NOTES ON SPAWNING OF THE JOHNNY DARTER
by Ray Katula, San Jose, California

Just about anybody remotely interested in North American
fish (including fishermen and children) in the midwest and
parts of the east has seen the common Johnny Darter
(Etheostoma nigrum). The author has caught specimens in a
wide variety of habitats, from small, clear farm brooks to the
wide, silty Mississippi. They can be found over various
substrates, but they prefer sand in slow-moving water. In
aquaria, provided with different substrates, they always
occupy the sandy sections. They have no trouble adapting to
gravel or rock, and in the upper Mississippi are commonly
caught over mud. Juveniles are more common over open sandy
and gravel areas, and adults are more common under some type
of cover, mainly vegetation or rocks.

In 1984, I travelled to my former home in Wisconsin and
caught, among other fish, a trio of young-of-the-year Johnny
Darters. The Mississippi that summer was very high, so I
caught them with a dipnet on a flooded gravel road alongside
the river. They spent the next two weeks in a wading pool
before they flew back with me. When I returned home, I put
them in a 20-gallon tank duplicating a large river backwater--
lots of aquatic vegetation, black gravel, and pieces of
petrified wood forming caves. Filtration consisted of only an
undergravel filter with no additional aeration. The one-inch-
long Johnnies were fed a diet of live and frozen brine shrimp,
live tubifex worms, and occasionally daphnia and frozen
bloodworms. Johnny Darters in my experience have never
consumed dried foods, and have to be coaxed into taking frozen
shrimp. The darters grew quickly on their live-food diet, and
by winter had pretty much reached an adult size of 3½".

In early spring, what appeared to be a male mysteriously
died, but there seemed to be a male-female pair left. First
signs of pre-spawning behavior began in March, when the male
assumed an overall blackness and his two dorsal fins
enlarged. The usually rather drab Johnny became a spectacular
fish, and maintained this coloration until his death six to
seven months later. The male also began intense protection of
a rock cave which he defended against tankmates such as Desert
Pupfish, Iowa Darters, and Central Mudminnows.

Towards the end of April, the previously swollen female
suddenly appeared noticeably thinner. Closer observation
revealed eggs on the ceiling of the cave defended by the
male. A rough count indicated about 45 eggs. Since all my
tanks were in use, no attempt was made to save the eggs or
young. About five days later, it was obvious that the whole
batch had fungused, so I removed the rock, cleaned it off,

and placed it back in its original position. Two weeks later, the pair spawned once again, but laid fewer eggs (30). This time not all the eggs fungused, and most survived until hatching. At about 74°F (19°C), the eggs hatched in 10 days, but the Johnnies' tankmates quickly devoured the hatchlings. After one more week, the Johnnies again spawned, with an even smaller batch of eggs, about 20. Most of these hatched also. The male continued to maintain his breeding dress, but no eggs were spawned for 1½ months, when spawning resumed exactly as above.

During the second rest period, the darters were moved into a 55-gallon aquarium which they shared with the Pupfish, Northern Redbelly Dace, Threespine Sticklebacks, and some Riffle Sculpins. Perhaps because the more aggressive sculpins forced the Johnnies from available caves, the Johnny Darters spawned on the gravel substrate, as their slightly indented eggs were discovered there. I observed this happening twice. Shortly thereafter, both darters perished, far short of their expected longevity of three-years-plus.

In retrospect, these darters spawned relatively easily, probably due to mainly live food. The pair was never subjected to an overwintering period, and water flow and aeration were minimal. Water temperature varied little, from 68° to 75°F. Water changes were made once a week, but were occasionally missed, with no visible harmful effects.

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