

A NOTE FROM THE  
EDITOR

Reefers,

In the past month we had one of our biggest events of the year. The Big Bird Port Aransas Collection Trip with special guest Bob Fenner. To much of the members delight all events during the trip were very educational and entertaining to say the least. Mr. Fenner's presentation being one of them. His presentation included collecting different species in their natural habit, the effects of using poison such as cyanide. The presentation also included the do's and don'ts of collecting out on the jetty. We were glad to have Mr. Fenner out collecting with us later that evening out on the jetty. A special thanks to Steve & Cheri Byrd for organizing such a successful event. Many members are looking forward to next year.

- Eve -



OrinonN- August Picture of The Month

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The Nitrogen Cycle  
By: Allan LaViers

There are many questions that arise from those just getting into in this hobby. I first joined MAAST back in January of 2009 after many years in the freshwater hobby. It was then that I realized that I had lots of questions that I had no answers to concerning the salt water aquarium. What is the Nitrogen Cycle? How does this cycle affect the home reef aquaria? Where does this bacterium come from? How do I know when the bacteria that we can't see have done their jobs? How do I keep the Nitrates level down? Are there shortcuts or other methods in which this process can be sped up? Is it possible to add water and rock to a new system and automatically, or within a day have a "cycled tank"? It is in this article that you will find the answers in which I have learned to be beneficial in my time as a reefer.

First, the Nitrogen cycle is a process in which every newly established tank must go through in order to sustain life in a saltwater reef. It was then that I learned it was a cycle that all aquariums have to go through. Also known as a biological cycling process that stabilizes the system. It is, simply put, as a chain reaction naturally occurring in nature that results in the propagation of many different types of bacteria. This bacteria growing in your tank is a good thing as each plays a part in the evolution of your empty boring tank, into that beautiful growing reef.

What is known to be the "Circle of Life", well in this case not a complete circle as depicted in nature or the movie "The Lion King" is actually a ladder of sorts in which each new bacterium born consumes the byproduct of the previous. There is no one cycle in any aquarium that can mirror the one that occurs naturally in nature. This is evidenced by our need to utilize things like Protein Skimmers and Carbon to keep control of the waste of our fishy pets. A natural filter is one that you can not necessarily see, but one that exists only under the unforgiving scrutiny of a microscope. Not all of it is invisible to the eye of course as algae & live rock plays a part in the process as well. However, the bacteria remains invisible, yet their presence is paramount to a healthy and balanced saltwater tank.

There are three components that are involved in the complete cycle of the home aquaria. The components include Ammonia, Nitrite and Nitrate. These three levels will indicate how "cycled" your tank is. For example, when your tank first starts to cycle there will be a spike in Ammonia. This is caused by die off from the live rock as it cures, exported wastes from the critters within the tank, and uneaten fish food that lies about. This process can be expedited by adding hardy fish such as Green Chromis early on that will weather the cycling of a tank. However, anything placed within the tank will have to endure the eventual rise of ammonia. The most humane, in my own opinion, would be to allow the cycle to take place with the placement of Live Rock (already covered with bacteria). This process can be slower, yes, but still very effective and by far the safest.

After a short period the Ammonia level will reach its peak and will begin to decline. It is at this time that the levels of Ammonia can be deadly to those placed in the tank. This level should read at zero before the bacteria begins the conversion from Ammonia into Nitrites. Nitrites are one of the highly toxic components that can prevent blood from carrying oxygen within the animal. Fish can typically withstand twice the amount of nitrite in their water than ammonia. You will see that as this process moves along the chemicals involved begin to be just a little less toxic than the one prior, which takes us to the next chemical in the cycle process, the Nitrates. A bacterium called Nitrobacteria, consumes the Nitrite, and in turn releases a less toxic chemical called Nitrate. Nitrates are much more tolerable to the citizens of your tank than any of the previous components. Keeping nitrates low will keep your fish and inverts, most of all the coral very happy indeed.

