

THE FISHMONGER

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Reminders:

- Our next **meeting** is Wed Feb 4th, 7:30, at the Vancouver Aquarium Marine Science Centre in Stanley Park. Enter at door #5 at the north end of the Aquarium Buildings.



Visit us on the web at:
www.fishopolis.com/vahc

EDITORIAL

I hope you all had a great holiday season and that this year is shaping up to be a good one. A new year means we have to renew our club memberships so please see Jack at the next meeting or mail in the renewal form at the end of this newsletter.

I bought my wife a nice digital camera for Christmas (well she thinks it was for her anyways) and I've been experimenting with taking pictures of my fish and tanks. It's not as easy as I thought so if anyone has any helpful ideas, I'd appreciate it if you email them to me at rguenther@bayleaf.com. If you feel inspired, why not turn it into an article for the Fishmonger?

My wallet always feels a little light at this time of year, so this newsletter has a theme of tips and tricks. I've included an assortment of articles that might help you to save a buck or two in the upcoming months. There are also a few home grown tips sprinkled through the pages. If you are inspired when you read these then please send me your bright ideas for future newsletters.

There is no theme set for March's newsletter yet. I'm looking for any original articles you may have on any subject even vaguely related to the hobby. Send me your articles, notes, pictures or anecdotes and I'll make sure you get all the credit.

I look forward to seeing you all at the February meeting.

Ron Guenther

CLUB NOTICES

- Thanks to Patrick Tamkee for his talk at the December meeting on patterns of genetic diversity in rainbow trout.
- Our own Dave Carlson will be speaking at the February meeting on Project Piaba.
- Our regular April meeting is replaced by our second annual Member's Only Spring Auction on Wednesday, April 7th. Check out the website and next month's Fishmonger for all the details.
- 2004 memberships are now on sale for \$20. Membership renewal / signup forms are on page 17.
- New members are always welcome. Should you know anyone who is a keen hobbyist, or someone just starting in the hobby, bring them along to the auction or the next meeting in February.
- We are now distributing The Fishmonger electronically. Please send an email to rguenther@bayleaf.com to ensure you get on the distribution list. We are no longer mailing them out but there will be a limited number of copies available at the monthly meetings.
- Getting original articles for this newsletter is tough so please help us out and write a few words on anything fish related. It doesn't have to be long or fancy and I'll even spell check it for you.

Newly Hatched Brine Shrimp

By Bart van Dijk (VAHC member)

The mother brine shrimp has many batches of young ones, they pop out of their egg membrane the moment they are born and join the swimming party. This happens all summer until conditions turn bad, such as: water temperature low, salinity high, no more algae, algae with multiple cells have taken over and or other food for instance germs not available, temperature too high and she now hurriedly stops the full development of the new eggs and encapsulates them in a very tough shell. The cysts, as they are now called, float to the surface and are blown around by the wind and ultimately are tossed by the waves and thrown on to the shore, no wonder that shell has to be tough to withstand all that abuse. The sun now goes to work and dries and dries them, until their nice round shape changes and they look like, that leaky soccer ball with about a quarter of the air missing. This now very definitely stops any further development inside the egg. And if they do not get wet and the embryo inside does not get hold of lots of oxygen, they can stay dormant for would you believe about 15 years.

Usually the next spring the warmer rains come down, (note that this is fresh water) and the osmosis through the pores into the shell starts. About 2 hours will have the shell back to fully round and the egg inside will re-start its development. But as you know the speed of the osmosis depends on how fresh the water on the outside remains and most of the water in the original moisture layer around the egg has now traveled into the shell leaving all its salts behind. A fresh supply is needed for the osmosis to continue. It has to build up the pressure inside so high that the shell bursts with enough force to free the egg. Luckily the rainstorms create high enough waves to stir the soup. A couple of hours later most of the popping is over and done with. Most of the eggs came out clean, but quite a few are still wearing the shells as hats and need further stirring.

Speed is now of the essence for the young ones inside. Get out of that egg membrane as fast as possible or risk getting caught in debris that uses up all the oxygen and you die. While the adult has a pair of feelers, 11 pairs of legs with gills, 2 eyes on the side of the head, 2 sexual organs, for the little ones there is no time for such niceties. Develop one temporary very rudimentary eye and just one pair of legs will have to double as swimmers and gills, get out of that egg and start swimming upwards, to stay in the oxygen rich sunny surface water.

