

THE BLACK-BANDED SUNFISH

ENNEACANTHUS CHAETODON

The Black-banded Sunfish was one of the first native fishes to be kept by American aquarists. Shimmering silver and black, gliding majestically through the aquascape, they present an exciting challenge to the keeper of indigenous fishes. To encourage fellow aquarists to acquire and breed this miniature beauty we will attempt to review past literature and relate it to our own observations.

The Black-banded Sunfish belongs to the order of "perch-shaped fishes" or Perciformes, sub-order Percoidei, and the family Centrarchidae. Named Pomotis chaetodon by Baird in 1854, it was later renamed Mesogonistius chaetodon and is currently known as Enneacanthus chaetodon. We affectionately call them "chaets" ("keets") to simplify things.

Stoye (1971) notes that E. chaetodon (chaets) were first collected in the swamps of Southern New Jersey and introduced into Germany in 1897, although they were not kept by American aquarists until 1910. In addition to New Jersey the range includes Maryland, Delaware, Virginia, North Carolina, and Florida.

Informative reports by Quinn (1967a,b) and Coombs (1973) recorded water acidity at 6.4 pH and below in some areas. Quinn observes that "waving fronds of sphagnum moss" and decaying plant material are abundant in the lowlands of the pine barrens; these factors account, for the most part, for the acidic water quality. Although we have acclimated chaets to 8.2 pH water, we found that they stayed in better health and bred when maintained at 7.0 pH or below. The environment of the pine barrens is a typical example of the Black-banded's habitat. The waters are either standing or slow-moving over a sandy bottom with surface plants in abundance. In the wild, water temperatures range from about 5°C (40°F) in winter to 27°C (80°F) in summer. In captivity place them in an unheated tank and if possible give them a cool (10-20°C.) rest period in winter (Frey, 1958). The Temperature in our chaet tanks averages about 21°C (70°F), except for a few hot weeks in the summer, which causes little problem. We have observed that a consistently high temperature will shorten the life of chaets and is not necessary for successful spawns.

Although juveniles have several bold black, transverse bars, these bars slowly become faded and broken with age. Most striking is the bar that starts in front on the dorsal spines and continues down the shoulder through the pelvic fins. Another bold bar extends down across the eye. Both the anterior edge of the pelvics and the tallest spine of the dorsal are colored salmon to bright orange (depending on the condition of the fish) and is very attractive in spawning females. Basically oval in shape, they are deep-bodied and laterally compressed. While sexually mature at 3.5 cm, they grow to 6 cm in aquaria and to about 9 cm in the wild.

Sexes are generally difficult to distinguish, but there are some

traits that make identification possible. First, the male is approximately one-fifth smaller in over-all size than the female. Secondly, the females have a greater girth, that is, they are more well rounded than males. At spawning time, males become olive to dark brown or black, later fading to a straw or washed-out color after the eggs are laid. Frey (1961) says that a "shiny spot on the opercle temporarily becomes more evident on the male", but our own observations show that this is an unreliable identification mark. Lastly females are more brilliantly colored during spawning, (Sterba, 1962).

Black-bandeds are fond of live adult brine shrimp and live tubifex worms. They will eat frozen brine shrimp and minced, cooked shrimp, but will refuse dry foods.

These voracious eaters can be helped on the road to spawning by more frequent feedings of live foods and a small rise in water temperature. The four spawnings we observed occurred at temperatures ranging from 20 to 21°C in the winter of 1974. Frey (1961) says that chaets begin to make preparations for spawning at 18°C (64°F). Avoid bright lights, as chaets are shy and will hide if the aquarium lights are too bright. Length of the day light does not seem to be important. A well planted tank is important to make the fish feel more "at home". We planted Vallisnaria.

Although a small aquarium may be adequate to maintain chaets, a larger one (at least 60 liters for 6 adults) is necessary to breed them (Stoye 1971 and Frey 1961). We placed eight specimens in a 120 liter aquarium where they later spawned.

At one year of age our chaets started spawning, which is in agreement with Frey's observations (1961). There is no mistaking the behavior of courtship and spawning with E. chaetodon.

Before courtship begins, a lone male claims a territory by fanning a slight depression in the sand, usually at the base of a plant or rock. He may be seen cleaning off the rock or mouthing some gravel. He then chooses a female by "cutting" her out of the group and drives her to the spawning site. A male in our aquarium drove the group of seven into the far third of the tank and immediately defended his territory against any fish that entered his two-thirds of the aquarium.

Nearing the depression with his partner, the male appears to nip at the vent area of the female. Spawning takes place with the pair side by side, quivering while moving in a circular fashion over an area of 5 to 10 square cm. Actual egg laying is usually preceded by several mock spawnings. As is generally reported for the family Centrarchidae, the eggs stick to the gravel with no attempt by the male to cover them up. The color and size of the eggs varied from one spawning to another, being amber to copper and about 1 mm in size. The number of eggs per spawning varied from 30 to 100 with an estimated 80% hatch rate.

At 21°C. the eggs hatch in about 72 hours and adhere to the sand,

rocks, and plants, eventually moving to just below the water-line and always in a head up position. fry are free swimming in two more days and can be fed infusoria and/or newly hatched brine shrimp. Several light feedings a day will insure rapid growth.

At three weeks chaetodon fry become cannibalistic. At this age you may observe one fry biting another or you may first notice the fungus infection which is a result of being bitten. There are two immediate solutions to the problem of cannibalism as follows: 1) limit hatches to a small number (Rosen, 1973b) or 2) provide plenty of aquarium space for the fry (our experiments indicate about 3 fry for every 4 liters (one gallon).

We fed live baby brine shrimp for the first three weeks and gradually weaned the fry to frozen baby brine shrimp. After 8 weeks they will begin to eat small or chopped tubifex worms and at 12 weeks they will begin to eat live brine shrimp at 3 to 8 mm in size. In one instance we saw a dead chaet with an adult brine shrimp stuck half way out its mouth; we assumed the shrimp was just too large to be swallowed and blocked the water flow across its gills, thus cutting off its oxygen supply. This was an isolated incident however. By three months of age most young chaets measured from 1 to 2 cm. As they grow larger they should be maintained by themselves or in communities of other shy, slow-moving, and less aggressive fish of the same size.

A school of young chaetodon gliding in unison across a well planted tank is a magnificent sight and is reward enough for the time spent caring for these beauties.

Note: Hopefully, we will be able to present more information at a later date, when we have had more experience with E. chaetodon. The authors welcome all comments, questions, and criticisms regarding this article. Please write to Liana M. Rivera and Bill N. Scoggins, 1144 Everett Ave., Oakland, Calif. 94602.

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