

## A Place for Predators

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*By Scott W. Michael*

### Reef Friendly Predators

When selecting fish for our reef tanks, most of us look for peaceful species that will not harm invertebrates, or we choose species that will help in aquarium maintenance (e.g., algae eaters). But what about some of the more predatory fish species that do not include corals in their diets? Is there a place for these species in the reef aquarium? Yes!

Some of these fish-eating (piscivorous) and crustacean-eating predators make wonderful additions to an aquarium full of corals. Of course, you have to avoid small fish that would fit in a predator's mouth, as well as ornamental shrimps, but if you are willing to forego these animals, there is an array of attractive and interesting predators that will do great in a reef tank. We will survey some of these families and discuss the pros and cons of keeping them in an invertebrate aquarium.

### Moray Eels (Family Muraenidae)

The reef tank is an ideal moray habitat because these aquariums tend to have a lot of cracks and crevices within the rockwork for a moray to refuge in. They range in size from 8-inch dwarfs to 13-foot giants, so species selection is critical. A downside is that morays may knock corals off the reef structure, which could damage these invertebrates. This is particularly true for morays that get rambunctious at feeding time.

Some morays will also dig under rockwork, causing instability and falling rocks (make sure rockwork is placed on the tank bottom before adding a sand bed). One advantage to placing an eel in your reef tank is that when it moves behind and among live rock, it will stir up some of the detritus that collects in these hidden areas.

One of the major causes of moray death is escape. These fish regularly leap from open tanks or through small holes in the aquarium top. In smaller tanks, larger individuals may even knock off glass tops that are not weighed down. Morays will also swim into overflow boxes, so modify them accordingly.

### Snake Eels (Family Ophichthidae)

Most snake eels are not well suited for reef aquariums because they tend to do best in tanks devoid of structure. They may swim about the tank and be stung by corals and sea anemones. However, if you devote a significant portion of a large tank (180 gallons or more) to an open sand bottom, you can keep snake eels healthy in a reef aquarium. They require a thick layer of fine substrate to bury under (with a minimum depth of 4 inches). These fish often move about the tank when they are not buried. Some will swim incessantly along the front and up the sides of the tank, so it's important to provide these fish with a lot of room. They are very effective at escaping from the aquarium, so make sure you have a suitable tank top.

When disturbed, some will frantically swim about the tank and attempt to leap out. So, it's best to work in the tank as little as possible, and when you have to do tank maintenance, move very slowly and stay clear of the eel.

Live fiddler crabs or ghost shrimp are usually needed to get these eels to feed (some are difficult to feed, like the banded snake eel, *Myrichthys colubrinus*). These eels will also eat polychaete worms, crustaceans, sea urchins and fish.

### Lizardfish (Family Synodontidae)

Lizardfish make an unusual addition to the predator reef aquarium. They are a threat to any fish tankmate that can fit in their mouths, and their mouths are large. They will also eat ornamental shrimp but are not a threat to most other invertebrates. They may perch on corals, causing polyps to close, but move often enough that they rarely cause permanent damage. The size of the aquarium required is species-dependent because these fish vary considerably in maximum length.

Because these fish spend most of their time resting on the bottom, aquarium surface area is more important than volume. Some species will require open sandy areas on which to lay and possibly bury; a sand substrate at least 3 inches deep is important for burying species. They are capable jumpers and are likely to leap out of an open aquarium. Only one lizardfish should be kept per tank, unless you can acquire a male-female pair. Larger individuals will eat smaller species and genus members.

#### Frogfish (Family Antennariidae)

Frogfish can make interesting reef aquarium inhabitants. Smaller species are especially well suited for tiny nano-reef setups. These small tanks are ideal because frogfish do best when housed on their own. They do not contribute greatly to the bioload of an aquarium because they do not have to be fed frequently and ingest all the food you give them. Also, their feces are large and solid (thus easily recognized and removed). In a large reef tank with live rock and coral, the more secretive species can disappear. Examples include the freckled frogfish (*Antennarius coccineus*) and the tuberculate frogfish (*Antennatus tuberosus*.) For a larger reef tank, select one of the more active, less secretive species, such as wartskin frogfish (*Antennarius maculatus*), painted frogfish (*Antennarius pictus*) or striated frogfish (*Antennarius striatus*). Frogfish sometimes perch on hard or soft corals, and cause polyps to stay retracted. This can be problematic if the frogfish remains on the same coral for days. You can encourage a frogfish to move off a preferred perch by carefully pushing it off with a piece of rigid tubing. Do not keep frogfish with invertebrates that have a potent sting (e.g., elegance coral, sea anemone) because the fish may be severely stung if it inadvertently lands on them.

