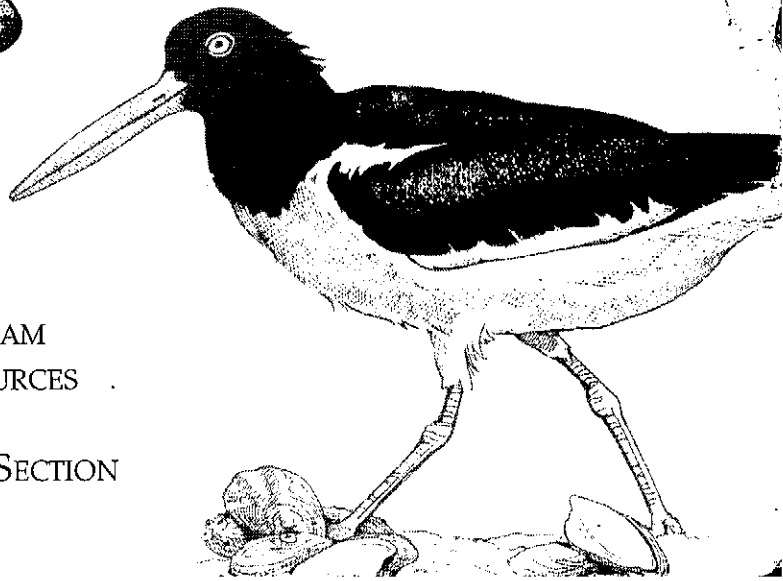
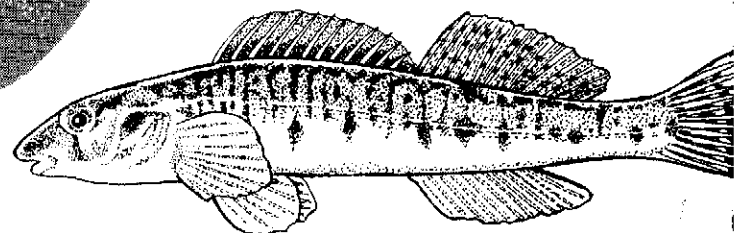
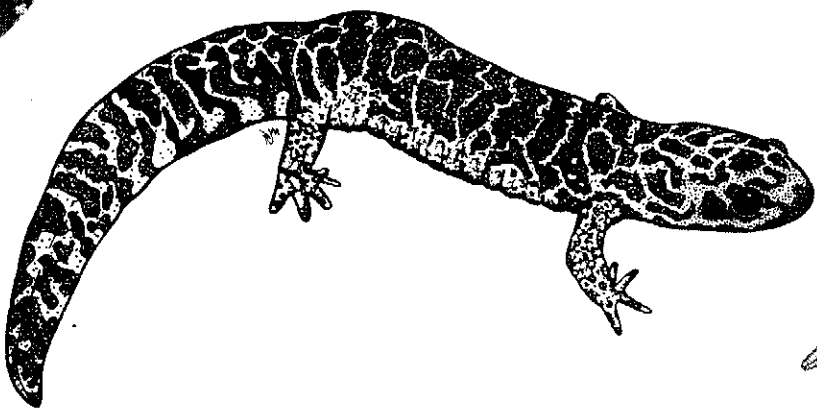


# Protected Animals of Georgia



NONGAME-ENDANGERED WILDLIFE PROGRAM  
GEORGIA DEPARTMENT OF NATURAL RESOURCES  
WILDLIFE RESOURCES DIVISION  
NONGAME WILDLIFE-NATURAL HERITAGE SECTION