The yolk sack even has enough food for the swimming but will only just last through the second molt when the digestive system is developed and ready to go to work.

So from the end of the first day on it is, eat and eat until it weighs about 500 times as much as when it was born; it will then be about one third of an inch long. As the brine shrimp grows it fills its shell, gets out of it, creates a new shell, fills that one, creates a new one, about 17 times during its first 21 days, the last one equips them with the external sex organs and it will then be mature. She starts producing eggs, a batch every 4 days until conditions turn bad, produces a batch of cysts and the circle is round. It could now be about 5 months after hatching, a very intensive life. So now you know all about nature's way and you should be able to see the reasons behind all the hatching directions on the outside of the can of cysts you bought.

You want to go over them once more? O.K.

The temperature is obvious the warmer- the faster the process, but you have to be a little bit careful to ensure that the temperature is the same from day today. You might have your hatchery in a water bath heat controlled by a thermostat, but the air you use for stirring can cool the brine quite a bit through evaporation and also the air being warm or cool to start of with, will make a huge difference. A good thermometer is relatively cheap

The stirring by air has to be sufficient to keep the cysts in suspension, to ensure enough fresh water for the initial hydration and the popping of the shells, but at each further stage the egg, the hatching and the little shrimp itself become more delicate and too much air can easily blow them apart. So this is where the shape of your hatchery does make a difference and while an upside down pop bottle is easy and cheap, something more cone shaped might be worth your while.

The best salt content has been determined through experimentation to be seawater, about 25 grams per liter (or 1000 grams). But realize that this is a compromise, the hydration of the cysts requires water with less salt and the adult brine shrimp live in water where the salt content can go as high as 350 grams per liter. The optimum for brine shrimp survival seems to be 100

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grams to 120 grams per liter, but this is only because the cysts sink in water that is any fresher. We want to be as low as possible so the shock to the shrimp is as low as possible, when we feed them. We want the baby brine shrimp to live as long as possible with our fishes in fresh water.

The little guys live only as long as their yolk sack lasts and will then require food to live and minerals to build their skeletons to continue their growths. So experiment a bit to find out the hatching times, so you can feed them to your fish as soon as possible. I like feeding my little fish some infusoria and a small pinch of dried egg yolk anyway and I then find brine shrimp alive 14 hours after feeding.

The economical way to buy the salt is by the 50 lb bag for about 8 dollar (solar salt available at animal feed stores) but it does not hurt to add a bit of sea salt to

supply some minerals.

The optimum pH is also somewhat experimental but seems to be about 8.0. For plants to grow in aquariums with fish you have to add Potassium anyways. So I bought some Potassium bicarbonate and now also use 1teaspoon in each 6 liter cone in the shrimp hatchery.

The only somewhat developed sense the little brine shrimp have is to just barely see d light and thus seems to be the only driving force in their early lives so it seems proper to supply a constant source of light.

The brine shrimp nets in the pet stores can be way too coarse and will let many small ones go through. The ones I find excellent carry the name Second Nature.

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COMMITTEE MINUTES

The VAHC Steering Committee meets on the first Tuesday night after the club meeting each month. We get together at members homes to talk about club business and see what the host has going on in their aquariums.

The January meeting was held at Bart's home in Coquitlam. Thanks to Bart for hosting the meeting. Here are a few of the topics we discussed:

- 2004 Member's Only Spring Auction
- 2004 VAHC Calendar of Events / upcoming speakers
- Club library
- Coordinating activities with other clubs

Our next meeting will be on Tuesday February 10th but we're not sure where yet. Check the website for details or ask a member of the steering committee at the next meeting. The meeting usually starts at 7:30 so if you are a club member and are interested in helping out with the club, be sure to come out. Some of the topics on the agenda include:

- Membership activities
- Club Finances
- 2004 VAHC Calendar of Events / upcoming speakers
- Club Library

Fry Savers

By Bill "Pegasus NZ" of New Zealand

(reprinted from Aquarticles.com)

I had accumulated around fifteen 20 litre pails with lids and have used them for various things, but I was sat watching the fry in one tank getting slowly devoured one by one, and having no spare tank or heater I thought of using one of the pails.

I bored a couple of holes of around 12mm just slightly higher than the depth of the tank in question (2x1x1). In one hole I pushed an "L" shaped uplift, and in the other a 100mm by 12mm overflow pipe. The pail sits at the side of the tank... but could sit some way away if you extended the pipes. Not very pretty, but it will only be there for perhaps a week until the fry get their sea legs, or more fry come along.

