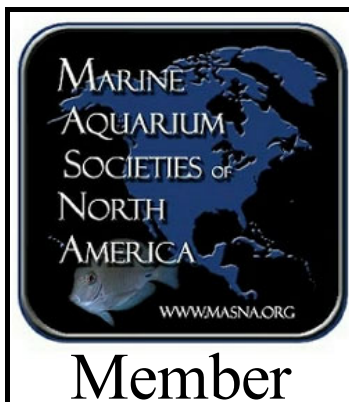


# OCTOPUS

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JUNE 2004



[www.c-sea.org](http://www.c-sea.org)



## Inside This Month's Octopus





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## **CLEVELAND SALTWATER ENTHUSIASTS ASSOCIATION**

June 2004

The **Cleveland Saltwater Enthusiasts Association (C-SEA)** is a non-profit, educational organization to promote the art and science of marine aquarology. General meetings are held on the third Friday (usually) of each month at 7:30 pm. The official publication is the **OCTOPUS**.

-  Advertisers help the club by defraying the cost of printing and mailing. **C-SEA** believes in supporting the local saltwater shops and the companies who support us with advertisements, discounts and donations.
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-  We reserve the right to edit submitted articles.
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## **Editor's Notes**

I'll keep it short, I need room for new member info! John Janda's presentation on "Working with Acrylics" should give you all much food for thoughts for summer projects. Remember to take pictures and document what you do. The Octopus is a great place to share your experinces with your fellow hobbyists. Have a great summer!

John Fay, Editor

## **MEMBERSHIP CORNER**

**Hey C-SEA Members (or those who think they are!):**

**Please check the mailing label of your *Octopus* to see if your membership in C-SEA is current. If you wish to re-join, please mail a check for \$15.00 with your name, address, phone and e-mail to:**

*Stan Dannemiller  
C-SEA Membership  
441 Locklie Dr.  
Highland Hts., OH 44143*

***Welcome new members:***

*Josh Butler - Fairlawn  
Jeff Corbett - Mogadore  
Chuck Kocinski - Parma*

***Thanks to the following who have renewed their memberships:***

*Bruce and Deann Breeds  
John Fay  
Alan Harrell  
Joe Steine*

## **June Meeting**

7:30 pm Friday, June 18, 2004

Cleveland Metroparks Zoo, Administration and Education Building

## **C-SEA Meeting - Working with Acrylics - John Janda**

John Janda will be doing a clinic for the June meeting to share what he has learned in a online education course sponsored by Reefs.org / Marine Aquarists Course Online [MACO in Plastics Fabrication. He will cover all phases from design through proper finishing, material choices and procurement, preparation, layout, machining, gluing, assembly, and polishing. It's more about learning to do it correctly rather than doing it quickly and not having a quality project when completed. You too can fabricate items for your tanks, even build your own acrylic tanks. He highly recommends these classes to everyone. Check it out [HTTP://Reefs.org/maco](http://Reefs.org/maco).

As always, refreshments will be served along with the livestock and members only raffle

### **2004 - 2005 C-Sea Officers**

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## **The Aquatic Environment**

By Jason Kim

Jason is the founder of AquaC. Inc.

From his web site [www.proteinskimmer.com](http://www.proteinskimmer.com)

Aquarticles

A lot of people who become interested in reef keeping have little or no background knowledge about the marine environment. Often times, beginning hobbyists are those individuals who feel ready to make the transition from freshwater to saltwater aquariums. Although some of the basic principles which apply to a freshwater system remain, reef microcosms are often more complex due to the fact that they are really miniature replicas of the actual ocean environment.

