A CONTRIBUTION
TO OUR KNOWLEDGE OF THE
FOOD FISHES
OF THE
OREGON COAST

FROM SPECIMENS COLLECTED BY

B. J. BRETHERTON

REPORT OF STATE BIOLOGIST

JULY, 1900

SALEM, OREGON
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A CONTRIBUTION TO OUR KNOWLEDGE OF THE FOOD FISHES OF THE OREGON COAST.

BIOLOGICAL LABORATORY,
UNIVERSITY OF OREGON, }
July 15, 1900. }

His Excellency, T. T. Geer, Salem, Oregon:

The following notes are based upon a collection of our coast fishes made by Bernard J. Bretherton, of Newport, Oregon, presented to the State University, and identified by the writer. The present collection is to be regarded as a nucleus for further aggregations, representing in time, it is hoped, all the species of fish in Oregon.

To anyone who has made a study of ichthyology it is apparent that it would be out of place, and an extravagance to introduce here the long, technical analyses given in scientific treatises upon the subject, and it has seemed best to give, in each case, a brief popular description, which, with the aid of the illustration may help one to recognize the species.

It will be noted that many of our more common fishes are not listed, the flounders for instance, and some others familiar to our citizens. In all probability the collector has left some of the more easily obtainable forms until later, with the thought that he can easily secure them at his convenience. Mr. Bretherton has made careful notes on the colors of the fresh fish, and has, further, endeavored to list the stomach contents as throwing some light upon their food habits. His notes are given in quotation. Coll. No. means "collector's number" referring to the number which came with the specimens.

In the case of a few doubtful species my identification was either corroborated by the United States Fish Commission or

the correct name given. The commission has also furnished us with six cuts at cost price. Acknowledgment of these courtesies is hereby tendered.

It may not be out of place to mention our experience in preserving fish in a way to best retain their colors. We have found that if the fresh specimens are placed in very weak formalin (3 % made from 40 % stock solution) and after remaining for a week or so in this, changed to a fresh solution of the same strength and placed on exhibition most of the colors are wonderfully preserved, and the liquid does not yellow with age as does alcohol in which fish are preserved.

In addition to this growing collection of Oregon fish, the State University has over fifty specimens from the Columbia River Basin presented a few years ago by the United States Fish Commission.

Respectfully,

F. L. WASHBURN,
State Biologist.

FIG. 1.—CALIFORNIA SMELT.

FIG. 2.—HERRING, *C. Mirabilis*.

CALIFORNIA SMELT.

(*Atherinopsis Californicus*—GIRARD.)

About eighteen inches long, a "translucent green" with a somewhat silvery or lead-colored lateral stripe; some yellow on gill covers. Eye small, body elongate. One specimen collected. Given by Jordan and Evermann as very abundant on coast of California from Cape Mendocino to San Diego; found in schools near shore, and an important food fish. See Fig. 1.

CALIFORNIA TOMCOD.

(*Microgadus proximus*—GIRARD.)

This little fish really needs no description. Just why it should be designated *California* Tomcod is a question, for it is in summer one of our most abundant, though by no means the best, of our salt water food fishes. Very common from Monterey to Alaska. Two specimens: Collector's Nos. 4 and 5. "August 10. Silvery white; pale brown on dorsal surface. Contents of stomach indefinable."

CALIFORNIA HERRING.

(*Clupea pallasii*—CUVIER and VALENCIENNES.)

Bluish above; silvery on sides and below. From sixteen to eighteen inches long. Abundant from San Diego to Kamschatka. A well-known fish on our coast and fully as abundant here as in California. Two specimens collected, Nos. 6 and 7. "August 10. Stomachs empty." Fig. 2 represents *C. mirabilis*, in general appearance resembling the species under discussion.

CALIFORNIA SARDINE.

(*Clupanodon ceruleus*—GIRARD.)

Another misnomer, for, under the name of "Herring," this and the preceding are at times exceedingly abundant in our bays, and very highly esteemed as food fishes. In general appearance like the last, but larger,—about twelve inches. Found from Puget Sound to Magdalena Bay. Two specimens, Nos. 8 and 9. "Norway Herring, a larger and plumper fish than the preceding." See middle figure in Plate I; photographed from a specimen preserved in formalin.

ALASKA GREEN FISH.

(*Hexagrammos octogrammus*.)

Called "sea trout" by our fishermen. Varies much in coloration, according to age, etc., and likely to be confused with *H. Stelleri*, the "Greenling."

Two specimens, 18 and 16.