I filled the pail up to the overflow with pre-aged water that was heated to the same temp as the tank, then set the flow on the uplift working. I left it running for an hour to check it out, and to keep track on the temperature and allow the two lots of water to mix. The uplift draws water from the tank which goes into the pail, which

overflows back to the tank. I placed a fine mesh over the uplift and on the inside end of the overflow pipe, then transferred the fry. The pail needs no light, as the lights from the tanks are adequate enough and illuminate the inside of the pail quite well. The lid just sits on the top to keep the draughts out.

The temp remains constant in both the pail and the tank, without using an additional heater or filter system, and the fry are safe and happy. Because they are equalised the fry can be quickly dropped into the pail without stress, and no worry about water conditions or temperature. Since making it I have used another one, but have cut a 300x200 window in the front and bonded a 4mm curved acrylic screen to the inside of the pail with silicone. A few minutes under the grill made it flexible enough to bend to shape. I can now leave the lid on and keep track of the fry.

###



Fun with Silicone

By Nischint Sohal of Bombay, India

(reprinted from Aquarticles.com)

I use a sheet of thermacole (or styrofoam, as I think it's known in the US) and apply a thin layer of silicone on it. Thin, mind you, not too thick and not too thin. Then sprinkle some sand/gravel on it and let it set. After a while, shake all free sand/gravel away, and inspect the thermacole sheet. If there are some empty spots, then apply a bit of silicone and attach single bits of sand/gravel. Once it's all set and done, let it dry/cure for 24 hours.

After that, you break the thermacole/styrofoam gently, making sure not to tear the silicone. Then peel off the thin silicone sheet with the sand/gravel attached to it. You can reuse the thermacole/styrofoam if you wish, but be very careful and gentle with the silicone sheet.

The end result? You can put this little sheet in your tank. Attach it to the back of your tank (as long as it's not too high), or the bed of the tank, and you have a sheet of gravel, which looks absolutely real and fantastic.

Applications?? Many, if you want a contrasting gravel look. Most of the times, if you use two types of gravel, to create layers or to create different gravel zones, you end up mixing the two types of gravel during cleaning. Which later might be a mess to clean. With this method, you just siphon off whatever waste you want, and you can even pick up the sheet and brush off waste from it.

You can arrange it however you want, but the main advantage of this method, over the traditional method of sticking the gravel on an acrylic/glass/plastic sheet, is its flexibility. You can cut corners, or shape it in whatever form you choose.

Cichlids digging into it?? No problem, just shove a rock on it, and they won't be able to move it. You can even attach plants using this method. It's also a great way to cover up any of your equipment.

The biggest USP of this method is that it's really cheap, fast and looks really good. I just did it to my tetra tank and it looks fantastic. I used reddish gravel, which contrasted beautifully with the golden sand that I have in the tank. Along with some bright and dark green plants, it looks absolutely beautiful.

Another thing that I did was take some marbles, and create a cone, like a pyramid, by siliconing the edges of the marbles that touched each other. Not only does it look beautiful while reflecting and refracting the light, but it also works as a sort of mini filter. Thanks to the water movement in the tank, waste gets into the marbled cone through the gaps in the marbles. All I do is lift up the cone, and shove the siphon in there to suck up all that gunk.

Of course, building caves with small rocks using silicone is easy. But if you have a big tank, then you can even create a small teepee out of the rocks and the silicone. Or make a huge bridge, using the ends as caves.

My next project? To make a small replica of a wrecked ship using rocks and silicone!!

###

Dave's Tip:

To save space Hatch your Brine Shrimp in an existing aquarium. Cut the bottom off a 2 liter pop bottle and hang it in one of your tanks. This eliminates the need for another tank and heater.

Home Brew

By Grant Gussies, CAS

Originally published in The Calquarium Volume 42, Number 3 (reprinted from Aquarticles.com)

Of all the strange things that I have done over the years for the aquarium hobby the strangest is probably setting up a "home brew" CO2 reactor. Think about it. I am employing yeast to ferment carbohydrates, not, as any sensible human being would do, to create a mood-altering beverage, but instead, to feed carbon dioxide to a glass box filled with water. This is not the sort of thing one can easily explain to casual visitors to your home.

But this is not the first time I've done this. I briefly had a yeast-filled pop bottle feeding a 30-liter gourami tank when I was living overseas. It worked...I think. At least the plants grew so quickly they filled the tank in no time flat. But the water coming out of a Hobart tap is some of the purest in the world: naturally soft with a pH of 6.0 or so. So it was hard to know what effect the very small amount of CO2 I injected had had, and what was the effect of using soft acidic water in the first place.

