



The Living Reef
April 2004 - Setting Up Aquarium Hardware
SUNDAY MEETING @ 2:00pm!

Editorial....

After seeing Elmer's tank last month it made me feel like my tank was very small and insignificant. In fact I suspect his refugeum was bigger than my tank! After some thought and much deliberation I came to realize that the old saying, it's not how big it is, it's how you use it, may actually be true in this case! A big tank may look impressive however it takes lots of sand, rock, coral and fish to fill up and if something goes wrong.....you can stand to loose too much money to mention! On the other hand a small tank doesn't have nearly as much livestock and is actually more finicky to look after and much harder to aquascape it well. So what does all this mean? Not much really, I am just making excuses to justify why I can't spend money on a on a large tank! Given the choice though, I would always go big if I could!

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MASWA Meeting Calendar....

SUNDAY April 25th 2004 @ 2:00pm
 Perry and Julie Turnbull
16 Woodland Place, Casuarina
Aquarium Plumbing and Hardware Setup

May 2004 – Chris Ferret
Fragging Demonstration & FRAGFEST III

June 2004 – Matt Weis
Special Raffle

July 2004 – ?
Decapsulating Artemia (brine shrimp) Cysts

August 2004 – Nigel Clark
FRAGFEST IV

September 2004 - ?
Special Raffle

This Meeting starts from 2:00pm, formalities start promptly @ 2:30pm!

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Cash: Make payment in person only.

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NEWSLETTER CONTRIBUTIONS

If you would like to make a contribution to the newsletter please don't hesitate to contact the Newsletter Editor, David Bloch on the phone number or email address listed above. Contributions to the newsletter need to be received no later than 7 days prior to the next meeting date.

Blubbery Gross-Out

The Infamous Taiwanese Exploding Whale!

A Whale of a Mess - Whale watchers in Taiwan got more than they bargained for as they gathered to gawk at a dead sperm whale as it was hauled through the streets of their fair city. After washing up on a nearby beach, the unfortunate 56-foot cetacean had been loaded onto a flatbed trailer to be transported Cheng Gung University for further study. Apparently the pressure finally got to the poor leviathan and he exploded, showering horrified onlookers and nearby vehicles with blood and viscera. Marine biologists later explained that the cause of the unexpected carnage was a build up of gases in the whale's stomach brought on by decomposition.

Whatever the reason, Shopkeepers along the street where the malodorous eruption occurred were forced to close for the day until the mess could be cleaned up, not to mention the by-standers who were covered head-to-toe in whale innards and were undoubtedly put off sushi from that day forward as a result of the explosion!



In a related story, a photograph of the whale in its pre-exploded state revealed that the now-deceased creature was not only a male of its species, but a well-endowed fellow at that. Photos of the big boy's, er, "big boy" were prominently displayed in local newspapers following the initial cataclysm, drawing some unexpected attention.

Hundreds of local men gathered at the university the next day, saying they were drawn there by an interest in the marine creature's manhood. One might say their worshipful attention was a result of misguided hopes that some of the whales "mojo" might rub off on them, but that would be mere speculation. We will spare our readers the "Free Willy" jokes.



Aquarium Gross-Out Blocked Drains Anyone?

Location - Manly Oceanworld in the early 1990s:

It involved a blocked 25mm outlet at the base of a 6000 litre aquarium. There was not much space underneath the aquarium (surprise, surprise!) so the aquarist was lying on his back underneath the tank. The pipe was really clogged so he had cut it to get access and was trying to unblock it with two fire hoses - one underneath at his end and the other in the tank.

After much cursing and frustration the blockage finally gives - straight into the aquarists face and down his wetsuit. It could have been a simple blockage of sand but that would have been to predictable. It was actually about 30 or so turbo type snails that had gotten into the pipe and got jammed and died.

That doesn't sound too bad does it? What about the smell you ask? Try and imagine copping a pipe load of what was a sort of anaerobic hydrogen sulphide ridden grey / black jelly with lumpy bits of shell straight down the front of your wetsuit! The poor aquarist was so shocked he couldn't even get out from underneath the tank - the stench was apparently unbelievable.

