



## The Living Reef

May 2007

Wednesday 30<sup>th</sup> 7:30pm

Hi everyone,

My little spiel this month is on the importance of planning your marine aquarium. Recently I have seen a number of tanks, both professional and DIY that are suffering from a major lack of planning. The way I normally go about planning is to list everything I would like to achieve with the tank. Then a list of all the equipment, including gear which is way out of the budget, needed to achieve it. From here it is just a matter of drawing up a quick flow chart of how the water is going to be processed by this equipment ie: Tank > overflow > filter sock > skimmer > 1micron filter > calcium reactor > refugium > automatic top-up > heaters > return pump > Tank. With this information,

you now have a good plan of attack, and its time to tackle how to fit it into the available space. This is where it's a good idea to start grinding through the tank journals and see how other people fit all that equipment under the cabinet. Remember, the more water volume, the more buffering capacity you have with salinity, calcium pH etc, so the bigger the sump the better. Also, having extra room in the sump is great for when you decide you need that bigger skimmer or somewhere to dose nutrients.

Above all with planning, Take Your Time! This is a long term hobby, and a few weeks working out how to do things properly is time well spent!

See you at the meeting!

Warren

## [RTAW Reefpedia](#)

This [wiki](#) has been established as an encyclopaedia of reef keeping by the [Marine Aquarium Societies of Australia \(MASA\)](#).

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## MASWA Meeting Calendar....

May 30<sup>th</sup>-Gavin Hennessy  
74 Floribunda Ave, Halls Head 6210  
**FRAG FEST!**

June 27<sup>th</sup>  
Halszka Antoszezwska

August 29<sup>th</sup>  
Warren Taylor

July 25<sup>th</sup> Guest Speaker  
Lee McIntyre

September 26<sup>th</sup>  
???

## MASWA Contact Information....

### COMMITTEE – 2007

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### MEMBERSHIP PAYMENTS

**Cheque:** Make all cheques payable to Paul M. Tayler.

**EFT:** MASWA Inc BSB 086-136 A/c 872473681 (please include your name on all EFT transfers!).

**Cash:** Make payment in person only.

### Postal Address:

Paul Tayler (MASWA Treasurer)  
PO Box 7185  
Shenton Park WA 6008



## MASWA Message Board....

### MASWA Test Kits (Free Testing)

MASWA's members are able to bring along water samples to any meeting and test their water. This is handy to verify your own test kits, or to try a kit you don't have at home. The kits are mainly Salifert Tests and include PH, Calcium, Carbonate Hardness/ Alkalinity, Nitrate and Silicate. Chris will also be bringing along his Phosphate Light Meter and MASWA now has a Refractometer to test the salinity of your water. This is a great free resource so make sure to take advantage of it. If you are unsure of how to test your water, bring along about 100ml and ask for help, its free!

### Membership Cards



MASWA will be introducing a Membership Card this month. The cards has been introduced so members can increase their social prestige, showing them off to your mates at the Sunday BBQ's and also to show your partners and families there's a reason why you keep disappearing the last Wednesday of each month.

But more importantly, the card has been introduced to help raise awareness that MASWA is a society of Marine Aquarist's in WA and it will help members to be easily identified to our Sponsors and other marine stores that you may shop at.

So don't be afraid to flash them around and

who knows you may even get a discount from your local fish shop.

### Yearly Photo Competition!

We will be running a yearly photo competition. Photo's can be submitted at the meeting or via email. The topic is obviously your aquarium, but it can be a single fish, a prized coral, or a full tank shot.

Prizes will be as follows:

1<sup>st</sup> place: A reefing book.

2<sup>nd</sup> place: LFS voucher

3<sup>rd</sup> place: One years MASWA Membership

Photos have to be submitted by the November meeting, and the judge's decision will be announced at the Christmas Meeting.

Email your entries to a committee member!

### MASWA now has its own bank account.

Please update your banking details for when you are making your membership payments.

The new account details are listed on the second page of the newsletter, but just in case here they are again:

**MASWA Inc**  
**BSB 086-136**  
**A/c 872473681**

## Last Months Meeting Rundown...

Last months' meeting was at Veba's aquarium store in O'Conner. It was a really good turn out, and Russell our most northern reefer (Broome) was there as well.

We had a really good talk on the Pro's and Con's of buying a local fish shop from the owner (Pakko) who had gone some 200 odd days without a day off. The stock in the shop was great, with some really good specials for the night. Here were some exquisite fish as well that are hardly seen in WA.