When setting up the gourami tank, my then-future wife, who I had recently met in Hobart, accompanied me on a trip one day to an excellent aquarium store south of the town. They had a lovely show-quality pair of Peruvian severums (*Heros appendiculatus*). So now severums are her favourite fish, and if you saw this pair you would understand why.

So...when we moved to Calgary she wanted me to get her some severums in payment for putting up with the large aquarium in our living room.

But Calgary's water, with a hardness of about 150 PPM CaCO₃, and a pH of 8.0 or so, is not that good when it comes to growing either severums or the vast majority of tropical aquatic plants. They come from water like that magic elixir that flowed from my faucet in Hobart, not that stuff that the limestone-laden Rockies keeps sending down the Bow River.

So I thought I would try CO2 injection once again, this time to lower the pH for the severums and to provide the plants with a carbon source

I bought a couple of plastic wine carboys at a garage sale. Plastic carboys have proven unsatisfactory for wine making, and so most home wine makers now use glass. You can therefore pick the plastic ones up cheap

at garage sales. And one-hole rubber stoppers that fit these things are available everywhere wine making supplies are sold.

Into the carboy went a few seconds of pouring worth of sugar, about 20 liters of warm water, and a healthy dollop of yeast. A length of rigid tubing was stuck through the rubber stopper, and a length of air hose was attached to that. The rubber stopper was put into the carboy's neck, and the free end of the air hose was stuck up the inlet siphon of the Fluval 303 that filtered the tank. The idea, taken from the Internet, would be that the canister filter would serve as a "CO2 reactor", with its impeller breaking up the gas bubbles so they would dissolve better.

The tank was already heavily planted with *Vallisneria spiralis*, *Cryptocoryne affinis*, *Ludwigia repens*, *Echinodorus bleheri*, and *Pistia stratiotes*. But the tank had no other filtration besides the Fluval 303. And I had placed the outlet hose of the filter below the water line so as to avoid losing the CO2 by surface agitation, as I read you should.

Big mistake!

This first experiment almost ended in complete disaster, as when I got home from work the next day, all five of the young severums looked, for all the world, dead. Their gill covers were stiff and distended, and they were lying on their sides. But there was still some sign of breathing. I yanked the CO2 line from the Fluval's intake siphon, got an air pump, and had two air-stones running in the tank immediately. Then I did a pH test... the indicator solution's color was solid yellow, so the pH (whatever it was) had dropped below 5.5 from its original value of 8.2.

This was obviously too effective!

But miraculously, all the fish survived! By the next morning they all seemed happy as clams. The pH by that time had read about neutral.

After the initial near disaster I have worked out a system that seems to work well, keeping the pH neutral or slightly acidic. I took an old Penquin Biowheel out of the closet. It had been relegated to the junk closet because

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the water pump it came with could not pump enough water (even without any filter media in it) to keep its biowheel turning, rendering the filter useless. This was my first purchase of a Penguin product, and it is so poorly designed (i.e. non-functional) that I have serious doubts about the quality of all other Penguin products as well; so much so that I won't bother to buy another. But the water pump of the Fluval 303 is considerably stronger than the Penn Plax's, and so I thought it could turn the wheel. It worked! I stuck the outlet hose of the Fluval into the hole for the siphon tube for the Penguin. The water then flowed back into the tank under the turning biowheel. I have just enough CO₂ loss through this system to keep the pH in the safe range, provided that I don't add too much yeast. Every two weeks I drain $\frac{3}{4}$ of the water from the carboy and replace it with fresh warm water and a good handful of sugar. This keeps the CO₂ bubbling at just the right rate.

The plant growth is very good in all species except the sword plants. I attribute this, with no evidence whatsoever, to a lack of nutrients in the sand (Sil 7) substrate. The books say that sword plants need a nutrient and iron rich substrate.

Remember the "big tank" in the living room whose (admittedly obtrusive) existence led to getting the severums in the first place? Well, this tank held at the time a mixed collection of Lake Malawi cichlids along with some *Vallisneria spiralis*, *Cryptocoryne affinis*, and *Pistia stratiotes*. The tank's plant filter also had a solid growth of temple plants (*Nomaphila stricta*). All the plants were doing OK, but the only ones that were actually thriving (in the same way that the plants in the severum tank were thriving) were the temple plants and the water lettuce. But both of these plants grow up out of the water, and so can get their CO₂ from the air.