So what is a reef, anyway?? Biologists define a traditional coral reef as a large, stable framework which is biogenic in origin, limited to the photic zone, and resistant to wave and storm action. Did you know that the Great Barrier Reef in Australia is the single largest organic construction on the planet? These tiny animals are really quite amazing. Because coral polyps are so small and slow-growing, it takes thousands, if not millions of years to build a large reef. Over time, the calcareous remains of coral skeletons, molluscs, bryozoans, and other marine critters are slowly cemented together by coralline algae and geological processes. Coral reefs are limited to the photic zone (the warm, sunlit bathed belt around the Earth's equator) since hermatypic invertebrates rely on U.V. light to synthesize food. One of the hallmarks of a pristine reef is the crystal-clear, nutrient-poor water which surrounds it. Just like the expensive condominiums in Hawaii, real estate in tropical oceans is hard to come by and extremely valuable. The only way slow growing corals can compete with the faster colonizing species of algae and sponge is by living in an environment which is inhospitable to nutrient-loving organisms. Most algae require lots of nutrients like nitrates and phosphates in order to thrive, and these delicacies are often in short supply off the shores of a tropical island. Corals, on the other hand, subsist quite well on the simple sugars their symbiotic zooxanthellae provide via photosynthesis. Not only are tropical waters nutrient-poor, but they also tend to be clear of sediment, terrestrial run-off, and phytoplankton blooms. Sunlight already has a tough enough time penetrating water - in fact as much as 75% of useful U.V. light is absorbed in the first few feet of the ocean's surface. Unclear water only makes it harder for corals to harness the sunlight they so desperately need.

The take-home message here is really quite simple. A successful reef aquarium absolutely requires clear, clean, nutrient-poor water in order to thrive. The principles which apply in the ocean are just as applicable to the tank in your living room. If your aquarium's water is laden with excess nutrients, unwanted algae may begin to take over your tank and eventually crowd out your expensive coral specimens. Of course, there are some species of algae which are slow growing and actually very attractive, and thus suitable for the home aquarium. Most of these species belong to a group of marine plants called coralline algae. Coralline algae

incorporate calcium in their tissue layers as a means of defense against herbivorous fish. Since they rely so heavily on calcium, these types of algae are often slow growing and do not pose a significant threat to captive coral specimens. Other types of algae, however, like the dreaded "hair algae" or "bubble algae" can become the bane of even the most experienced aquarist. Nutrient-rich water not only affects algae growth, but there is quite a bit of evidence that suggests it also inhibits coral health and can even lead to premature death. Small polyped stony corals such as members of the large *Acropora* genus are notoriously delicate and require near-perfect water conditions in order to thrive. Through proper techniques and husbandry, an oligotrophic (nutrient-poor) environment can be maintained.

I have stressed the need for superb water quality. Some of you may have wondered why many tropical areas are oligotrophic (nutrient-poor) by nature, since temperate parts of the world seem to be heavily inundated with an abundance of nutrients. One of the main reasons is due to the fact that nutrient-rich water, after a long journey through the deep sea, is constantly imported by offshore currents along the coasts of many temperate areas. Most of the world's temperate coastlines are directly affected by upwelling currents, and this is one of the reasons that kelp/macroalgae habitats are common in these areas. Tropical coral reefs export rather than import nutrients through strong wave action and currents. Furthermore, the biological interactions which exist on coral reefs are so tightly interwoven that most nutrients freed through biological processes are simply sucked right back up into the system and recycled. Just like the real estate on a calcareous reef, nutrients are hard to come by and are plucked up as if they were hotcakes. Besides having crystal-clear water, tropical reefs are also remarkably "sunny" places. Unlike Northern England or Seattle, Washington, the tropics receive near constant bombardment by the sun's intense U.V. rays. The tropics experience fewer cloudy or overcast days per year than do other latitudes, and they also receive a greater amount of sunlight. The angle of incidence effects light's ability to penetrate the atmosphere and ocean surface. If you hold a flashlight at an angle and stare into the bulb, your eyes would probably be just fine. But if you look straight into a flashlight head on, you might be temporarily blinded. This is a good example of light's angle of incidence and how it affects intensity.

Since corals depend so heavily on light in order to survive, and we know that light rays are amazingly strong at the equator, it makes sense that we must strive to create a very bright environment in the aquarium. The term brightness, however, means very little to the experienced reef aquarist. Light, just like sound, varies in wavelength, as well

