

Fading Color in Fish

Why do some fish fade in color when maintained in captivity?

By Scott W. Michael

Q. I have a 70-gallon aquarium with some live rock, soft corals, a clam and several species of fish, including a mandarin goby, coral beauty, a powder blue tang, a purple firefish and a tricolor anthias. I have had the tricolor anthias for about eight months and have noticed its color isn't nearly as vibrant as it was when I purchased it. The anthias is hardy and spends a lot of time in the open, but it is much less striking than it once was. Why did its color fade? Is there anything I can do to bring back its bright colors?

The powder blue is also developing what I have been told is lateral line disease. Is there anything I can do about this? Any help would be greatly appreciated.

A. This is a very good question, Marcie, and one that many of us anthias lovers have frequently pondered. In my mind, the subfamily Anthinnae is comprised of some of the most spectacular fishes that swim the world's coral reefs. But, unfortunately, the chromatic characteristics of many of the anthias often fade in captivity, leaving the aquarist with a fish that is only a shadow of its former brilliance. For example, I have seen female lyretail anthias (*Pseudanthias squamipinnis*) in a public aquarium that were a dull tan rather than bright orange!

So, why do these fish fade? There are two possible explanations for this undesirable phenomenon. The first, and most likely, reason is that they are missing nutrients in their captive diets that are a common ingredient in the fish food they ingest on the reef. Larger zooplanktors, especially copepods, represent a large part of anthias diets. The crustaceans are rich in carotenoid pigments, which help these fish retain the yellow, orange and red pigments that are a significant part of their chromatic attire.

To help maintain the brilliant colors of these fish it is important to give them a varied diet that includes plenty of crustaceans, like brine shrimp (especially live), frozen or freeze-dried krill, frozen mysid shrimp and chopped table shrimp. Other good staple fish foods include the frozen preparations on the market that are a mix of saltwater organisms (e.g., scallop, fish, crustaceans) supplemented with pigments, vitamins and essential amino acids. Although these are a good dietary staple, the freezing process can strip away some of their nutritional value, especially if "freezer burn" occurs or if the fish food is thawed and refrozen.

Another way to help ensure that your fish get proper nutrition is to soak fish food in an additive like Selco. This substance contains omega-three fatty acids and a stabilized form of vitamin C, vital nutrients that are often missing in aquarium fish diets. It works particularly well if you're feeding freeze-dried fish foods, like krill, which soak it up.

Salmon and herring flesh, which are rich in carotenoids (hence the orange color of salmon flesh), may also help promote color fidelity in anthias. There is also an exciting new product on the market called Vibro-Gro that may also help reduce color loss. It's a flake food with color enhancers, including carotenoids. Although some anthias may refuse to eat flake food, most individuals can be coaxed over time.

The second, but less likely, cause of color loss may be bright light. Many tropical fish change coloration in response to their natural surroundings. Shrimp gobies observed on black sand bottoms are more colorful than the same species living on lighter substrate. And gobies from turbid mangrove areas are usually more brightly attired than ones from clear reef habitats.

It may be that the color of some anthias, like the red-belted (tricolor) *Pseudanthias rubrizonatus*, become lighter when placed in a fish aquarium with higher light levels than those found in their natural habitat. This anthias is most often observed at depths of 60 feet or more. The individual pictured in Aquarium Fish International was at about 90 feet, near a coastal reef, and the water was greenish, with visibility rarely exceeding 45 feet. Individuals from these relatively low-light conditions may fade when moved to a brightly illuminated aquarium.

References

Delbeek, J. C. 1991. Fishes for the marine invertebrate aquarium. *Aquarium Fish Intl.* 3:18-31.

Although this theory may explain why the color of the red-belted anthias fades, it would not hold true for those shallow-water anthias that are also known to lose their color. This idea is from Delbeek (1991), who suggested that this may be the reason that some Gramma species fade in captivity.

I would try giving your anthias a diet comprised of some of the tropical fish foods listed above and see what happens. Although it may never achieve its former brilliance, I have observed individuals where the colors did intensify in time.

As for lateral line erosion, this illness most often inflicts surgeonfishes and angelfishes. However, I have also seen groupers, comets, damselfishes and butterflyfishes suffering from this malady. In my experience, one of the most susceptible tropical fish is the purple tang (*Zebrasoma xanthurum*).

A number of factors are thought to cause the disease, including improper nutrition, carbon use and stray electrical fields in the aquarium. Only improper nutrition — more specifically, a lack of vitamin C and vitamin A — has been substantiated scientifically. I have seen yellow tangs, fed only flake food, with lateral line and fin erosion, and I've seen improvement in surgeonfishes when greens soaked in a vitamin supplement were added to their diets.

I have seen situations in which the progression of lateral line erosion stopped when carbon was no longer used. On the other hand, I have used grounding cables in a retail setting and in home aquariums, but still had tropical fish develop lateral line disease. I have never seen a case improve due to the installation of a grounding cable either.

I would recommend feeding your powder blue a diet rich in vitamins C and A. This could include some of the frozen preparations with added Spirulina algae and sheets of dried algae known as nori. Ocean Nutrition is now selling red, green and brown algae, in dried form, ready to feed to your fish. Simply attach it to the side of your aquarium with a lettuce clip (a plastic clip with a suction cup or a hook that goes over the side of the aquarium). Broccoli is also a great source of vitamins A and C that many coral reef herbivores will eat in the aquarium.