He was promptly dragged out from under the tank and then carried out to the harbour by his wrists and ankles and thrown in - all the while all of the guys, and him were dry retching.

The poor guys stank for a week and never did use that wetsuit again!

March Meeting Rundown....

It's sometimes quite easy to find the home of a marine aquarist at night – just look around for blinding bluish lights coming out of windows or skylights! Elmer's tank was no exception. In fact I could see the light beaming out of his skylight from a few kilometres away!

There was a great turnout to Elmer's meeting. His tank was looking fantastic with lots of happy and healthy fish and inverts. What was most interesting about this tank were the juvenile clownfish that have actually grown up in the tank from eggs. They were not removed and raised, they did it all themselves! In this tank was also a pair of Flame Angels that appeared to be showing signs of spawning behaviour. Maybe on our next visit we will see juvenile flames!

Elmer's tank was lit by 20000K 400W metal halides, actinic blue fluorescent lamps and SUNLIGHT, the magical ingredient. Filtration consisted of live sand, live rock and a protein skimmer that's used a few times a week and a bag of activated carbon in the sump. Also connected to this aquarium is a refugeum that I suspect was providing all the necessary food for the baby clownfish.

To sum it up Elmer's tank was well thought out and setup and put to good use an atrium that could never look as good as the aquarium does!

Congratulations to all who won books in our special raffle. Instead of having lots of cheap books we decided to raffle off fewer but more expensive and hopefully more informative books. You know what they say, quality is better than quantity or is that the other way around? Ah well it's late and my brain aint working too well!

Thankyou to Elmer and his family for opening up their fabulous home and aquarium for us to see. I would also like to thank Mrs Marilyn Tayler for making those delicious chocolates, please make some more for next month! See you all next month.

April Meeting Information....

This month we are heading to the home of Perry and Julie Turnbull. Perry and Julie have a small tank that is doing very well but have also got a large tank that they are awaiting to set up. Perry and Julie have had a little bad luck as far as setting up their larger tank. They purchased a second hand tank, got holes drilled in its base and had it plumbed and filled with seawater. While the water was filling the tank guess what happened? The base cracked! A crack started from one of the holes drilled in the bottom of the tank. Since then they had another tank built, this time in 12mm glass but have not yet set it up.

This month we are going to discuss the basics of setting up a tank and show Julie and Perry how easy it is. We will go through the plumbing, pumps, skimmers, calcium reactors and lighting. We hope to get everyone involved with the discussion and hear what ideas everyone has for setting up the hardware side of the marine aquarium.

The meeting will be on **Sunday 25th April 2004 @ 2:00pm** and the **address is 16 Woodland Place, Casuarina**. Drinks and nibbles will be served as normal.

Please note that this meeting is on **SUNDAY @ 2:00pm**, not **WEDNESDAY @ 7:30pm**. You can come on Wednesday night if you wish but no one else will be there and you will look like a fool ☺

Hope to see you all there.

MASWA Message Board....

MASWA 2004 ARTICLE PRIZE!

To try and encourage members to get actively involved we have decided to offer a \$100 prize to the person who has contributed the most hobby related articles, cartoons or jokes etc to the MASWA 2004 newsletters. The content must be suitable for general audiences (no rude jokes Nigel and Tony! Ed.). The winner will be announced at the **December 2004 CHRISTMAS** meeting.

MEETING DAY – SUNDAYS OR WEDNESDAYS?

With Perth being such a spread out city MASWA is now finding itself in the situation where it has members from one end of the city to the other (Mandurah to Mindarie!). As a result of this we have started toying around with the idea to have the odd meeting on a Sunday. We will trial a Sunday meeting this month and see how it goes. The problem with having the meetings on Wednesday evenings or any weekday evening for that matter is that some members have to travel long distances late at night. Not only is this a pain but may prove dangerous as we all know the risks of driving tired. We will discuss this at the upcoming meeting but until then just think about it. It is also hard for parents who want to bring their kids along to meetings. Please feel free to comment on this and let us know what you think.

GENERAL MEETING AGENDA (Wednesday's)

For those new members who have not been with us long or perspective visitors/members reading this for the first time below is a rough agenda of what happens at a MASWA meeting:

7:30pm: socialise and catch up with friends, introductions of visitors and new members to everyone by social coordinator and other committee members.

