

Marine Tank Cycling

There are many ways to cycle a marine tank.

By Neale Monks, Ph.D.

Although it may be appropriate under certain circumstances to cycle a marine tank using fish, it is better to cycle aquaria using a fishless cycling method, if possible. The ammonia and nitrite spikes that occur through the aquarium cycling process are stressful to most marine fish and lethal to virtually all aquarium invertebrates.

There are situations in which cycling a marine tank with fish is inevitable. The usual scenario involves a person making an impulse purchase of an aquarium and fish on the same day. While setting up an aquarium this way isn't recommended, what's offered here will minimize the problems caused by this approach.

Live Rock

The addition of live rock reduces the time it takes for a new marine tank to cycle. Live rock introduces the bacteria needed to get the biological filter established quickly.

If you add sufficient live rock, the tank will be ready to receive its first fish immediately thereafter. About a pound of live rock per gallon of water should be sufficient for this. This is only true if the live rock is highly porous and the tank has strong water circulation.

Transferring Filter Media

Biological media can be transferred from an established marine tank filter to a new filter to jumpstart the process of biological filtration in the marine tank. This will significantly reduce the length of time it takes for the tank to cycle. A mature filter can safely donate up to 50 percent of its biological media. The remaining bacteria will quickly colonize the replacement media, ensuring the filter continues to operate at full capacity.

The downside to moving media from one marine tank to another is that you may be moving aquarium pests and diseases, as well. Never transfer media from a marine tank currently experiencing an outbreak of a parasite, such as marine white spot or velvet.

When moving biological media, treat it just as you would treat live rock: Keep it wet and avoid temperature extremes.

Seeding With Substrate

Adding some substrate from a mature marine tank is another way to jumpstart the cycling process. The more you add, the shorter the cycling process will be. As with filter media, aquarium sand can carry pests and diseases, so the benefits need to be balanced against the risks.

A safer approach is to use commercially packaged aquarium live sand. This can be expensive, but a 50/50 mix with wet coral sand provides a good balance between cost and effectiveness. For a 1-inch depth, this works out at about 5 pounds of live sand and 5 pounds of plain coral sand per square foot of surface area.

First Fish

Choosing which fish to use while cycling a marine tank can be difficult. Many of the most hardy marine fish are also the most aggressive. Damselfish are notoriously aggressive; while species of *Chrysiptera*, *Dascyllus* and *Pomacentrus* are incredibly hardy, they're also very territorial when mature, and this makes them problematic choices for reef and community tanks. To varying degrees, the same problem with aggression bedevils anemonefish, another group of marine fish noted for their hardiness.

Morays, lionfish and groupers are generally resilient, but their size and predatory habits limit their usefulness. Most of these marine fish aren't suitable for reef tanks at all, but they may be viable choices for community systems, assuming that any fish added afterward aren't so small they'd be viewed as food.

Triggerfish are famed for their hardiness, but their invertebrate-crunching habits make them suitable for fish-only marine tanks. Triggerfish also tend to be territorial and rather aggressive, and if introduced as the first fish, there's a good chance they'll view any fish or invertebrates added afterward as threats to be dealt with accordingly.

One way to avoid being stuck with marine fish you don't want is to use something inexpensive you can return or find a new home for after cycling has concluded. Brackish fish are often used in this way, most notably black mollies and sailfin mollies.

If purchased as freshwater fish, take care to acclimate mollies to marine conditions before they are used to cycle a tank.

Test Kits and Water Changes

You need ammonia to stimulate the population growth of the marine tank filter bacteria, but ammonia concentrations above 0.5 mg/l are stressful to fish and will eventually lead to sickness or death. So it's important to use an aquarium test kit to make sure the ammonia concentration doesn't reach lethal levels. Use your ammonia test kit at least every 2 to 3 days, and if the ammonia concentration exceeds 0.5 mg/l, do a 25 percent water change.

Nitrite is less toxic than ammonia, but at levels above 1.0 mg/l, it is stressful to most fish. Again, use a test kit on a regular basis, and if required, carry out a water change to reduce the nitrite concentration.

Nitrate levels are less critical, but most marine fish do best at concentrations less than 20 mg/l, while invertebrates (particularly corals) require levels below 5 mg/l to do well.

Feeding and Time Scale

Don't feed your new marine fish more than once per day while the tank is cycling, and don't feed the fish at all if the ammonia level is above 0.5 mg/l.

A tropical marine tank should cycle within six to eight weeks; if mature filter media, live rock or live sand are used, your marine tank should cycle much more quickly.

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 tanks, 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.