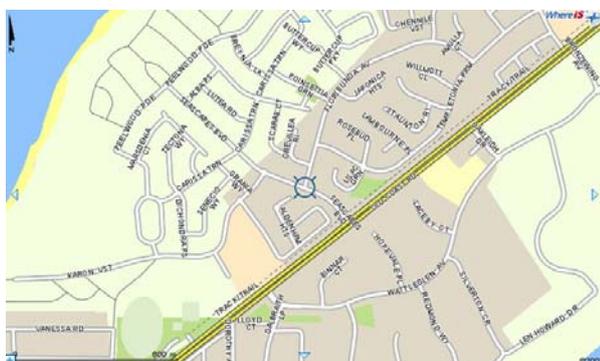
Acro AI ( <http://home.iprimus.com.au/cvz/cvz/> ) had a video of his outdoor tanks that went through a mass coral spawning event. This is a rarely seen thing in normal aquariums, and was great to be able to see it happening



There was a stack of prizes last month as well including a Macro Aqua Skimmer worth \$240.00 from Veba's. Congratulations to the following who took home goodies:

Door Prize, PhosBuster: Gavin  
\$20 PADC Voucher: Chris Sutton  
Fremantle Ocean Farm Water Change: Alan  
Fremantle Ocean Farm Water Change: Marilyn Tayler  
Macro Aqua Skimmer: Tony  
\$20 Rocky Reef Voucher: Lee  
The guide to starting a marine aquarium: Heath  
Oceanarium Hammer Coral: Chris W.  
Oceanarium Soft Coral: Chris (Poppie)  
Australian Coral Farms T-shirt: Neil  
Australian Coral Farms T-shirt: Warren

## Up & Coming Meet Information.....



This months meeting is at Gavin's in Halls Head. Gavin has multiple tanks, including freshwater and Malawi. This meeting is also a Frag Fest! So remember to bring along any corals that need a trim. It's a great time to find out how to take cuttings from the experts and even have a go yourself. Once you make the first cut, you'll be looking at every coral you see to work out where to give it a prune.

There will be excellent prizes as usual and Oceanarium have donated corals for the event.

# Feature Articles

## Part Two of Ross's Reef Guide...

### Do I have a PLAN for my marine startup?

Is a plan essential? YES! Marine systems are relatively simple to set up. But to understand the setup and how each component fits into the setup gets a bit more complicated. I would recommend a thorough understanding of what you are attempting to do before you plunge in. Once you have the understanding it becomes relatively simple to formulate the plan.

### Research.

This is where it all starts. A good reference book is a great place to start. There are also numerous internet references to assist in this aspect. The [RTAW Reefpedia](#) is such online resource and includes its own Beginners Guide.

A major problem with marine systems is the sheer quantity of information available, and it gets worse – a lot of the information will seem to conflict at every turn so there are quality of information issues as well. This is why research is such an important aspect, any information gathered needs to be checked and/or verified in one way or the other.

### Stock.

Another critical aspect of the planning stage is to know what you want to keep. Corals and fish can have specific environmental requirements and they can be completely different from other organisms that you may want to keep. Seahorses in particular benefit most (and in fact need) a species specific system but there may be other compatibility issues with other species. Angelfish are known nibblers of coral so a fishonly system would be of benefit for those types of fish, Butterflyfish are the same. Coldwater or temperate species would have a different setup requirement to those of a tropical setup.

### Equipment.

Yes there is a lot of gear to hang off a marine system. Heaters, circulation pumps, lights the list seems endless and that's only the basic stuff. Below would be a list of my minimum recommendation of equipment for a system startup. This is my opinion only so verify it first.

- Glassware – tank and sump
- Stand
- Lighting
- Return pump ( for sump)
- Circulation pumps for minimum 10x turnover
- 2 x heaters (slightly overrated for built in redundancy)
- Skimmer

Items that may be included for purchase further down the track could include:

- Auto evaporation top off (recommended) Calcium reactor
- Waveboxes
- Light timers
- RO water filter (recommended)

### Do I need sand in the tank?

There are 2 types of sand bed, shallow sand bed (SSB) and a deep sand bed (DSB). Some systems are run with a polyethylene base (like a bread cutting board) instead of sand or indeed nothing at all (bare bottom or BB) and it is generally a matter of personal taste and/or function.

A SSB is mostly aesthetic. Some fish are also inclined to bury themselves in sand beds for sleeping (some of the Wrasse family of fishes) so a system may have to include one if wrasses are planned.

A DSB is different as it also performs an environmental function aside from the aesthetic appeal. DSB's of a certain depth can provide zones that are oxygen poor (anaerobic zones), in these zones a particular type of bacteria thrive. These bacteria take nitrate from the water, use it as their oxygen donor and reduce the molecule to its components of nitrogen and oxygen that diffuse out of the water and out of the system.

