# Feeding Marine Fish and Fish Health

**Incomplete marine fish diets will lead to fish disease problems.**

*By Scott W. Michael*

Q. I have had a 75-gallon saltwater aquarium for one year and am still not sure what I should be feeding my fish. The aquarium contains one passer angelfish, one dogface pufferfish, one small snowflake moray, one large moon wrasse and a powder blue tang. I feed all but one of the fish mainly frozen brine shrimp and some flake food, as suggested by my local pet store owner. I feed the eel freeze-dried krill.

Recently, the tang has developed what I believe to be lateral line or hole-in-the-head disease, and I remember reading somewhere that this is caused by improper diet. Is this true and if so, is there something else I should feed them?

A. This is an important question that is often not understood by the beginning aquarist. As with humans, or any other animal, a poor diet can result in general ill health and greater susceptibility to pathogens. Some of the more commonly observed problems with poorly fed saltwater fish include: lateral line and fin erosion, weight loss, color infidelity, listlessness and disease outbreaks. The accompanying sidebar contains a list of some other symptoms reported in fishes as a result of nutritional deficiencies.

Fish need protein, lipids, carbohydrates, vitamins and minerals. Unfortunately, few foods contain all or enough of these essential nutrients. Therefore, the best way to ensure that all their nutritional prerequisites are met is to give them a varied diet! This means a combination of flake, frozen and fresh foods.

You may be aware that few fish are specialized feeders. For example, the vast majority of carnivores feed on a number of different types of prey, not just one single prey organism. Variety is not only the spice of life, but in the case of our marine fish it is essential for life!

One good staple food is fresh, unseasoned seafood, which is available in most places (I live in Nebraska and even I have ready access to it). Shrimp, clams, squid and saltwater fish, rinsed off and finely chopped, are great foods.

If you are feeding fresh fish avoid species with oily flesh (e.g., tuna, herring) because this will cause a fatty film on the water's surface. Also beware that fresh foods can quickly become rancid, polluting the aquarium. Therefore, it is important to remove uneaten pieces from the aquarium bottom and filter soon after food is introduced to the tank. Although not a seafood, earthworms that have been cut open and cleaned of their gut contents are greedily accepted by some large predators, such as groupers and triggerfishes.

Symptoms of Nutritional DeficienciesDarkening of body or fins Reddening of body and fins Color loss Fin erosion Lateral line erosion Lower jaw erosion Skin lesions Increased sensitivity to bacterial infections Slow wound repair Hemorrhaging of the gills Changes in blood chemistry Cloudy eyes Exophthalmus Weight loss Atrophying musculature Rapid breathing Loss of appetite Poor growth Convulsions Loss of equilibrium Erratic swimming Spiral swimming Mortality If you are keeping herbivores, such as your powder blue tang, or omnivores, you can supplement their diets with fresh vegetables, such as lettuce or spinach leaf. Freeze or steam the leaf before introducing it into the aquarium. This will makes it easier for the fish to digest. There are a number of plastic clips with hangers or suction cups on the market that you stick or hang on the inside of the aquarium. This makes it easier for the fish to browse on the vegetable matter. If you do not have a clip, you can take a piece of coral rubble, attach a leaf to it with a rubber band and drop it to the bottom of the aquarium. I would recommend adding a piece of lettuce once a day if you have sparse algae growth in your aquarium.

Another great supplement for plant eaters is Nori — sheets of dried macroalgae readily available from any oriental food store. If you have a fish-only aquarium, try encouraging filamentous microalgae growth or add macroalgae — such as Caulerpa — to provide a natural food source for your herbivores.

There are also some frozen foods on the market that are a mix of marine organisms (e.g., scallop, fish, crustacean) supplemented with pigments, vitamins and essential amino acids. These are a good dietary staple, but unfortunately, the freezing process can strip away some of their nutritional value, especially if freezer burn occurs or if the food is thawed and refrozen.

There are frozen foods especially formulated for herbivores that contain the unicellular blue-green algae (cyanobacteria) Spirulina. There is even one preparation especially for angelfishes — it has sponge in it — which is their preferred bill of fare. I do feed some frozen brine shrimp and krill, but would never recommend you use them exclusively. Both these foods, and most other crustaceans, are rich in carotenoid pigments and do help fish retain their bright colors.

Another way to ensure that your fish are getting their nutritional requirements is to soak fish food in an additive like Selcon, from American Marine, Inc. This 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 foods, such as krill, which soak it up like a sponge.

I also recommend feeding some live foods. These can be especially helpful if you are trying to get a finicky fish to eat. I have found most fish love live blackworms, but I am very careful not to throw too many of them in the aquarium at once because they die quickly and decompose. Live brine shrimp and ghost shrimp are also popular with many marine fish, and freshwater crayfish and fiddler crabs are great treats for predators that like large crustaceans.

Freshwater feeder fish, such as mollies, guppies and goldfish, are very popular foods. However, you should not feed your predators only live freshwater fish because they lack polyunsaturated fatty acids that marine fish need for good health.

Live marine clams, which are sometimes available in the seafood section of grocery stores or in fresh fish shops, are a great fish food. These mollusks are particularly valuable for enticing picky eaters, such as certain butterflyfishes and angels. In fact, a friend of mine, Brad Gosch, has kept larvatus butterflies (Chaetodon larvatus) fat and happy by feeding them clams on the half shell. He breaks the shell open with a screwdriver and a hammer and then throws the open clam into the tank. The feeding frenzy that ensues is remarkable!

You mention that the powder blue tang is suffering from lateral line erosion. This illness is most often seen in 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 fish is the purple tang (Zebrasoma xanthurus). A number of factors have been insinuated as the cause of lateral line disease, including improper nutrition, carbon use and stray electrical fields in the aquarium. Only one of these, improper nutrition — more specifically, a lack of vitamin C — has been substantiated scientifically. I have seen yellow tangs with lateral line and fin erosion that had only been fed flake food. I have also seen the condition improve in surgeonfishes when greens were introduced into their diets or when the food was soaked in an additive.

As far as the other two possible causes are concerned, I have seen situations where the progression of lateral line erosion stopped when carbon was no longer used in the aquarium. On the other hand, I have used grounding cables (which are supposed to remove electrical fields from the tank water) in a retail setting and in home aquariums, but still had fish in these aquariums develop lateral line disease. I have never seen a case of lateral line improve because of the installation of a grounding cable either. There are, however, other writers who say that grounding is an effective remedy for this problem.