory Cruise No. 32, Chartered Vessel Tordenskjold, U. S. Bureau of Commercial Fisheries, October 18, 1957, unpublished.

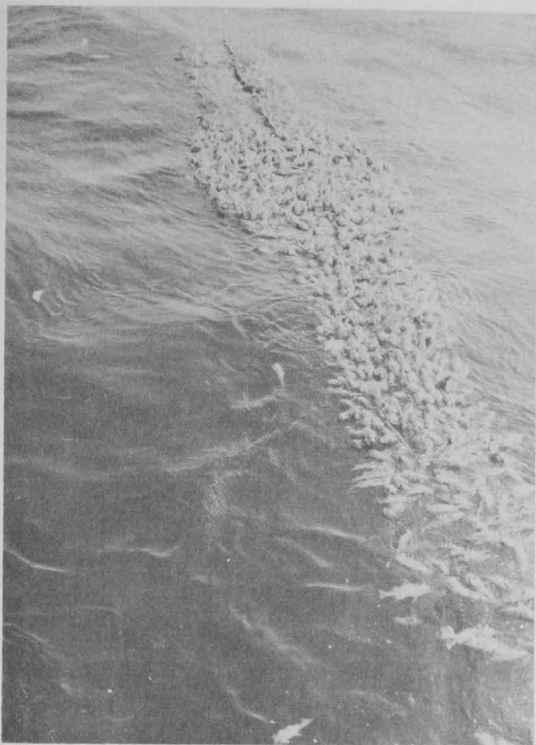


Fig. 2 - Catch of Pacific ocean perch in an otter-trawl net. These fish live on the floor of the ocean. Owing to the low pressure at the surface of the water in contrast to the high pressure at the depth they live, their air bladders expand markedly when they are brought to the surface, and they therefore gain considerable buoyancy. Fishermen call a catch of this type a "floater."

life of 8 months at 0° F. Their deterioration in cold storage presents no foreseeable technological problem.

#### REPORT OF ANALYSES

Physical data, yield of fillets, and proximate composition (protein, oil, moisture, and ash) of 16 trawl-caught Pacific ocean perch are presented in table 1. Proximate composition was determined using standard techniques of the Association of Official Agricultural Chemists (1955). The fish were taken from two drags on June 29, 1957, by the M/V Tordenskjold, which was engaged in exploratory trawling in waters off the west coast of Prince of Wales Island. The fish in one drag (sample numbers 1-8) were larger than were those secured from the other drag (sample numbers 9-16). An inspection of the data, however, indicates that the chemical composition or yield of fillets in the group of larger fish differs little from that in the group of smaller fish. The average proximate chemical composition of the fillets of Pacific ocean perch described in this report was 17.6 percent protein, 1.3 percent oil, 79.0 percent moisture, and 1.2 percent ash. The average yield of



Fig. 3 - A trawler of the type that could be used in an Alaskan commercial fishery for Pacific ocean perch. Note the otter-trawl boards at the stern of the vessel.



Fig. 4 - View of otter trawler from the stern with a deckload of fish.

Table 1 - Proximate Chemical and Physical Composition and Fillet Yields of Pacific Ocean Perch (*Sebastes alutus*) Taken in Two Drags Off Prince of Wales Island, Southeastern Alaska, on June 29, 1957

Sample	Length	Weight	Fillet Yield	Proximate Composition			
				Protein	Oil	Moisture	Ash
Number <sup>1/</sup>	Inches	Pounds	(Percent)				
Drag A:							
1	12.5	1.4	29	17.6	1.41	78.0	1.24
2	13.0	1.5	30	17.8	0.93	78.0	1.13
3	13.5	2.1	31	16.3	0.69	79.6	1.15
4	13.0	1.9	27	15.1	0.97	79.1	1.13
5	13.0	1.8	30	16.6	2.20	78.5	1.09
6	12.0	1.5	29	17.8	1.36	78.0	1.08
7	13.0	1.9	26	18.2	1.14	78.8	1.08
8	12.0	1.7	27	18.6	2.86	76.9	1.14
Average	12.8	1.7	29	17.2	1.44	78.4	1.13
Drag B:							
9	9.0	0.7	29	17.7	0.77	82.2	1.26
10	9.0	0.8	27	18.4	1.17	79.1	1.17
11	10.0	0.9	30	18.4	1.21	79.0	1.19
12	9.0	0.8	27	18.2	1.41	79.1	1.25
13	10.0	0.9	29	18.5	1.35	79.6	1.20
14	9.0	0.7	31	18.4	0.86	80.4	1.12
15	9.5	0.7	30	18.1	1.35	79.9	1.15
16	9.0	0.7	30	16.0	1.38	79.4	1.32
Average	9.3	0.8	29	18.0	1.19	79.8	1.21
Average of two drags	11.0	1.3	29	17.6	1.32	79.0	1.17
Fillet waste from two drags				13.6	7.0	69.9	6.0

<sup>1/</sup> Each sample number represents one fish.

fillets was 29 percent. The fillet waste contained 13.6 percent protein, 7.0 percent oil, 69.9 percent moisture, and 6.0 percent ash. The fish averaged 11 inches in length and 1.3 pounds in weight. Pacific ocean perch caught at another time of the year and from another geographic location, however, might differ somewhat in composition from those reported here.

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## CHLORINATED SEA WATER HELPS TO IMPROVE QUALITY OF FISH ABOARD FISHING VESSELS

The value of chlorinated sea-water in preserving the high quality of fish aboard fishing craft has been demonstrated by a series of tests in the North Atlantic trawl fishery. The experiments were conducted by the U. S. Bureau of Commercial Fisheries on a cooperating commercial fishing vessel. Equipment fabricated by the Bureau's Technological Research Laboratory in Boston was used in the tests.

It was found that fish washed in a spray of chlorinated sea water immediately after evisceration, and transported in holds which had been thoroughly washed by a similar solution, were cleaner and fresher than fish coming from trawlers using only ordinary sea water. The trawler using chlorinated sea water left port at the same time, fished the same waters, and returned at the same time as other fishing vessels; therefore comparisons between the old and the new techniques were readily made.

As a result of these findings owners of more than a dozen New England fishing vessels have evidenced an interest in installing chlorinating equipment.

According to Bureau staff members, the equipment is inexpensive and easily installed. It consists of a hypochlorinator metering pump and an electric motor. The chlorinated water from this assembly can readily be introduced into the existing "wash-down" system of the vessel.

The chlorine is provided by an eight-percent solution of sodium hypochlorite which is metered into the "wash-down" system at the rate of 50 to 80 parts per million parts of water for washing the holds and pen boards. By regulating the metering pump, a solution of 10 to 20 parts per million can be used in rinsing the eviscerated fish.

Fish dealers who handled the fish from the experimental trip state that there were no detectable odors of decomposition in the body cavity of the fish, and that the fish were cleaner and fresher looking than those from other trawlers using the nonchlorinated sea water.



### MEANING OF TERM "FISHING MORTALITY" USED BY FISHERY BIOLOGISTS

"Fishing mortality" as used in fishery biology means rate of death of fishes caused by fishing operations. It is used to distinguish this cause of death from "natural mortality" or death due to natural causes such as starvation, disease, or being eaten by other fish. The total rate at which animals die or a captured or "total mortality" must be determined in order to understand the dynamic changes taking place in the fish stocks. A knowledge of the rate of death by fishing, separated from the rate of death from "natural" causes, is often important for effective fishery management.

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