No. 18. "Sea trout—September 7, 1899. Dorsal surface and sides light slate, blotched with pale green, each blotch surrounded by several dark umber spots; ventral surface, lighter; pectoral fins spotted with pale mustard yellow.

No. 16. "Medicine fish. Ventral surface, brownish yellow with greenish tinge. Dorsal surface, burnt umber. Stomach contents, mussels."

ROCK TROUT, GREENLING, BOREGAT, BODIERA.

(*Hexagrammus, decagrammus*—PALLAS.)

Much like the last and liable to be confused with it. Sexes very unlike in color. The females are extremely variable in coloration. I quote from Jordan and Evermann to show the great variation in individuals and the consequent confusion among local fishermen: "Adults highly colored; the males with large sky-blue spots; the females with smaller red or orange spots; young sometimes plain brown with dark humeral spots. Males clear brownish olive of varying shade, often tinged with bluish or coppery and vaguely blotched, often with small blue spots; head and anterior part of body with rather large sky-blue spots, each surrounded by a rusty ring, these smaller and more numerous on the top of the head; lips with bluish spots, upper fins brown, mottled; ventrals and anal dusky bluish; pectorals dark, both rays and membranes crossed by sharply defined whitish reticulations, so that the fins appear to be profusely spotted with white. Females brownish, somewhat tinged with reddish, closely covered with round spots of a reddish-brown; these spots usually quite small and uniform over the whole body, back and sides; dorsal fin spotted on the scaly part, the fins otherwise plain reddish or bluish; the ventral usually dusky; pectorals light orange, without markings. Other females-----have the ground color slaty blue, with round orange spots considerably larger than usual and becoming vermiculations on the head; dorsal fin orange, clouded at base with blue; soft dorsal edged with bluish; pectorals plain orange; belly white. These vary into the ordinary type----- Length, eighteen inches. Abundant from Point Conception to Kodiak Island, Alaska, especially about San Francisco. A common food fish. See Fig. 3, also upper figure in Plate I; photographed from a specimen preserved in formalin.

FIG. 3.—STELLARIS ROCK TROUT, *H. aspera*, to illustrate *H. deciprennus*.

FIG. 1.—LANT OR SAND EEL, *J. lucernus* - DEKAY.

Is it any wonder that these individuals of the same species receive different common names? I give collector's description of color and his notes in detail to illustrate the misconceptions arising from these striking variations.

Five specimens, Nos. 3, 11, 12, 13, 15.

Nos. 11 and 12. March 24.—Sea trout. Fins, pale yellowish brown: ventral surface, white; sides and dorsal surface, slate thickly spotted with color of fins. Stomach contents (No. 12), large crustacea.

No. 3. "Kelp fish. Color, dark umber mottled with light green; ventral surface, pale yellow; fins, slate gray.

No. 13. "Kelp fish. March 24. Pale brown clouded with black on head: fore part of body blotched with peacock blue. Each blotch with several black dots; fins, black.

No. 15. "Medicine fish. March 24. Dark brown on dorsal surface fading into terra cotta, everywhere blotched with gray; folds under jaw brilliant bluish green.

LANT, LAUNCE, SAND EEL.

(*Ammodytes personatus*—GIRARD.)

It is not an unusual thing for summer visitors at the seashore to find that the receding tide has left the beach strewn with little cylindrical fish about four inches long, of a clear translucent green color with silvery sides, a sharp snout, with underjaw projecting, and a forked tail. This is the Sand Launce, not only attractive from its coloration, from an æsthetic point of view, but also a most excellent pan fish. They burrow in the sand to escape their numerous enemies, and are frequently found in this position where the tide has left them, their heads only showing above the surface. If the morning stroller on the beach is wise he will gather all of these he can, and with an admiring glance possibly at a school darting about in some imprisoning beach pool, he will hurry home and give directions for their cooking. Cleaning these little fish is soon over with. Hold one by the nape with thumb and forefinger of left hand; then with scissors, or with fingers of other hand, dexterously remove the head, and at the same time the attached entrails. Wash the fish, dry, flour, and fry in pan with about fifty of his fellows, and the next morning will find all the members of the family on the beach hunting for Launce. Abundant on sandy shores of Atlantic and Pacific coasts. See Fig. 4.

BROWN ROCK FISH.

(*Sebastes auriculatus*—GIRARD.)

One specimen received. Collector's No. 2.—"August 2. Color, mottled, orange, yellow, with reddish cast on dark umber ground. Ventral surface lightest. Lower lip yellow. Stomach contents, fragments of fish." Length,

seven inches. Given as very abundant from Cape Mendicino to Cerros Island. See lower figure Plate I; from a photograph of a specimen preserved in formalin.

