

ON THE "LONG" FLOUNDERS OF THE FAR EASTERN SEAS OF THE USSR:  
MICROSTOMUS, GLYPTOCEPHALUS, TANAKIUS (PLEURONECTIDAE).

BY

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The systematic position of the long flounders of the Far Eastern seas has been extremely confused for a long time; up to the present time their characters and differences were insufficiently distinct to discriminate, in spite of several works specially devoted to or concerning that question (Hubbs, 1915, 1932; Jordan & Starks, 1906; Norman, 1934; Soldatov & Lindberg, 1930; Taranets, 1937; Schmidt, 1929, 1950). Because of this (confusion) it has been impossible to identify the long flounders with the available keys (Soldatov & Lindberg, 1930; Taranets, 1937).

Therefore, it is expedient to point out identifying characters verified and partly found by us from materials of expeditions of the Institute of Oceanology and of the Zoological Institute of the Academy of Sciences USSR. Utilization of these characters permits ready identification of Far Eastern long flounders and prevents the possibility of further confusion.

The Far Eastern long flounders (genera Microstomus, Glyptocephalus, Tanakius) are characterized by the following complex of external characters, which distinguish them from the remaining flounders.

1) Mouth small, length of upper jaw of eyed side much less than  $1/3$  length of head; 2) body relatively low -- its height considerably less than  $1/2$  length (less caudal fin); 3) caudal fin broad, it contains 20-24 rays; 4) dorsal and anal fins long: in them (79) 84-107 and 65-89 rays, respectively.

Common in our Far Eastern seas is the long flounder (Glyptocephalus stelleri), more rarely occur the small mouth flounder (Microstomus achne) and the narrow flounder (Tanakius kitaharae).

We cite the principal synonymy<sup>1/</sup>, the clearest identifying characters of distinction, and information on the distribution of the species mentioned.

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<sup>1/</sup> Indicated in greater detail in works of earlier author (Hubbs, 1932, and Norman, 1934).

1. LONG FLOUNDER -- Glyptocephalus stelleri (Schmidt).

Synonyms. Smallmouth flounder (Moiseev, 1946a, 1946b; Taranets, 1937); Korean flounder (Comm. Fish. USSR, 1949); Microstomus stelleri (Schmidt, 1904); Microstomus hireguro (Tanaka, 1916, 1917); Glyptocephalus ostroumovi (Hubbs, 1915; Jordan & Hubbs, 1925; Soldatov & Lindberg, 1930); Glyptocephalus sasae (Jordan et al, 1913; Snyder, 1912).

Characters (Fig. 1a). Beginning of gill slit above the base of pectoral fin and located between upper edge of the fin and the lateral line. Lateral line straight or nearly straight. Least height of caudal peduncle less than 1/2 the length of head. On preopercle 4 large round depressions (mucous pores), easily noticeable on blind side <sup>2/</sup> (depressions are also on sides of skull case and lower jaw). Upper orbit very much displaced backwards compared to lower, nearly 1/2 length of eye <sup>3/</sup>. Profile of snout steep. D (83) 88-97, A (72) 75-80, C 22-23, P 10-12. Vertebrae 50-54. Gill rakers 4+ 7-10 (Hubbs, 1915). Teeth  $\frac{7-10+18-21}{8-12+18-21}$ .

Range. Southwest and southern part of Okhotsk Sea: Amur River estuary, southern Sakhalin, Hokkaido, Kuril Islands, western Kamchatka, Sea of Japan, coast of Japan to southern Honshu. Occurring at depths up to 350 m and deeper, forming aggregations in spring and early summer at depths of 22-70 m and withdrawing by autumn to depths greater than 100 m (Moiseev, 1946a, 1946b).

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<sup>2/</sup> In doubtful cases, cut skin over preopercle in order that they may be detected.

<sup>3/</sup> This character, indicated formerly (Hubbs, 1932), not always useful for small.