### Why do we need these anaerobic bacteria?

It's a good question. It's that nitrate reduction process that is desirable in a marine system. Nitrates are a pollutant in the system and are the end result of a process called Nitrification. By oxidising the nitrates and therefore the pollutant they help to keep the water better for the organisms that live in it.

### Nitrification ( The nitrogen cycle).

Nitrification is one of the building blocks of pollution control in nature and as a marine aquarist we'll exploit it to the fullest extent possible. Simply put, the fish in a system produce nitrogenous wastes as Ammonia, bacteria in the aerobic (oxygen bearing) zones oxidise the ammonia to nitrite. Still in the aerobic zone yet more bacteria oxidise that nitrite to nitrate. But that's as far as it goes in the aerobic areas. If the nitrate is not removed from the system either physically or biologically it will build up in the system until it's detrimental to the organisms we place in the system. Water changes can dilute the nitrate but a strategy for removal/conversion is a better idea. A DSB on its own is sometimes not the simplest solution as there are many variables such as bioload, sand grain size etc. It may be better to attack the nitrate from more than one angle such as:

- DSB for bacterial conversion to gas
- Skimming to remove some of the fish waste before it begins to break down.
- Algae for uptake of nitrate (requires harvesting to actually remove it from the system) and is usually placed in the refugium.

Healthy reefing to you  
Ross Coghill

(aka *Kranky*)

## Calcium Reactor Calibration

Daniel Roworth

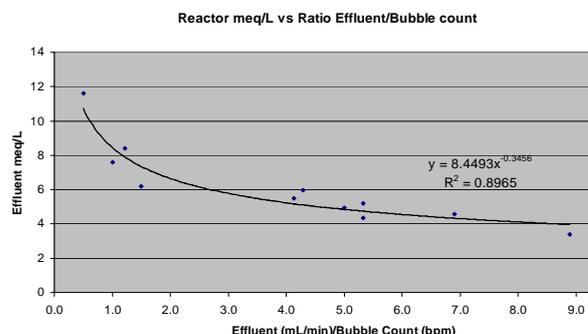
I made a post some time ago theorising that calcium reactors may be partially self adjusting/correcting as the tank alkalinity changed. To try and give some data to back up my theory I started making a point of measuring my calcium reactor operating conditions- bubble count, effluent flow rate, effluent pH and alkalinity during my weekly tank checks.

Although I have been unable to show any real relationship between my tank alkalinity and the level exiting my reactor- mainly because my tank alkalinity doesn't swing that much- I did find something interesting.

Many people advocate measuring the pH exiting the reactor as a guide for adjusting the effluent rate and/or bubble count to make sure the reactor is operating efficiently. Although I started off measuring the pH (using a handheld pH pen) I soon gave up as it seemed to have little relationship to the reactor discharge alkalinity. Now there should definitely be a relationship- and I'm sure it's there- but I was seeing large swings in alkalinity for very small (0.1 unit) changes in pH- so the search was on to find a better measurement to tune my reactor to.

The basis of any calcium reactor is that a slow flow of aquarium water is passed through it and circulated through a bed of carbonate media. Carbon dioxide is injected into the recirculating water which lowers the pH. As the pH drops the water begins to dissolve the media in the reactor- raising the alkalinity and calcium levels of the effluent leaving the reactor. The "output" of the reactor (in terms of meeting the calcium/alkalinity demand of the display tank) can be increased by increasing the bubble count, increasing the effluent flow rate or both. In most cases it is recommended to increase both effluent flow rate and bubble count together as this keeps the reactor operating efficiently- i.e. getting the most out of it for the least CO2.

So with this in mind I began to look at the discharge alkalinity of my reactor based as I changed the ratio of the effluent flow rate to the bubble count. The following chart shows a plot of effluent alkalinity in meq/L vs the ratio of the effluent flow rate (in mL/min) and the bubble count (in bubbles per minute). A low effluent:bubble count ratio indicates a high bubble flow rate for a given effluent flow and vice versa.



As you can see there is a reasonable correlation between the two- and by using the formula to the right- I can estimate my effluent alkalinity based on the ratio of my effluent flow rate and bubble count. This gives me a much quicker and easier method for tuning my reactor than measuring the pH. Nothing is ever as easy as it seems of course- there's always a catch.

First of all this calibration chart is unique to my reactor- different reactors will give different charts mainly because the bubble size may change. Secondly any change to the media is likely to shift the curve- and may even result in a completely different shape. Lastly differences in reactor design may give a different concern- particularly the size of the reactor for a given flow rate and whether the reactor has 1 or 2 chambers (mine is a dual chamber reactor).

Well I hope that the above is of interest and/or use to you.

Cheers,

Daniel  
aka ItDepends on RTAW.