as intensity. Certainly, there is a huge difference between one of Beethoven's symphonies and the sharp sting of an air horn. Imagine that corals, in the same way that people can tolerate certain frequencies of sound, enjoy certain wavelengths of light and dislike others. Since water serves as a very good filter for most of the visible light in the spectrum, corals have, over time, evolved and adapted to specific "colors" of light. These wavelengths happen to be those which penetrate water the most effectively. When you are underwater, everything seems to look blue, green and grey. Notice how reds and yellows become drab the deeper you go. Since blues and greens, or wavelengths near 400-450 nanometers penetrate the ocean so well, corals absolutely depend on this band of energy to survive. This is of great importance to the reef aquarist, since many of the bulbs offered for sale at pet stores produce high intensity red and yellow light, and little blue light. The reason manufacturers produce these bulbs is simple. Corals, fish, and decorations look their best under red/yellow light since this wavelength seems to bring out their vibrant colors best. When purchasing lights for a reef tank, however, it is wise to pick bulbs which most closely match the wavelengths which are found in the natural environment. Do not buy bulbs which only make your critters look vibrant. Sure, you may get a few oohs and ahhs, but they will be temporary gasps of amazement since your tank's inhabitants will soon be dead. Luckily, the recent boom in the reef keeping hobby has brought about an awareness of this issue, and it's quite easy to find the perfect lighting system.

I would like to mention one other matter before I end this article. Now that we have covered the basics of light and water quality, some people might wonder what other aspects of the aquatic environment remain to be discussed. One issue that frequently gets left out of many popular texts is the bioload factor. For those familiar with fish-only aquariums, there is an old rule of thumb which states "one inch of fish per gallon of water". How does this rule apply to reef tanks?

First of all, there are very, very few "rules" in the reef keeping hobby at all, and anyone who tells you otherwise should be looked at with great skepticism. Even in regards to fish-only tanks, this rule of thumb is silly. Why? Different species of fish produce varying amounts of biological waste. For example, a six inch triggerfish which feeds on raw meat and goldfish will certainly present a greater stress on a filtration system than would a six-inch pipefish. Some people recommend calculating actual body mass as a way to decide how many fish an aquarium can handle. This, in my opinion, is just as silly. A large angel fish with the same body mass as a triggerfish just doesn't produce the same amount of waste. Triggers are messy fish, whereas angels tend to be delicate, nit-picky eaters. Furthermore, a tank with a wet/dry filter, protein skimmer, mechanical canister filter, U.V. sterilizer, and ozonizer will certainly be able to process a heavier bioload than one which only benefits from a single wet/dry filter. Once again, the old trustee "rule of thumb" falls apart.

Corals, like fish, come in all sorts of shapes and sizes, and also vary in their capacity to produce waste. If you've ever seen a picture of a coral reef, or

had the privilege of diving one, you undoubtedly noticed that most sections of living reefs do not look like the pictures of beautiful aquariums you see in magazines and books. For the most part, corals simply cannot coexist in such tight orderly fashion with one another. Remember, it's a dog eat dog competition for space and resources out there. This is not to say that a tank jam-packed with corals is an unhealthy tank...it is merely a word of caution. I once read an article which stated that the average two-inch damsel fish, in nature, has the equivalent of 2,000 gallons of water in which to live. It would be mighty depressing if we were forced to purchase huge, ten foot long tanks in order to keep a lone damsel. The point is that many ocean creatures are accustomed to a large amount of space to move about in and live. Corals, though sedentary, need space too. Many species of corals have evolved specialized defense mechanisms to ward off would-be intruders. These include stinging, nematocyst-lined sweeper tentacles and various methods of chemical warfare. Since we should attempt to duplicate nature in the home aquarium, it is appropriate to keep these factors in mind. Beware of placing corals too close together. Some specimens, such as certain species of soft corals that produce harmful biotoxins, should also be watched closely. As long as your aquarium's inhabitants live peacefully and appear healthy, then there really is no limit to the number of animals you may stock your tank with. Do not, however, purchase a thoughtless assortment of animals, place them in your tank haphazardly, and hope for the best. This would be cruel and pointless, since your animals would undoubtedly harm themselves, and might even die.

So far, I've talked about water quality, the importance of light, and factors concerning bioload. The last topic I want to discuss is the state of the world's reefs. While this topic does not directly deal with aquarium techniques, I think it is important for all prospective reefkeepers to have an idea of what's going on below the ocean's surface.

There are hundreds of different types of habitats here on Earth. People tend to be most familiar with terrestrial ecosystems, since these areas often benefit from the most popular spokesmen. I am not talking about Jack Hannah or some environmentalist from Greenpeace... I am referring to those cute, furry animals that inspire compassion for nature. Tigers, koala bears, and their assorted cuddly friends contribute a great service to ecologists who fight to save their habitats. Unfortunately, ecosystems like salt marshes, deserts, and the open ocean do not have many spokesmen to speak of (no pun intended). Everyone knows that the world's rainforests are being slashed and burned at a mind-boggling rate, but did you know that coral reefs are taking just as bad a beating?