Frogfish will ingest incredibly large prey items. Any slender fish (e.g., wrasses) kept with a frogfish should be at least twice as long as the frogfish. If a fish is deep-bodied (e.g., *Dascyllus* damsels), it should be slightly longer than the frogfish.

The key to frogfish husbandry is to reduce stress. They apparently suffer from post-stress disorders that can cause an otherwise healthy-looking frogfish to die mysteriously. This means not housing them with tankmates that are prone to harassing them, relocating them as infrequently as possible and maintaining good water quality.

#### Toadfish (Family Batrachoididae)

Although toadfish can be kept in reef tanks, they are a threat to algae-eating snails, small clams, ornamental crustaceans, mantis shrimps, brittle stars, small urchins and small fish. Toadfish will readily use the many hiding places that are typically found in a reef aquarium, but in a larger reef tank, they may be hard to find as a result of their reclusive habits. This can present feeding challenges.

Toadfish should be fed a varied diet, but some individuals may not be eager to ingest nonliving food. Live ghost shrimp may be needed to tempt finicky toadfish.

They will dig in under the live rock if sand is present in the tank, and this may cause structural instability. Toadfish do not require a lot of swimming room to survive. Most will do fine in aquariums as small as 15 gallons. Toadfish will not spend a lot of time in the open when first placed in their new home, but with time they should become more secure and start to appear in the open when the aquarium is illuminated.

#### Scorpionfish (family Scorpaenidae)

Like a peculiar work of art, scorpionfish are oddities that are appreciated most by the collector of the unusual. They are venomous and can inflict a very painful sting (that can also be dangerous in some cases), so make sure that you take the necessary precautions when moving one of these fish or working in its aquarium.

Scorpionfish spend most of their time on the substrate. As a result, they can be kept in smaller tanks without difficulty. Most species prefer ledges, caves and coral rubble in which to refuge. Reef aquarists are advised to select a species that spends more time in the open (e.g., *Scorpaenopsis* spp.). If you add one of the more secretive forms (e.g., *Parascorpaena* spp.) to a large tank full of live rock, you may never see it.

Feeding can present challenges. Most scorpionfish will only eat live food. Gut-packed ghost shrimp are a good staple diet for those scorpionfish that cannot be weaned onto "seafood on a stick." Provide them with a varied diet and feed them to satiation twice a week.

#### Lionfish (family Scorpaenidae)

The lionfish are members of the scorpionfish subfamily Pteroinae. They are the best members of the scorpionfish family for a reef aquarium. The size of the reef tank used is species-dependent. The *Dendrochirus*, which tend to be smaller, can even be kept in larger nano-reefs (e.g., 20 gallons). Provide them with suitable hiding places because they are more secretive. The Pterois will need more room (e.g., 55 gallons or larger).

All the lionfish are ideal candidates for the reef aquarium if small fish and ornamental shrimp (including cleaner and boxer shrimps) are not important to you. Some species, such as Pterois volitans and the Russell's (*Pterois russelli*), spend more time in the open but need more room.

Live food may be needed initially, but most lionfish can be switched to nonliving foods presented on a feeding stick. Good

live foods include ghost shrimp, fiddler crabs and small crayfish. Feed the lionfish to satiation two or three times a week.

It's usually not a problem to house two or more lionfish species together. However, members of the same species and closely related forms (e.g., two members of the genus *Dendrochirus*) will occasionally fight. Aggressive encounters may include biting and ramming with the venomous spines, which can result in serious injury. If one lionfish is persistently attacked by another, they should be separated.

Special consideration needs to be made when selecting tankmates for your lionfish. Most species will eat any fish tankmate that can fit in their large mouths. However, they rarely behave aggressively toward unrelated species.

#### Waspfish (Family Tetraogidae)

The waspfish can make an interesting addition to a reef aquarium. Because of their less active lifestyles, the smaller species can be kept in a nano-reef. They will eat crustaceans and small, bottom-dwelling fish, but are no threat to sessile invertebrates. Waspfish are relatively easy to keep if you provide them with live, gut-packed ghost shrimp. Some individuals can be trained to take pieces of seafood off a feeding stick, while smaller specimens may eat live brine shrimp.

Provide these fish with open sand bottom areas, because some species bury while all spend most of their time resting on soft substrates. Some species prefer to refuge among macroalgae. Like many bottom-dwelling predators, these fish are often mistaken for food-encrusted substrate by fish that eat sessile invertebrates, including butterflyfish, angelfish, pufferfish, triggerfish and porcupinefish. Large herbivores may also pick at them because they look like plant material.

