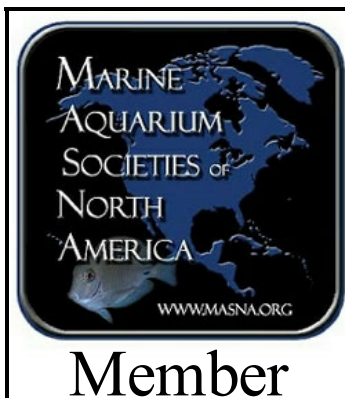


OCTOPUS

VOLUME 31, ISSUE 8
APRIL 2004



www.c-sea.org



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MAGNA XVI **BOSTON REEFERS** Register 
September 10-11-12 2004 www.macnaboston.com

CLEVELAND SALTWATER ENTHUSIASTS ASSOCIATION

April 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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Editor's Notes

As I write this during the first weekend of April, there is 4 inches of snow on the ground and it's gonna be 18 degrees tonight. Spring in Cleveland can be so cruel! I am envious of those of you who have or will be spending spring break somewhere warm. I will have to be content staring into my fish tank or watching "Beach Week" on the Travel Channel.

April is shaping up to be a busy month (seems to me I say that every month!). There are frag swaps in Girard and Pittsburgh this month and Sanjay Joshi is coming to town. For those of you have been looking for a big name speaker at one of our meetings, look no further! You will not be disappointed. If you want to learn about lighting or have a lighting question, you will not want not miss Sanjay.

In this month's *Octopus* we feature an article on water movement from our friend Anthony Calfo. I have made good on my New Years resolution to upgrade my tank and lighting. I will be documenting my adventure along the way. The first article looks at upgrading the tank's lighting. Additional segments in the upcoming months will look at various other DIY projects I have and will be undertaking. Next month will focus on building a canopy to hold the lighting.

Being Editor of the *Octopus*, I get all sorts of interesting e-mails. This month I happened to receive two for job openings in the aquarium trade. Maybe one of you would be interested.

Lastly, C-SEA officer elections are slated to be held in May. This is a great opportunity for you to get involved in the Club. Feel free to talk to any of the Board members if you are interested in one of the Board positions or if you just want to be more involved.

John Fay
Editor

April Meeting

7:30 pm Friday, April 16, 2004

Cleveland Metroparks Zoo, Administration and Education Building

Sanjay Joshi will discuss Reef Lighting

As always, refreshments will be served. Bring some extra money for the Livestock Raffle!



Calendar of Events

April 10th - **Frag Swap** - 2 pm, The Reef, 7 North State Street, Girard, Ohio (330) 545-1370 – \$5.00 at the door gets you pop, snacks and a chance in the door prize drawing.

April 16th - **C-SEA Meeting** - **Sanjay Joshi** - “Lighting Guru” and Curator HUB-Robesin Aquarium at Penn State

April 17th - **Midwest Marine Conference 2004**, 8:00 a.m. - 5:00 p.m. Weber's Inn, of Ann Arbor (see page 7 for more details)

April 24th - **4th Pittsburgh Area Frag Trade** - April 24th, Noon, hosted by Rob of East Coast Clams, 748 Nordeen Dr., West Mifflin, PA 15122

May 21st - **C-SEA Meeting** - **Annual Elections** - **Spring Raffle, Tentative** - **Members Garage Sale!**

June 18th - **C-SEA Meeting** - John Janda - **Working with Acrylics**

C-SEA is looking to sponsor a bus trip to either Baltimore or Chicago to see the aquariums there. We will be teaming up with CAS and/or PMSI to fill the bus. Let John Janda know if you are interested.



Water Flow, how much is enough?

By Anthony Calfo (readingtrees@yahoo.com)

(Used with permission of the author)

Overflow and Powerhead

Proper water flow is crucial for success with reef invertebrates. However, it is an often neglected and surprisingly inflexible parameter for coral health. Water movement is one of the three fundamentals in reef aquarium husbandry along with light and food. Fortunately, it is also the least controversial dynamic and a very straightforward and simple endeavor. While inadequate lighting of symbiotic corals can often be compensated with extra feeding, inadequate water flow is categorically limiting to growth and increases the risk of morbidity.