Agricultural runoff, blasting, cyanide use, and over-fishing are just a few of the problems which threaten reefs today.

I doubt that the International Coral Reef Conservation Association would attract much public support by putting a longhorn cowfish on its brochure. What a shame! Corals (or their close relatives) have, for the most part, inhabited the earth's tropical ocean's for over a billion years. That is a very long

time, even geologically speaking. Coral reefs have witnessed the birth and extinction of dinosaurs, and will likely persist to witness the last days of Homo sapiens. One of the reasons they have been so successful is the fact that reefs, as an ecosystem, are remarkably adaptable. Unfortunately, human beings have used this fact as a way to justify their grossly exploitative actions. The progressive, blitzkrieg-style impact on reefs due to anthropogenic influences, combined with natural phenomena like storms, temperature variations, and disease are really taking their toll throughout the world's tropical oceans.

Quite a few experts in the field agree that the pristine reef environment is a thing of the past. A habitat gone extinct.

What can we do to help save the world's reefs? Unfortunately, not a whole lot. Even with increased legislation and awareness of key environmental issues, the state of the oceans hangs perilously from the sloped shoulders of mankind. As the world's population continues to explode, the oceans will be forced to accept greater and greater stresses. There are many ill-informed conservationists who would have the public believe that the aquarium industry is one of the greatest threats to coral reefs. This saddens me, since I feel that their energy could be better spent trying to tackle more serious issues at hand. Until recently, caring for live tropical invertebrates was something straight out of a science fiction novel. We simply did not understand the biology or possess the technology to keep such delicate creatures alive in the home. As a result, corals have the reputation as a wasted resource in the aquarium. Conservationists can easily target aquarists since they are not backed by the enormous funds which oil companies, foreign fishing conglomerates, or organizations representing farmer's agricultural rights use to fight their economic and political battles.

The fact is, the harmful effects of harvesting for the aquarium trade is low on the list of environmental threats. Unlike other pressures, the industry does increase awareness and promote education which might ultimately lead to increased conservation efforts. I believe that one of the most promising ways to preserve natural coral reefs is through education. As the reefkeeping hobby continues to gain popularity the general public will learn what amazing creatures these are and hopefully want to help save them. The manatees in Florida or the California condor would have gone extinct long ago had their plights not been made so visual to the entire world. Large public aquariums are sprouting up like weeds in many parts of the country, which goes to show that increased awareness and education is now within our reach. As responsible reefkeepers, and in order to help fight to save the world's reefs, we should avoid purchasing specimens which are obviously unfit for life in an aquarium. There are plenty of species of coral, fish and invertebrate which can live comfortably in a captive tank.

Let's not add fuel to the fire by attempting to maintain those certain "delicate" species which have little chance to survive. If we act responsibly, there just might be the slightest glimmer of hope for the future of our Earth's most prestigious aquatic environment. Take pride in the fact that, as you acquire knowledge and gain the experience necessary to become a successful reefkeeper, you are also a full-fledged conservationist, playing an ethical role in the grand scheme of things.

## **PREZ SEZ**

By John Janda, C-SEA President

Hello fellow members;

Another C-SEA season has begun with election of officers for the Board of Directors. I want to thank everyone that “stepped up” and ran for or accepted a nomination to office. C-SEA is an all volunteer organization and only works when you get involved. A big THANK YOU to all the members that attended the meeting and voted for the candidate of your choice. With the storms that literally blew through in the late afternoon I was not sure how the turnout would be, you proved once again that you have to be Tough to be a Fish Nerd. Congratulations to all the board members especially first timers Carole McLaren and Alan Harrell, Welcome Aboard and sincere thank you to Jim Parker and Dave Adkins who they replaced. With everyone’s help and support C-SEA will continue to move forward.

This month as far as I have been told C-SEA will have a couple of firsts, Our first summer meeting and our first summer newsletter. In the past we met at Baldwin Wallace and Sea World and as you know Sea World was open during the summer and BW was not so we did not have a place to meet. With C-SEA meeting at the zoo this opened up this option for us.

