

Reef-Safe Fish

How safe are “reef-safe” fish in your fish tank?

By Scott W. Michael

Any fish that feeds on algae, including the mimic surgeonfish (*Acanthurus pyroferus*), may nip at stony corals. Photo by Scott Michael

The pencilstreaked rabbitfish (*Siganus doliatus*) is often used to control algae in the reef tank, but may sometimes bother corals and mushroom anemones. Photo by Scott Michael
The more I've tried keeping different fish in reef aquariums, the more it confirms my belief that finding species that are compatible with corals is an inexact process at best. When selecting fish for a reef tank, it's important to be aware of the variability within families, genera and even individuals of the same species. An individual fish may even behave differently in different reef setups, depending on what types of corals it is kept with or how often its keeper feeds it.

This variability is the bane of reefkeepers everywhere. You select a fish you are told will work with your corals, only to have it start picking on your favorite specimen. Can you ever be sure how a particular species is going to behave in your reef tank?

There are certainly fish species that have a good track record with corals. The most trustworthy fish in a reef aquarium are those that do not have jaws and teeth used for grazing on sessile invertebrates. These fish include mainly carnivores that feed on tiny surface- and bottom-dwelling crustaceans and fish. Examples of suitable species include fairy wrasses (*Paracheilinus*), lined wrasses (*Pseudocheilinus*) and dwarf lionfish (*Dendrochirus*).

A large number of detritivores, herbivores and omnivores can be kept with corals. These fish can actually be useful in the reef tank, where they can help deal with pestilent algae species that can overgrow sessile invertebrates — but these potentially good reef aquarium residents also occasionally go bad (i.e., they may start harming corals) in captivity. It is these fish which have a somewhat dubious reputation when it comes to their inclusion in a coral aquarium that are the subjects of this article.

Why the Good Go Bad

Although it may not always be obvious why a good fish suddenly starts behaving badly, in some cases these changes in feeding behavior can be explained. Obviously, if you know what causes a fish to start picking at corals, you may be able to reduce the likelihood that it will happen. Let's look at some factors that may trigger bad behavior.

Hunger

Fish that are not fed often enough are more likely to start picking at corals. For example, I have seen several instances in which emaciated tangs have started to pick at large-polyped stony (LPS) corals. Herbivores are less of a threat if the aquarium contains plant material for them to graze on. If these fish have mowed down most of the algae in your tank, add a piece of frozen or steamed romaine lettuce or a sheet of freeze-dried algae (e.g., nori) every day. By adding a lettuce leaf and leaving the stem in your aquarium, you may be able to divert the attention of your grazing and browsing fish away from your invertebrates. Not only will this help keep your corals safer, but it also provides a nutritional treat for your herbivores.

Coral Types

The types of corals present may also determine if a good fish goes bad. Detritivores, herbivores and omnivores are more likely to pick at LPS corals than small-polyped stony (SPS) species. The large, fleshy polyps of LPS corals make them a more palatable target than the more diminutive polyps of SPS corals. The latter can also retract completely into their calcareous skeletons, which means it takes a more specialized carnivore with the appropriate mouthparts to overcome these calcareous defenses.

The palatability of soft corals varies widely. There are species containing distasteful or even toxic compounds that dissuade most reef fish from feeding on them, whereas others lack these defenses and thus are more readily consumed by various fish. Some species that seem to be particularly prone to being eaten by fish include Xeniids and the star polyps (Order Stolonifera). The species that are avoided by generalized predators include some (but not all) members of the

following genera: Lemnalia, Sinularia, Sarcophyton, Cladiella, Paralemnalia and Efflatounaria.

Social Facilitation

Some fish go bad because of peer pressure. You may have a fish that has never bothered a coral but suddenly begins picking at prize cnidarians after a new fish is added to the tank. This may occur if the older resident learns from the newcomer that a particular invertebrate is tasty. The prior resident will begin mimicking the new fish and start picking at a coral neighbor it has ignored up until then.

This phenomenon in which one fish learns from a tankmate (or a neighbor on the reef) is known as social facilitation. Although social facilitation can be problematic, it can also be beneficial. For example, sometimes finicky fish can be trained to eat introduced food by a more voracious tankmate.

Some Fish That May Go Bad

Below, you will find a survey of some species that are often kept by reefkeepers but have a somewhat questionable reputation. While these species are safe with their cnidarian neighbors in some cases, if conditions are right (or wrong), these fish have been known to feed on their coral neighbors. Even though many of these species are not reported to feed on corals in the scientific literature, they may develop undesirable feeding preferences in captivity. In some cases, they do not actually consume the entire polyp, but their nipping behavior causes the polyp(s) to contract and can result in mechanical damage to coral tissue. These injuries make the coral more susceptible to bacterial infection.

Pygmy angelfish (Centropyge)

If you look at food habit data, it appears that Centropyge would be desirable introductions to a reef aquarium community. Feeding studies indicate that these fish consume mostly detritus, diatoms and other microalgae. The problem is that coral slime is a form of detritus, and pygmy angelfish can learn bad habits as a result of their grazing on this coral byproduct. The problem occurs most often with LPS corals. If your LPS corals are always closed and the tank contains a Centropyge, there's a good chance that the angel is bothering the coral. They have also been known to nip at the oral disc of anemones, feeding on their feces, or even eat dying anemones or corals. They may also nip zoanthids, tridacnid clam mantles and the feeding appendages of feather duster and Christmas tree worms.

