Intraspecific Variation in the Agonid Fish, *Sarritor frenatus*

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Sarritor frenatus (Gilbert) is widely distributed in the northern North Pacific and is distinguished from other agonid fishes by its two barbels under the snout, gill membranes without barbels, short snout, inferior mouth and presence of vomerine teeth.

Sarritor frenatus was separated by Andriyashev (1937) into two subspecies on the basis of the following characters: The pectoral fin is black in *S. f. frenatus*, while it has a large white spot on the upper lobe in *S. f. occidentalis*; the number of interdorsal plates is 2~3 or rarely 4 pairs in *S. f. frenatus*, but 4~5 pairs in *S. f. occidentalis*. However, one of six specimens of *S. frenatus* from off Hirô, the Pacific coast of Hokkaido, shows an intermediate condition of these two subspecies (Fig. 1). Therefore, I reexamined Andriyashev's (1937) basis for determination of subspecies.

The 204 specimens (133~242 mm in standard length) examined were obtained from various regions, i.e., Japan and southern Kuril Islands, Okhotsk Sea, eastern coast of Kamchatka and northern Kuril Islands, western Bering Sea, middle part of Aleutian Islands, eastern Bering Sea, and eastern North Pacific (Fig. 2). These specimens are deposited in the Laboratory of Marine Zoology, Hokkaido University (HUMZ) and Far Seas Fisheries Research Laboratory.

Interdorsal plates were counted as paired between the posterior end of the first dorsal fin and the origin of the second dorsal fin.

Results and discussion

In this study, the color pattern of the pectoral fin and numbers of interdorsal plates, which were considered as diagnostic characters of two subspecies by Andriyashev (1937), and

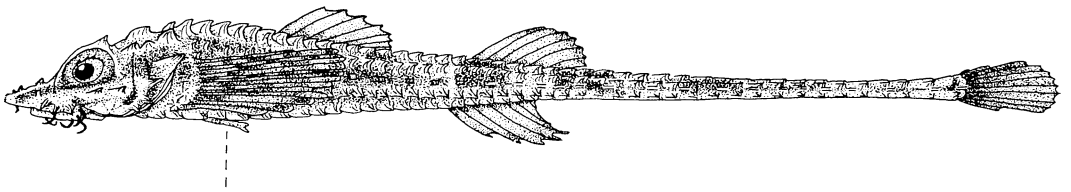

Fig. 1. *Sarritor frenatus* (Gilbert): HUMZ 52737, 216 mm in standard length, female, from 42°02′N, 143°42.9′E, off Hirô, Hokkaido, March 23, 1976.

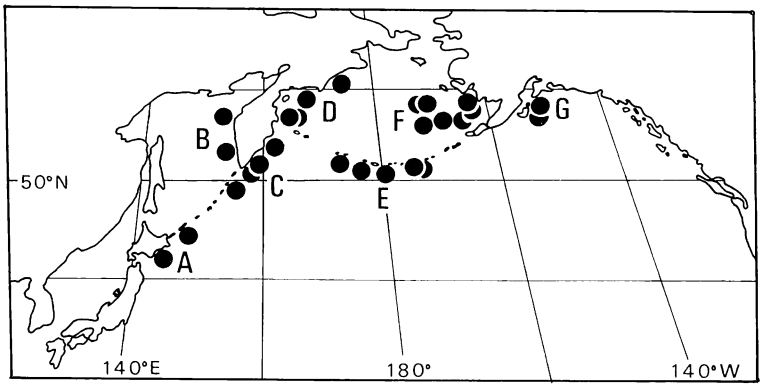

Fig. 2. Collecting localities of *Sarritor frenatus*. A, Japan and southern Kuril Islands; B, Okhotsk Sea; C, eastern coast of Kamchatka and northern Kuril Islands; D, western Bering Sea; E, middle part of Aleutian Islands; F, eastern Bering Sea; G, eastern North Pacific.

numbers of lateral line plates were examined.

Color pattern of pectoral fin. The correlation between the color pattern of the pectoral fin and the number of interdorsal plates was examined. Of 204 specimens of *Sarritor frenatus* examined, 4 were the black-fin type (Fig. 3B) having 2 interdorsal plates (1 specimen), 3 (1) and 4 (2), and 200 were the large white-spot type (Fig. 3A) having 2 interdorsal plates (19 specimens), 3 (87), 4 (88) and 5 (9). There was no correlation between the color pattern of the pectoral fin and the number of interdorsal plates.

Andriyashev (1937) and Lindberg and Andriyashev (1950) noted that *S. f. occidentalis* did not occur in the eastern Bering Sea and the eastern North Pacific. Among my specimens, however, the large white-spot type frequently occurred in all regions, while the black-fin type was found only rarely in Japan, the southern Kuril Islands, the eastern Bering Sea and the eastern North Pacific. Thus, the distributional pattern suggested by Andriyashev (1937) and Lindberg and Andriyashev (1950) could not be recognized.

Okada and Kobayashi (1968) stated that the difference in the color pattern of the pectoral fin might be due to sexual dimorphism. But, such sexual differences could not be demonstrated in the specimens examined.

