Studies on the Deep-Water Fishes from off Hokkaido and Adjacent Regions

Tatsuji UENO
(Fac. Fish., Hokkaido Univ.)

While examining many specimens of fishes from the depth off the coasts of Hokkaido and its adjacent regions, the author has found some interesting species which have hitherto been little known or unrecorded from the waters of Hokkaido and northern Japan, as well as some others which require criticism from the ichthyological point of view. Here the author wishes to report his observations and gives some ichthyological annotations on them in following series of this study. The materials for this study were chiefly obtained from the catches brought up by the bottom-twawl or "Kisen-sokobiki" from a depth about 150 to 1200 m, at the fishing grounds and landed on the harbors at Kushiro, Abashiri, Mombetsu of Kitami Prov., Wakkanai, Otaru, Muroran and Hakodate, etc. The majority of the materials were collected by the author himself from the spring of 1949 to the winter of 1952 at fish-markets, but some others were given to the author by the branches of the Hokkaido Fishery Experimental Station situated at the cities stated above. The specimens thus collected amount to over one thousand in number and contain about 190 species belonging to 130 genera and 41 families as far as the author has studied to this day.

In addition to the above mentioned materials, the specimens of several interesting species collected by Mr. T. HIKITA at various places in Hokkaido in many years were placed in the author's hand for a closer examinations, and also some imperfectly known fishes were given to him by Mr. H. MISU who spared them from his collections made in the depth of the northern Japan Sea by the aid of a bottom-trawel net of the training vessel "Hokusei-maru" attached to the Faculty of Fisheries, Hokkaido University, from May to October in 1951.

In August 1952, HIKITA and MISU published their report on the deep-water fishes based upon the above stated MISU's collections.[1)]

But they have committed some obvious mistakes in their identification of species. For instance, *Myoxocephalus tuberculatus* SOLDATOV & PAVLENKO in their report (p. 35, pl. VI. fig. 4) is nothing but *M. ochotensis* of SCHMIDT.[2)] and *Cyclolumpus asperrimus* TANAKA (p. 40, pl. VIII. fig. 1) is a species of the genus *Cyclolumpus birulai* (POPOV) as one can understand from their description and figure. So their report is in need of revision, and the author will freely give his opinion on the subject concerned in the present article.

In the following description of various parts of body in each species, the measurement is done as below:

The body length is measured from the tip of snout to the base of caudal fin; the length of head, from the tip of snout to the extreme posterior margin of

opercular flap; the depth of body is indicated by the vertical breadth of the deepest part of body; the length of snout is represented by the length between the tip of snout and the extreme anterior margin of orbit; the length of maxillary is measured from the tip of upper lip to the posterior end of maxillary; the diamater of orbit is the horizontal distance between the opposite margins; the width of interorbital space is meant by the distance between the upper margins of eyes; the length of caudal peduncle is shown by the length between the base of hindmost anal ray to the base of caudal fin; the depth of the same is the least vertical width of caudal peduncle; the length of each fin is represented by the length of its own longest ray.

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I. On a rare fish, *Zaprora silenus* JORDAN, found off Kushiro, Hokkaido

In 1943, Dr. K. KURONUMA recorded a specimen of this fish taken from a spot off Paramushiru Island, Kuril's, with a brief description under the new Japanese name "Bōzu-ginpo". But it has been unrecorded, hitherto, from the sea of Hokkaido. However, the author obtained a single specimen, 130 mm long, from the fish-market of Kushiro in 23, December, 1951.

Zaprora silenus JORDAN

Zaprora silenus JORDAN, 1896, Proc. Calif. Acad. Sci., p. 203, pl. 20, (Nanaimo, Vancouver)..... JORDAN & EVERMANN, 1898, Bull. U. S. Nat. Mus., (47), Pt. 3, p. 2850, fig. 409, (British Columbia)..... EVERMANN & GOLDSBOROUGH, 1907, Bull. Bur. Fish., 26, p. 276, fig. 25, (Unalaska)..... SCHULTZ, 1934, Copeia, 3. p. 98.: 1936 Publ. Washington Univ. Biol., 2, (4), p. 128, 191..... TARANETZ, 1937, Bull. Paci. Sci. Inst. Fish. Ocea., 11, p. 151,..... CHAPMANN & TOWNSEND, 1938, Ann. Mag. Nat. Hist., 11, (2), p. 89,..... KURONUMA, 1943, Bull. Biogeograph. Soci. Japan., 13, (16), p. 112, (Paramushiru, Kurils)..... CLEMENS & WILBY, 1949, Bull. Fish. Resea. Boar. Canada, (68), p. 199, fig. 136, (British Columbia).

