RICHARD J. NEVES

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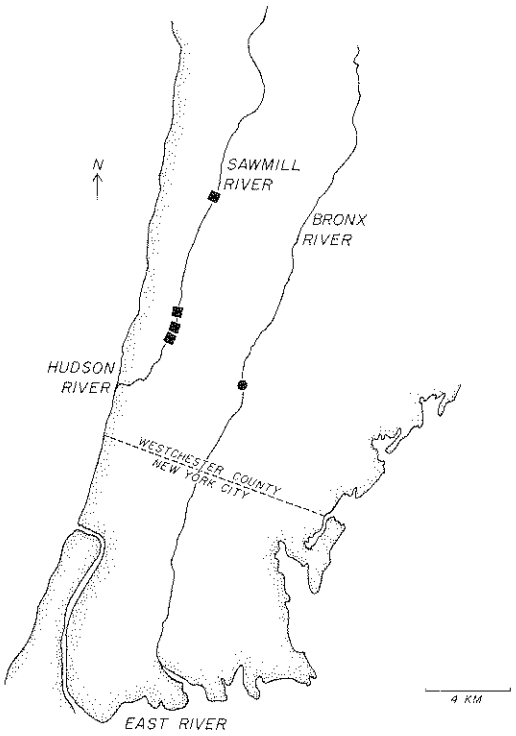

Fig. 1. The Bronx and Sawmill Rivers in southeastern New York. Our collection localities of *Rhodeus sericeus* are indicated with a circle (●) and collections from the Sawmill River, 1931–1951, in the Cornell University Museum (CU 5112, 18323, 23611, and 26823) are indicated by squares (■).

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STATUS OF THE BITTERLING, *RHODEUS SERICEUS*, IN SOUTHEASTERN NEW YORK.—The European bitterling, *Rhodeus sericeus* (Bloch), was probably released into natural waters of the United States as an aquarium fish introduction (Bade, 1926). The first records of this species (as *R. amarus*) listed it as abundant in the Sawmill River (Fig. 1), Tarrytown, New York (Dence, 1925; Myers, 1925; Bade, 1926). Greeley (1936) collected the bitterling in the Sawmill River and other collections were made there until 1951 (Cornell University 23611). Efforts to collect specimens since have been in vain and *Rhodeus* is assumed to have disappeared from the Sawmill River.

Greeley (1936) also recorded two small specimens from the Bronx River but no other specimens have been reported in collections by the New York State Department of Environmental Conservation, Corps of Engineers, and others. However, during an ichthyofauna survey of the Bronx River, we collected 11 specimens at and above the Midland Ave. bridge (Scout Field) in Bronxville, New York on 10 and 14 August 1979, and nine specimens about 0.9 km up-

stream at the Paxton Ave. bridge on 18 October 1979 (Fig. 1). Collections were made with a backpack electroshocker and a 3 m × 1 m × 0.5 cm bar mesh seine.

Eight males (30–39 mm SL) and three females (35–37 mm SL) were collected in August and six males (44–51 mm SL) and three females (46–47 mm SL) in October. All males had indications of nuptial tubercles on the snout. The ovipositor was 1.5–2 mm long on the females collected in August and 4–6 mm long on the October specimens. Ovipositor length is defined as the distance from the distal end of the ovipositor to a point even with the distal end of the anal papilla. The specimens are deposited in the American Museum of Natural History as AMNH 39116 and AMNH 39117.

We found no bitterlings at 14 other stations in the Bronx River and Sprain Brook, a tributary which enters the river between the two *Rhodeus* collection sites. *Rhodeus* is thus apparently limited to approximately 1.2 km of the Bronx River. Greeley's (1936) collection was taken between our two sites (precise locality from R. Pierce, pers. comm.) but as far as we can determine, no one else besides ourselves has sampled this particular locality. *Rhodeus* could be overlooked in a superficial sample because it is not common. Our 20 specimens were taken with hundreds of golden (*Notemigonus crysoleucas*) and common shiners (*Notropis cornutus*) as well as other fishes. We think that this population is not a recent introduction, but has survived in the Bronx River since the early part of the century.

Reproductive success of any of the Rhodeinae depends on the presence of freshwater bivalves (Nikolsky, 1954). Breder (1933) showed that *R. sericeus* could use two of our local mussels (*Unio complanatus* and/or *Anodonta cataracta*) for successful reproduction. Live *A. cataracta* were collected in the Bronx River, but only at the two stations where *Rhodeus* were found. The distribution of *Rhodeus* in the warmer months is correlated with and probably depends on the distribution of *A. cataracta*.

Nikolsky (1954) indicated that the Rhodeinae have relatively short life spans (5 years) and mature sexually in the second or third year. Holcik (1959) indicated that, in Czechoslovakia, *R. sericeus* can reach five years of age, with a maximum total length of 69 mm. We removed two scales from the right side of each specimen just anterior to the dorsal-fin origin and one scale row above the black lateral band and pressed the scales between microscope slides. Examination at 56× showed that 19 of the specimens had no annuli and one male (51 mm SL) had one annulus. The young-of-the-year individuals would probably be sexually mature the next spring. Older individuals may exist in a deep-water area that we did not sample.

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