ISSUE
1
Jan – March
2011

QUARTERLY NEWSLETTER FOR MAAST MEMBERS

THE MAASTARD

this issue

A NOTE FROM THE EDITOR

Reefers,

As another year has passed, let us say goodbye to 2010 & welcome a greater 2011. In the past couple of years MAAST had to go through lots of adversity, misfortune & destitution in trying to rebuild its name, and we made it happen in 2010. We succeeded, achieved & accomplished our goals this being at the top of our list. I'm not just talking about the BOD or the MODS but talking about you the members as well.. This website has always been for you to enjoy as a hobby nothing more, nothing less. Just a Hobby.

Having served as your Vice President, in 2010 I would like to take this time to thank you all who had the confidence in me to hold such a trusted position on the BOD. A lot was learned, I was inspired and motivated to do all I could for MAAST. I put my heart out on the line when MAAST needed it the most. And I feel first class. A big congrats to my fellow BOD Member Mike Dean for becoming the new Vice President and for doing all he has done for MAAST. I am most positive Ace, Mike and the rest of the new BOD will do an awesome job in 2011. I am looking forward to another 2 years on the BOD, as well as to continue with my dreams of making MAAST an even better & brighter place for all of you to enjoy.

In conclusion, I look forward to seeing many of you at our events, sponsor stores and here on the website/forums. I wish you all my blessings for the New Year and a healthy happy reef tank.

Until next time..

Yours Truly,
Eve Vialpando (Pennies2Cents)
Newsletter Editor

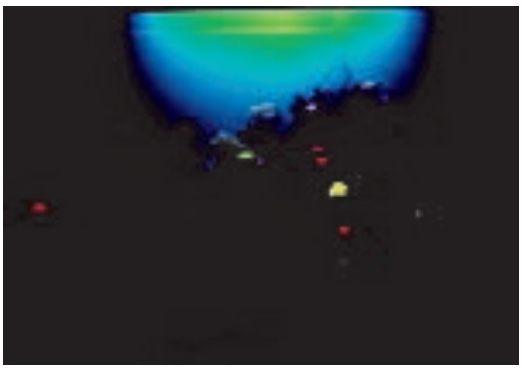
Shedding Light on Coral Bio-Fluorescence

By Ace Shedd

The complexity of anthozoans becomes more apparent the more we learn about them. From the chemistry of their skeletal growth to the biology behind their live tissue growth and the physics behind their appearance, the more we learn the more apparent it becomes that we have much more to learn. Even something as simple as pigment proteins produced by corals is much more complex than it seems.

There are three types of pigments within the tissue of corals. Chromo proteins are the pigments that give a coral its normal daytime appearance. Photo pigments are the pigments used by the hosted zooxanthellae to photosynthesize. Finally, fluorescing pigments are those that allow corals to emulate light rather than just reflect it. Fluorescence is defined as absorption of one color (wavelength) of light and emission of a different color (wavelength) of light in response. Moreover, the fluorescing proteins can range in color including: green, yellow, red, and blue. Also, some fluorescing proteins are photo-activated, which involves specialized lighting and camera techniques to capture the fluorescing image.

One major set of fluorescing proteins is activated by light in the 420nm and 460nm wavelengths. These two wavelengths of light represent the typical color of light that reaches corals at different depths since the other colors are filtered out by the water above. As these photo-activated pigments absorb photons at this wavelength, electrons within the pigment molecule rise to a higher energy state. When they fall back to their resting lower energy state, they release photons. Since some energy is always lost, the released photons are a dif-



This photo shows the vibrant colors of corals fluorescing under UV lighting.

"Bio-fluorescence" continued on page 2

Introducing MAAST's 2011 Board of Directors

President:
Ace Shedd (hobogato)

Vice President:
Mike Dean (Mike)

Directors:

Sherri Ancira (Sherri)

Christopher Bianco (cbianco)

Kristy Dean (Kristy)

Kevin Kiel (kkiel02)

Chris Mata (stangchris)

John Perry (FireWater)

Lorraine Richards (BSJF)

John Roescher (jroescher)

Stephen Thompson (txg8gxp)

Eve Vialpando (Pennies2Cents)

"Bio-fluorescence" continued from page 1

ferent wavelength than the ones absorbed. This is how the pigments can absorb blue light and then emit a different color of light like green or red. Other photo-activated proteins absorb UV light and then emit photons in the visible color spectrum, usually green.

