NORMICHTHYS YAHGANORUM, A NEW SEARSIID FISH FROM ANTARCTIC WATERS

By Robert J. Lavenberg
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DAVID K. CALDWELL
Editor
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Abstract: A new species of searsiid fish, Normichthys yahganorum, is described from two specimens obtained in the southeastern Pacific Ocean. The new species is the third known member of the genus. N. yahganorum differs from both previously known species, N. operosa and N. campbelli, in having fused gill filaments. Other features utilized to distinguish the three species include longitudinal scale rows, ventral rays and gill rakers.

In the exploratory investigations of the Antarctic biota by members of the department of biological sciences of the University of Southern California, the United States Antarctic Research Vessel USNS Eltanin has undertaken several cruises along the Chilean coast in the southeast Pacific Ocean. The ship usually departs from Valparaiso, and proceeds south to 40° where biological operations in the Antarctic begin. Among the fishes collected off southern Chile during Cruises 5 and 15 are two moderate-sized searsiids. The combination of dermal pits above the lateral line canal and the absence of photophores readily diagnoses these individuals as members of the genus Normichthys Parr (1960).

In identifying these two slickheads, an unusual arrangement of the gill filaments was noted. This characteristic and several other meristic features were noted that distinguish the Antarctic forms from all other known species of the genus. The material differs so markedly from the other Normichthys that I consider them representatives of a distinct species.

The material has been deposited in the fish collections of the Los Angeles County Museum (LACM). The new species may be known as:

Normichthys yahganorum, new species

Figures 1 and 2

Holotype.—LACM 10264; immature male; 95.3 mm. in standard length (SL); off southern Chile, approximately 60 miles W and just S of Isla Gamblin (45° 01' S, 76° 33' W at beginning of haul); Eltanin station 215; 10-foot midwater trawl (IKMWT); maximum depth of trawl 1100 m., over a bottom of 3180 m.; 14 September 1962.

Paratype.—LACM 10265; immature female; 76 mm. in SL; off southern Chile (38° 00' S, 74° 48' W at beginning of haul); Eltanin station 1286; 10-

1Assistant Curator of Ichthyology, Los Angeles County Museum.
Figure 1. *Normichthys yahganorum*, new species, Paratype, LACM 10265. Immature female, 76 mm. SL, illustrating the slender shape of young individuals.

Figure 2. *Normichthys yahganorum*, new species, Holotype, LACM 10264. Immature male, 95 mm. SL.
foot IKMWT; maximum depth of trawl 2350 m., over a bottom of 4660 m.;
trawl fished between 2045 and 0330 hours; 2 October 1964.

*Diagnosis.*—A *Narmichthys* differing from *N. operosa* and *N. campbelli*
in having the gill filaments fused and forming a flap-like extension of tissue
from the gill arch instead of no fusion of gill filaments; short gill filaments
present on periphery of tissue flap in *yahganorum*; in having smaller scales,
111-117 in the longitudinal series rather than 80-90 (*operosa*) or 65-71 (*campbelli*);
in having seven ventral rays rather than six (*operosa*) or eight (*campbelli*);
and in having an intermediate number of gill rakers, 6-8+1+16-17 rather than
7+20-21 (*operosa*) or 5-6+1+12-14 (*campbelli*).