As predominantly sessile animals, reef invertebrates are critically dependent on specific water movements to not only help them thrive, but to survive in oceans and aquariums alike. Proper water flow serves many purposes including but not limited to the following: the carriage of food and other nutrients to a coral, the carriage of waste products away, the exchange and dispersion of sexual cues and gametes, purges suffocating detritus, disperses and dilutes familiar and alien allelopathic compounds, and stimulates and supports new growth.

It is very difficult to create too much water flow in most reef aquariums given the very dynamic environment that most corals hail from, but it is possible to dispense water flow improperly.

There are three basic types of water flow on a reef that we commonly replicate in aquaria: laminar, surge and random turbulent.

Laminar flow is the easiest flow to produce and the most commonly *mis*-applied in aquaria. Submersible pumps and powerheads produce laminar flow: a one-directional, linear movement of water. Among popular species of coral in the trade, few will tolerate long term exposure to this type of water flow and even fewer actually need it. It is plainly harmful for many species and is especially harsh on fleshy, large-polyped stony corals (LPS). For sessile animals ill-adapted to weather an imposed laminar flow, prolonged exposure can literally abrade or denude living tissue! However, there are reef invertebrates that do favor laminar flow and grow strategically to exploit it. Sea fans are the most conspicuous example of reef invertebrates that favor this type of water movement. The large, flat plane of a fan gorgonian's body grows perpendicular to the brisk path of water flow to fully exploit the uni-directional movement. Not all gorgonians favor brisk, laminar water movement, though; there are as many or more species of gorgonian that favor surging water movement. To reiterate, only a minority of corals commonly kept in aquaria will thrive with laminar water movement. Most corals prefer random turbulent or surge water-flow.

Surge is a dynamic form of water flow that is the hardest to replicate in aquaria and yet the most useful to employ categorically for the health and growth of reef invertebrates. It is characterized by a rush of water in one direction and then an equally voluminous change or exit of water in the opposite

direction at timed intervals. Most corals tolerate or favor this type of water motion. Polyps and whole animals, if flexible, advance and retreat almost hypnotically in the surge having either side of their structure cleansed and bathed in the life supporting flow. Unfortunately, it is very inconvenient to produce surge flow in small home aquariums. Specialized aquariums and equipment are needed to produce and contain the wildly fluctuating volume of water in the system. Furthermore, the waves and "salt creep" produced by the delivery of water in this manner are more challenging issues to contend with than most home aquarists care to embrace. Display aquariums in living spaces are necessarily more tidy and compact. They often cannot afford the space or aesthetic compromise of a deeper vessel or overhead surge device. There is also the nearly inevitable concern about the sound ("noise" to some) of surge activity in aquariums within the confines of a living space. Ultimately, surge activity is remitted most only to larger aquariums and public displays where such special considerations can be addressed. Aquarists interested in creating surging water flow might begin by referencing The Carlson Surge Device or the Borneman Flush Device (page 341 of Borneman's indispensable work "Aquarium Corals"). For all other aquarists, rest assured that the creation of random turbulent water flow in aquaria instead is a small compromise that still has tremendous benefits to coral health for most species commonly kept.

Random Turbulent flow is perhaps the best universal type of water movement to create in aquaria for the optimum health and growth of reef corals. It is created by the simple convergence of laminar effluents to create a random and vigorous mix of water. Unfortunately there is no single recipe for creating this type of flow since we all rockscope our aquariums differently and such structural impediments change the dynamic of water moving through the system. Very basic experimentation by repositioning the nozzles or effluent stems of powerheads, pumps or returning manifold outputs will determine an arrangement that produces the best movement of water in the display. Ideal flow will stimulate coral polyps to extend eagerly and move about briskly at random. Also, it will prevent any unwanted "dead spots" where detritus could otherwise accumulate. Powerheads are the most commonly employed devices for moving water in aquaria. For those using powerheads, begin by positioning pumps to discharge water to the diametrically opposite end of the aquarium. A pump in the upper left portion of the display might be directed to the lower right area of the tank. Hopefully, another pump in the upper right portion of the tank can be employed to converge on this pattern. Additional powerheads used to disturb the balanced pair of pumps will likely be of great value. Some of the simplest and most effective pump arrangements I have seen have used the top-mounted Tunze "Turbelle" or Aquarium Products "Gemini" pumps in all four corners of the display directed at each other in opposition.

