

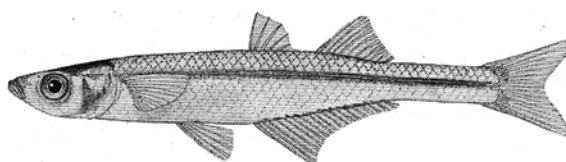
Threatened fishes of the world: *Menidia extensa* (Hubbs & Raney 1946) (Atherinopsidae)

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Common names: Waccamaw silverside. **Conservation status:** Listed as threatened by U.S. Fish & Wildlife Service (1987). **Identification:** Freshwater, lacustrine derivative of the allopatric *Menidia beryllina*. Long, slender-bodied atherinid (body depth 7–8 times in SL) reaching maximum length of 84 mm. D1 III–VI; D2 7–11; A 19 (17–21); vertebrae 42–45; lateral scales 44–50. Overall silvery to translucent, with melanophores lining the posterior edge of dorsal, lateral scales. Scales poorly developed and deciduous. This species



is not sexually dimorphic, with the exception of pre-spawning females being slightly more robust than males. Drawing by E.F. Menhinick. **Distribution:** One of three endemic fishes in Lake Waccamaw, Columbus County, North Carolina (Hubbs & Raney 1946, Frey 1951). Specimens have been collected occasionally in the headwaters of the Waccamaw River, just below the Lake Waccamaw dam during periods of high water (Shute et al. 1981). These specimens were likely washed over the dam during high flows and do not represent an isolated, reproducing population. **Abundance:** Very common – one of most abundant species in Lake Waccamaw. **Habitat and ecology:** Found in large schools near the surface in open water areas, typically above sandy bottoms and areas with little vegetation. Diet consists mainly of zooplankton, especially cladocerans. Minor food sources include ostracods and aquatic insects (Davis & Louder 1969). *Menidia extensa* is one of the most important forage species in the lake (Rohde et al. 1994). **Reproduction:** The following life history information is taken primarily from Davis & Louder (1969). Spawning occurs from March through July, which is marked by a large migration from open waters to vegetated near-shore spawning grounds. No parental care is exhibited. Best described as an annual species – most individuals die after spawning and do not live into their second year. Individuals become sexually mature at approximately 30 mm SL (Shute 1980). **Threats:** The shoreline of Lake Waccamaw is becoming densely developed. Homes and cottages cover nearly three-fourths of the shoreline while the remaining one-fourth lies within Lake Waccamaw State Park. Coincident to this development is the potential for increase in nutrient loading in the lake (Shute 1997). Nutrient loading increases the potential for wide-scale algal blooms and corresponding eutrophication. Because *M. extensa* has an annual life cycle, it is susceptible to rapid extinction given reproductive failure for even a single year. Additionally, the recent invasion of the lake by the brook silverside (*Labidesthes sicculus*), is of concern (Moser et al. 1998). The potential for negative interactions between these two atherinids is unknown; early indications are that there is some habitat segregation (Rohde unpubl.). **Conservation actions:** The U.S. Fish and Wildlife Service recovery plan (1993) calls for protection of critical habitat, research to determine the specific habitat requirements of all life stages, and bi-annual monitoring of the population as well as water and habitat quality monitoring. Research is also being conducted on captive propagation of this species.

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