*Description.*—Body strongly compressed, tapering slightly to caudal peduncle
in larger individuals and more strongly in smaller individuals; greatest
depth just anterior to ventral fins, depth tapering more strongly from origin of
dorsal to caudal peduncle in larger than in smaller forms, caudal peduncle
depth variable with size of individual; depth slightly increased by a moderately
sharp, short fleshy dorsal comb as in the Platyroctinae, and a similar but less
distinct ventral fleshy portion extending through length of anal fin base; dorsal
and ventral combs probably more prominent in smaller individuals; greatest
width at head directly behind eye. Dorsal, anal, and procurent rays moderately
 Elevated, ventral fins not elevated. Shoulder organ inconspicuous, small
basal portion lying directly above the insertion of the pectoral fins, short tube
extending posteriorly over five scale rows. Two dermal pits just above lateral
line canal, their position above and midway between angle of preopercle and
shoulder organ. Cleithra protruding from body on ventral side of body between
gill membranes, a flap of scaled tissue surrounding protruding cleithra. Anal
papilla strongly tapered. Head moderately pointed; dorsal comb structure
originating at nape directly above preopercle; flattened in nape region but con-
cave in interorbital space; roof of skull with a wide extent in interorbital space
but narrowing sharply just anterior to orbits; frontals laterally flattened, ex-
tending slightly over margin of eye, upper lateral surface rugose; dorsal profile
descending in a gentle slope from posterior interorbital region to tip of snout;
ventral profile following a straight line between slightly protruded cleithra and
posterior margin of lower jaw, lower jaw rising in a gentle slope from posterior
margin to snout tip; snout pointed, ending at junction with forward directed
premaxillary tusks. Snout length greater than interorbital width at mid-orbits,
both less than eye diameter. Nares flapless. Jaws of moderate length, pointed;
two supramaxillaries; upper jaw shorter than lower jaw; posterior edge of
maxillary extending just behind pupil; teeth on premaxillary well developed and
uniserial, a pair of tusks directed anteriorly; maxillary dentition weaker than
premaxillary, teeth small and uniserial; dentitional pattern of dentary like that
of maxillary, a short mid-dentary tooth row present; one pair of elongate teeth
on head of vomer; palatine toothless; tongue without teeth but covered with
numerous spinous papillae. Teeth of lower jaw insert inside upper jaw series
when mouth is closed.

Scales cycloid, thin and oval in shape; small and adherent, completely
covering the body; head scaleless; heavily marked by annuli, a few ridge-like
furrows on scales suggesting radii; 111 to 117 scales in a longitudinal series along lateral line, 19 scale rows above lateral line and 16 scale rows below; lateral line semi-distinct, 31 to 34 pores present along its longitudinal extent; a small series of lateral line pores present over urostyle; a single pore present in epidermis below each body scale.

Gill rakers moderately long, constituting about five per cent of SL. Gill filaments fused along entire extent of gill arch giving rise to a broad flap of gill filament tissue, gill filament tissue flap about two to three per cent of SL at its greatest width on lower limb of arch; small pseudobranch present; a large white gland present under gill cover in region of preopercle.

Dorsal and anal fins subequal, anal origin slightly posterior to dorsal origin; origin of dorsal nearer to caudal fin than snout, first three or four rays anterior to anal origin but closer to anal origin than to ventral origin; ventral fins originate nearer to caudal fin than snout; pectoral fin base inserted about one-fifth of way up side of body, its position horizontal with body plane, pectoral rays short and slender, length of rays about equal to length of base; ventral rays short, although slightly damaged they apparently equal length of pectoral fin rays.

Inner surface of peritoneum slightly pigmented with various shades of brown, from light tan to dark brown, in a reticulate pattern. A thin-walled stomach present. Four large pyloric caeca, the first and third branched.

Counts and Measurements.—The following counts are for both specimens. Dorsal rays 19, anal rays 17, pectoral rays 16, ventral rays 7, branchiostegal rays 7, gill rakers 6-8+1+16-17, and vertebrae 44. Measurements for the specimens are given in Table 1.

Remarks.—Normichthys yahganorum represents the first occurrence of this genus in the Antarctic region of the Pacific Ocean. Although the new species is quite distinct from N. operosa Parr (1951) and N. campbelli Lavenberg (1965), it shares certain characteristics with these species including the absence of photophores, the presence of dermal pits, subequal dorsal and anal fins, and a thickened ventral abdominal wall. The distinctness of N. yahganorum is shown in several features including the reduced number of dermal pits; only two pits are present in N. yahganorum while in the other species the number ranges from three to seven. There is no pore in the body scales of the new species as reported in N. operosa (Parr, 1960). A pore exists in the epidermis beneath each scale. The lateral line is distinct in N. yahganorum but reduced and indistinct in N. operosa and N. campbelli. A striking feature of N. yahganorum is the development of a dorsal and ventral keel similar to that of the Platytroctinae. This keel or comb is weakly developed but present.