There are about as many different ways to keep Nitrates lowered as the day is long. I would bet you dollars to doughnuts that the single most effective way to keep them down is by frequent partial water changes. Other methods include a refugium full of macro algae to include mangroves, a Deep Sand Bed (DSB), a combination of both, and various products of which both local fish stores and online websites tout the ability to lower your nitrates. I even read one article that suggested more lighting in the 6500K area.

In the end water changes would work the best. How much water should I change out you may ask? Well, it depends on the size of your tank. For example lets us the 25% rule. If you have a 75 gal reef you would take out approximately 18 gals of water and replace with 18gals of already mixed saltwater. Ensure that your premixed water is at the same temperature and salinity of your display. With the aid of the refugium and frequent water changes your tank should look great and be an awesome home for all your salt watery friends.

## NEW ELECTED BOARD MEMBERS:

We would like to welcome our newest members of the Board of Directors: Michael Metts (LoneStar), Rob Bernhardt (Mr. Cob), Jack Watkins (txav8r) and Jennifer Prince (Princer7). Congratulations. We look forward to working with you in the near future in making MAAST a place to enjoy.

## September Birthdays

Happy Birthday to the following members.

- HarleyGuy
- theguzzman
- Ocean17
- lhoy
- scuba\_steveo
- sm1983
- watson0720



## A Step by Step Guide for the New Reefer

Here is some very helpful information for the new reefer. This will help you in getting your new reef system up and running.

### A Step by Step guide for the new reefer..

Author: Unknown

The first thing you will want to do is to get a notebook. Write down everything you have in mind. Ask yourself:

A. What size tank?

B. How much filtration will I need? (the entire volume of water should be turned over at least twice per hour)

C. How much substrate will I need? (a good amount is a 1.5 to 3 inch depth)

D. How much live rock will I need? (plan on spending at-least \$5.00 per gallon capacity minimum depending on density of rock purchased. Chances are you will want much more. Don't skimp here or you'll be sorry later!)

E. What type of lighting will I need? (depending on what organisms you are interested in keeping, you should only consider High Output T5, Metal Halide (MH), Power Compact Fluorescents (PC's), or Very High Output Fluorescents (VHO) if you are serious about keeping a nice reef aquarium. Some individuals might recommend standard 40 watt fluorescent bulbs but this is a bad idea in most cases unless used on a shallow tank or one in which a very minimal selection of non-intense light requiring organisms will be kept.

F. What size skimmer will I need and what type? (while we don't use skimmers on our personal tanks, we do set them up on newly established aquariums for at least 6 months or so. This is more of a safety precaution than anything else and will allow for a much larger error rate than without one as well as cutting back the waiting time considerably)

G. Ask yourself: Do I really want to spend this much money? Remember, this is just the basics. If you don't want to spend the cash, then it's time to move on to a fish-only setup or to a nice freshwater aquarium. If you still are set on setting up a reef but can't really afford it, then slow down and take your time gathering the proper equipment. Don't skimp on equipment. Look around on the internet for aquarists selling used equipment that is still in good shape. Look in the classifieds in the local newspaper. You will be amazed at what you will find. We purchased a 300 gallon aquarium for \$100 dollars which we found in the newspaper!

## Step Two

**The Tank:** Basically there are three types of aquariums available. Acrylic, Glass, and wooden with a Front Glass Panel (the last best avoided for reef aquaria).

While acrylic is light and strong as well as easily drilled, it scratches very easily (especially when scraping algae or diatoms) and often turns yellow with time. For this reason, we recommend a glass aquarium. (though the decision is still yours) If you do go the glass route, try to find one that is made out of non-tempered glass. This will allow it to be easily drilled if you decide to do so later down the road.

The size of the aquarium is the next question to be answered. Basically, the bigger the better. The larger the aquarium, the more forgiving it will be when you make a mistake or don't catch a problem right away. A good starter aquarium should be at least 45 gallons.

