



Common Name: COOSA CHUB

Scientific Name: *Macrhybopsis* sp. (undescribed species)

Other Commonly Used Names: speckled chub

Previously Used Scientific Names: *Macrhybopsis aestivalis*, *Macrhybopsis* sp. cf. *M. aestivalis* "B", NatureServe refers to this taxon as *Macrhybopsis* sp. 1.

Family: Cyprinidae

Rarity Ranks: G3G4/S2

State Legal Status: Endangered

Federal Legal Status: none

Description: The Coosa chub is a slender minnow with large eyes, a blunt, rounded snout, subterminal mouth, and a relatively long maxillary barbel at each corner of the jaw. Standard length can reach 62 mm ($2\frac{3}{8}$ inches). Along the sides, the body is silver with a pink or purplish hue and black speckles that form a weakly defined lateral stripe. The dorsum is tan and the belly is silver. The dorsal, anal, and caudal fins and the snout are often tinted red or orange. Males are not readily distinguished from females. The dorsal fin insertion is slightly posterior to or directly above the pelvic fin insertion. This species typically has 34 - 41 lateral line scales, 8 anal fin rays, and a pharyngeal tooth count formula of 1, 4 - 4, 1.

Similar Species: Coosa chubs are easily distinguished from other minnows by the presence of long maxillary barbels and lateral black speckles. The closely related silver chub (*Macrhybopsis storeriana*) has a larger adult body size, approaching 23 cm (9 inches), shorter barbels, and is not marked with black speckles. The lined chub (*Hybopsis lineapunctata*) has a dark lateral stripe and caudal spot, a clear band above the lateral stripe, lacks speckles, and has only short barbels (sometimes absent). The longnose shiner (*Notropis longirostris*) has a similar body shape and snout, but does not have distinctive markings or barbels.

Habitat: Coosa chubs are found in large streams and rivers and generally occur in swift water over gravel or cobble, often in association with riverweed (*Podostemum ceratophyllum*). At ten

shoals on the Etowah River sampled annually from 1998-2004, adults were more than twice as likely to occur in areas where microhabitat conditions included the presence of riverweed.

Diet: Although no studies have looked at the diet of the Coosa chub, other species in this genus are known to be benthic invertivores. A diet analysis of *Macrhybopsis tetranema* (peppered chub) occurring in New Mexico and Texas showed a high proportion of dipterans, along with considerable amounts of plant material, detritus, sand, and silt. Many western *Macrhybopsis* species are highly adapted for life in turbid streams, having barbels, reduced eye size, advanced olfactory senses, and cutaneous or compound taste buds that make them efficient foragers in highly turbid waters. Coosa chubs probably rely more on visual senses than the western species, since they have relatively large eyes and occur in systems with much lower turbidity.

Life History: The life history of the Coosa chub is largely unknown. Coosa chubs reach a maximum age of two or three, and are likely to spawn multiple times during the summer. Platania and Altenbach spawned *Macrhybopsis aestivalis* (speckled chub) in aquaria and determined that they are broadcast spawners, producing transparent, nonadhesive semi-buoyant eggs about 1mm in size upon expulsion. In rivers, the eggs are kept afloat by stream current. The distance traveled during the drift-stage of development may be substantial depending on abiotic factors (e.g., water temperature, channel shape, and stream flow). The presence of multiple dams along rivers has likely contributed to the imperilment of some western *Macrhybopsis* species, since still water conditions are unsuitable for larval development. Most studies of *Macrhybopsis* species have focused on western species that occur in larger, more turbid rivers, and rivers that have greater fluctuations in stream flow, including some that experience significant drying during summer months. While Coosa chub life history patterns may be similar, studies of their behavior in southeastern systems are needed.

Survey Recommendations: Coosa chubs are easily collected by kick-seine or sweep-seining methods, making it unnecessary to sample them with potentially harmful methods such as backpack electrofishing. Although they are typically captured in swift water over gravel with riverweed, they may also occur within patches of American water-willow (*Justicia americana*) growing on the margins of mid-channel islands and shorelines. Late summer or fall sampling tends to be the most effective time to collect Coosa chubs, largely because water level is lowest and most conducive to sampling.

Range: Coosa chubs are endemic to the Mobile Basin and only occur above the Fall Line in the Coosa, Tallapoosa, and Cahaba river systems within Georgia, Tennessee, and Alabama. In Georgia, Coosa chubs occur in the Ridge and Valley and Piedmont physiographic provinces in the Conasauga, Coosawattee and Etowah river systems. They are primarily known from the mainstem of the Etowah River from Lumpkin County downstream to Allatoona Reservoir, but they also occur in the downstream portions of some major tributaries to the Etowah River. The Conasauga population is nearly restricted to the mainstem from Ball Play Creek (Polk County, Tennessee) downstream to Holly Creek. In the Coosawattee system, Coosa chubs are only known from a few, small collections in the Coosawattee, Ellijay and Cartecay rivers. Check the [Fishes of Georgia Webpage](#) for a watershed-level distribution map.

