Breed Tomato Clownfish

How do you breed tomato clownfish?

By Scott W. Michael

Q. I was wondering how to breed tomato clownfish. Is there a best way to go about it? What kind of sea anemone is best? I have heard it's impossible to breed tomato clownfish. Is that true?
Ryan Shapiro

A. A number of anemonefish species regularly spawn in the home aquarium, and in fact, most are now being bred in captivity, with captive-raised individuals readily available to hobbyists. This includes the tomato anemonefish (Amphiprion frenatus). With the availability of larval foods and the products needed to keep these foods alive, it is now easier to raise anemonefish.

I will give you a quick anemonefish breeding primer, but you will want to do more research on this topic to ensure you succeed. For in-depth information, see Hoff (1996) and Wilkens (1998). Another great source of information on anemonefish husbandry is the Breeder's Registry at breeders-registry.gen.ca.us.

The easiest way to acquire a pair of tomato anemonefish is to purchase two juveniles, and wait until they mature and change sex. Anemonefish are hermaphrodites, so it is relatively easy to acquire a heterosexual pair. The most dominant fish will usually transform into a female. Individuals lower in the pecking order will remain nonbreeders. Unless you have an extra-large aquarium, you will likely have to remove these other individuals, because the pair is likely to relentlessly pick on them.

With the right environment and nourishment, it is not unusual for a pair to begin spawning within months of reaching sexual maturity. Most pairs will spawn at least once a month, but under optimal conditions, spawning frequency may double. In most cases, anemonefish will spawn 11 months of the year in the aquarium.

One of the most important prerequisites for anemonefish spawning is that the fish "feel" secure. In the wild, an anemone acts as a living, stinging security blanket for these fish. You may want to use a sea anemone in your aquarium (of course, you must have the proper lighting and water movement for an anemone). The best species for A. frenatus is the colonial form of the bulb or bubbletip anemone (Entacmaea quadricolor).

That said, it is usually more practical to set up an alternative sanctuary. One way to do this is to create a small pile of rocks with an adequate hiding place for the adults, and lean a ceramic tile against this (the tile will provide a removable nesting substrate). Many commercial anemonefish breeders use flowerpots (either ceramic or glazed) or pieces of PVC pipe as anemone surrogates (add two, so when one is removed for cleaning, there is another one present for the fish to hide in).

Anemonefish have been reported to spawn over a temperature range of 71 to 88 degrees Fahrenheit, but according to Hoff (1996), egg and larvae quality are best when spawning occurs at between 79 to 83 degrees. They have been reported to spawn at salinities of 28 to 35 ppt (parts per thousand) and a pH of 7.8 to 8.3.

A good diet is important for the parents, and it will also affect the health of the eggs and larvae, as well as female fertility. You should feed the adult fish three times a day, using one or more of the nutritionally complete foods available. Some breeders will also give an occasional fourth feeding that will consist of vitamin-enriched live brine shrimp, "yellow" fish roe or live zooplankton.

Once the eggs are laid, there are two ways to deal with them. They can be transferred to another tank before they hatch, or they can be left with the parents, and the larvae can be moved to a different aquarium after hatching. Most hobbyists do the latter. This method will result in higher larval mortality, due to adult predation, predation by other tankmates, death due to mechanical filters or injury when the larvae are transferred.

If you leave the eggs in the tank, remove the larvae as soon as possible after they hatch. The larvae are attracted to light and thus can be easily removed from the aquarium after they hatch by placing a bright light source (e.g., a flashlight) at one corner of the tank. Once the larvae concentrate in that area, carefully scoop them out with a plastic bowl or siphon them out with large-diameter plastic tubing. Never use a net, which can injure the delicate larvae. Also, remember that

when a pair of fish has eggs, they will be aggressive, often relentlessly attacking tankmates.

Many commercial breeders remove the nest of eggs (which are usually attached to a flowerpot or a piece of ceramic tile), and they will place it in a different aquarium. As long as the water parameters in the hatching tank are similar to the breeding aquarium, the eggs should survive the transfer (some authors recommend filling the hatch/larval rearing tank with water from the breeding aquarium). Simply lift the substrate and attached eggs out of the water, and quickly carry it to the larval tank. In order to replicate the parents' fanning behavior, an air stone should be positioned near the nest so that a flow of large air bubbles circulates water over the eggs.

Once the eggs hatch, the hard work begins. As with the adults, it is vital to provide the larvae with a healthy, stable environment. This means frequent water changes for excellent water quality.

Feeding the larvae is the biggest challenge most fish breeders face - this is also where the Hoff (1996) and Wilkens (1998) texts will come in handy. Live rotifers that have been fed phytoplankton ("green water") to increase their nutrient value are used from days one to 10. It is important to provide an optimal density of rotifers, so the young fish get enough to eat, but not so many rotifers that the water becomes polluted. After the fish are about 6 to 8 days old, begin feeding them live baby brine shrimp and pulverized dry foods. Rotifer feeding can end about 10 to 12 days after hatching, while you can stop feeding newly hatched brine shrimp at about 15 days (if you wish, you can continue to feed Artemia). Fifteen days after hatching, the young fish can be fed exclusively on pulverized dry foods.

From days seven to 11, the larvae of most anemonefish undergo metamorphosis, and will drop out of the water column and begin spending their time near the aquarium bottom. Mortality peaks will occur two days after the hatch and during early metamorphosis (days seven to eight). After this, survival should be fairly high. As for the percentage of hatch, larvae survival also varies among anemonefish species. Good luck and happy fish-watching!

References

Hoff, F.H. 1996. Conditioning, spawning and rearing of fish with emphasis on marine clownfishes. Aquaculture Consultants Inc. Dade City, FL, 212 Pp.
Wilkins, J.D. 1998. Clownfishes. Microcosm, Shelburne, VT, 240 Pp.