**The Stand:** This part is probably one of the least important aspects of keeping an aquarium. Basically, it should be sturdy enough to support twice the weight of the aquarium when full with water. If you are interested in building a stand, take a look at our plans. You might also want to ensure that the stand provides enough room underneath for other equipment.

**Pumps and Power heads:** While turning over the entire volume of water at least twice per hour is important, one must remember that current should be evenly distributed throughout the aquarium. A good pump with at least 3 water returns pushing medium current should suffice. If not, you might want to consider the purchase of a couple of power heads.

**Heater:** In larger aquariums, a heater is hardly needed if one can keep the room temperature consistent. If you are set on using a heater or are keeping a smaller aquarium, you might want to purchase two or three small heaters vice one large one. This will help protect from heater failure which most likely will happen sooner or later.

**Skimmer:** Quality is important here. Use a well known reputable skimmer brand and make sure it is too big for your system. That is right - I said too big. If your system is 55 gallons, you should try to get a skimmer rated for up to 100 gallons or so.

**Lighting:** The most intense lighting would probably be in the form of Metal Halide lamps. We recommend MH with supplemental VHO or PC's for additional actinic blue lighting. Look around, do some research to decide what lights are best for you. By now you should have a basic idea of what type of organisms you will be keeping.

Misc. equipment: Other equipment you will need are:

- A Hydrometer
- Kalkwasser Dripper
- Various test-kits (ammonia, nitrate, nitrite, Ph, calcium, phosphate)
- A magnetic Glass Cleaner (optional though useful)
- Reef aquarium epoxy (for mounting corals as well as rock-work)

## Step Three

**Setting up the tank:** Now that all the basics are in place, you can setup the aquarium. Ensure that it is in an ideal place, away from heavy drafts or intense sunlight which might overheat your aquarium. Ensure that all electrical outlets are located in close proximity for

**Writer's for the newsletter committee.**

We need writers!

Now, a lot of you think you can't write an article -but we're not only looking for advanced topics here - we need beginners stories, tips, product reviews, and more!

Send us your thoughts any and all are welcome.

Looking forward to working with you.

Sincerely  
The Newsletter  
Committee.

## Pay It Forward Program

Our Pay it Forward Frag Program has a new look! Our very own Rob Bernhardt aka (Mr. Cob) is the incharge. If you have any questions please feel free to contact him via PM. We are delighted to see your work come to MAAST. Thanks Rob for your hard work.

# What is the Nitrogen Cycle:

The nitrogen cycle of an aquarium is a chain reaction in nature resulting in the birth of various types of nitrifying bacteria, each with their own job to do.

The three components involved to make this happen are ammonia ( $\text{NH}_3$  or  $\text{NH}_3+4$ ), nitrite ( $\text{NO}_2$ ), and nitrate ( $\text{NO}_3$ ).

In general the nitrogen cycling process usually takes about 30 days, but there is no exact time frame for this process to complete its task, as each aquarium is different. Factors such as how many fish, other livestock, and organic matter is present in the tank can vary the completion time, one way or the other.

Testing your aquarium water during cycling is very important, as this will tell you what phase the aquarium is in at any given time throughout the process.

Continued from Page 3

ease in setup. When finished, you should have all equipment in place though not turned on. We recommend a standard computer-type power box for controlling all equipment instead of a direct outlet or power-strip. Ensure that all water return is set in a good position to provide good water circulation. Ideal would be at least one return from each side as well as one return near the center of the aquarium which delivers water directly into top of water column. This will help avoid surface slime from developing. Follow manufacturer's instructions for setting up all other equipment. Feel free to contact us with any questions.

## Water Source

Find a reputable manufacturer of aquarium salt. Some choices include:

- Instant Ocean
- Reef Crystals

Follow manufacturer's instructions though always prepare 24hrs in advance. Synthetic salts often raise significantly in salinity after freshly mixed. We recommend at Specific Gravity of 1.025 - 1.027. Many authors recommend levels much lower though we find this target to be of the most beneficial.