# ROBUST REDHORSE

*Moxostoma robustum*

**State Status:** Endangered  
**Federal Status:** Not Listed

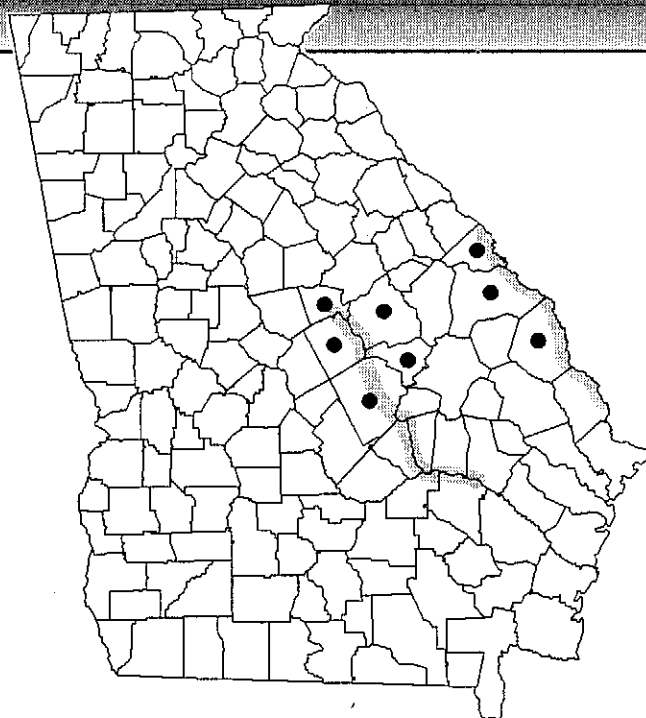
**Other Commonly Used Name(s):** None

**Description:** The robust redhorse is a large, heavy-bodied sucker that attains total lengths greater than 70 cm (28 in) and weights up to 8 kg (17.6 lbs). Like the river redhorse, which is a related species, the robust redhorse has large molar-like pharyngeal teeth which are a specialization for crushing hard-bodied prey such as native mussels. The robust redhorse is bronze on the back and sides, and adults are faintly striped along lower sides. Juveniles will have intense red in the caudal fin, which becomes less so in adults. Adult males develop large prominent tubercles on the snout, head, anal, and caudal fins during the spawning season.

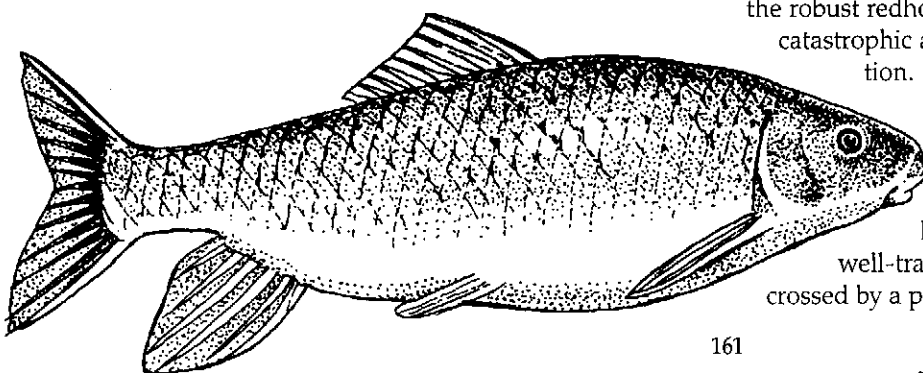
**Range and Habitat:** The robust redhorse historically occurred in southeastern Atlantic slope river drainages, from the Altamaha in Georgia northward to the Pee Dee of North and South Carolina. Today the largest known population occurs in a 55-mile stretch of the Oconee River from Milledgeville south to above Dublin, Georgia. A recently discovered population of presumably small size still persists in the Augusta Shoals of the Savannah River. Only one individual has been collected from the Pee Dee River since 1980, and the status of this population is unknown. The robust redhorse has been re-introduced into the Broad River system, a tributary of the Savannah River, and the Ogeechee River, and monitoring studies are being conducted to follow the success of these efforts.