Over the summer we will be planning for NEOMAC II our fall mini conference. It looks like it will be a little earlier this year due to the dates available. We are looking at an early October Saturday date. Our other choice is early December which interferes with the holidays (and weather is also a consideration). We hope that with more advanced notice we can increase our coverage and increase our attendance. Anyone interested in helping plan the conference contact me or any officer and we will gladly get you involved. A little help goes a long way and minimizes the work for everyone. With this mini conference we hope to present the marine hobby to a wider range of people as well as defray the ever rising costs of the club. This mini conference will also be good preparation for us to host a MACNA as much of the needed infrastructure is the same, just on a larger scale. Please come out and support this endeavor and invite your friends. Spread the word to all you know as the success of the conference depends on each and every one of us. **YOU CAN MAKE IT HAPPEN, REMEMBER THIS YOUR CLUB.**

Speaking of being tough, I urge everyone to take a moment and consider their Emergency Action plan for their marine animals. The storm that blew through the area on Friday afternoon knocked out power for about 200,000 customers. I being one of those customers did not fully appreciate the scope of the situation until I returned home from the meeting, raffle frag in hand, to a candle lit house and 2 “ of water on the basement floor. And NO, It was not romantic!!!!!!!!!!!! The weather and news reports were not encouraging with more thunderstorms on the way and expectations of power outages till early in the week. It’s midnight, what do you do? I tried to deal with the incoming water but it was like trying to empty a lake with a teaspoon. The water was coming faster than my improvised siphoning system could handle, but the good news was that the water would not get any deeper because of the inside footer drains I installed when the house was built. I still had water covering  $\frac{3}{4}$  of my

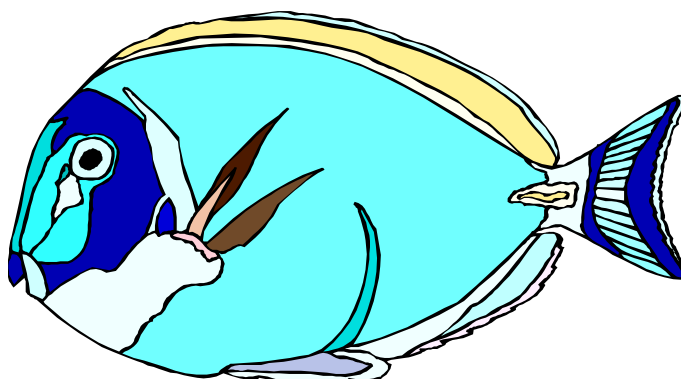
basement floor and no way to remove it. Its 12:30 AM. Panic sets in. Power has been out since about 4 PM. I stirred the surface to try to get some oxygen into the water. Checked on the tanks and the fish are still in an upright position, Prayed. Lighting, thunder and more rain. Its 3:00 AM. Passed out and woke up about 6:30. Power is still out. At this point it really hits home that it is going to be lights out for a long time. Went to Home Depot in hopes of finding a generator to try to minimize the lost of aquatic life and food in the Freezer/Fridge. By the time I got home and assembled the generator and unwired the house to connect it to the generator its 10 AM Power has been out 18 hours. Thoughts of Dr. Marks presentation ringing in my head “What to do when you loose everything” I had not prepared for the what if’s. Power was restored about midnight on Sunday about 56 hours later. I lost a Yellow Tang, 2 clownfish, a breeding Fiji Damsel, a Clarkii clown, Sallylightfoot crab, and Coralbanded shrimp. I also lost my Crocea clam a short time later I suspect from the stress of the changes in water quality. The lesson to be learned from this is not to be complacent and take power for granted. With what we have invested in our aquariums and for the welfare of the animals in our care, it only makes sense to have a “what if” plan in place for when the WHEN happens.

Also there has been mention of activities or meetings over the summer months and the thought comes to mind of doing home visits i.e. tank tours and possibly a combined picnic meeting with the CAS group. My thoughts of tank tours were along the lines of grouping several tanks together in one geographical area one month and another group the next month. If anyone wants to show off their tanks and would not mind some fish nerds checking out your setup let me know, then checkout the website for the latest info. Thoughts and ideas are greatly appreciated. I look forward to seeing everyone at the meetings. Have a safe summer.

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Happy Reefing  
John Janda, President



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