8:00pm: opening of meeting, formal introduction by president, welcome visitors and new members.

8:30pm: introduce host, host presentation of aquarium.

9:00pm: draw raffle and if appropriate start "fragfest" or guest speaker talk/presentation.

10:00pm: draw meeting to a close.

RAFFLE PRIZE DONATIONS

If anyone has any books, hardware, livestock or any bits and pieces they wish to get rid of how about donating them to the raffle table? All the monies raised in the raffle go back into MASWA so the better the raffle the better the prizes and the more we can do during the year.

CORAL FRAGGING DEMO & FRAGFEST III COMING UP @ MAY MEETING

In May we will be holding our third FRAGFEST so now is the time to start fragging and growing those corals that are overtaking you're your tank! The sooner you get them started the healthier and happier they be by the May meeting. Prior to the May FRAGFEST we will be conducting a fragging demonstration for all the newer

members who did not get to see the demos last year. We will demonstrate fragging of both hard and soft corals and show the various techniques used to separate and attach the frags to pieces of substrate.

Marine Whitespot, *Cryptocaryon irritans*....

This article was sent to me by a friend from Uni. It's a little technical at times but nevertheless quite informative. Unfortunately my friend can't remember where it's from so if you recognize it please let me know so I can ask them for permission to use it – oops it may be too late for that!

Introduction

Cryptocaryon irritans has been described as one of the most devastating parasites affecting marine fish (Wright & Colorni, 2002). Heavy infections cause mass mortalities and financial losses in both ornamental and food fish. The confines of an aquarium make ideal conditions for the proliferation of this pest. Within a closed system, the population of *Cryptocaryon irritans* can increase approximately 10-fold every 6-8 days (Burgess, 1992).

Despite all of the information currently available about this parasite, it still remains to be one of the most serious threats to the health and well-being of captive teleost marine fish. This is due in part to misinformation about the life cycle, mode of transmission and treatment options that are perpetuated largely (albeit unintentionally) by misinformed hobbyists and retailers. This five part series will detail these and other aspects pertaining to *Cryptocaryon irritans* in an attempt to dispel such misinformation.

What is *Cryptocaryon irritans*?

Cryptocaryon irritans is commonly referred to as "ich" or "white spot" by marine aquarists. *Cryptocaryon irritans* is a ciliated protozoan parasite of marine teleost fish in tropical and temperate waters. This pathogen is an obligate parasite of marine fish (Iwama, Pickering, Sumpter & Shreck, 1997. Dickerson & Dawe, 1994). This means that it feeds exclusively on fish and cannot complete its life cycle unless this food source is available within its environment. The theront stage of this parasite will not survive for more than a day or two without a host fish.

History

Cryptocaryon irritans was first reported in Japan in nineteen-thirty-seven (Sikama, 1937). It was described as a ciliate parasite infecting more than 45 species of marine fish in aquaria of the Tokyo Imperial University Institute for Fisheries. Occurrences of infection with this pest were previously observed only in public or private aquariums (Nigrelli & Ruggieri, 1966. Wilkie & Gordin, 1969). Since that time, it has become increasingly problematic in mariculture (Colorni, 1985. Huff & Burns, 1981). *Cryptocaryon irritans* shares many similarities with the freshwater parasite *Ichthyophthirius multifiliis*. However, these two parasites are taxonomically distant.

Recent developments

There is extensive phylogenetic analysis and molecular support for the taxonomic re-assignment of *Cryptocaryon irritans*. It was recently recommended that this protozoan ectoparasite be taxonomically reassigned to the order *Prorodontida* within the class *Prostomatea* and a new family name has been suggested, *Cryptocaryonidae* (Wright & Colorni, 2002).

