Logperches: Masters of the Stone

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Logperches represent a unique subgroup of darters, easily distinguished from virtually all other darters by their tiger-like coloration, and distinctive head and snout shapes. All logperches have a pale-yellow base color, with narrow bars on the side and back. The markings vary considerably: some species have many bars, some few, and some have small to large dark blotches on the side. The patterns are distinctive, and are among the primary characters that aid ichthyologists in identifying species.

Color patterns are important in fishes and perform multiple roles. The pattern in logperches serves as camouflage, allowing the darters to blend with background colors and shapes, making them less obvious to predators or prey. Besides deception, color patterns serve many functions in animals. They enable species recognition (i.e., allowing species to identify each other), sex recognition, relative age (juvenile versus adult), and convey moods. Ccolor intensity can also dramatically change between day and night. The term "sexual dichromatism" (literally "two colors") is applied to fishes whose males are differently pigmented than females. The coloration differences can become very pronounced during spawning season, when males compete for females. However, in most logperch species, the degree of dichromatism is relatively low.

No, logperches do not routinely rest on logs. Like the common names of many animals, the origin of the name is obscure, but the distinctive name is fitting for the most distinctive group of darters. All logperches have a unique foraging behavior: they flip stones on the stream bottom with their snouts to expose any prey hidden underneath. Logperches eat aquatic insects, young crayfishes, and aquatic roundworms. Scientists do not know at what age stone-flipping behavior begins, but it at least occurs by the juvenile stage. Perhaps young-of-the-year logperch push small rocks or probe sand and gravel with their snouts. Adult logperches that are actively foraging may flip 7 to 10 stones per minute. Watch the video clip link at this web address:

`cars.er.usgs.gov/Southeastern_Aquatic_Fauna/Freshwater_Fishes/Logperch/Logperch.mpg`

It shows the Mobile logperch (*Percina kathae*, Fig. 1) actively flipping stones, some quite large relative to its body size. The logperch is able to do this because it uses its head as a prying lever, and pushes up and forward with its large pectoral fins. Large adult logperch develop calluses on their snouts, which gives them a distinctive "pig-snout" appearance (note the snout of the blotchside logperch). In the video clip, you can see the Mobile logperch actively investigate the underside of flipped stones, searching for prey.

Logperches spawn by burying their eggs in sand or gravel substrates, or if the substrate is too coarse, the female may push her vent to the substrate and eject her eggs into the spaces between stones. The male lies beside her and releases milt (fish sperm) to fertilize the eggs. The probable reason for hiding eggs is that many other fish species will eat the eggs, as will crayfishes and aquatic insects. Spawning competition among males can be quite aggressive. Male blotchside logperch (*P. burtoni*, Fig. 2) have been observed ramming and biting each other while competing for a female. Roanoke logperch (*P. rex*, Fig. 3) spawn in deep runs and chutes over gravel bottoms in April. Frequently in nature, males become brilliantly colored during their breeding seasons. Unlike many darters, especially those in the genus *Etheostoma*, male logperches do not develop bright, gaudy colors. Instead, the subdued male logperch bears a prominent orange band along the first dorsal fin margin. Likewise, the dark pigments become more contrasting, changing from brown or olive to jet

Fig. 1.
Mobile logerch, *Percina kathae*. Photo: USGS–Noel Burkhead.

Fig.2.
Blotchside logerch, *Percina burtoni*. Photo: USGS–Noel Burkhead.

Fig.3.
Roanoke logerch, *Percina rex*. Photo: USGS–Noel Burkhead.

black. All three photographs shown here are of spawning male logperches.

The darter family Percidae has the second largest number of species of freshwater fishes in North America. (Only the minnow family Cyprinidae has more species.) Presently, there are about 165 species of darters known, all of which live in North America. Logperches belong to the genus *Percina* (subgenus *Percina*), and are among the largest of darters in size, approaching 150 mm (six inches) in total length. They are widely distributed in the eastern and central United States, ranging from the East coast to the mid-West, and from Canada to Texas. You can usually find logperches in small creeks to large rivers. If, while wading in a stream, you can see the bottom clearly in three feet of water, the visibility will likely be good enough to observe fishes by snorkeling. Like most darters, logperches are not schooling fishes. Rather, they occur singly or in small groups, and they tend to be very mobile. I have watched adult blotchside logperch swim 40-50 meters up and down the same section of a stream while actively foraging. Look for logperches at the beginning or ends of long pools, especially where the water speed increases and the depth decreases. In general, small fishes do not move far from where they were spawned. In a study of the Roanoke logperch, one male (marked with dye) was observed on an angler's stringer about 1.6 kilometers (1 mile) downstream from where it was initially captured and marked.

Two logperches are listed as endangered species: the aforementioned Roanoke logperch and the Conasauga logperch (*P. jenkinsi*). Both species have limited ranges, and there is evidence that their ranges have declined due to alteration and loss of habitat. Of the two species, the Conasauga logperch is the rarest. It is only known from the upper portion of the Conasauga River in northern Georgia and Tennessee. In fact, most of the threatened and endangered fishes in the eastern United States are various species of darters.

Why are so many darters in trouble? We do not understand the reasons for decline among many of the darter species. However, research shows there is a critical link between being adapted to live on stream bottoms (benthic life style), being small in size (six inches or less in length), and having a small range (total geographic area occupied). It has been suggested that excessive erosion of soils, which deposit on stream bottoms as fine sediments, may be one of the major causes of endangerment to darters. Fine sediments, such as sands, silts, and clays, can fill in the spaces between stones, depriving darters of the insect prey they eat. Sediment also muddies the water, especially after rains. If this occurs frequently during darter spawning seasons (spring and early summer for most species), the muddy water could make it difficult for darters to engage in elaborate spawning behaviors, and reduce the numbers of eggs they spawn. This is one of the areas of research that scientists at the Florida Integrated Science Center are investigating. Other causes of habitat loss of stream dwelling fishes are impoundment (blocking of rivers by dams to create lakes), and many forms of pollution.

Anyone wanting to know more about logperches should investigate *Handbook of Darters* by Dr. Lawrence M. Page (1983, TFH Publications, Neptune, N.J.) or *The American Darters* by Robert A. Kuehne and Roger W. Barbour (1983, University Press of Kentucky, Lexington).

Mark your calendars!

2005 NANFA Convention

Where: Little Rock, Arkansas
When: June 9-12, 2005 (arrival on 9th, field trips on 10th & 12th, talks on 11th).
Details coming soon!