Threespine Stickleback, *Gasterosteus aculeatus aculeatus*, New Record from Shimonoseki

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As presently known, *Gasterosteus aculeatus aculeatus* (Linnaeus) is common in Honshu, Japan, north of 35°N latitude. There have been scanty records, however, from south of 35°N latitude, namely, coastal sea water off Murozumi, Hikari City, Yamaguchi Prefecture, southern Honshu, and from the Oita and Uragami Rivers in Kyushu (Ikeda, 1937; Aoyagi, 1957; Nakamura, 1963; Katayama, 1970) (Fig. 1).

On April 20, 1971, nine specimens of *G. aculeatus aculeatus* were caught in the Nagata River near Shimonoseki, southern Honshu (Fig. 1). The Nagata River is a small stream, about 10 m in width and 10 km in length, and empties into the Japan Sea. The fish were caught about 1 km upstream from the river mouth where the bottom was of muddy-sand, the water about 20 cm in depth, and with water plants growing in places. In this river and its adjacent ones, no stickleback had previously been caught or known from previous researches. The species probably began to go up the river in recent years. It is not known whether the immigrants originated from the coast of the Japan Sea or from the coast of the Pacific Ocean, since Shimonoseki lies at the point where both coasts meet. Moreover, it is highly probable that they came from the isolated habitats. We could not ascertain the real facts.

On the morphological characters, counts and proportional measurements of the nine specimens measuring 62.7 to 75.2 mm in standard length are as follows: depth of body 2.08–2.23 in standard length; head length 2.78–3.03. Snout 2.87–3.74 in head length; eye diameter 2.24–2.53; depth of caudal

Fig. 1. Map showing isolated habitats of *Gasterosteus aculeatus aculeatus*, in Japan south of 35°N. A, Uragami River, Nagasaki Pref.; B, Oita River, Oita Pref.; C, off Murozumi, Yamaguchi Pref.; D, Nagata River, Shimonoseki, Yamaguchi Pref.

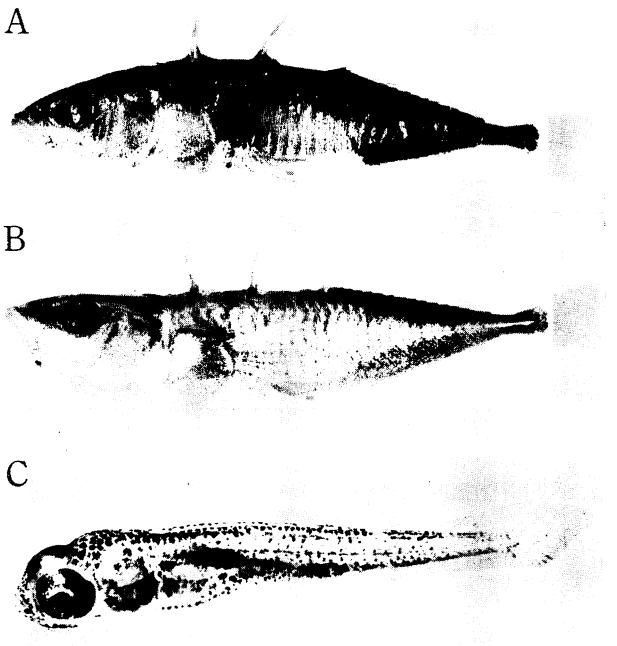

Fig. 2. Parents and their larva of *Gasterosteus aculeatus aculeatus*. A, male (SUF 71401), 66.0 mm in standard length; B, female (SUF 71405), 75.0 mm in standard length; C, larva, 7.2 mm in total length.

peduncle 1.14–1.38; length of first dorsal spine 3.59–4.39. D. III, 13–14; A. I, 9–11; scutes (32) 33–34; vertebrae including urostyle 31–33. A female specimen shortly before spawning had 444 ripe eggs.

According to divisional method of type of Ikeda (1933), the present specimens characterized by having scutes of (32) 33–34 and arrangements of scutes of *Trachurus*-type apparently belong to the anadromous type, and also those by having spinous scutes on lateral keel surrounded by membrane are Niigata-type, which appears in the regions swept by Kuroshio and Tsushima Currents.

For observation of the breeding habit, one male and one female sticklebacks (Fig. 2, A, B) were kept in an aquarium (water temperature 15°–17°C) and in the course of a month were observed courting, nest building and spawning. The aquarium contained some water plants and the sticklebacks were fed once per day on minced shrimps, bivalves and fish. The male began to make a nest in one corner of the aquarium on April 24. The female laid eggs in the nest in the morning on April 25, and after five days the larvae hatched out. The larvae were fed on artificial powder fish-food (Fig. 2, C). On May 7, the female parent died, but the male continued to live until May 15.

The breeding habit of the species is well known (Breder and Rosen, 1966). Our observation on courting, nest building and spawning was not different from many cases already reported.

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Literature cited

Aoyagi, H. 1957. General notes on the freshwater fishes of the Japanese Archipelago. Taishukan, Tokyo, ii+272+17+20 pp., 212 figs. In Japanese.

Breder, C. M., Jr. and D. E. Rosen. 1966. Modes of reproduction in fishes. Nat. Hist. Press, New York, xv+941 pp.

Ikeda, H. 1937. On the *Gasterosteus aculeatus aculeatus* (Linnaeus) caught from Kyushu District. Suisan-kenkyushi, 32(1): 1–2, figs. 1–2. In Japanese.

Ikeda, K. 1933. Variation and distribution of *Gasterosteus aculeatus aculeatus* (Linnaeus). Zool. Mag., 45(534): 141–169, figs. 1–11. In Japanese.

Katayama, M. 1970. Further additions to the fishes of Yamaguchi Prefecture in the Inland Sea of Japan. Bull. Fac. Educ., Yamaguchi Univ., 19(2): 107–114, figs. 1–8. In Japanese.

Nakamura, M. 1963. Key to the freshwater fishes of Japan fully illustrated in colors. Hokuryukan, Tokyo, 258 pp., 175 figs. In Japanese.

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下関市で初記録のイトヨ

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下関市吉見永田川の河口から約 1 km 上流で 9 尾のイトヨが初めて捕獲された．本種は日本では一般に北緯 35 度以北の日本海側および太平洋側に分布し，局地的に山口県光市沖，大分県大分川および長崎県浦上川から知られている．本種の永田川での捕獲は分布上興味深い．今までの調査で知られていなかったことにより，最近になって遡河し始めたものと思われる．これらは日本海側から移住して来たものか，太平洋側からのものか，あるいは隔離された生息地からのものか明らかにすることができなかった．

採集された雄 3 個体と雌 6 個体の標準体長は 62.7～75.2 mm である．これらは楯状鱗数 (32) 33～34 で，その配列状態が *Trachurus*-type であることから，降海型である．そして尾竜骨上の楯状鱗の型から，黒潮・対馬海流があらっている地域にみられる Niigata-type である．

本種の雌雄各 1 尾を水槽で約 1 カ月飼育し，繁殖行動を観察した．これらの行動は以前から知られているものと同じであった．

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