## Fishy Links And News

### Cyno driving me nuts

hi all. my tank is overrun by cyno. been like this for close to 3 months now, and nearly all my corals have gone. im thinking of removing all my bio balls from my sump setup. running 3 skimmers ( ill borrow 3 little queen skimmers) from a friend and run them directly from the main tank ( currently 1 is in the sump)...

### Kalkwasser

should my kalkwasser solution be cloudy or clear, i mixed some up last night at the rate of just over a teaspoon per litre and the solution is pretty well white. whats yours like...

### The fat tang club! - Now accepting all fish!

Post yer tangs!

I'm kicking it off with our orange-shoulder  
Sorry about the photo - it's really hard to get a front-on without reflections

### The "How To" Guide to Reef Aquarium Chemistry for Beginners,

#### Part 3: pH by Randy Homes-Farley

This article is the third in a series that deals with coral reef aquarium chemistry issues on a basic and practical level. Its primary purpose is to get new aquarists to focus on those aspects of reef aquarium chemistry that are truly important, instead of on those that are not. New aquarists are bombarded with a huge assortment of issues and opinions related to aquarium husbandry practices, and none seems to cause more anxiety than chemistry issues. Some of these issues are actually very complicated, and the answers to many questions are simply not known. Fortunately for hobbyists, knowing the answers to these questions is rarely important to keeping a wonderful reef aquarium. Those issues that are important to understand are much more straightforward and can be solved without excessive anxiety.

## Classifieds

4 x 2 x 2.5 (H) - Incl. -- all live rock, corals, fish, zebra eel, refugium, berlin protein skimmer, 400w metal halide, 300w jager heater, cabinet & open hood. .... \$2500

Breeding system - 2 tier stand with ten 18 inch square tanks, all connected to main sump. Incl. pumps, heaters and lights.. ... \$500

Breeding system - will suit marine or f/w. Incl 10x 120L tanks, 3x 80L tanks, all connected to main sump and two separate sumps for remote deep sand bed and refugium use. also c/w heaters lights and pumps. ....\$1500

breeding colony of bristlenose catfish - (1 male and 5 females) comes with 3 4ft tanks on 3 tier stand all lights gravel pumps heaters plants etc included .....\$400

Brand new tank - 1200 x 450 x 800 H - comes with 150w metal halide, black cabinet and hood, sump. Currently f/w set up with fish but will sell fish separately if tank is wanted for marine purposes. Tank has over flow box and is done with black silicone. Also comes with heater and

pump. ....\$1000

Brand new tank - unused black silicone with over flow box and hole for return 1200 x 350 x 800 H .....\$400

Contact Heath on 0416 240 115

Your stuff for sale here!

Please try to keep it aquarium related.

It can be equipment, fish, corals etc!

Email a committee member to get your ad shown!

## MASWA Sponsors....

It's official; MASWA now has Seven commercial sponsors! MASWA sponsors get an advertisement and a banner in the newsletter each month. The advertisement can be used to advertise monthly specials etc. Depending upon what has been agreed with the sponsor they may offer MASWA such things as member discounts, donations of goods, gift vouchers or special offers.

Advertisements in The Living Reef do not necessarily reflect MASWA endorsement of any product, service or advice offered by the advertised business. If you would like to advertise in The Living Reef, please contact Maria White (Social Coordinator) on 0416 206 647 or email: [n1venus@bigpond.com.au](mailto:n1venus@bigpond.com.au).



**Fremantle Ocean Farm will generously donated the next water change to all new members who join MASWA and 2 free water changes vouchers for the raffles**



has kindly donated a door prize for the MASWA Meetings

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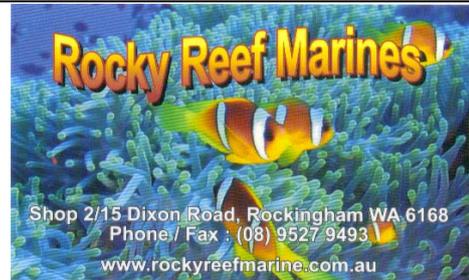
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**Rocky Reef Marine has generously donated gift vouchers and products for the MASWA raffles**

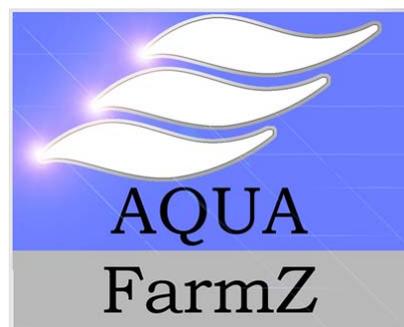


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**Veba's generously donates prizes for the MASWA raffles**



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**Perth Aquarium and Display Centre has generously donated gift vouchers for the MASWA raffles**

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