THE DIAMOND KILLIFISH (Adinia xenica)

by Bob McDonnell, Granger, Indiana

A few months ago, in a pet shop, I spotted my first Diamond Killifish, Adinia xenica, a species native to the U.S. Gulf Coast from Florida to Texas. They were surely "diamonds in the rough," however, far from revealing their eventual glory. Obviously youngsters, barely 3/4"(2cm) SL, their colors, patterns, and body shapes had not yet developed.

Once home, I tried to research the species' requirements more thoroughly. Very little has been written about these little beauties; a closer examination of the original source material did disclose their preference for brackish water and a vegetable diet. I provided both in spades. A ten-gallon brackish set-up was already in operation housing various tropicals. It was heated to 80 degrees (F, 27 degrees C) and lit with a fluorescent strip for six to eight hours daily (as well as by indirect room lighting for another ten). Perhaps due to the two or three teaspoons of Instant Ocean marine mix per gallon of water, a rich growth of algae covered the gravel substrate and several rock caves which, along with some driftwood and plastic plants, decorated the aquarium. Two green nylon-yarn mops (one top-to-bottom, the other on the gravel) were added for the new killies. Generous portions of chopped, boiled lettuce were added to the tank's varied feeding regimen (flake food, frozen brine shrimp, chopped earthworms and table shrimp, frozen babyfood mixture, and freeze-dried plankton).

After three weeks, they'd reached 1-1/2" (4cm), and at three months, they'd more-or-less stabilized at almost 2" (5cm). I put them in their own 5-1/2-gallon tank, with three gallons of their original tank's water and two of freshly mixed (brackish) tapwater warmed to their accustomed 80 degrees (F). A substrate of small-grain red flint gravel was used to cover a Eureka tubular undergravel filter. Topping-up and changing of water was gauged to leave the surface on a level with the outflow elbows of the filter's airlifts. This provided good aeration and something of a current. Again, since I was uncertain of the species' spawning habits, I provided mops at all levels (top-to-bottom, anchored to the gravel, and floating at the surface). An incandescent (25-watt) hood provided a secure cover as well as enough light (and heat) to generate some natural algae growth. The "day/night" cycle remained about the same as in the other tank.

Food items offered also remained the same, with the only addition a generous daily portion of baby redworms. Great care was exercised in matching my feedings to their appetites. I cut back on the amount of items that tend to foul the tank if uneaten.

Spawning

As to the actual spawning technique of Adinia xenica, pick a style--any style--and they approximate it at some point during courtship! The periods of secretive shyness, the impatient forcefulness of the egg-laden female, the side-by-side, heads-up shimmying dance, the flitting dance/chase sequences, and the multiple, single-egg embraces--all are parts of their intriguing behavior. Perhaps the most noticeable feature of the spawning period shows as the male begins pursuit. His eyes darken, as does a band of pigment on each cheek, giving him a raccoon-like "mask." Heightened intensity of his lateral banding and intermittent flaring of all unpaired fins complete his suitor's garb. A handsome fish all of the time, he transforms so dramatically and suddenly that he is a truly startling apparition. But wait, there's more.

Approaching a female from above and behind, the male "herds" her (by deftly blocking her swerves) toward mid-water plants, mops, etc. As her mouth retains its customary top-feeding conformation, his shows itself to be extremely protrusible. The upper lip and the skin covering his snout are literally stretched to the point of near-transparency. His fleshy lower lip is projected radically downward as well. As this exercise is repeated, accompanied by an energetic bobbing of his body, the female is thus nuzzled about the head and lips--all of this while they are maneuvering through the tank decor. At the risk of sounding silly, I'm going to say that these oral hijinks remind me of two lovers trying to kiss from the upper and lower berths of a runaway Amtrak train!

When they have apparently finished this activity, rather than remove hoods, shift anchor rocks, and generally terrify the breeder fish (only to find no eggs anyway), I simply wait until I see the first fry, then carefully remove the parents. This method entails only a frequent inspection schedule and a prearranged haven (in this case, the original tank) for the pair. As the spawners will have been conditioned on a rich diet, fry predation may not be a factor, but it is a fish-eat-fish world out there. Why take the chance? My theory is that when the first sighting occurs, the hatchling(s) can be assumed to have resulted from mating(s) of from 15 to 22 days earlier. One may then hope for the presence of further dozens or hundreds of fertilized ova awaiting staggered hatch dates. Provided the earliest fry don't grow too quickly in size (and appetite), this arrangement works quite well, as long as careful feeding and water-change schedules are maintained.

Fry

As my breeding pair had been in the breeding set-up for nearly two months, I was both relieved and delighted to see that

first 1/8" (30mm) sliver lurking in the floating mop (had I missed any earlier ones?). I'd expected deeper-bodied fry to emerge, since the adults are laterally compressed, and, with finnage, almost as deep as they are long. Their somewhat angular silhouette is mildly diamond-shaped, hence the common name. One or two more of the little Adinia appeared daily, indicating a light but steady spawning pattern for the species (or at least the pair involved).

Feeding was no problem whatever. Wardley's "Small Fry" liquid food was used, but Tetramin "Formula E" powder was suitable for even the smallest of the litter. At 14 days (1/4", 60cm), the fry could handle finger-crushed flake food and minced frozen brine shrimp. At this stage, a marked thickening of the caudal peduncle is the first sign of the body shape to come, and the young begin exploration of all levels of their rearing tank. The vertical barring so prominent on the adults emerged at 23 days. Feeding was frequent (four or five times daily) and rather heavy--a situation controlled by 20-percent water changes.

As occupants of different sectors of the water column, the fry engaged in very little purposeful interaction. As only 25 days separated the first hatching from the last, sibling predation was not a serious factor. As voracious as are even the smallest A. xenica, though, it seems quite likely that the current batch would give future generations problems if left in the same tank.

Reference

Axelrod, Dr. Herbert F. Exotic Tropical Fishes (Neptune, N.J.: TFH Publications, Inc.).

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