Alarming new evidence has come to the attention of the scientific community that *Cryptocaryon irritans* is adapting to new environments. The parasite has been exposed to different survival pressures, necessitating its constant adaptation and variation (Yambot, et al., 2003). Several new strains have been discovered (Diggles & Adlard, 1995, 1997; Diggles & Lester, 1996a,b,c. Jee et al., 2000). It has been found in new regions, at cooler temperatures (12-16C) than previously reported (Jee, et al., 2000). Until recently, it was believed that the disease would not develop below 19C (Nigrelli & Ruggieri, 1966. Diggles & Lester, 1996b. Gordin, 1969). Highly aberrant strains have recently been found thriving in hyposaline environments in Taiwan (Yambot et al., 2003). With the news that *Cryptocaryon irritans* is spreading to new geographical locations and adapting to a wider range of temperature and salinity comes the need for fresh new strategies and treatments for its control.

Myth and misconception

It is a common misconception among hobbyists that fish must be in a weakened state before they are susceptible to infection with *Cryptocaryon irritans*. Stress is a factor



A *Chaetodon guentheri* severely afflicted with *Cryptocaryon irritans*.

as it does reduce immune function in fish. This makes it less likely that fish will develop some level of acquired immunity after becoming infected. However, stress (or weakened condition) is not a prerequisite to infection with *Cryptocaryon irritans*. Healthy fish that are not unduly stressed are susceptible to infection upon exposure to this pathogen. It is noteworthy that stress has not been mentioned as a factor when infecting fish in clinical trials with *Cryptocaryon irritans*.

Another commonly held belief among hobbyists is that *Cryptocaryon irritans* (ich) is always present in every marine aquarium. They mistakenly liken "ich" to an opportunistic bacteria or other pathogen that is always

present within the aquarium and assume that it only becomes problematic if the fish are in a weakened state (i.e. poor water quality, or diet). Those that hold to this belief often downplay the importance of preventive measures such as quarantining new acquisitions prior to placing them into display aquariums. *Cryptocaryon irritans* must be introduced into the aquarium before an infection can develop. Generally, this parasite is imported into a system or aquarium with infected fish. Failing to quarantine these new additions puts the established stock at a much greater risk of infection. It is also more difficult and problematic to treat disease outbreaks in a display aquarium; especially those that contain live rock, or invertebrates.

Dr. Harry W. Dickerson made the following statement pertaining to *Cryptocaryon irritans* in the Summer 1994 issue of Seascopes: "Survival of the aquarium population requires the elimination of virtually all parasites, and treatments will not work unless carried through to completion. When treatments are applied with an understanding of the parasite's life cycle, the chances of success increase significantly." (Dickerson, 1994) "The difficulty in eradicating *C. Irritans* from marine aquaria and mariculture systems arises from the complexity of its life cycle, in particular the prolonged development of some tomonts and the consequently asynchronous excystment of infective theronts." (Colorni & Burgess, 1997). With an effective treatment and proper procedures, *Cryptocaryon irritans* can be eliminated from the aquarium and the fish.

Cryptocaryon irritans is an obligate parasite, meaning that it cannot complete its life cycle (at the trophont stage) without a host fish. Taking into account that the normal time frame in which tomonts will hatch ranges from 3 to 28 days, a fallow (without fish) period of 30 days to 6 weeks is recommended to eliminate the parasite from an aquarium. Removing all potential hosts from a system for this period of time should eradicate the pest from the aquarium. If the fish are removed from the display to another aquarium for treatment and an effective means of therapy (i.e. hyposalinity or copper treatments) is employed, then those fish will be clean of infection.

What fish are susceptible?

Cryptocaryon irritans has low host specificity (Burgess & Mathews, 1995). This means that it will infect almost any species of fish that is exposed to it, even those that are not native to a marine environment. Saltwater-adapted black mollies *Poecilia latipinna* were used as the subjects of one trial to establish the low host specificity of this parasite (Yoshinaga & Dickerson, 1994). Resistance becomes increasingly difficult as the population density of the parasite multiplies within an aquarium or system. Infection is more likely in aquariums than in the wild because of high stocking density, favoring the probability of the free-swimming theronts locating a host (Yambot, et al., 2003).

It is evident that different species of boney reef fish have varying degrees of resistance to *Cryptocaryon irritans* (Colorni & Burgess, 1997. Diggles & Lester, 1996c). In captivity, resistance may be more a matter of differences in the dietary and environmental needs between the various species of fish than any other factor. Species belonging to the angelfish, tang, butterfly, puffer and

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cowfish families are among those thought to be especially vulnerable to infection. Elasmobranchs such as sharks and rayfish are considered to be naturally resistant (Lom, 1984).

