Common Name: RIVER REDHORSE

Scientific Name: *Moxostoma carinatum* (Cope)

Other Commonly Used Names: none

Previously Used Scientific Names: *Placopharynx carinatus*

Family: Catostomidae

Rarity Ranks: G4/S2

State Legal Status: Rare

Federal Legal Status: none

Description: The river redhorse is a large, heavy-bodied sucker that can attain total lengths approaching 750 mm (30 in). The margin of the dorsal fin is straight to slightly concave and the upper lobe of the dorsal fin is pointed. The lips have deep longitudinal grooves (i.e., plicae). There are 12-14 dorsal fin rays, a complete lateral line with 42-44 scales (usually), and 6-9 large molariform teeth on the lower half of the pharyngeal arch. Body coloration of adults is brassy olive and the belly is white. The dorsal and caudal fins, particularly the distal margins of these fins, are bright red in adult males and females. Juveniles have a silvery body and a blotch saddle pattern across the back; juveniles may have red caudal fins, but not as intensely red as in adults. Breeding males develop medium to large tubercles on the snout, cheeks, head, anal rays and caudal rays, and may develop smaller tubercles elsewhere. During spawning, males develop a prominent dark lateral stripe, bordered above by a tan stripe, another dark stripe and a tan or pale dorsum; there is often a dark mask on the head. These spawning colors are ephemeral and will quickly vanish, especially if the fish is disturbed.

Similar Species: The undescribed sicklefin redhorse (syntopic with the river redhorse only in Brasstown Creek, Towns Co.) also has brilliant red dorsal and caudal fins, but is

easily distinguished by having a sickle-shaped (vs. straight to only slightly concave) dorsal fin. Blue Ridge populations of the black redhorse (*Moxostoma duquesnei*) may have a reddish to wine colored caudal fin, but this species has a more slender body and higher lateral line scale count (44-48) than the river redhorse. The blacktail redhorse (*Moxostoma poecilurum*) has a bright red tail, but the lower caudal lobe has a black band of pigment bordered below by a thin white-stripe (the white stripe may be obscured by red pigment in live specimens). All other syntopic redhorses lack the bright red caudal fin that is characteristic of the river redhorse.

Habitat: River redhorse inhabit medium to large rivers and streams and may be found in riffles, runs, and pools. Adults are usually found in the swiftest portion of streams in deeper runs and are apparently intolerant of silty or muddy habitats. Spawning occurs in riffle and run habitat over coarse gravel.

Diet: The molariform pharyngeal teeth of the river redhorse are adapted for feeding on hard-bodied prey, such as mussels, snails, and crayfish. Large numbers of the introduced asian clam (*Corbicula*) are often consumed. Aquatic insects are also included in the diet.

Life History: Redhorse suckers are often sought and utilized for food fish. They are indicators of good water quality and may aptly be termed the "salmon" of the southeast, given their biomass and importance in fish assemblages. One of the most interesting behaviors of river redhorse is the spawning aggregation and associated behavior. Spawning occurs from April to May in southern populations. Varying numbers of males and females arrive at spawning shoals, which are often relatively shallow, with substrates composed of small gravel and sand up to large gravel and small cobbles and having moderate current velocities. Males hold and defend positions on the shoal against other males, and they may often be seen spaced approximately two body lengths or more apart. Often loose lines of these males (with their ephemeral coloration turned on) are spaced across a shoal. A single female will approach a pair of males, and after a period of alignment, all three individuals will spawn vigorously, with the female positioned between the two males. The spawning act may last from 2-8 seconds, and large amounts of gravel, some quite large, may be displaced downstream. Fertilized eggs are deposited in the gravel; hatching will occur within 3-5 days depending upon water temperatures and developing larvae will remain in the gravel for a week or longer until they are capable of swimming. The river redhorse may occupy reservoir habitats but requires riverine habitats for reproduction. Life span ranges from 12 to more than 20 years.

Survey Recommendations: Redhorses are fast-swimming and often difficult to capture. Electrofishing upstream of a stationary bag seine may be effective, but only after a stealthy approach by samplers. Boat and backpack electrofishing may also be effective, but many fish escape dip nets. In contrast to the usual difficulties, redhorses sometimes lose their wariness during the spawning period and can be readily seined or observed from the bank. For this reason, electrofishing should be avoided or carried out in a very careful manner during the spawning season.

Range: The river redhorse occurs in the upper and central Mississippi River basin (north

to Minnesota, west to Oklahoma, east to North Carolina), in scattered localities in the Great Lakes drainages, and in Gulf slope rivers from the Pearl to Escambia drainages (Louisiana to Florida). In Georgia, the river redhorse is known historically from Indian middens on the Etowah and Coosawattee rivers in the upper Coosa River system. Georgia populations are known from the Coosa River and its major tributaries (Conasauga, Coosawattee and Oostanaula), and from Brasstown Creek in the Hiawassee River system. They have been reported from the Toccoa River system, but these observations have not been confirmed. They occur in the Tallapoosa River system in Alabama and could potentially occur in the Georgia portion of this system. Check the Fishes of Georgia Webpage for a watershed-level distribution map.

Threats: The river redhorse occurs only in isolated locations in Georgia and is relatively rare. Impoundments have eliminated and fragmented appropriate riverine habitat, which has blocked movements and resulted in population isolation. The construction of additional reservoirs is a significant threat throughout the range of the species. Water quality degradation, including siltation of riffle habitats necessary for spawning and feeding has impacted many large rivers in the Coosa River system and is an ongoing threat. Flow alteration downstream from Allatoona and Carters dams may reduce habitat suitability for spawning and recruitment in riffles. Increasing water withdrawal in the upper Coosa River system may eliminate suitable riffle habitat during low flow periods. The Brasstown Creek population is threatened by the rapid development in the area around Young Harris, Georgia. Brasstown Creek is the only known stream in Georgia that provides spawning habitat for five species of redhorse suckers.

Georgia Conservation Status: No studies have specifically assessed the status of the river redhorse in Georgia. This species is known from recent collections in the Conasauga River (most records), Coosawattee River, Oostanaula River, and Brasstown Creek, but most collections are comprised of few individuals.

Conservation and Management Recommendations: Conserving populations of the river redhorse in Georgia depends on maintaining and improving habitat quality throughout its range. It is essential to eliminate sediment runoff from land-disturbing activities (such as roadway and housing construction) and inputs of contaminants (such as fertilizers and pesticides). There are many technical assistance and cost-sharing programs that can help farmers implement best management practices to reduce nutrient, soil, and pesticide runoff. Forested buffers should be maintained and restored along the banks of the rivers and tributary streams. For example, the Brasstown Valley Resort has re-established a 100-foot buffer of native riparian vegetation along the portion of Brasstown Creek that runs through their property. Maintaining natural streamflow patterns by preventing excessive water withdrawal or unnaturally flashy runoff (such as from urban stormwater runoff) is also an essential element of protecting riverine habitat quality. The river redhorse and other fishes that depend on riffle habitats are especially vulnerable to streamflow depletion because habitats with swift currents are diminished at low flows.

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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
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