The robust redhorse is known only from habitats in mainstream rivers and has been collected in riffles, runs, and pools. Adults in the Oconee River have usually been found in association with (tree) snags, often in deeper water near shore. Spawning occurs in coarse gravel habitats.

**Diet:** Asian clams (non-native) and a variety of aquatic insects.



*Shading indicates range  
Dots indicate counties with known occurrences*



**Life History:** Spawning occurs from late April through early June in the Oconee River population when water temperatures approach 18-20 °C (64-68 °F). Spawning has been observed in shallow water over coarse gravel substrates and also occurs in deeper water over gravel. The spawning act almost always involves a female flanked on either side by two males. Fertilized eggs are buried in the gravel as a result of the vigorous spawning act. A muddy plume often appears downstream from the three spawning fish due to the magnitude of disturbance of the substrate. Young robust redhorse remain in the gravel after hatching, until they have absorbed the yolk-sac and can swim. Robust redhorse live at least 25 years, and research being conducted on the Oconee River population may reveal an even longer life span. Diet studies on the robust redhorse are limited to Oconee River fish and hatchery reared individuals recently released into the Broad River.

**Threats/Comments:** The robust redhorse primarily occurs in a 91-km (55-mi) reach of the Oconee River. Species like the robust redhorse that have limited ranges are vulnerable to catastrophic accidents as well as general habitat degradation. Current studies on the Oconee River population suggest that recruitment of new individuals is very low, further increasing the overall vulnerability of this species. The reach of the Oconee River where the robust redhorse lives is crossed by a major railroad and several well-traveled highways; the stretch would also be crossed by a proposed major cross-state highway.

Transportation accidents that result in spills of hazardous chemicals could result in a major fish kill that would effectively eliminate the robust redhorse in the Oconee River.

Much more likely threats to the robust redhorse are increasing water pollution and habitat degradation that result from poor land-use practices in forestry, agriculture, and industry. This region of the Oconee River basin is heavily mined for kaolin clay, and chronic industrial spills have occurred in tributaries to this reach of the Oconee River in the recent past. Species like the robust redhorse which depend upon clean gravel substrates for spawning and early development of young are especially vulnerable to siltation and any activities that contribute excessive amounts of sediment to the river are major threats.

The robust redhorse and other species in the Oconee river system are also threatened by the introduction of the flathead catfish, a large species native to most rivers draining into the Gulf of Mexico. The flathead catfish is not native to streams draining into the Atlantic Ocean, but it has unfortunately been widely introduced into many of them. Many of the streams into which the flathead catfish has been introduced have lost populations of suckers, sunfishes, and other catfishes. The flathead catfish has only recently appeared in the upper Oconee River, where the robust redhorse also occurs, but clearly represents yet an additional major threat.

#### **Conservation and Management Recommendations:**

The robust redhorse is one of the most threatened species of fishes in Georgia and North America. Conserving populations of the robust redhorse in Georgia depends upon unraveling the mysteries of its life history in the Oconee River and developing management strategies which will help ensure the long-term viability of this population. Long-term research is essential to gather important information needs for future management decisions. Improving water quality and preventing any future habitat degradation in the Oconee River are two essentials needed to help protect this population.

A recovery goal established by the Robust Redhorse Conservation Committee is to establish populations of robust redhorse in at least three river systems within the historic range. This will require the development of consistent effective artificial propagation techniques to produce young as well as the identification of suitable re-introduction sites. Robust redhorse have been released into the Broad River and the Ogeechee River so as to begin establishing new populations. In order to establish a population that is old enough to reproduce, the release of large numbers of young individuals and the monitoring of their fate are necessary. State and local governments as well as private industry must be convinced of the need and the benefits of re-introducing the robust redhorse into additional river systems if long-term recovery is to succeed.

#### **Selected References:**

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Page, L. M. and B. M. Burr. 1991. *A field guide to freshwater fishes of North America north of Mexico. Houghton Mifflin, Boston. 432pp.*

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