Common Name: FLAME CHUB

Scientific Name: *Hemitremia flammea* (Jordan and Gilbert)

Other Commonly Used Names: none

Previously Used Scientific Names: none

Family: Cyprinidae

Rarity Ranks: G3/S1

State Legal Status: Endangered

Federal Legal Status: none

Description: The flame chub is the only member of the genus *Hemitremia*. This unusual minnow is small (up to 78 mm or 3 in total length) and heavy-bodied, with a deep caudal peduncle and a slightly compressed body shape. The head and snout are short and blunt. The lateral line is not completely pored and the pharyngeal tooth count formula is 2-5-4-2. Coloration of juveniles and small adults is olive green above and white below, with a pale band above the lateral stripe. The dark lateral stripe extends from the snout to a small caudal spot. During the breeding season, males develop bright red coloration on the lower body below the lateral stripe, at the front base of the dorsal fin, and above and below the caudal spot. Males will usually have some red coloration during the remainder of the year as well. A non-reproductive adult is shown at the bottom of the account. Females often grow larger than males.

Similar Species: The flame chub could be confused the creek chub (*Semotilus atromaculatus*) and possibly the Tennessee dace (*Phoxinus tennessensis*). The creek chub has the same pharyngeal tooth count formula (2-5-4-2) and may have red in the dorsal fin, but is distinguished from the flame chub by having much smaller scales, a complete lateral line, and a small barbel near the corner of the mouth. The Tennessee dace may also have bright red coloration on the body and in the dorsal fin, but has much smaller scales, a more slender (i.e., strongly laterally compressed) body shape, a 5-5 pharyngeal tooth count formula, and two (versus one) lateral stripes.

Habitat: The flame chub occurs only in cold, clear waters of springs and spring-fed streams. It has been collected in a wide range of waterbody sizes, from tiny first-order springs (c.a. 1 m wide) to large streams (ca. 20 m wide) that are fed by springs. It is often associated with aquatic plants, such as pondweed (*Potamogeton*), watercress (*Nasturtium*), and smartweed (*Polygonum*).

Diet: Midge larvae with other aquatic macroinvertebrates such as snails, isopods, freshwater oligochaetes, and hemipterans; adult insects, both terrestrial and aquatic, as well as filamentous algae.

Life History: Spawning has only been reliably documented in aquaria, but a possible spawning aggregation was observed in a shallow seepage area within a pasture. Egg size distribution and male color patterns suggest a protracted spawning season lasting from January through May, with water temperatures ranging from 11-17 º C (52-63 º F). Females are probably multiple-clutch spawners. Flame chubs reach 2 years of life, with few living any older.

Survey Recommendations: Spring runs can be easily sampled using dipnetting or seining. Trapping may be effective in deeper spring pools.

Range: The range of the flame chub is limited to the Tennessee River drainage of Alabama, Georgia, and Tennessee, and one locality in the upper Coosa River system in Alabama. Georgia records are known only from about five sites in the Chickamauga Creek system in Catoosa and Whitfield counties. Check the Fishes of Georgia Webpage for a watershed-level distribution map.

Threats: Habitat alteration, including vegetation removal, in springs and spring runs is the principal threat to the flame chub. The flame chub is reported to have nearly disappeared from east Tennessee, a testament to its vulnerability. Without specific protection, the flame chub is vulnerable to extirpation in Georgia as a result of failure to preserve spring habitats.

Georgia Conservation Status: The best remaining population(s?) of the flame chub occurs in the Tiger Creek system, where the species has been documented as recently as 2008. The flame chub has not been documented outside of the Tiger Creek watershed since the 1960s.

Conservation and Management Recommendations: Protecting the habitat integrity of springs, spring runs, and spring-fed streams known to support flame chub populations is essential for conserving this species in Georgia. Springs are relatively small habitats, vulnerable to contamination from runoff of sediment and pollutants, excessive water withdrawal, and destruction. However, the localized nature of springs also makes possible their conservation through careful management. Further surveys need to be conducted to determine the range and occurrence of populations of flame chubs so that specific habitats and management plans can be developed.

Selected References:

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Date Compiled or Updated:
B. Freeman, 1999: Original account
K. Owers, Jan 2009: Added picture, updated status and ranks, added fish atlas link, converted to new format, minor edits to text.
B. Albanese, July 2009: Added similar species, Georgia conservation status, additional picture, and minor updates throughout.
Z. Abouhamdan, April 2016: updated link