Ultimately, one of the very best and easiest ways to create random turbulent water flow involves a single large external pump (usually plumbed into a sump for the return of water) to reduce or avoid using unsightly pumps and powerheads in the display. A simple and solitary return line from the pump can sneak up the back of the aquarium to form a discreet closed loop of pipe that runs the perimeter of the display and is to be mounted just at or slightly above the running water level. This run of pipe will serve as a manifold to evenly distribute water flow to the tees plumbed

into the loop for a very fine-tuned delivery of water flow to the reef corals below. Small segments of interlocking, flexible pipe can be attached to the end of each tee for even more precise control. Else, a swiveling 45-degree elbow at the end of each tee can still deliver variable water flow nicely. Either way, a teed manifold will afford an aquarist nearly limitless opportunities to adjust the movement of water in the aquarium with ease as necessary.

Whichever form of pump and plumbing an aquarist chooses, flexibility of direction for water flow is critical to be able to continue to produce random turbulent movement in the tank. The rockscape might change (plants, rocks, etc.) and corals will certainly grow, and all such impediments will alter the dynamic of water movement in the display. Be assured, though, that a dynamic and random pattern of water flow is the least complicated and most effective way to provide adequate water movement for most popular corals.

Some Advice about Wave-makers and Wave-timers: in short.. save your money and resist buying such toys! Although variable water flow is indeed better for most corals, it is not so critical that it warrants the complicated and wasteful employment of electronic wave creating devices. The interruption of water flow by timers and solenoid valves is really unnecessary and categorically less useful than the proper full-time employment of the unfettered pumps. Rest assured that the simple creation of random turbulent flow from converging energies will give you the most for your money! At the lowest common denominator, a wave-timer that shares the duty of any number of pump is only delivering a fraction of the same water flow (usually half, for staggered intervals) that could be otherwise be obtained by running the pumps in a dedicated fashion. Furthermore, the interruption of power (with or without soft-start features) places greater stress and wear on the pumps, and measurably shortens their lifespan.

Finally, in address of the specific amount of water flow needed for corals, we cannot only say that more is better. The type and volume of water flow in the aquarium must be tailored to suit each collection of corals that have hopefully been assembled with regard for their similar needs. The old "rule of thumb" for water movement was 4 to 10 times a tanks total volume. In modern aquariums however, a 10-fold turnover of water is mediocre at best. Now enlightened to avoid laminar flow for most corals, aquarists will find that 10 to 20-fold turnovers are common and appropriate. Some systems with various stony corals or programs targeting fast growth will likely employ even great flow. Judicious experimentation is the only rule to follow here.

Borneman, E. H., 2001. *Aquarium Corals, Selection, Husbandry and Natural History*, T.F.H. Publications, Neptune City, NJ. 464 pp

Anthony Calfo is the author of the "Book of Coral Propagation", and co-author of the "Reef Invertebrates" with Robert Fenner. He is a daily mentor and content provider for WetWebMedia.com and he can be reached for comment via e-mail at anthonycalfo@readingtrees.com

75 Gallon Upgrade Project

Part 1 - Selecting the Lighting

by John Fay

Ever since I got my Perfecto 75 gallon tank with pine stand, I've been scheming to upgrade my lights. Those of you who know me, are probably tired of hearing me say "I need to upgrade my lights". Although my fish have always been happy under the 110 watts of power compact lighting, I've had difficulties keeping corals. Sure my coralline growth has been great, and I have mushrooms that are real healthy and a couple of gorgonians that do real well, but any frag I've tried to add from the C-SEA Frag sessions, or freebies I've gotten from various frag swaps, have unfortunately, succumbed to lack of sufficient lighting.

I have been looking and searching for the perfect light setup that I could afford for at least the last year. I knew I wanted a retrofit system, because I also knew I wanted to build a canopy for my tank. I was bored with the strip light look. The first part of my research on lighting, of course looked at the pros and cons of the different lighting schemes: Metal Halide, VHO, PC or T-5. Each has it's own advantage and disadvantage. A while back I had the opportunity to see Paul Pfingsten's tank, he runs all VHO lighting. His coral look great. They are healthy, colorful and have great growth. Anthony Calfo in his Book of Coral Propagation, Volume 1 states "VHO systems are the most versatile lamps for systems less than 30" deep." Well, if Anthony says it's OK and based on how Paul's tank looked, I focused on VHO lighting. VHO lighting was also more in my in my budget versus the other systems. I can shop forever, researching my purchase till even I am bored. I have a 3-ring binder with pages of info on lighting, from recommendations to prices. While I continued researching the best and most affordable setup, in the back of my mind I also knew that I really liked the rippling effect of metal halides.