YELLOW-TAILED ROCK FISH.

(*Sebastes flavidus*—AYRES.)

A strong, heavy fish, the so-called "Black Sea Bass" of our Oregon Coast. Olive green or blackish. Twenty-four inches long. Mouth large, strong; lower jaw projecting. Dorsal fin continuous, but indented; spines of fin slender. Two specimens. Collector's Nos. 17 and 22. "Black Sea Bass. Ventral surface, dirty white; dorsal black; stomach empty." See Fig. 5.

BLUE PERCH, STRIPED SURF FISH, SQUAW FISH.

(*Taenitoca lateralis*—AGASSIZ.)

(*Ditrema laterale*—GUNTHER.)

This species and its relative, *Damalichthys argyrosomus*, the White Perch or Porgee are almost too common on our shore to need description. They are both members of a viviparous family, the Embiotocidae or surf fishes. In the summer season when they are carrying their young their flesh is poor and tasteless, though they readily take the hook and specimens all the way from one pound to six pounds are caught off the rocks, the tyro fisherman being sometimes astonished to see young fish, two inches long, slipping from the parent and flopping on the rocks beside him, quite capable of swimming if placed in water. This family is so interesting, that I quote from Jordan and Evermann as follows: "Viviparous. The young are hatched within the body, where they remain closely packed in a sack-like enlargement of the oviduct analogous to the uterus until born. These foetal fishes bear at first little resemblance to the parent, being closely compressed and having the vertical fins exceedingly elevated. At birth they are from one and a half to two and a half inches in length and similar to the adult in appearance, but more compressed, and red in color. Since the announcement of their viviparous nature by Prof. Louis Agassiz in 1853 and by Dr. William P. Gibbon in 1854 these fishes have been objects of special interest to zoologists. Fishes of the Pacific Coast of North America inhabiting bays and the surf on sandy beaches. One species (*Hysterocampus traski*) inhabits fresh water; three others (*Ditrema temmincki*, *D. smittii*, and *Neoditrema rausonetti*) are found in Japan. These species reach a length of from six to eighteen inches and are very abundant where found. * * * Most of them feed on crustacea, but one genus (*Abconia*) is partly or wholly herbivorous. Genera 17: species about 20."

The pavement-like teeth, above and below, in the back part of the mouth (pharyngeal teeth, used for crushing hard substances), are extremely interesting and well worth examination on the part of the fisherman interested

FIG. 5.—BLACK ROCKFISH, to illustrate the group.

FIG. 6.—THE WHITE PERCH.

in biological phenomena. One specimen, Collector's No. 20. "Squaw fish. Head golden yellow, spotted irregularly with brilliant blue; entire body striped longitudinally with alternate golden yellow and brilliant blue. A distinct black median stripe from upper corner of gill opening to base of tail. *Stomach contains small jelly fish.*" See Fig. 6.

SCULPIN, BULL HEAD.

(*Enophrys bison*—GIRARD.)

A type of a large and variable family known as Cottidæ, the Sculpins. There are about sixty genera in this group and over two hundred species, a few of which are found in fresh water. Of the salt water forms most of the species are shore fish, but some descend to great depths. No extended description of the Sculpin is necessary, for any fisherman catching one for the first time, would feel instinctively, as he landed his bony prize (?) and surveyed it bristling with horns, its head flat and wide, its mouth gaping, and its generally repulsive appearance, that he had caught "a sculpin."

The species under discussion is very common from San Francisco to Sitka. Not used for food. One specimen received, Collector's No. 1. "August 1, 1898, Bull Head, or Sculpin. Color dark umber, irregularly mottled with light lemon yellow. Stomach packed full of young kelp weed."

SAND FISH.

(*Trichodon trichodon*—TILESIIUS.)

One specimen sent by Mr. Toner, Yaquina City, the only one observed by the writer. A striking fish, about eight inches long, of a general silvery color; brownish above; a brown streak on side, broken toward the head. Peculiar mottlings between head and first dorsal fin, and irregular brown markings on back at base of fins. Dark line below or at lower edge of eye. Habitat, North Pacific, on sandy shores, from Monterey to Behring Sea, burying itself in sand.

Comparison of the straight line, shown with some figures, with the picture of the fish, enable one to estimate the length of the species in inches.

Hexagrammus
"Kelp"

Clupanado
"Herri"

1 in.

Hexagrammus decagrammus
"Kelp"

1 in.

Clupanodon caeruleus
"Herring"

1 in.

1 in.

Sebastodes auriculatus
"Brown Rock-fish"

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