

## Scientific Value of Keeping Native Fishes in Aquaria

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### Native fish aquariums in homes as a hobby & captive breeding and classrooms for science & environmental education.

Fishes are kept in aquaria for a variety of reasons. Most aquarists keep fishes because they enjoy observing the tremendous diversity of body shapes, colors, and behaviors. Others keep fishes for the explicit purpose of learning something new about them. Keeping only a few species of fish can quickly teach an aquarist and his/her family some valuable lessons about the natural world. Our native fishes are quite diverse—about 800 species are found in the freshwaters of North America—and they show a great variety of morphological designs and behaviors.

Keeping fishes in aquaria has led to many original observations. It is one of the best methods for making scientific discoveries about fishes, which can be extremely difficult to study in streams and lakes. In fact, some fishes are nearly impossible to study in detail in the bodies of water in which they normally are found. For example, fishes that live in turbid rivers cannot be seen by human observers who are either above or in the water. Fishes that live in clear water can be observed from a stream bank or by someone with a snorkel, but often they are extremely uncooperative with a person trying to study them. In aquaria, conditions can be controlled to simulate natural conditions and may lead to observations that otherwise would not be made.

Although sometimes difficult to observe even in aquaria, spawning behaviors can be particularly fascinating and relevant to species protection. Some fishes spawn by scattering eggs, some lay eggs in secluded places and guard them, others give birth to living young. One group of native fishes on which our knowledge of spawning behaviors has grown greatly from aquarium observations are darters. With about 180 species, darters are one of the two most diverse groups of North American fishes. (The other group, the minnows, contains about 250 species.) Aquarium observations on darters have revealed a variety of reproductive behaviors. Some

bury their eggs in the substrate, some attach them to plants or the sides of rocks, and some sequester them under rocks and guard them. We know now the breeding habits of 103 species of darters. Only 25 of these species have been observed in nature; the other 78 have been observed only in aquaria.

Females of some of the egg-guarding species of darters prefer to lay eggs with males that already are guarding eggs in their nests rather than spawn with males without eggs. They shun males at least to some degree that have not yet demonstrated that they can successfully guard eggs. Males of these species compete for these choosy females and in some species, have evolved morphological traits that can make them more attractive to females. They have evolved structures on their fins that look very much like eggs. These egg-mimics can attract females to nest sites even though no eggs are present. Although not always this spectacular, other amazing behaviors are shown by North American fishes, and many of these behaviors are known only because they have been observed in aquarium-held fishes.

In the United States, 70 species of fish are listed as federally threatened or endangered because of habitat loss and other forms of environmental degradation. This depressingly large number of endangered fishes exists because people do not care or know enough to demand that land be developed in a way that protects habitat for our native plants and animals. The more that we know about our native fishes, the more we will appreciate them for their beauty and their habits, and the more we will want to protect their environments.

Scientists make excellent use of aquarium observations. In fact, we would know far less about our native fishes if we did not keep them in aquaria. Aquarists enjoy keeping fishes, but our native fishes are the more significant beneficiaries of this activity.