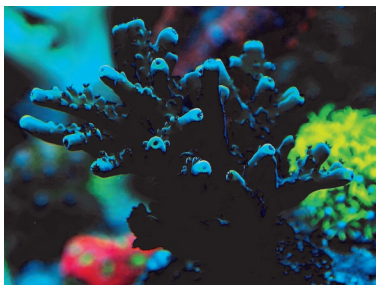


Figure 1: ***Acropora sp.*** **under actinic lighting.**

In order to capture the emitted light from fluorescing corals, the camera has to be able to remove the original color of light from the photo. This can be done with filters, or with the camera's custom white balance setting. For blue light photo-activated pigments, a yellow filter will remove the blue light from the photo.
UV filters can also be purchased to remove noise in the photo when capturing UV photo-activated pigments. Most digital cameras will also allow a custom white balance. This feature coupled with underexposure does a fair job of capturing the bio-fluorescence of corals.

The custom white balance method was used on the following photos. **Figure 1** is an *Acropora sp.* in actinic light (ATI Blue plus T5) with no custom white balance. This photo shows the blue and purple chromo proteins that are responsible for the normal appearance of the coral. **Figure 2** shows the same coral under 460nm blue LED light with the camera's custom white balance set. The camera speed was also set to underexpose the photo at -2. Finally, **Figure 3** was taken under a black light (UV) again with using a custom white balance and underexposing the photo. Also, with each of the photos, a tripod and timer was used to avoid moving the camera during the long exposure needed.

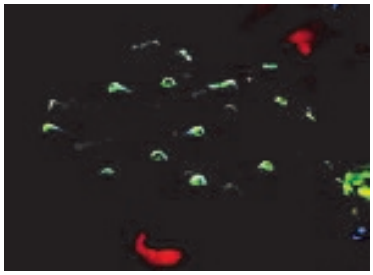


Figure 2: The same ***Acropora sp.*** **under blue LED lighting and custom white balance.**

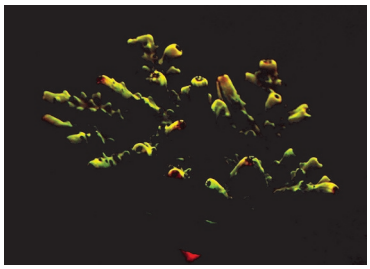


Figure 1: The same ***Acropora sp.*** **under black UV lighting, emitting noticeably different color.**

Not all corals contain fluorescent pigments. Some contain blue light-activated pigments and some contain UV-activated pigments. Finding out which corals fluoresce is just one more fun thing to do to explore and learn more about the animals we keep.

WANT TO LEARN MORE? The following web pages will provide more insight into coral pigments and the fascinating science behind them:

http://www.leddivelight.com/biofluorescent-night-dive-sunset-reef-east-end-of-grand-cayman/

http://www.biolbull.org/cgi/content/full/215/2/143

http://www.advancedaquarist.com/2006/9/aafeature

http://reefkeeping.com/issues/2005-11/ac/index.php

Macro Algae Overview: Venturing Beyond the Refugium

By Karin Baker

Macro algae is generally relegated away from the display tank to the refugium where it often serves a strictly utilitarian purpose of nutrient export. While macro algae is used occasionally for ornamental purposes in biotope tanks, hard coral tanks are mostly void of them and one could get the impression that reefs are just an accumulation of corals and completely free of algae. After all, the reefs are a nutrient-poor environment and all of our algae woes are based on nutrient load, right?

An event that took place in the Caribbean in the '80s illustrates how wrong the assumption of the algae -free reef is. In 1983 the long-spined sea urchin *Diadema antillarum* was struck by disease and suffered mass mortality. By February 1984 the urchin had virtually been eliminated. What is the significance of this? The Acropora coral populations *A. cervicornis* and its congener *A. palmate* had been weakened first by hurricane Allen and later by a slow moving coral disease, but nothing proved as fatal to the fast growing acropora corals as the elimination of the long-spine urchin.

