

## MACNA XII 2000

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*By Terry Siegel*

This year's MACNA (Marine Aquarium Conference of North America), MACNA XII 2000, was held in Fort Lauderdale Florida. The general theme of this conference was stated as “The Twentieth Century Hobbyist; How Far We’ve Come.” What I found particularly interesting was the issues raised regarding coral nutrition, and whether it is advantageous and possible to feed corals. As an aside, because I have been attending these conferences for many years, I have noticed a significant change in the coloration of aquacultured reef fish. The first batches of tank-raised anemonefish were distinctly washed out in appearance when compared to wild specimens. However, the tank raised anemonefish displayed for sale during the last few years have the same vibrant coloration as their wild cousins. The difference was brought about by improved nutrition.

As most reef aquarists know, corals are divided into two distinct groups: hermatypic and ahermatypic. The former contain symbiotic dinoflagellates, often called zooxanthellae. These are symbiotic alga that photosynthesize and provide the host coral with nutrition. For this reason many aquarists believe that hermatypic corals in captivity do not need to be fed. Pointing out that the majority of a coral polyp's biomass is devoted to the capture and consumption of food, Dr. Ron Shimek, strongly opposed this view in his presentation. He further argued that if hermatypic corals didn't require feeding, those parts of the coral's anatomy would have become vestigial. This, of course, raised the next logical question for the reefkeeper: what, how often and how to feed?

With hermatypic corals with large mouths, such as *Plerogyre* or *Euphyllia* spp, it is relatively easy to feed small bits of chopped seafood. With hermatypic corals with small mouths, such as *Acropora* sp., it is not possible to target-feed small bits of seafood. Nevertheless, many of us in the U.S. are successful at keeping what we call SPS (small polyp scleractinian) corals. Not only are we able to keep these corals alive, they grow to the point where they have to be pruned. In some cases they have spawned for a few fortunate aquarists.

Was the nutrition provided by their symbiotic algae sufficient to provide for growth and reproduction? I don't think so. I believe that their polyps capture bacteria, along with zooplankton and phytoplankton, and in some cases extract organics directly from the water column. Analysis of bacteria in the water column of a typical reef tank indicates an exceptionally high concentration of bacteria. Furthermore, the utilization of a deep substrate filled with benthic organisms undoubtedly enriches the water column with zooplankton. Connecting a refugium to the display tank provides a similar function. A refugium protects animals like copepods and arthropods from predation by reef fish, while at the same time permitting their larva to enter the display tank's water column.

Many corals, particularly soft corals, feed on phytoplankton, especially in the form of diatoms. Though many reefkeepers find the chore of scraping diatoms off of the front glass annoying, by doing so they are filling the water column with food for those corals that feed upon it. In fact, scientists like Dr. Bingman and Peter Wilkens believe that the concentration of Silicates —  $\text{Si}(\text{OH})_4$  — should be maintained at natural seawater levels of 3 mg/L. It appears that the growth of sponges and diatoms are limited by the availability of silicates. Many aquarists in the U.S. go to great lengths to eliminate silicates through the use of deionizers and reverse osmosis filters in their makeup water. This may very well be a mistake. Note, it is not a mistake to use RO/DI units, only to remove silicates. Furthermore, powerful downdraft skimmers are very efficient at removing phytoplankton and zooplankton from the water column. In my experience with downdraft skimmers, I had to increase the number of fish and amount of feeding to prevent certain corals from starving. After I hooked up my first downdraft skimmer I noticed that *Goniopora* and *Zenia* sp. began to die back. In other words, I had to increase the biomass of fish and the amount of feeding to compensate for the efficiency of the downdraft skimmer.

There are a number of soft corals that reefkeepers have had very little success with, especially those from the genus *Dendronephthya*. I have seen one tank that has indicated some success with this genus. Though I have mentioned this tank before, it is worth mentioning again. The tank is a standard 55-gallon. It contains live sand, two small powerheads for circulation and one 40-watt actinic fluorescent tube for illumination. There is no traditional reef tank filtration. The tank is filled with sponges, anemones, sea horses, banded pipefish and very healthy looking colonies of *Dendronephthya* and *Scleronephthya* soft corals. These corals are brilliantly colored and would certainly be prized by reefkeepers if it were possible to keep them alive in captivity.

Most aquarists today believe the difficulty in keeping these animals centers around feeding. Peter Wilkens has had some success by stirring the gravel/sand bed daily (see *The Reef Aquarium, Volume Two* by J. Charles Delbeek and Julian Sprung, pages 20 to 21, for more details). Additionally, preliminary studies by scientists indicate that these corals feed exclusively on phytoplankton, but that density, planktonic size and current may also be critical factors affecting their ability to feed. Tom Mars, a part-time employee at House of Finns in the U.S., is the one primarily responsible for maintaining this 55-gallon tank. Tom attributes his success to an unusual feeding technique he has been using. Every day he dumps a phytoplankton "soup," along with brine shrimp nauplii, into the tank, where it is circulated by the two small powerheads. After about two to three hours the soup is completely removed by a large micronite filter. Without the use of the micronite filter the tank would become polluted. He is also convinced that low light is essential for success with these animals. Too much light allows algae to overgrow the sponges and other animals, interfering with respiration and feeding.