When it comes to this troublesome behavior, there seem to be trends within pygmy angelfish species, but there's no consistency. For example, the cherubfish (*C. argi*) can typically be kept with most stony and soft corals without inflicting damage. However, an occasional specimen will begin picking at the tissue of LPS corals, soft coral polyps and even mushroom anemones. In contrast, the lemonpeel angelfish (*C. flavissimus*) is a well-known coral picker. No matter what Centropyge you are thinking of adding, remember that introducing any angelfish to your reef aquarium always entails some degree of risk.

Swallowtail angelfish (Genicanthus)

I have often recommended members of this genus as the best angels for a reef aquarium because they pose less of a threat to stony and soft corals. In the wild, these fish feed primarily on algae and zooplankton, but also ingest the occasional sponge, polychaete worm or bryozoan. On rare occasions, captive individuals may feed on soft coral polyps and even LPS corals. If you have an individual or a group of these fish and they begin picking at your corals, try feeding them more often, or remove them or these corals from the tank. It is best to feed Genicanthus at least twice, and preferably more often, per day. Feed a varied diet that includes finely shaved fresh or frozen shrimp, frozen brine shrimp, mysid shrimp and frozen preparations that contain Spirulina algae.

Surgeonfish (Acanthurus)

Surgeonfish are typically welcome additions to a reef aquarium because they can help control some undesirable algae. An occasional surgeonfish may also develop a "taste" for LPS corals. This behavior usually begins when the fish begin feeding on the feces (which includes zooxanthellae) that these corals exude from their mouths. Sometimes, the fish will be satisfied to ingest the fecal material, but in other cases they will begin nipping at the mouth and the polyp itself. This can irritate the coral and cause it to retract its polyp. Another acanthurid drawback is that they are susceptible to parasitic infection, which will be very difficult to medicate in a tank full of invertebrates. A heavily infested fish may have to be removed so that successful treatment can be administered.

Palette or Pacific blue tang (Paracanthurus hepatus)

Although it is one of the least likely surgeonfish to bother sessile invertebrates, even this species has been known to nip and feed on LPS corals on rare occasions. In the wild, they do not eat coral tissue but feed on algae, as well as zooplankton. In a reef tank, nipping at corals may occur, especially if the fish are not receiving enough to eat. Offer food to *P. hepatus* several times a day. Try finely chopped fresh or frozen seafood, mysid shrimp and vitamin-enriched brine shrimp. These fish will also eat frozen preparations for herbivores.

Another drawback with these tangs is that they are very prone to skin parasites, which can be particularly difficult to deal with in a reef system. This fish is also susceptible to lateral line and fin erosion.

Tangs (Zebrasoma)

The Zebrasoma are frequently used to control algae in a reef tank. They graze on both microalgae and macroalgae, with their "preference" for one or the other varying among species and geographical locations. Although tangs serve a useful function in this way, some individuals occasionally nip at the tissue of stony and/or soft corals. LPS corals are the most frequent targets. They less frequently bother star polyps, gorgonians, zoanthids and Tridacna clams (although they have been known to nip mantles). They cause more problems in tanks in which algae growth is sparse and little food is introduced. By offering romaine lettuce, spinach or sheets of dried algae, you may be able to reduce the likelihood of this behavior. Tangs will sometimes consume small fan worms and damage larger sabellid dusters by rasping through their sedimentary tubes.

Rabbitfish (Family Siganidae)

The siganids are another group of herbivores that can go bad in a reef aquarium. These fish are often kept to control algae, specifically macroalgae (e.g., Caulerpa), that can take over a tank, as well as some of the pestilent filamentous forms (e.g., Enteromorpha and Derbesia). Although most rabbitfish are true vegetarians, there are a few species that are reported to feed on sessile invertebrates, such as sponges and colonial tunicates. In the aquarium, most siganids do not bother either soft or stony corals. They will, however, feed on the zooxanthellae expelled by LPS corals, which can lead to the occasional individual developing the bad habit of picking at the coral's polyp. A rare rabbitfish has even been known to pick at and eat mushroom anemones (order Corallimorpharia). Therefore, if you have corals in your tank that are beginning to close up or behave as if irritated, make sure you spend some time closely watching your rabbitfish. If they begin nipping at corals, you will probably have to remove these fish, although you can also try feeding them more.

As far as other invertebrates are concerned, I have had rabbitfish chew through the sedimentary tubes of feather duster worms and nip at the feeding tentacles of Christmas tree worms. Larger individuals may eat small, delicate shrimps; however, they rarely bother ornamental crustaceans.

Although you can never predict 100 percent of the time if and when these species may become a problem in a reef aquarium, you may be able to curb this undesirable behavior by making sure they have plenty to eat. Also be careful about the types of corals you keep with them. Until next time, happy fish-watching!