Fill tank 1/2 full with fresh seawater mix. Ensure that you have enough prepared to fill the remainder of the aquarium after addition of rock and sand. Do not attempt to turn on equipment until tank is completely full.

## Live Rock/Sand

The purchase of live rock and sand is not an easy one nor a cheap one. You should expect to pay anywhere from \$4.00 - \$8.00 per pound of live rock or live sand depending on location and grade of rock. You will need plenty of live sand though only half of what you will need for the aquarium should be purchased as live sand. The other half should be a dry aragonite mixture supplied by your local fish store. This mixture will give the best overall long-term results.

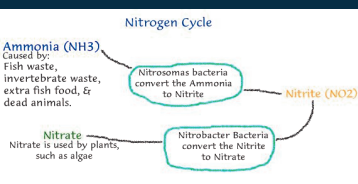
Try to get as wide a variety of rock as possible (our favorite being Tonga rock due to its branchiness) This will present a wide variety of organisms later down the road. Stay away from "base" rock as it is basically standard rock or dead rock which has been placed in seawater. While it may hold some live and beneficial bacteria, it hardly compares to the real thing. Once again, don't skimp here! If you can't afford it now, you can always add more next payday! Look for sizes that will easily shape with others in your aquarium's size.

When placing the sand, just dump it on in (aragonite first). Don't worry about the water getting cloudy. It will have plenty of time to settle. Next, begin to construct the rock-work remembering to provide as many caves and crevices as possible but don't forget to provide lots of flat areas to place your specimens! You can use epoxy, stainless steel wire, or even plastic ties to form wonderful rock formations. Take your time and don't worry too much about taking too long. Just keep at it until you are satisfied.

Once everything is in place, you can top-off the aquarium with water and turn on all equipment. Don't be surprised if your skimmer doesn't put out too much right away or even if it puts out what may seem excessive. The aquarium will eventually stabilize.

Now for the hardest part.....waiting. Your aquarium will take anywhere from 30 - 50 days to properly establish in which time, the lighting cycle should be on a 12 on 12 off schedule. Don't worry about adding any additives and definitely don't add any livestock. The live rock and sand will successfully cycle the aquarium.

As time goes by, your tank will experience an ammonia spike followed by a nitrite spike



Nitrates are generated by from the metabolic wastes of invertebrates, fish, and bacteria and are highly toxic to your tank. The level should be as close to zero as possible. Hiatt's RN! and tri-pelleted activated charcoal will eliminate the harmful compound. Knowledgeable aquarists recommend using a charcoal-filled flow tube with your filtration system, making sure water and air flow freely through the tube.

### Continued from Page 4

which will be followed by a nitrate spike. When the nitrate spike has reach acceptable levels (30 - 50 days) your aquarium will have "cycled". Don't mistake this for being established. Establishment will come much later down the road however, you can now add a very limited level of organisms which should only include 1 hermit crab and 1 snail per gallon as well as a maximum of one fish per 30 gallons. (you will be able to add additional hermits and snails down the road as tank becomes established) Don't attempt to add any other invertebrates as the aquarium is not yet stable enough to support them. Keep an eye on all parameters each week.

Once a week you should check the following:

- specific gravity (more often in smaller aquariums)
- Ammonia
- Nitrite
- Nitrate
- Phosphates

Each week thereafter, if all basic pars are in good condition, you can safely add one specimen (hardy ones only for first 6 - 8 months). If properly cared for, your aquarium should become "established" in 10 - 14 months.

### **Supplements**

Most aquarists make the mistake of over supplementing their aquariums. The amount of supplementation you will need will depend on livestock levels as well as water changing routine. We recommend adding B-ionic as directed as well as dripping kalkwasser daily. Frequent additions of iodine are also recommended though this may not be needed in aquariums with decent water changes.