N. yahganorum and N. operosa have dermal pits lying equidistant between the top of the gill slit and the shoulder organ. The dermal pits of N. campbelli are just anterior to the top of the gill slit.

In all three species of Normichthys the upper branchiostegal rays are broad and flattened while the lower rays are slender ray-like structures.

This species is named for the Yahgan Indians, archipelagic shellfish gatherers of Tierra del Fuego, who practiced shellfish conservation and avoid-
ed exhausting their food supply. *Normichthys yahganorum* occurs in deep water along the Chilean coastline where this South American Indian culture once flourished.

*Distribution.*—The three species currently recognized in the genus *Normichthys* have widely separated geographic ranges. *N. operosa* occurs in the eastern Atlantic Ocean. *N. campbelli* inhabits the midwaters of the eastern north Pacific Ocean, off southern California and Baja California. *N. yahganorum* apparently lives in deep water in the Antarctic region of the southeastern Pacific Ocean.

*Acknowledgments.*—I am grateful to William A. Bussing, David K. Caldwell and Jay M. Savage for their critical review of the manuscript. The material was collected aboard the USNS *Eltanin* by Hugh H. DeWitt, Thomas Hopkins and Richard F. McGinnis. The photographs were made by the Museum staff photographer, Armando Solis. The work was financed in part by National Science Foundation Research Grant G-19497, under sponsorship of the United States Antarctic Research Program.

### TABLE 1

Measurements of *Normichthys yahganorum*, new species, expressed in mm.; figure in parentheses is per cent of SL.

<table>
<thead>
<tr>
<th>Character</th>
<th>LACM 10264 Holotype</th>
<th>LACM 10265 Paratype</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Length</td>
<td>95.3</td>
<td>76.0</td>
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<tr>
<td>Head Length</td>
<td>28.7 (30.1)</td>
<td>25.1 (33.0)</td>
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<tr>
<td>Snout Length</td>
<td>7.7 (8.1)</td>
<td>6.0 (7.9)</td>
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<tr>
<td>Eye Diameter</td>
<td>8.5 (8.9)</td>
<td>8.2 (10.8)</td>
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<tr>
<td>Interorbital Width at Mid-orbits</td>
<td>8.4 (8.8)</td>
<td>6.1 (8.0)</td>
</tr>
<tr>
<td>Maxillary Length</td>
<td>13.9 (14.6)</td>
<td>11.5 (15.1)</td>
</tr>
<tr>
<td>Mandible Length</td>
<td>15.9 (16.7)</td>
<td>13.4 (17.6)</td>
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<tr>
<td>Predorsal Length</td>
<td>60.6 (63.6)</td>
<td>47.2 (62.1)</td>
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<tr>
<td>Dorsal Fin Base Length</td>
<td>19.0 (19.9)</td>
<td>14.7 (19.3)</td>
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<tr>
<td>Preanal Length</td>
<td>64.1 (67.3)</td>
<td>48.6 (63.9)</td>
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<td>Anal Fin Base Length</td>
<td>18.2 (19.1)</td>
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<td>Prepectoral Length</td>
<td>32.3 (33.9)</td>
<td>25.4 (33.4)</td>
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<td>Preventral Length</td>
<td>53.0 (55.6)</td>
<td>40.4 (53.2)</td>
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<td>Pre-shoulder Organ Length</td>
<td>33.2 (34.8)</td>
<td>26.8 (35.3)</td>
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<tr>
<td>Body Depth Just Anterior To Ventral Fins</td>
<td>24.1 (25.3)</td>
<td>15.4 (20.3)</td>
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<tr>
<td>Least Depth Caudal Peduncle</td>
<td>10.2 (10.7)</td>
<td>5.3 (6.9)</td>
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<tr>
<td>Caudal Peduncle Length</td>
<td>18.6 (19.5)</td>
<td>15.6 (20.5)</td>
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### LITERATURE CITED

Lavenberg, R. J.  

Parr, A. E.  