Threats: Major threats to the Coosa chub come from changes associated with increased urbanization and poor agricultural practices. The Coosa chub population in the Etowah system appears stable at present. The Etowah watershed is experiencing rapid urban and suburban growth which may continue to pose a threat to Coosa chubs. In the Conasauga River, scientists at the University of Georgia have documented a dramatic decline in the abundance of Coosa chubs, especially in the lower portion of their historically known range. Coincident with the decline of Coosa chubs, they have also documented a large decrease in riverweed cover at shoals sampled since the late 1980s. Coosa chubs are more likely to occur with riverweed in shoals in the Etowah River, where riverweed cover appears to be stable. Riverweed may not be required for their persistence; however, the dramatic decline of both riverweed and Coosa chubs in the Conasauga, indicates that changes in land use are negatively affecting stream biota. The Coosa chub occurs in a portion of the Conasauga River that is largely upstream of major urban influences. It appears that runoff from agricultural lands, potentially including pesticide runoff and runoff of excess nutrients (leading to eutrophication, algal blooms and other trophic effects) may be exacerbating the decline of the Coosa chub in the Conasauga River.

Georgia Conservation Status: Warren et al. (2000) listed the Coosa chub as vulnerable. At that time, both the Conasauga and Etowah populations were fairly strong. In the Etowah River, the Coosa chub population continues to appear stable based on annual surveys over the last decade at ten Etowah River shoals. In the Conasauga River, however, there has been a rapid decline in the rate of occurrence and abundance of Coosa chubs at seven shoals sampled annually since 1996 (excluding 2004). The number of shoals occupied by Coosa chubs dropped from 54% in 1998 and 1999 to 0% (none collected) since 2003. Population status in the Coosawattee is currently unknown and more surveys should be conducted to determine if that small population is persisting. Thus, the only strong population remaining in Georgia is in the Etowah River in Cherokee, Dawson and lower Lumpkin counties.

Conservation and Management Recommendations: Conservation of Coosa chub populations depends on protecting and improving water quality in the Conasauga, Etowah, and Coosawattee Rivers. This includes controlling upland erosion and sedimentation, maintaining riparian buffers, eliminating leaking septic systems, and improving stormwater management to prevent flashy stream hydrology, warming of stream waters, and to allow for filtration of upland pollutants. Additional research is needed to determine if changes in agricultural land-use practices in the Conasauga watershed are causing the recent decline in Coosa chubs and other biota.

Selected References:

Bonner T. H. and G. R. Wilde. 2002. Effects of turbidity on prey consumption by prairie stream fishes. *Transactions of the American Fisheries Society* 131: 1203-1208.

Boschung, H. T. and R. L. Mayden. 2004. *Fishes of Alabama*. Smithsonian Books, Washington D.C.

Durham, B. W. and G. R. Wilde. 2006. Influence of stream discharge on reproductive success of a prairie stream fish assemblage. *Transactions of the American Fisheries Society* 135: 1644-1653.

Etnier, D. A. and W. C. Starnes. 1993. Fishes of Tennessee. University of Tennessee Press, Knoxville.

Georgia Department of Natural Resources. 1999. Protected Animals of Georgia. Wildlife Resources Division, Nongame Wildlife & Natural Heritage Section, Social Circle. 247 pp.

Luttrell, G. R., A. A. Echelle, W. L. Fisher, and D. J. Eisenhour. 1999. Declining status of two species of the *Macrhybopsis aestivalis* complex (Teleostei: Cyprinidae) in the Arkansas River basin and related effects of reservoirs as barriers to dispersal. *Copeia* 4: 981-989.

Paul, M. J. and J. L. Meyer. 2001. Streams in the urban landscape. *Annual Review of Ecology and Systematics* 32: 333-365.

Platania, S. P. and C. S. Altenbach. 1998. Reproductive strategies and egg types of seven Rio Grande basin cyprinids. *Copeia* 3: 559-569.

Warren, M. L., B. M. Burr, S. J. Walsh, H. L. Bart, R. C. Cashner, D. A. Etnier, B. J. Freeman, B. R. Kuhajda, R. L. Mayden, H. W. Robison, S. T. Ross, and W. C. Starnes. 2000. Diversity, distribution, and conservation status of the native freshwater fishes of the southern United States. *Fisheries* 25: 7-31.

Wilde, G. R., T. H. Bonner, and P. J. Zwank. 2001. Diets of the Arkansas River shiner and peppered chub in the Canadian River, New Mexico and Texas. *Journal of Freshwater Ecology* 16: 403-410.

Authors of Species Account: Megan Hagler

Date Compiled or Updated: July 2008

© Greg Anderson