Mode of transmission

Cryptocaryon irritans is most frequently introduced into an aquarium when adding new, infected fish into the system (Dickerson & Dawe, 1995). These fish may have the typical white spots or lesions, or they may not exhibit any outward signs of infection while still harboring trophonts in the gill tissues.

It is possible, but much less likely, to import *Cryptocaryon irritans* into a system by means other than on infected fish. Water containing the free-swimming (theront) stage is a possible means of introduction (Colorni & Burgess, 1997). However, considering the short time span in which theronts remain infective in the water after hatching this risk is significantly smaller. Storing the water for 24 hours before use should provide a margin of safety (Colorni & Burgess, 1997). Hard surfaces such as sand, rock, glass, equipment and even some invertebrates (invertebrates do not become infected) can serve as attachment sites for tomons (Burgess, 1992). If any of these objects are removed from an infected tank or system and placed into another aquarium they may carry some tomons or cysts. It is also theoretically possible to import an infection when using live foods of marine origin.

Drying the aquarium, sand, rock and equipment will kill attached tomons. Drying, obviously, cannot be used as a means to kill tomons that are attached to live invertebrates. If the system that an invertebrate, piece of live rock, or live sand originates from is infected, it may be necessary to quarantine these items before they are moved into a display containing fish.

Cause of death

Heavy infections of *Cryptocaryon irritans* can cause mass mortalities in confined populations of fish (Yoshinaga & Dickerson, 1994). *Cryptocaryonosis* is the name of the primary disease caused by an infection with *Cryptocaryon irritans*. Secondary bacterial and/or fungal infection is often associated with this ailment. *Cryptocaryon irritans* can cause the death of the host due to asphyxiation, osmotic imbalance and secondary microbial infections (Diggles & Adlard, 1997).

The presence of hyperplastic epithelial cells in the gill tissues and fusion of secondary lamellae are caused by *cryptocaryonosis* (Yambot, et al., 2003). If sufficient numbers of the parasite attack a fish, at the onset of infection, death can occur from massive damage to the gill epithelia before telltale white spots become visible to the naked eye (Dickerson & Dawe, 1994). Fusion of secondary lamellae and irreversible obliteration of inter-lamellar spaces occurs after frequent, heavy infections (Colorni & Burgess, 1997). The wounds that are caused by invading theronts frequently become sites for secondary infection by opportunistic bacterial and fungal pathogens (Colorni & Burgess, 1997). These lesions may be particularly vulnerable locations for secondary infection by non-specific pseudomonas species of bacteria (Nigrelli & Ruggieri, 1966). The wounds compromise the mucus/scale/skin barrier making osmoregulation more difficult and costly energy-wise. In

severe cases, this can lead to osmotic shock. Generally, mortalities occur only after successive, severe infections (Colorni, 1992).

Fishy Links and News....

WHAT LIES BENEATH

From the depths of the Tasman Sea come some very strange fish. Richard Macey reports.

Vampirism, group sex and stockpiles of deadly weapons have been uncovered by a joint investigation between Australia and New Zealand. It's all been found going on beneath the cover of the Tasman Sea.

For a month last year the research ship Tangaroa trawled the waters, hauling in from two kilometres down weird and well-armed creatures inhabiting undersea mountains whose few dry peaks include Norfolk and Lord Howe islands.

Funded by Australia's National Oceans Office, and involving scientists, government agencies, museums and universities in Australia and New Zealand, the expedition snared 500 fish species and 1300 species of invertebrate now being studied by more than 50 researchers around the world.

"Probably over 100 are new species," said Mark Norman, a senior curator at Museum Victoria. Others have only been seen a few times before.

"The diversity down there is incredibly rich," said Peter Last, a CSIRO scientist. "Animals got stuck there and have turned into new species."

One cup of sand contained 250 species of tiny snails. Dr Norman named the deep sea angler fish, with its bizarre sex life, as one of the most unusual inhabitants.