### **Maintenance**

Daily Maintenance:

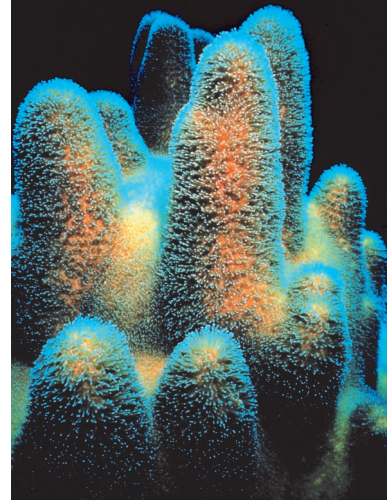
- Check Specific Gravity (in larger aquariums this may not need daily)
- Check Temperature (recommended to be kept at 78 - 82 degrees) Keep stable!
- Add kalkwasser (drip slowly throughout the day or night)
- Check all equipment (a visual spot-check can catch a big problem)
- Feed (feed all fish though this might not need done in lightly stocked tanks)
- Check skimmer (dump the collection cup if needed)

Weekly:

- Perform a small water change (can be done less frequent though weekly small changes can really help to keep things turning over) 5% a week is a good amount to replace.
- Clean interior glass of algae growth
- Clean any pre-filter material
- Clean salt creep

Monthly:

- Remove and clean all heavily soiled equipment.
- Note: remember to read, education is the key!



### pH Levels

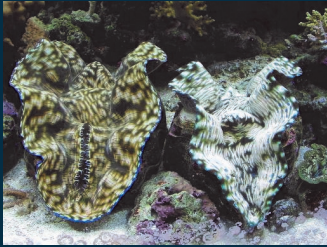
(power of hydrogen)

The pH level in a saltwater aquarium is a constant concern to most aquarists. Whereas the occupants in a fish-only system can tolerate a fairly wide range of pH levels for periods of time with no major harm, the occupants of a reef tank rely heavily on a constant pH level in the right range to just survive, let alone thrive. The generally accepted pH level in a basic saltwater system is between 7.6 and 8.4. A pH of 7 is considered to be "neutral", neither acid or alkaline, while pH above 7 is alkaline or "base", and below 7 is acidic. Reef tanks are a more sensitive, and therefore need to be kept at the higher end of the pH scale, 8.0 to 8.4.

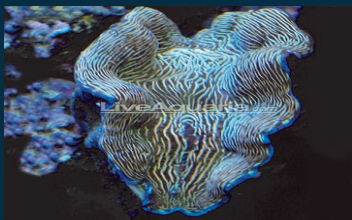
# EYE ON IT

## Species Spotlight

The Derasa Clam is also referred to as the Southern Giant Clam or Smooth Giant Clam. The latter name refers to the relative lack of ribbing and scales on the shell. The smoothness of its thick shell, and the 6-7 vertical folds helps to differentiate its species from *T. gigas*, its larger relative which is not as smooth and has 4-5 folds.



In an aquarium, however, scutes may develop on the Derasa Clam. Its mantle is a mixture of orange, yellow, blue, and black and white, and usually has a wavy striped or spotted pattern, usually with vivid blues and greens. It has a narrow byssal opening and the incurrent siphon has tentacles. This species is one of the largest of the "giant" clams, and grows rapidly, reaching a maximum size of approximately 20 inches. Under the proper conditions, smaller Derasa Clams can double or triple their size in less than a year. Those in the aquarium trade are usually cultured.



The Derasa Clam is the most widely available and hardy of the Tridacna clams. It needs bright lighting supplied by intense fluorescent or metal halide lamps to live, grow, and keep its bright colors. The type of lamp will depend on the depth of the tank and the position of the clam. A daylight fluorescent tube is also recommended.

The Derasa Clam requires calcium levels of 400-480 mg/L, and an alkalinity of 7 to 12 degrees. Proper levels of strontium and iodine are also needed. The Derasa Clam relies heavily on the photosynthesis of the zooxanthellae cells growing in its mantle. However, all clams also require micro foods designed for filter feeders, especially when small.