Without the urchin algae quickly overgrew the corals. As Nancy Knowlton writes in a 2001 article published by the Academy of Sciences:

> *"The consistency of ecological responses around the region leaves little doubt that D. antillarum was a keystone species at the time. Indeed, the temporal link between the mass mortality and algal overgrowth provides some of the best evidence for the primarily top-down (herbivory) rather than bottom-up (nutrients) control of algal abundance on Caribbean reefs. The effects were most severe where overfishing had reduced numbers and sizes of herbivorous fishes, a pattern pointing to the importance of ecological redundancy for ecosystem health. In Jamaica, for example, enormous blooms of quickly colonizing seaweeds covered all dead substrates (which were still extensive on Jamaican reefs because of Hurricane Allen). These algae were later replaced by larger, longer living, less palatable algae probably because of feeding preferences of fish grazers that, although reduced in numbers by overfishing, are nevertheless present and typically more selective than Diadema."*
>
> ***- Nancy Knowlton***

With that in mind: algae happens! In fact renowned reef and marine book author Alf Jacob Nilsen even states in his works, "The healthiest reefs have algae."

As one who has completely disassembled a tank in response to *Caulerpa racemosa* algae taking over, I had a very conflicted view on algae. I loved what it did for my nutrient and oxygen levels. I enjoyed what it added to the tank visually. I hated what it did to my corals once it got out of control.

Because of that I have been reading quite a bit on algae to come up with a plan to add algae – either to a display tank or to the refugium – in a way that lets us enjoy the benefits while making sure things do not get out of control.

As we saw in the above example, having herbivores available will be crucial in controlling rooted algae in a display tank. Another concern in regards to algae is the possibility of it 'going sexual' in its method of reproduction. What exactly is the problem with algae releasing spores?

"Macro Algae" continued on page 4

MAAST Newsletter Needs You!

Writers 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

HAPPY BIRTHDAY

From all of us here at MAAST !

NateDogg

J_G

RayAllen

hanknMorgan

taldrich13

devildog1986

MKCindy

txmike

Europhyllia

Marlin

"Macro Algae" continued from page 3

John Maloney describes the event and its consequences like this:

> *When macro algae goes sexual, it releases spores into the water to reproduce somewhere else, normally because it is dying. This is normally a result of poor lighting, lack of nutrients or lack of pruning. The problem is* ***twofold;*** *one extra nutrients from the plant are released into the water which may raise nitrate and phosphorous levels, but more importantly the plant will respire more than normal.*
>
> ***- John Maloney***

The problem with this respiration is that the algae releases CO2 into the water which can greatly affect pH and therefore the health of the other inhabitants. It is normal for algae to generate oxygen during the day and release some CO2 at night. What differs is the amount in which the CO2 is increasing during the release of spores. One way to counteract the possible damaging effects is to operate the refugium on a reverse photocycle so that when one group of algae are adding CO2 to the water, the other group is adding oxygen and things stay in balance.

Caulerpa contains some of the macro algae species most likely to go sexual and should be selected with great care. In his book *Marine Algae Control Secrets,* Bob Goemans, Ph.D. provides a wonderful summary of commonly available Caulerpa species and their suitability for the aquarium. What is important to remember with Caulerpa is that this algae releases a toxin called *Caulerpicin* **that can inhibit coral growth and possibly even harm fishes.**

As far as desirable Caulerpa for the reef aquarium goes, he mentions that *C. mexicana* and *C. prolifera* are the two best species to choose. The reason for that is that both *mexicana* and *prolifera* are the only two Caulerpa species usually eaten by most herbivorous fish and thus more easily controlled. Not surprisingly since *C. mexicana* releases much fewer toxins than other Caulerpa species. According to Goemans *C. prolifera* is more prone to sexual reproduction if it is not diligently pruned.

Pine cone macro algae is an excellent ornamental macro.

Other species frequently available such as *C. racemosa, C. sertularioides, C. taxifolia* and *C. floridana* are recommended as refugium species due to their rapid growth and nutrient export capabilities. After my experience with *C. racemosa* I would be hesitant to take the chance of a small piece breaking off and traveling into the display tank but many aquarists employ these types of macro algae successfully in their refugium.

While Caulerpa is probably the most well known macro algae (along with Cheatomorpha) other wonderful ornamental algae species are available! I found http://liveplants.com to be a great quick reference guide with their photos. http://www.ReefCleaners.org has a wonderful info section as well as a variety of macro to choose from.

One of the safest macro to add to a display tank has got to be the beautiful red Halymenia. It is most commonly available in a free floating form and this one has no roots hence no ability to grab hold of the substrate and take over a tank. If you decide you no longer want it, it can be easily removed. It also accepts being mounted to a rock with a cable tie and adds a wonderful splash of color to any tank.