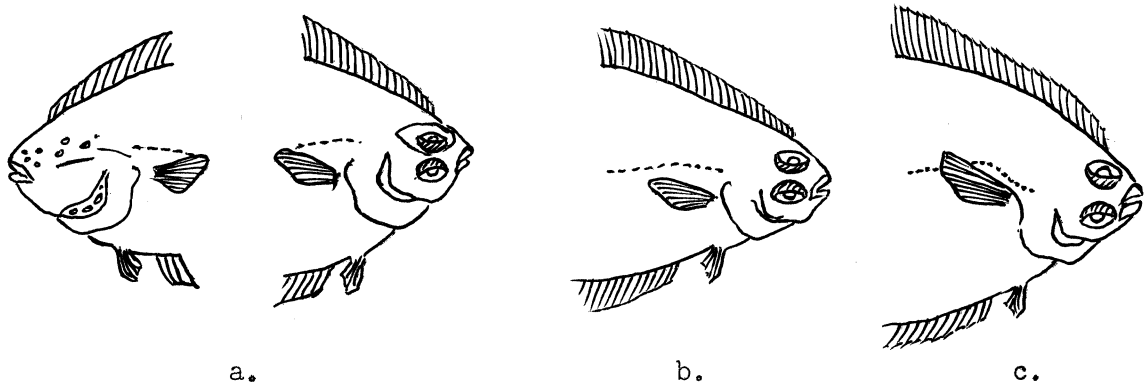


Figure 1. Schematic drawing of the anterior part of the body of long flounders (partly from Norman, 1934): a.--Glyptocephalus stelleri, both blind and eyed sides; b.--Tanakius kitaharae; c.-- Microstomus achne.

2. NARROW FLOUNDER -- Tanakius kitaharae (Jordan and Starks).

Synonyms. Pleuronectes cynoglossus (non Linnaeus) (Otaki, 1897); Microstomus kitaharae (Hubbs, 1915; Jordan & Starks, 1904, 1906; Jordan et al, 1913; Soldatov & Lindberg, 1930; Schmidt, 1931).

Characters (Fig. 1b). Beginning of gill slit above base of pectoral fin and located between upper edge of the fin and the lateral line. Lateral line straight or nearly straight. Least height of caudal peduncle equal to 1/2 length of head or greater than it. No depressions on preopercular bone. Upper orbit displaced backwards in relation to lower one by 1/4 length of eye. Profile of snout projecting  $\frac{4}{5}$ .  
D (84) 87-95 (102), A 75-82, C 23, P 10-11. Vertebrae 49 (11 + 38). Gill rakers 5-6 + 7-9 (Hubbs, 1915). Teeth  $\frac{12-14+14-16}{11-15+16-19}$ .

Range. Sea of Japan, near coast of Japan (including Hokkaido) and Korea.

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$\frac{4}{5}$  Recommended by certain authors (Hubbs, 1915, 1932, and Norman, 1934) for the discrimination of Tanakius and Glyptocephalus the characters of the presence of scales on orbits and branched posterior D and A rays are not useful enough.

3. SMALLMOUTH FLOUNDER -- Microstomus achne (Jordan and Starks)

Synonyms. Veraequa achne (Jordan & Starks, 1904; Jordan et al, 1913);  
Glyptocephalus stelleri (Taranets, 1937, Fig. 92); Microstomus stelleri (non Schmidt! )  
(Hubbs, 1915; Jordan & Hubbs, 1925; Jordan & Starks, 1906; Jordan et al, 1913;  
Soldatov & Lindberg, 1930; Tanaka, 1916, 1917; Schmidt, 1929).

Characters (Fig. 1c). Beginning of gill slit at upper edge of pectoral fin  
base <sup>5/</sup>. Lateral line forms a slight arch over pectoral fin. Least height of caudal  
peduncle more than 1/2 length of head. No depressions on surface of preopercular  
bone. D (79) 84-95, A (65) 67-77 (79), C 21-22, P 10-11. Gill rakers 6-7+8-10  
(Hubbs, 1915). Teeth  $\frac{0+8-11}{0+8-12}$ .

Range. Southern part of Okhotsk Sea: southern Sakhalin, Hokkaido, Kuril Islands.  
Sea of Japan and East China Sea: coasts of Japan, Korea, China, Pacific Ocean coast  
of Japan.

Besides the three species of long flounders mentioned in our waters there may  
be found two eastern Pacific Ocean species, distributed near the American coast  
from Bering Sea and Alaska to California.

These are: 4). Longfinned long flounder -- Glyptocephalus zachirus Lock.,  
close to Gl. stelleri in structure of preopercle <sup>6/</sup>, but easily distinguishable  
by long pectoral fin on eyed side (longer than head or equal to it in length);  
and 5). California smallmouth flounder -- Microstomus pacificus (Lock.), close to  
M. achne in position of beginning of gill slit, but distinguishable by nearly  
straight lateral line and a more elongate body.

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<sup>5/</sup> This character determined by us is a generic character of Microstomus, since it  
also is characteristic of the Atlantic Ocean species M. microcephalus Don.

<sup>6/</sup> This is a generic character of Glyptocephalus (Gottsche, 1835).

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