D. 53; A. 28 P. 24; B. 5; Gill-rakers 25 on the first gillarch. Head 4.52 in body length; depth 2.95. Snout 3.90 in head; width of head 2.10; maxillary 2.80; orbit 4.90; length of caudal peduncle 4.21; depth of the same 1.97; interorbital space 2.67;

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1). Report on the ichthyofauna from the depth of the northern Japan Sea. 1952. (in Japanese)

2). SCHMIDT, 1929, Ann. Mus. Zool. Acad. Sci. l' URSS. p. 417, fig. 3,; he described and figured as a new subspecies under the name of *Myoxocephalus verrucosus ochotensis* based upon several young fishes from Ochotsk Sea, but TARANETZ, in 1937, treated as a independent species with adult specimens for difference from original description of *M. verrucosus* by BEAN from Bering Sea.

postorbital part of head 1.73; longest dorsal 2.03; same of anal 1.63; pectoral fin length 1.48; caudal fin length 1.40.

Body robust, greatly compressed back not elevated, caudal peduncle high. Body and head covered with small adherent cycloid scales except distal third of all fins, gill-membrance, lips, cheeks, snout, opercles and bones about orbit. Head short, nape not elevated, gently sloped in the upper profil. Eye moderat, placed inhigh. Mouth terminal, slightly oblique; the upper jaw protractile, but not movable; the lower jaw very heavy, its tip projecting beyond the upper jaw. Teeth small, but rather strong, close-set, formes a uniform cutting edge; vomer, palatine and tongue toothless. The lower pharyngeals narrow, with many bluntish small teeth; the upper ones rather large, with the similar teeth on its top. Pseudobranchiaes present. Gill-rakers very slender and flexible, 8 on upper and 17 on lower lobe; gills four, with a large slit behind the last gill-arch; gill-membranes united together, but entirely free from isthmus. Preopercle, parietal region, lower jaw and regions about orbit with many distinct fixing mucous pores; three of them on each rim of lower jaw; behind these three ones arranged in a line on horizontal limb of preopercles; three onvertical limbs of the same; two in front of eye; one at near nostrils; another one above eye; seven on suborbital regions; four arranged in two rows behind eye; a horizontal row of four pores along the temporal regions, the last one on the opercle flap just above gill-opening; one at vertex; another one midway between vertex and eye; and two on each side of nape. Lateral line obsolete. Pectoral fin large, rounded and placed in moderately high. Dorsal fin low, beginning above the preopercle rimb, composed of simple inarticulate rays; the rays flexible and about equal length. Anal fin inserted under the 26th dorsal ray, the longest one longer than that of dorsal; all rays branched and subequal length. Ventral fin absents. Caudal fin rounded at the posterior margin; caudal peduncle short and stout, not cylindalical. Vent closed to the front of anal fin.

Color in formalin, dusky brown uniformly; no marking on body on body and head; belly pale.

The present specimen somewhat differs from the original description of JORDAN (1866, p. 203), in following points:

JORDAN's holotype	Present specimen
1). Head 5 $^{2}/_{5}$ (5.40) in body length.	1). Head about 4.50 in body length.
2). Depth 4 $^{1}/_{8}$ (4.15) in body length.	2). Depth about 3.00 in body length.
3). Dorsal 56.	3). Dorsal 53.
4). Pectoral 20 to 22.	4). Pectoral 24.
5). Eye 5 $^{1}/_{3}$ (about 5.30) in head.	5). Eye 4.90 in head.
6). Snout 5 $^{1}/_{3}$ in head.	6). Snout about 4.0 in head.
7). Gill-rakers 28 on the first arch.	7). Gill-rakers 25 on the first arch.

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(To be concluded)