

Reef Keeping: A Natural Approach

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A growing trend in the marine hobby is the belief that a reef aquarium should mimic wild ecosystems as much as possible. This means simulating the food sources, biological filtration, lighting spectrums, and water movement found in nature.

If you're interested in taking a more natural approach to reef keeping, here's how:

Filtration

The water-volume-to-organism ratio in an aquarium is very small when compared to a natural reef, and therefore filtration is an essential place to begin building your natural ecosystem. The key to a natural filtration method is using a [refugium](#). These auxiliary aquariums recreate on a small scale the sea grass beds that are commonly found in association with a natural reef. Experts in the field have used this method of filtration for years with excellent results.

Refugiums serve as a home for [live sand](#), [live rock](#), and micro crustaceans, which feed and thrive on the detritus and wastes from the main aquarium, thereby adding to the bio-diversity of the system. A macroalgae, usually of the genus *Caulerpa*, is then grown above the rock and sand, feeding upon the nutrients within the water which aids in keeping waste levels from becoming problematic and reduces the number of necessary water changes.

This will keep macroalgae confined, avoiding overgrowth in your main display. Macroalgae are also thought to release compounds into the water which aid the fish immune systems.



Lighting

Lighting is an integral part of a saltwater reef aquarium that contains photosynthetic invertebrates. The most natural-looking light is produced by [metal halides](#) and HQI systems. These create glitter lines, which are light waves intensified by the water's surface and thought to aid photosynthesis in certain invertebrates and corals. For the refugium, use [power compacts](#) or [T-5 fluorescent bulbs](#) with a Kelvin rating between 5500°-7500°K. And by illuminating your refugium at times when the main aquarium is not, it will provide essential oxygen, thereby reducing nighttime pH fluctuations.

Water Movement

Water movement is essential for an optimal reef environment. For example, many SPS hard corals require a moderate to strong intermittent water flow. Inadequate water movement may hinder the corals from opening their polyps and feeding, resulting in a slower growth rate.

In order to provide proper water flow in the aquarium, you may want to incorporate a wave-making device. The [WaveMaster Pro](#) can be combined with a few inexpensive [powerheads](#) to provide alternating currents within the aquarium.

The installation of a [water flow diverter](#), which splits your return line, allows water flow to be alternated within the aquarium, mimicking a natural current. For larger aquariums, more than one valve can be used to provide multiple alternating outlets.