Similar in color but rooted, is *Botryocladia,* also called grape or red bubble algae (not to be confused with *C. racemosa* grape algae or *Valonia* bubble algae). Goemans recommends the addition of trace elements to tanks containing red algae but I have not experienced a need for it yet. Perhaps my salt mix contains sufficient levels?
Calcareous algae is another option for the reef tank and because of their calceacreous makeup they may even have digestive benefits for grazers such as tangs. Take care and carefully plan the placement of calcareous algae since some such as *Halimeda opuntia* can grow rapidly and others such as *Codium* are easily dislodged and breaking into smaller pieces. A relatively safe choice as far as calcareous algae goes is *Neomeris* also called Spindleweed since it stays short and does not tend to spread.

I hope you enjoyed my brief overview of macro algae for the reef aquarium. Of course there are many more available. As a general guideline if you do add one to the display tank choose one that is palatable to herbivores or of a slow growing variety for ease of control and does not release excessive toxins. Also keep in mind that green macro algae tends to grow faster than red or brown and is therefore a better choice for nutrient reduction in the refugium.

Below is a useful guide provided by John Maloney of www.ReefCleaners.org to maintaining ideal water conditions for a macro tank. Reef systems and systems that use macro algae as refugium species may differ:

Preferred Water Conditions for Macro Algae

- **pH: 7.9-8.2**
- **Temperature: mid to upper 70's, although 72-86 is what they can handle, with short durations of cold endured.**
- **Salinity: some can handle large swings in salinity, *Halimeda monile* for instance experiences 4 drastic swings in salinity a day, and does fine this way. However, try to keep your tank close to the "standard" 1.024, as not all macro algae are so flexible. (Neither are all fish for that matter)**
- **Calcium: 400ppm-450ppm (Especially important for calcifieds like halimeda, brushes etc...)**
- **Magnesium: around 1200ppm-1300ppm (Especially important for mangroves)**
- **Iodine: .4 is the standard (Don't beat yourself up on this, water changes usually are sufficient).**
- **Iron: Keep it around .1ppm - Ferrous iron is the best, as it is easily utilized by plants and macros.**
- **Nitrites: 0**
- **Ammonia: 0**
- **Nitrates: a steady amount around 10-5ppm is ideal for macro tanks. If you use macros strictly for filtering, then you probably want them at zero. If you can find the balance of all the nitrates your macro can take, and keep the tank at a steady zero with good growth then that is of course the most ideal place to be, but it is difficult to do without limiting growth.**
- **Phosphates: Keep them around.05 ppm. (Or at a ratio between 20 and 14 parts of nitrates for each part of phosphate). So in this 20:1 ratio if you had 10ppm Nitrates, ideally you would have .05ppm phosphates.**

Sources:

Sea urchin recovery from mass mortality: New hope for Caribbean coral reefs?
Nancy Knowlton (online at http://www.ncbi.nlm.nih.gov/pmc/articles/PMC33118/)

Marine Algae Control Secrets (Revised 2nd Edition) by Bob Goemans, Ph.D.

Reef Secrets by Alf Jacob Nilsen and Svein A. Fossa

John Maloney http://reefcleaners.org/

Jawfish peeks out from beautiful red Halymenia macro algae.

EYE ON IT

Species Spotlight:

Scallops and Sponges

Scallops are filter feeders, requiring food designed for these types of invertebrates. They require a sandy substrate or a large rock formation to find comfortable spots to rest and feed.

Specialized foods and great water quality are required to successfully maintain these organisms in the home aquarium.

Sponges filter massive amounts of water every day, feeding on the microplankton. Many will develop calcium, silica or sponging structures to support their shape.

Sponges need to be anchored in rockwork; they do not tolerate sandy anchoring substrates.

Information/Photos were compiled with permission from www.liveaquaria.com

Upcoming Events:

January 29, 2011 (2:00 - 4:00)

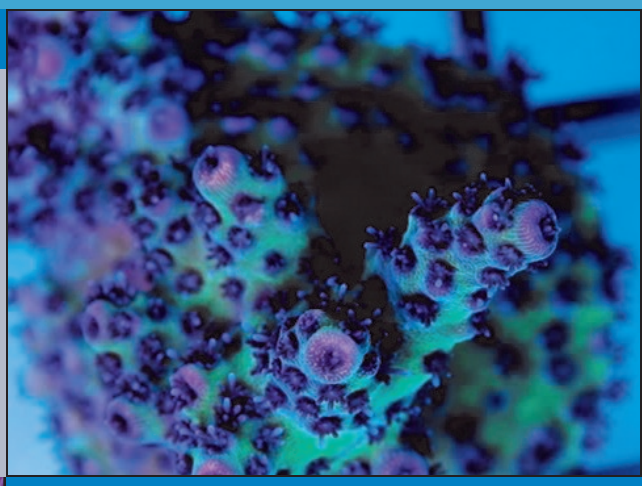
Working with Acrylics

5127 Stormy Breeze
San Antonio, TX 78247

February 20, 2011 (5:00 - 7:00)