I was very close a couple of times from ordering my VHO setup, but was never able to pull the trigger. Then a couple of days before the February C-SEA meeting I saw a post on Reef Central from a fellow Club member selling a Hamilton 175 watt metal halide ballast (M57). I was not 1st in line, but I told him I would be his backup. Turns out the original deal could not be consummated and I was now the proud owner of a very affordable MH ballast. Now, of course I had to change gears completely. I ordered a reflector, mogul base and XM 10K bulb. I liked the XM bulb for three reasons, # 1 it would work with my pulse start ballast, #2 XM 10K bulbs were getting rave reviews on the on-line posting boards based on color and PAR value (*Photosynthetically Available Radiation (PAR) output. PAR is the available light between 400-700nm (nanometers). This spectrum is the light spectrum that we, as humans, can see. It is also the area in which photosynthesis occurs in plants. There are considerable discussions to whether the whole PAR spectrum applies to corals or whether just a few narrow*

bands. So far there is no definitive proof one way or the other. So PAR is still the best measure we presently have of judging how intense the lamps output is in relation to coral usage. Source - <http://www.cnidarianreef.com/lamps.cfm>) and # 3 it was affordable. Researching this stuff on line is great, people actually take the time to try different items and post pictures of how they look. In my opinion, this was the bulb for me.

Now, you may have noticed I didn't run out and order a second ballast and setup to compliment what I was in the process of going with. Being the cautious person I am, I wanted to check two things: #1 would my recently purchased, used ballast actually work (being from NY, I guess I have a problem trusting people. I don't think I can buy stuff from EBay for that very reason.) #2, would I like the bulb and setup that I had researched so much. I waited patiently for my stuff to arrive. When it arrived, I quickly setup a temporary stand to holdup the reflector and bulb. I fired it up without a hitch. The light shining over my tank was one I wanted, bright, true and produced the rippled lighting I enjoyed!

Look for Part 2 - Building a Canopy/Hood in May

Midwest Marine Conference 2004

Saturday, April 17th

8:00 a.m. - 5:00 p.m.

The Marinelife Aquarium Society of Michigan invites you to a premier conference with some of the best known Aquarists in the hobby today. The list of speakers is now finalized and I am very excited to announce the following line-up of speakers.

LeRoy and Sally Jo Headly - GARF
Eric Borneman - Author & Biologist
Mitch Carl - Omaha's Henry Doorly Zoo
Frank Marini PHD. - ReefCentral

Registration begins at 8:00am sharp, with the first speaker starting at 9:00am. After the second speaker a sumptuous hot luncheon buffet, followed by the final two speakers. At 4:00pm the conference will conclude with a raffle and some meet and greet time.

Weber's Inn, of Ann Arbor is the site for this wonderful conference in the Great Lake State. Aquarists from though out the Midwest will find a wealth of area attractions well suited to Marine Enthusiasts, including the Belle Isle Aquarium (North America's Oldest), The Detroit Zoo, with breathtaking suspended 2000 gallon Marine Aquarium, and our local coral farm, Tropicorium in Romulus, Michigan is a favorite stop. Several excellent marine aquarium stores, and perhaps a few of our members tanks are well within an hour's drive from Ann Arbor. If you have additional questions regarding the conference feel free to e-mail John Dawe at johndawe@med.umich.edu or call (734) 426-8378 after 11am.

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*

Please welcome new members:

Ron & Sue Ashworth Brunswick, OH
Charles Ferrari Brooklyn, OH
Chris Ritsert Parma, OH

Thanks to the following members who updated their memberships in March:

Charles & Beth Cox
Jim Parker
Joe Steine
Wayne & Melinda Yerdon
Robert Quinn
Brad Watts

2003 - 2004 C-Sea Officers

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Compensation package includes salary + commission, benefits, 401k, travel expenses.

If you are interested, fax or mail your resume to:

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