

Sumps: Practical & Specialized Uses

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From the most basic to the most advanced applications, a seemingly mundane piece of equipment, a sump, can provide numerous benefits, most important of which is improved water conditions.

Sumps are beneficial additions for both fresh and saltwater aquariums. In the most basic terms, a sump is an additional receptacle plumbed inline via a Siphon Overflow box, or bulkheads in pre-drilled aquariums. It will provide additional space and increase the total volume of water in an existing system. Sumps can be as basic as a supplementary aquarium, a large plastic container, or as part of a more elaborate [wet/dry trickle filter](#) or [refugium](#). With some basic plumbing techniques, a sump can be installed to most aquariums to provide numerous benefits.

Additional Space for Equipment

A sump benefits an aquarium by providing additional usable space. Think of it as an "add-on" to your existing aquarium. It is the ideal location for equipment such as [heaters](#), [thermometers](#), and [protein skimmers](#). Since most people keep a sump beneath the main aquarium or hidden from view, equipment that can clutter or obstruct aquarium viewing can be neatly tucked away.

Increase Total Water Volume

Sumps increase the total volume of water and as a result, water parameters are more stable and less prone to fluctuations. Larger volumes of water are less susceptible to sudden changes and, more importantly, help distribute the concentration of chemicals such as nitrite and phosphate more evenly, deferring their ill effects.

For example, consider a 55-gallon aquarium with a 25-gallon sump. The concentration of waste products produced in an appropriately stocked 55-gallon aquarium is now distributed throughout a total water volume closer to 80-gallons with a sump as opposed to 55-gallons without a sump. Keep in mind that proper husbandry and regular [water changes](#) are still necessary. Even though the total volume of water has increased, it is still a closed system where chemical concentrations will progressively increase if they are not removed or processed in an efficient manner. Fortunately, sumps can also be incorporated as a staging site for a variety of advanced filtration systems.

Incorporating Sumps

As part of a [wet/dry trickle filter](#), a sump provides efficient aerobic biological filtration to process ammonia and nitrite. Some [wet/dry filters](#) may include media trays for custom filtration. The media trays can be filled with [mechanical filter media](#), [chemical filter media](#) (for example [activated carbon](#)), or any other type of filter media to meet your particular filtration needs.

For marine aquariums, the additional space provided by the sump allows ample room

to install a variety of advanced filtration systems including [protein skimmers](#).

FOR ADVANCED AQUARISTS

In recent years, "bioactive" sumps, or [refugiums](#), are becoming more popular in saltwater systems. Bioactive sumps have been modified to capitalize on a variety of biological processes other than aerobic bacteria to promote even more efficient utilization of nutrients in a closed aquarium system. The addition of [Reef Rock](#) (in saltwater aquariums) or biological filter media such as [CerMedia MarinePure Biofilter Media](#) closes the loophole in the nitrogen cycle to provide complete nitrification. Submerged within the sump, pockets deep within live rock and [CerMedia MarinePure Biofilter Media](#) provide anaerobic bacteria with conditions suitable to colonize and convert nitrate into harmless nitrogen gas.

This basic refugium can be further elaborated to include a deep [sand](#) or [mud bed](#) and macroalgae to create what is referred to as an "algae scrubber." The live rock and the deep sand or mud bed allow complete nitrification while the macroalgae, grown above the rock and sand, process other nutrients including phosphate. This micro-environment created in the sump is also an excellent nursery for micro-crustaceans, worms, and other microfauna. The macroalgae, in conjunction with the microfauna, increase biodiversity and help process waste products more efficiently and further contribute to the overall health of the aquarium.