LED Lighting

Austin Aqua-Dome
1604 Fortview Rd.
Austin, TX 78704



Coming Soon:

TANK OF THE MONTH

Lorraine (BSJF), Karin (Europhyllia), James (Scream311), and Cory (CoryDude) have been hard at work putting together something new and exciting for MAAST!

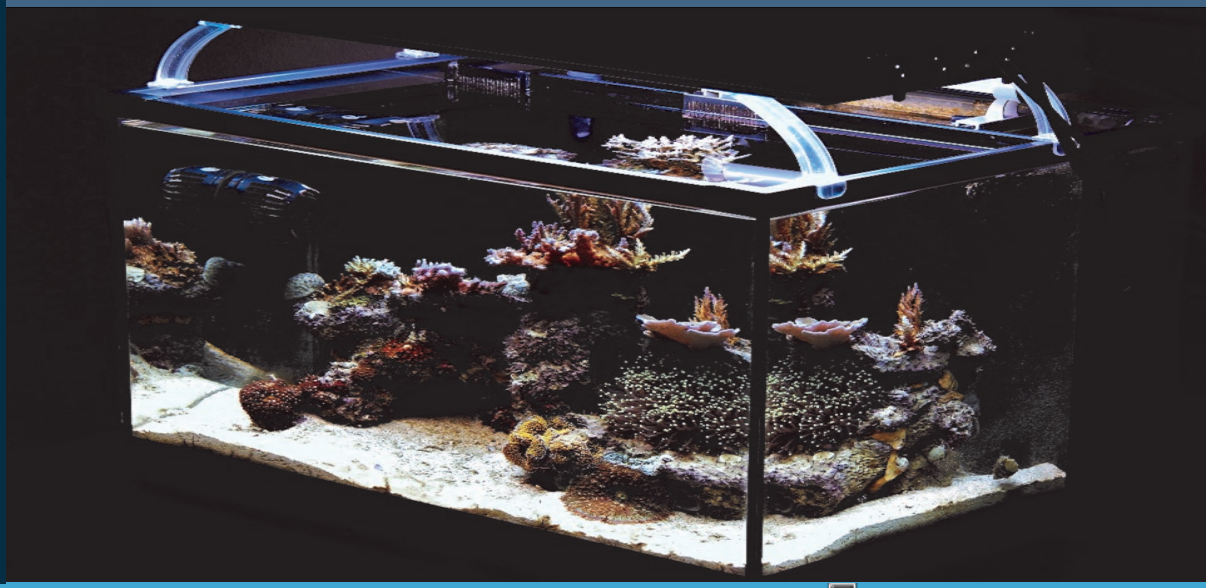
Details will be announced by February 1.

Make plans to nominate your favorite tanks soon!

THIS MONTH'S AQUARIA Q & A

Question: I am setting up a 400 gallon saltwater tank and I am wondering if it's ok to use chlorinated water to fill the tank up initially if I use a dechlorinator. Otherwise, how do you get the saltwater mix with freshwater in a tank that size?

Answer: Yes, it should be fine to mix the salt directly in a tank full of dechlorinated tap water. Mix slowly and test frequently with your hydrometer (or refractometer). Put a little less salt in than what is recommended on the bag/box. Let the mixed saltwater sit and aerate for a couple of days and then re-measure with the hydrometer to see how much you need to add. Don't forget to get the tem-



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**

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 - Jarob - POTM Winner

P1 - Hobogato - Tank Shot

P2 - Hobogato - SPS 1, 2, & 3

P2 - Pennies2Cents - Vlamingi Tang

P3 - Mr. Cob - Macro Algae

P4 - Europhyllia - Macro Algae

P5 - Europhyllia - Macro Algae

P6 - swjim - Pink Acro

P6 - txg8gxp - Green / Purple Acro

P6 – cbianco - Tank Shot