When transferring a waspfish from one tank to another, use a specimen container or a fine mesh net to prevent the dorsal and cheek spines from becoming entangled. These fishes are venomous and can give a painful sting.

#### Groupers (Family Serranidae)

Groupers are hardy, disease-resistant fish that can live for many years in a home aquarium. The groupers can be kept in a predatory reef aquarium, but they will eat crustaceans, including anemone shrimp, cleaner shrimp and anemone shrimp. If you want to attempt housing cleaner shrimp (*Lysmata* spp.) or boxer shrimp (*Stenopus* spp.) with these fish, adding the crustaceans to the tank before the grouper will increase your chances of success.

Groupers will also eat any fish they can swallow whole. In some cases, depending on the prey item's shape, they can ingest fish almost as long as they are. Long, slender fish, like eels, certain wrasses, blennies, gobies and dartfish, are easy to swallow and will curl up in the stomach. Deep-bodied, spiny fish are more difficult to engulf and may even become lodged in the mouth or pharynx of an overeager grouper.

When selecting a grouper, consider how large it may become. Many (e.g., most of the members of the genus *Epinephelus*) will outgrow most home aquariums. They also grow very fast if well fed.

Some groupers are very secretive (e.g., bluelined grouper, *Cephalopholis formosa*), spending much of the day peering out from under ledges and caves. Once these species become accustomed to their new home, they will usually begin to spend more of the daylight hours hovering near or sitting on the bottom close to their favorite shelter site.

#### Soapfish (Tribe Diplioprionini)

Soapfish are durable aquarium inhabitants that can be kept in a reef aquarium. However, they will eat any crustacean or fish that will fit in their mouth (which can be surprisingly large). Most spend the majority of the daylight hours hiding among the aquarium decor, occasionally slinking from one crevice to another. After a while, they learn to recognize their keepers as a source of food and become quite tame.

It may be necessary to induce feeding by offering these fish live food (e.g., ghost shrimp), but most are easily trained to accept bite-sized pieces of seafood, frozen preparations or frozen mysid. Although most soapfish will behave aggressively toward species or genus members, they are rarely aggressive toward nonrelated fish species.

A downside to soapfish ownership is the potential risk they pose to their tankmates because of their toxic body slime. If they are being harassed by a tankmate or the aquarist, or if they are ill, they might secrete copious amounts of grammistin, which could result in the death of the soapfish and any other fish in the tank. Fortunately, this happens very rarely in the home aquarium.

#### Sand Perches (Family Pinguipedidae)

Although sandperches are not a threat to corals in a reef tank, they will prey on other invertebrates. They will eat bristle

worms, small mantis shrimps and hairy xanthid crabs, but more desirable invertebrates may also be in peril. Small sandperches have also been known to eat feather duster worms and Christmas tree worms, while larger individuals may consume small bivalves, anemone crabs, cleaner shrimp, anemone shrimp, pistol shrimp, small boxer shrimp, and juvenile brittle and serpent stars.

Unlike some bottom-dwelling carnivores (e.g., frogfish, scorpionfish), sand perches are much less likely to rest on corals and irritate them. Most live on open sand or rubble bottoms, so some open sand area will be needed.

They can be aggressive toward other bottom-dwelling predators, especially those with a similar body shape (e.g. gobies). Avoid housing them with passive aquarium fish (e.g. gobies, dartfishes). Larger sandperches feed heavily on small fish, so do not keep them with any fish that they can swallow whole.

It is prudent to house only one per tank as they are likely to fight (especially males). Aggression is also likely to occur between sandperches of different species, especially in smaller aquariums. The good news is that these fish are relatively disease resistant.

#### Triggerfish (Family Balistidae)

The majority of triggerfish are not suitable for the reef aquarium. Most members of this genus feed on a wide array of invertebrates, including species that we nurture in our reef tanks. However, there is a small group of triggers that are exceptions to this rule. These are the members of the genus *Xanthichthys*, which include the bluechin (*X. auromarginatus*), crosshatch (*X. mento*) and Sargassum (*X. ringens*) triggerfishes. These fish feed mainly on zooplankton and typically ignore invertebrates if they are fed frequently enough. They are less likely to rearrange aquarium decor. This interesting but potentially destructive behavior can lead to corals toppling over or falling on one another, which can injure and kill these invertebrates.

I hope this article has served as a interesting primer for those of you looking for a more unconventional reef aquarium fish community. The incredible diversity of fish available to us is what makes this hobby so engaging! Until next time, happy fish-watching.