

***Danionella translucida*, a new genus and species of cyprinid fish from Burma, one of the smallest living vertebrates**

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Synopsis

Danionella translucida, a new genus and species of danioin cyprinid fishes, is described from Burma. Females are mature at 10–11 mm standard length, and the largest known specimen is only 12 mm. Ripe eggs are few in number and relatively large, 0.4–0.6 mm in diameter. Adults are scaleless and largely transparent, with a complex pattern of large melanophores on the ventral surface of the abdomen. Specializations observed in skeletal preparations include the ‘danioin notch’ in the medial surface of the mandibles; a large maxillo-mandibular cartilage; a cartilage (epibranchial 5?) uniting the branchial arches 4 and 5; pharyngeal bones with a single row of 4 tricuspid teeth; and pectoral, pelvic, and caudal fins with fewer rays than reported or observed in any other members of the family Cyprinidae.

Introduction

The smallest known adult vertebrate is *Trimmatom nanus* Winterbottom & Emery, 1981, a member of the fish family Gobiidae living in coral reefs in the Indian Ocean. Females as small as 8 mm in standard length have ‘fully developed eggs’ (Winterbottom & Emery 1981, p. 146). The largest known specimens are 10.2 mm in standard length (all fish sizes in the present paper are standard lengths).

Until now, the smallest known freshwater fish is also a gobiid. *Mistichthys luzonensis* Herre, from freshwater lakes in the Bikol region of southern Luzon Island in the Philippines, are fully mature at 10–14 mm (Te Winkel 1935). Another freshwater goby from Luzon, *Pandaka pygmaea*, has mature females of only 10–11 mm but the largest specimens are at least 2–4 mm longer. This species also has a very stout and robust body.

In the present paper a new genus and species of

Cyprinidae is described from freshwater in Burma, in which females of only 10.3–11.3 mm have ripe or ripening ovaries, and the largest known specimen is only 12.0 mm. This is the smallest known member of the superorder Ostariophysi and the smallest adult vertebrate known to inhabit fresh water.

The new fish (Fig. 1) was collected from the roots of floating aquatic plants in a slow-flowing, shallow stream (maximum depth 1 m) in the Pegu Division of Burma about 100 km NE of Rangoon on 9 March 1985 (toward the end of the long dry season). The only other fishes collected at this locality were adults of other small cyprinids (*Brachydanio* and *Microrasbora*), a sisorid catfish (*Hara*), and a small ricefish (*Oryzias*).

Observations of the skeletal anatomy of the new genus and species confirm that it belongs to the family Cyprinidae and indicate that its phylogenetic relationships lie with the danioin group of cyprinid genera. This group, including *Brachy-*

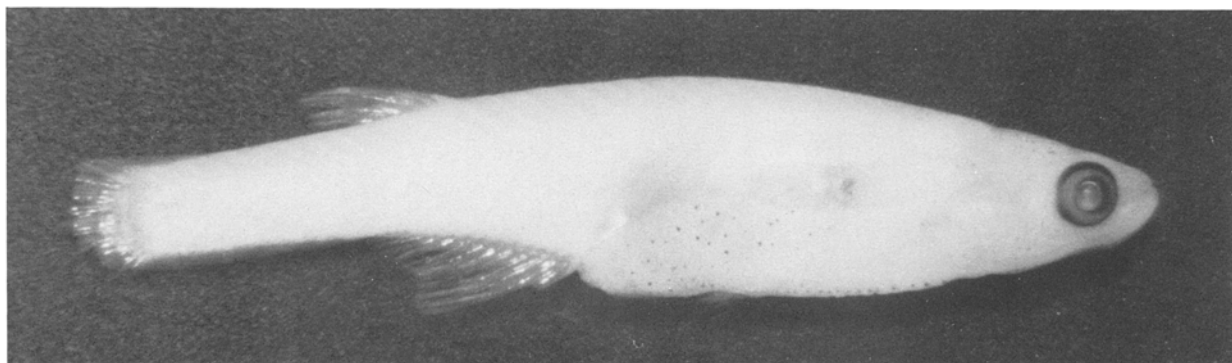


Fig. 1. *Danionella translucida*. A formalin preserved female, 11.9 mm SL.

danio, *Danio*, and *Parabarilius*, has many species in Burma, including several in which adults are only 20 to 30 mm long. The danioins are distinguished from other cyprinids by the uniquely shared character of the 'danioin notch', a large and peculiarly shaped indentation in the medial margin of the mandibles. This feature was noted in several species of *Danio* by Howes (1979, p. 192, fig. 42). I have observed it in several species of *Brachydanio* and in *Parabarilius* but not in any members of the rasborin, esomin, bariliin, chelin, or other 'informal' taxonomic categories currently recognized for various Asian cyprinids. The danioins are further characterized by having a moderately long anal fin (typically with 9–16 branched rays) and abdominal vertebrae much fewer than caudal vertebrae (southeast Asian cyprinids other than danioins and chelins usually have only 5 branched anal fin rays; in most, abdominal vertebrae are more numerous than caudal). There are some small cyprinids known only from Burma which are not readily placed in any of these informal categories. These are the monotypic genus *Sawbwa*, known only from Inle Lake, and the species of *Microrasbora*, known from Inle Lake and Pegu Division (including the stream where the new cyprinid was collected). I have examined their skeletal anatomy and conclude that they are not closely related to the new genus.

***Danionella* new genus**

Type species. – *Danionella translucida* new species.

Diagnosis. – Differs from all other Cyprinidae in its minute adult size, 10–12 mm; and from all or almost all other members of the family in the low number of its pectoral fin rays (15), pelvic fin rays (I4) and principal caudal fin rays (9/9 instead of the otherwise invariable or almost invariable 10/9). It differs from all other cyprinids so far as known in having a large maxillo-mandibular cartilage, and a cartilage connecting the fourth branchial arch to the fifth ceratobranchial. It differs from most other cyprinids in having only a single row of four pharyngeal teeth (tricuspid).

Scales absent. No barbels. Lateral line apparently absent on head and body (no canals or pores observed). Abdomen rounded. Dorsal fin, originating in posterior part of body, with 2 simple and 6 branched rays (last ray not divided to base). Anal fin large, origin near middle of body, with 2 simple and 10–14 branched rays (last ray not divided to base). Caudal fin moderately forked, simple principal rays (uppermost and lowermost principal ray of caudal lobes) of same thickness as branched principal rays (not greatly thickened as in some *Rasbora*). Innermost rays of pectoral and pelvic fins large and well developed (not minute and poorly developed or weakly staining as in *Rasbora*). Caudal peduncle with a midventral keel for its entire length and a middorsal keel extending for posterior half of its length. Abdominal ver-