"The female is the size of a tennis ball. It has big savage teeth, little nasty pin eyes . . . and a rod lure off the top of its head with a glowing tip to coax in stupid prey." The male "looks like a black jellybean with fins".

When a male finds a female, he bites into her side, never letting go. "He drinks her blood, in return for giving her sperm," Dr Norman said. The flesh of the two fish eventually fuses "and they remain connected, permanently. It's sexual vampirism, with a bit of dwarfism thrown in. They have found females with up to six males attached."

There are fish with tongues covered in teeth and fish with hinged teeth to help get down huge meals.

The Pacific spookfish uses its long snout "like a metal detector" to scan for the electrical impulses of prey buried in the mud.

The dumbo octopus has a pair of flaps to help it glide through the water, making it "look like the cartoon character Dumbo the Flying Elephant".

Giant sea spiders, not spiders at all, have such tiny bodies they keep some organs in their legs.

Dr Norman was also fond of the fangtooth, "one of the most savage-looking of all the deep-sea fishes". Two sharp teeth poking out of its bottom jaw slide into pockets in its head, saving the fish from stabbing itself in the brain.

Dr Last cited an apparently new deep-water batfish as among his favourites found by the Norfanz (Norfolk Island, Australia and New Zealand) expedition: "They walk along the bottom . . . their fins are almost modified into legs and the head comes to a point like a unicorn. It's pretty weird."



Real-life sea monsters . . . the humpback angler fish, the dumbo octopus and the giant sea spider. Photos: Norfanz

<http://www.smh.com.au/articles/2004/03/21/1079823237850.html>

MARITIME TRAINING CENTRE AT MANDURAH

The aquaculture industry would benefit from a Maritime Training Centre which may be developed at Mandurah. Mandurah MLA Arthur Marshall recently met with officials from various educational establishments to discuss the possibility, and the range of courses appropriate. He asserts TAFE should find a local venue and then start up the courses. Courses in maritime subjects have already commenced for Years 11 and 12 at Mandurah Community College.

KIMBERLEY COLLEGE OF TAFE AQUACULTURE

The Kimberley College of TAFE is a major thrust behind the boom in aquaculture activity in the area. The Aquaculture Park's facilities are being used to breed cherabims, barramundi, trochus shells, and brown and black tiger prawns. Banana prawns and pearl oysters will feature in the coming year. The Park has the only 'real' barramundi hatchery in WA, advises Jeff Cooper, head of the Aquaculture Department. While its main purpose is training, the hatchery has produced millions upon millions of barramundi juveniles and hundreds of thousands of black and brown tiger prawns. Barramundi larvae and fingerlings are supplied to farms throughout

WA. Excess prawn stocks are sold to prawn farmers - and TAFE's study into tiger prawn breeding, supported by the Science and Technology Fund, resulted in production of a manual which is now accepted as the training document on the subject at TAFE bodies Australia-wide.

NEW PRODUCT - SILICON STRIPPER/REMOVER!

While walking around at Bunnings the other day a new product caught my attention. It was Silicon remover! It seems to be a solvent that dissolves the silicon. It's in a tube just like silicon comes IN and is available from Bunnings now!

EXOTIC FISH DISEASE EXPERTS MEET IN GEELONG

Experts from Australia, Canada and France met at the Animal Health Laboratories in Geelong to participate in a five-day course addressing the threat of exotic diseases. Australia currently has a disease-free status, says the CSIRO's Dr Mark Crane, and it's an important strength in the aquaculture industry. One thrust of the meeting was to consider processes to deal with the threat caused by increased tourism and shipping. The course was funded by the CSIRO and the Fisheries Research and Development Corporation.

Buy, Sell, Swap and Wanted?....

FOR SALE:

2ft cube tank on pine cabinet with hood & 32mm overflow in tank - **\$250 ono**

Tank 120cmW x 100cmL x 70cmH with tapered front on sandstone look cabinet with hood. Tank has 2X 40mm holes for external sump **\$450 ono**.

Contact **Paul Groves** on **0421 803 288** if you are interested.

WANTED:

Second hand Chiller to fit 250 Lt tank

Contact: **Andrew Brandreth** on **0423 801 552** or email bsa@powerdsl.com.au.