Aquarium Marine Algae

Identification and treatment of aquarium marine algae.

By Neale Monks, Ph.D.

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Various blennies are sold as algae-eaters, but they will need supplementary feeding. Photo by Tony TerceiraMarine algae in the home aqaurium are generally beneficial, providing fish food and shelter for other marine organisms, as well as frequently being attractive enough in their own right to be worth encouraging. But outbreaks of undesirable varieties of marine algae can signal problems with water quality and light intensity.

Types of Algae

Diatoms
Diatoms have siliceous cell walls, and can form slimy, golden-brown coatings on aquarium glass and other solid objects. Readily consumed by snails, diatoms rarely cause problems but can turn the water cloudy by “blooming” in some situations. Being tolerant of poor (or varying) water conditions and low lighting levels, diatom blooms are particularly common in newly established or badly maintained aquaria.

Red Algae
Red algae form distinctive mat- or bush-like structures and are usually some shade of pink in color. Many types are calcareous and may be referred to as coralline algae. Red algae need good water quality, bright light, and in the case of coralline algae, sufficiently high levels of calcium in the water. Because red algae grow slowly, they are rarely problematic.

Green Algae
Like red algae, green algae come in coralline and noncoralline varieties. In terms of requirements, green algae are very similar to red algae, though some of the large noncoralline varieties can grow so quickly that they may overgrow sessile invertebrates if not pruned back regularly. Green algae are a major food source for many fish and invertebrates, so biological control is usually easy.

Blue-Green Algae (Cyanobacteria)
These photosynthetic bacteria are inconspicuous in well-maintained aquaria, but they can become a nuisance in aquariums with poor water quality or insufficient water movement. Blue-green algae form dense slime with a distinctive musty odor when removed from the water. They are most commonly blue-green, but they are also red or black. Biological control is difficult since few animals eat blue-green algae; so, prevention is the key to successful management.

Controlling Algae: Nutrients
Broadly speaking, algae are more tolerant of eutrophic conditions than sessile invertebrates, such as corals. High levels of nitrate and phosphate can prompt algae to grow rapidly, particularly blue-green algae. So, part of any algae-control strategy is ensuring that water quality is good.

Because nitrate and phosphate come into the aquarium via food, overfeeding is one of the easiest ways to start an outbreak of undesirable algae. Protein skimmers can help by removing organic matter before it is broken down into nitrate and phosphate. Equally important is the rate at which nitrate and phosphate are diluted via water changes. Municipal tap water can often be remarkably nutrient-rich, so doing additional water changes using tap water rather than de-ionized water may do little to reverse an algae problem.

Controlling Algae: Lighting
The large, decorative green and red algae favored by aquarists need the same strong lighting that corals and anemones require. But the smaller single-celled algae that form slime and blooms can often get by with much less light. Diatoms in particular thrive in poorly lit aquariums, which is one reason that they are so common in aquariums set up by inexperienced aquarists. So, one way to minimize problems with such algae is to ensure the aquarium is properly lit.

Marine Algae EatersCommon NameScientific NameUsefulness NotesTangsAcanthuridaeGood; most species are constant nibblers on green algae Can be territorial; will need supplementary feeding Dwarf AngelfishPomacanthidae; Centropyge spp.Good; feed extensively on green algae Territorial; difficult to maintain; will need supplementary feeding BlenniesBlennidae; most often Salarius fasciatusExcellent; consumes red and green algae, though rarely harming the large decorative varieties Will need supplementary feeding CrabsVarious, including Mithrax spp.Variable; red and green algae are consumed, along with other food items Great opportunists, crabs will eat anything they can catch, including fish and shrimps Hermit CrabsVarious, including ClibanariusVariable; some hermits are reliable algae eaters that work well in reef aquariums, others less so As with crabs, the larger hermits especially can be damaging and/or dangerous to other livestock Turbo SnailsVarious, including Turbo and AstraeaExcellent; good algae eaters and harmless to invertebrates Probably the best all-around algae eaters for the reef aquarium Sea HaresAplysiaExcellent; feed almost entirely on algae Difficult to maintain once the algae have gone; best avoided Sea UrchinsVarious, including Diadema spp.Variable; will eat red and green algae, including coralline algae, but some species are more omnivorous and may damage corals and polyps Notoriously prone to dislodging insecure rock formations; many species have a nasty sting, so handle with care

Controlling Algae: Biological Control

Various fish and invertebrates are promoted as algae-eaters, but these work with only varying degrees of success. Some types can become problems in their own right, damaging sessile invertebrates (as is the case with sea urchins) or even catching shrimps and small fish, if given the chance (as with Mithrax spp. emerald crabs).

Before adding any supposed algae-eater to your reef aquarium, thoroughly research its needs and potential shortcomings. By default, turbo snails (typically Turbo and Astraea spp.) are the best general-purpose algae eaters and the least likely to cause harm. The euryhaline blue-legged hermit crab (Clibanarius tricolor) is another reliable algae-eater.

Various tangs, angelfish, blennies and others have been sold as algae-eaters, but these will need supplementary feeding, as well, and in terms of social behavior may not complement existing livestock.

Diatom Blooms

Diatom blooms are common in new aquariums passing through the phase in which the nitrogen cycle is becoming established and nutrient concentrations in the water vary wildly. Several blooms may come and go, and it can take many weeks, even months, for the process to finish and conditions to properly settle down.

UV sterilizers, regular water changes, and careful control of water quality will minimize the problem.

UV Sterilizers

These work by killing waterborne algae, primarily those that cause diatom and green algae blooms. They have little impact on algae that encrust solid objects, such as blue-green algae. UV sterilizers need to be carefully cleaned and maintained to operate effectively. The UV tube will need to be replaced periodically (often yearly), and the jacket through which the water passes may need scrubbing every few weeks to ensure that the UV light can shine clearly through the water.

Algicides and Manual Removal

Because algicides are poisonous to a wide variety of beneficial as well as nuisance organisms, the benefits of using these chemicals rarely outweighs the risks. At best, these fix the visible symptoms rather than the underlying problems with water quality or light intensity.

Manual removal using scrapers and sponges is the best way to keep the glass walls of the aquarium clean. Patches of algae on the sand and rocks can be siphoned away during water changes, though care should be taken not to disturb soft-bodied or sessile invertebrates.

Neale Monks studied zoology at the University of Aberdeen in the north of Scotland and obtained his Ph.D. at the Natural History Museum in London. He's also been a marine biologist, a high school teacher, a university professor and a museum's exhibit designer. But his real love has always been tropical fish. His particular interest in brackish water fish culminated in his editing of the first encyclopaedic book on the topic, 'Brackish-Water Fishes', published by TFH in 2007. Neale regularly contributes to all the major English-language fishkeeping magazines, focusing especially on community aquariums, biotopes, healthcare and water chemistry issues. After living in London and then for a while in Lincoln, Nebraska, Neale now lives in a quaint cottage in a pretty market town in Hertfordshire, England, where he divides his time between teaching and writing.