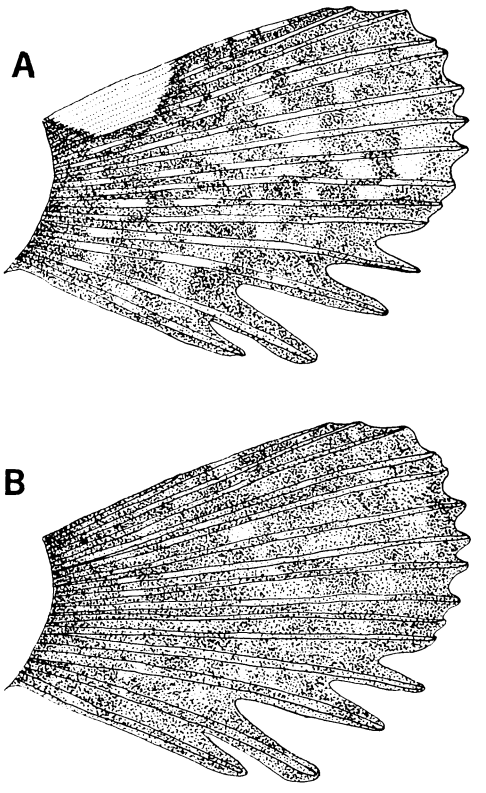

Fig. 3. Two types of the color pattern on the pectoral fin in *Sarritor frenatus*. A: Large white-spot type. B: Black-fin type.

Number of interdorsal plates. This character varied from 2 to 5 pairs in the specimens examined (Fig. 4). The mode (mean) of the number of interdorsal plates was 2 (2.8) pairs in the eastern North Pacific region, 3 (2.8) in the eastern Bering Sea region, and 4 (3.3～3.8) in other regions, from Japan and the southern Kuril Islands to the middle part of the Aleutian Islands.

According to Andriyashev (1937), there are 2～3 interdorsal plates, rarely 4 pairs, in the eastern Bering Sea and 4～5 pairs in the west-

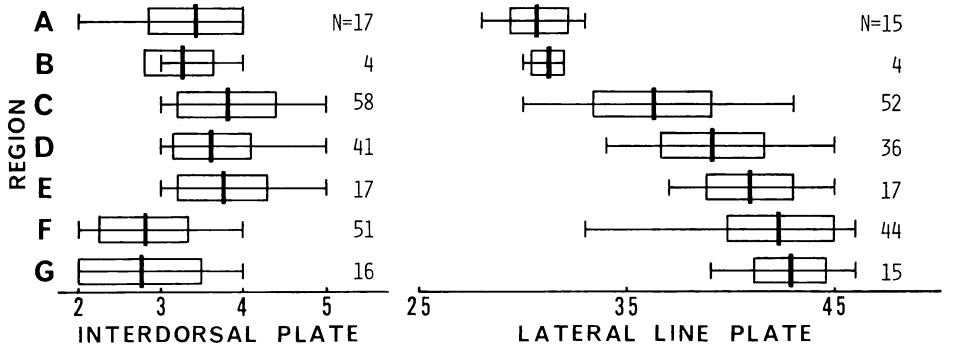

Fig. 4. Numbers of interdorsal plates and lateral line plates in seven regions (as for abbreviation of region, see Fig. 2): Horizontal line, range; vertical line, mean; open rectangular, standard deviation.

ern Bering Sea. However, specimens with 3 pairs of interdorsal plates were found frequently in the western Bering Sea (Fig. 4). Hence, the difference between regions, i.e., from Japan and the southern Kuril Islands to the middle part of the Aleutian Islands, the eastern Bering Sea and the eastern North Pacific, is considered to be due to geographical variation of *S. frenatus*. This geographical variation is not related to the color pattern of the pectoral fin.

Number of lateral line plates. A wide variation in the number of lateral line plates, from 28 to 46, was observed, but numbers gradually increase from the western North Pacific to the eastern North Pacific, except for a gap between the Okhotsk Sea and the eastern coast of Kamchatka and the northern Kuril Islands (Fig. 4). I regard this gap as probably resulted from an insufficient number of specimens in the Okhotsk Sea region, because the number of lateral line plates of *S. frenatus* indicates fairly wide variation in each region, e.g., 30 to 43 along the eastern coast of Kamchatka and northern Kuril Islands and 33 to 46 in the eastern Bering Sea region (Fig. 4).

Conclusion. Judging from these facts, *S. frenatus* cannot be divided into two subspecies. Thus, *S. f. occidentalis* is a junior synonym of *S. frenatus*.

Acknowledgments

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ヤセテングトクビレの種内変異

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ヤセテングトクビレ *Sarritor frenatus* は Andriyashev (1937) により背鰭間の骨板数および胸鰭上葉の白色点の有無に基づき2亜種，ヤセテングトクビレ *S. f. frenatus* およびシロブチテング *S. f. occidentalis* に分けられた．しかし，北太平洋北部から得られた204個体の本種を比較検討した結果，これらの特徴は本種の種内変異であることが明らかになった．すなわち，背鰭間の骨板数の違いは胸鰭の斑紋の型と関係なく地理的変異によるもので，骨板数は北太平洋東部から西部へ向かって，2から4へと次第に増加する．なお，側線鱗数の変異も地理的変異によるもので，北太平洋東部から西部へと，46から28まで，次第にその数が減少する．

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