Information/Photos were compiled with permission from [www.liveaquaria.com](http://www.liveaquaria.com).



<u>September 20th</u>	<u>October 24th</u>	<u>November 14th</u>	<u>December 09</u>
Presentation By Peter Kordelski (Ping)	Halloween Frag Party 5pm-?	MAAST Tank Tour Details TBA	
Bass Pro Shop San Antonio, TX 2-4pm	Mr. & Mrs. Z28Pwr San Antonio, TX		

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### This Month's Aquaria Q&A ...

**Q:** Why Are Coral Reefs Important To Humans?

Coral reefs are among the most biologically diverse ecosystems on earth. Second only to tropical rain forests in the number of species they harbor, they are sometimes called the "rainforests of the sea". Although coral reefs only occupy about 0.07 percent of the ocean floor (an area roughly the size of Texas), they are home to as many as one quarter of the world's marine species. Coral reefs offer important income sources for their human neighbors through tourism and fishing, which provide both subsistence and trade. Recently, scientists have begun to discover that coral communities may contain valuable medicines that may one day lead to treatments for cancer and HIV. For coastal communities, coral reefs also play an important role in protecting their coastlines from storms.



# BECOME A CHARTER MEMBER TODAY

## Membership

Dues are \$25 for the calendar year. These dues quickly pay for themselves by the discounts given that many local stores honor to MAAST members.

We are trying to make our club better, bringing more educational topics, more door prizes and raffle items, and guest speakers. We also have the routine maintenance items like the website, food for meetings, membership dues to national marine organizations, and print/publication fee's. Membership dues allow our club to keep afloat and make all of this possible. As always, the website portion of the club will remain free.

Why collect dues?

1. Keeps MAAST afloat.
2. Funds club meetings so host does not have to pay for all out of pocket.
3. Allows for an image gallery on MAAST website.
4. Extra funds go into pool for "expert" speakers at the meetings.
5. Higher quality raffles, higher quality meetings, higher quality club!
6. Eligibility to run for a club office or be appointed to a committee.
7. Eligibility to VOTE!
8. Discounts at participating LFS's and online vendors.
9. A membership card
10. A voice to represent aquarists' interest.

For more information concerning Charter status, please read our By-Laws.

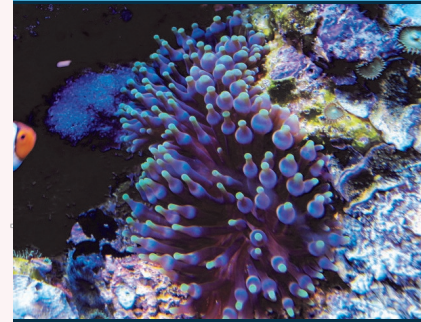
The membership dues are \$25.00. Payment can be made either at the meetings, online via PayPal, or with a check mailed to our PO Box below

PayPal fee's can be sent to [treasurer@maast.org](mailto:treasurer@maast.org)

or via snail mail to:  
MAAST  
P. O. Box 780582  
San Antonio, TX 78278

Please include name, sign-in name, e-mail, home address, and phone!

*Thanks for everyones help and support with this great organization!*



## PHOTO CREDITS

P1 - POTM Winner- OrionN

P2 - Tank Shot  
[www.copyright-free-pictures.org.uk](http://www.copyright-free-pictures.org.uk)

P4- Acan Shot-G-ray

P5- Pillar coral, *Dendrogyra cylindricus*

[Wwww.Wikipedia.com](http://www.Wikipedia.com)

P6 - Derasa Clams  
[www.ReefCorner.com](http://www.ReefCorner.com)

P6-OrionN- Clam Shot

P7- Purple BTA Anemone JimD

## Helpful Tips:

### Optimum Levels

pH	8.1 - 8.3
Specific Gravity	1.026
Alkalinity	8 dKH
Calcium	450 ppm
Magnesium	1350 ppm
Nitrate	0
Phosphate	0 - .01 ppm