

F a t h e a d F u n d a m e n t a l s



by

R o b e r t B o c k

Pity the humble fathead minnow. Reared in farm ponds throughout the United States, valued only as bait, its destiny to be impaled on a hook.

A new orange color variety of the fish has been developed and marketed in the pet trade as “rosy red” minnows. But mainstream aquarists regard the fathead with as much respect as do fishermen. Rosy reds are sold for about a dollar a dozen, as food for oscars and other big, carnivorous tropicals.

Although underappreciated, the fathead, *Pimephales promelas*, is one of our more remarkable native fishes. Along with other members of its genus, the fathead is one of the few members of the minnow family that prepares a nesting site and defends its eggs until they hatch. From carp to redbelly dace, other members of the minnow family typically swim away after spawning, leaving their eggs unattended.

The fathead is also extremely hardy, not at all fussy about what it eats, tolerant to a wide range of water conditions, and reaches a maximum size of only about 2-1/2 inches. These characteristics, and the ease with which it may be acquired, make it an excellent fish for beginners.

Wild fathead minnows usually spawn from April to August, once water temperatures reach 58°F, and daylength reaches about 16 hours. The spawning behavior is truly fascinating. Typically, the male, which is slightly larger than the female, chooses a spawning site in a hollow log, under a rock, or even under a lily pad. Using the breeding tubercles that erupt on his snout, the male will scrape the site clean, and pull any remaining debris away with his mouth or by sweeping it away with his tail.

The minnow gets its common name from the fact that the breeding male develops a dark, spongy, wrinkled

pad from its head to its dorsal fin. This spongy pad secretes mucous, which the fish smears on the spawning site. It's believed that the mucous aids egg survival by protecting against fungus and parasites. The mucus may also serve to warn rival males away from the spawning site.

The spawning males also lose the ability to secrete the “fright chemicals” (*shreckstoff*) that members of the minnow family produce when they are injured. If the male kept producing these chemicals, the irritation produced by his rubbing the spongy pad on his back against the spawning site would frighten away all prospective mates. (The fright chemicals secreted by injured minnows may also serve to attract predators—some fishermen report that breeding male fatheads are inferior to females as baitfish.)

Females may be chased into the spawning site by the males, or attracted by a display in which the males erect their fins for two to three seconds. A male may also display by rapidly swimming upward to the female, rolling on his side, and then swimming back to the nest. During spawning, the male will press the female between himself and the spawning site. The eggs are adhesive and stick to the surface of the site. The male will aerate the eggs and keep them clean by fanning them with his fins.

After spawning, the female is chased away, and the male will defend the site from other fish and even turtles by either butting them with his snout tubercles, or swiping at them with his tail. A nest may contain eggs at several stages of development, as males will spawn with a number of females in sequence. The females will release up to 10,000 eggs in a season, from nine to 1,100 eggs at a time. Females will also spawn with several different males during the course of a season.

Although the fathead has been ignored by aquarists in its own country, the British have been quick to recognize the merits of this remarkable little fish. In an article in the February 1997 issue of the British magazine, *Practical Fishkeeping*, Neil Bosson and Steve Windsor report how they first noticed a pair spawning in their aquarium in September, 1995. Phone calls to various importers failed to shed any light on the fish's mysterious behavior. Perhaps the fish weren't even minnows, Bosson reasoned, as he understood minnows to be egg scatterers. A call to coldwater expert Dr. Peter Burgess, however, resulted in the identification of the fish as "Fat-headed Golden minnows."

The account in *Practical Fishkeeping* provides a blueprint for those who wish to breed the species in an aquarium. Bosson keeps a group of five or six in a tank of about 20 gallons, using undergravel filtration and an internal sponge filter or a power filter. He recommends 20 to 25 percent water changes every two weeks. The pH may range from 6.0 to 8.5, but Bosson suspects neutral (7.0) is probably best. Adults are fed flake food, or food tablets stuck to the side of the aquarium.

According to the article, the eggs may be left with the male (all other fish should be removed) until hatching, or removed and incubated in a four liter container. Aquarium spawning takes place at about 22-26°C (about 72-78°F). The fry are too small for brine shrimp at first, and so require infusoria and liquifry. After two weeks, the fry will reach a large enough size to accept newly hatched brine shrimp, and in about three or four months will be large enough for flake food.

NANFA member Carie Nixon reported that her husband and longtime collecting partner, NANFA member Phil Nixon, once did research on fish that homeowners could stock in their garden ponds to control mosquito larva. One spring, Phil stocked a series of outdoor 50 gallon tubs with fatheads, goldfish, koi, gambusia, and other fish easily obtained by homeowners. With apparently no other help from Phil, the minnows bred profusely, and apparently didn't consume that many of the young. By the end of the summer, the young numbered in the hundreds. Carie said that where she works, fatheads are often reared as feeders for bass. Typically, a few fatheads are put into a 55 gallon tank, along with overturned flowerpots or half round tiles. The adults are fed flake food, and perhaps daphnia, and the fry are given newly hatched brine shrimp. Because the tanks are kept in greenhouses,

they accumulate lots of algae, which the fish may be eating as well.

According to the Peterson *Field Guide to Freshwater Fishes*, by NANFA member Larry Page and Brooks Burr, the fathead can be found over much of North America, from Central to Eastern Canada, down through Arizona and New Mexico, Texas, Northern México, and much of the Eastern U.S. The fish is most abundant in the great plains states, generally not found in mountainous regions, or on the Atlantic slope, south of the Delaware River.

Because of its hardiness and its widespread use as a bait fish, the fathead has also been widely introduced outside its range, a practice that can often be detrimental to existing populations of native species. The fathead prefers slow headwater pools, as well as lakes and ponds and tolerates muddy, low oxygen conditions that other fish can't. Fatheads can be collected by seining, dipnetting, or with baited traps.

Currently, I'm keeping five rosy reds in a 65 gallon tank, along with an assortment of about 25 other minnows that I brought home from various collecting trips. The fatheads reside calmly with the other minnows, and I haven't observed any squabbles so far. I frequently feed the fatheads and other minnows soaked Hikari Cichlid Gold baby pellets. Soaking the pellets prevents the accidental deaths that occur when dry foods, eaten in too large a quantity, take on water and expand inside fish's digestive systems. When I don't have time to soak the pellets, I throw in several Hikari sinking bottom feeder pellets. These large, disk-shaped pellets are too big for the fish to swallow at first, but the fish can later pick off small pieces as the pellets soak through. I've been busy lately, and so haven't kept up with water changes as I should have, but the fatheads and other minnows don't seem to care. The fatheads also don't seem to mind the hard, 7.6 pH water that comes out of my tap.

So far, my rosy reds haven't spawned, but two are beginning to thicken around the head and back. One of these has taken an interest in a hollow cavity inside a water logged stump I brought back from the Gunpowder River just outside Baltimore a few years ago, spending a lot of time inside it, and chasing the other fish away.

The fatheads are among the few residents of my fish room that I've actually purchased, not collected. At about 10 cents a piece, these interesting (although overlooked) little fish are well worth the expense, and about the best bargain in fishkeeping today.

A fathead minnow, *Pimephales promelas*, photographed by Konrad Schmidt, with the opening words of Robert Bock's "Fathead Fundamentals," pp. 13-14.

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