This led me to think that the growth of the fully submerged plants in the Lake Malawi tank was CO₂ limited. But CO₂ injection is out of the question in a Lake Malawi cichlid tank. These fish are very sensitive to pH changes and need it at a constant 8.2.

However I had grown a little tired of my Lake Malawi cichlids. They are beautiful, yes, but they are also remarkably stupid for cichlids. Where are the great personalities that cichlids are famous for? Not in Rift Lake cichlids in any event. And breeding them was hardly a challenge anymore.

I was ready for new challenges. To try and finally grow healthy, dark-leafed, and flowering sword plants seemed to be what I needed.

So the September auction saw the sale of all my Lake

Malawi cichlids. The tank's gravel substrate was replaced with Sil 9 gravel to which laterite (purchased at Pisces) was added to the lower third. The Lake Malawi rockwork was replaced with some driftwood. And the carboy was set up to inject CO₂ into the tank overflow. Yes, it would be great to have a high-pressure CO₂ system with an electronic dosimeter, but financial realities are what they are.

The tank's *Vallisneria spiralis* and *Cryptocoryne affinis* were replanted in the new substrate along with some new sword plants from Twyla and the Java fern, *Anubias*, and *Ludwigia* from the smaller tank.

Then the severums were moved in (they were getting too big for their 125-liter tank anyway) along with a small army of *Otocinclus affinis* from Pisces and a large school of *Corydoras gossei* and *Corydoras baineno* from Birgit.

And already I have my first sword plant flower! Plant growth is good, algae growth is getting under control, and the fish are doing well. There are no signs of the fish breeding yet but they are still young. Clearly, the brew has helped!?

###

Ron's Tip:

Feed zucchini to your plecos. Wash and scrub the skin well, slice 1cm thick, fasten with a veggie clip to the side of your tank and let them go at it. Some say to cook it so it sinks but I've never done this.

For feeding fry, I mix their food in a little water and use a turkey baster to put the food into the water close to them. It helps to prevent food wastage and the fish grow quicker.

Try using an old grater to break up frozen food.

How to Buy a Used Tank

By Kent Cannon

Kent Cannon, otherwise known as 'Cichlid 102', has kindly given us permission to reprint this article. It and others may be found on the website dafishnews.cjb.net (reprinted from Aquarticles.com)

How do you beat the high cost of keeping fish? Seems like every time you turn around you have to buy something! Fortunately, there are many ways to cut down on the little costs that make up our hobby. This month, the DIY project is going to come from a ground-floor perspective. Just because new tanks are expensive, it doesn't mean that you have to start out with a new one in order to have healthy fish! I am always looking at the want ads and the nickel shopper for a good deal on tanks. The truth is that many people buy their tanks in a weak moment and end up losing \$60 or more and then give up! The tank then goes to the storage shed or the garage only to sit there, in the way, for several years until it is given away or sold at a yard sale. I have only purchased two new tanks in my entire career as a cichlidiot! Both of those were kits, and only one of those had decent equipment with it. When you buy like that, you get stuck with whatever they throw in, kind of like a white elephant gift. Since then I have wised up and have found many a good deal, many for less than a dollar a gallon with all of the accessories thrown in!

The things to look for when buying a used tank are fairly simple:

- **Don't buy a tank with broken glass!** If someone is willing to give you a tank with one broken pane and you are up to repairing it, then great - but don't spend money on a broken one.

- **Don't buy tanks with chipped corners.** Glass can and will run from a chip. That is not to say that you can't get by with a chip, but don't pay good money just to wake up one morning to a wet living room full of dead fish and broken glass! If you do have a tank with a chip, take some emery cloth and buff all of the edges of the chip so that it cannot run. - Never spend more than a dollar a gallon. I can buy a brand new tank for about a buck a gallon, so why would I purchase a used one for the same price? I try to keep the price at around \$.50 to \$.75 per gallon. Nice thing is, when buying a used tank you get all of the accessories that you would have had to pay extra for had you bought it at the store!

- **Avoid bare tanks.** When you have to spend money on lighting, filtration, UGF, and a heater, you are going to be out some serious money. Most people who have a tank have the accessories. The only tanks that I have

seen without any are tanks that were used for snakes or hamsters or some other small animal. I bought three tanks from a fellow with all of the accessories, and as I was leaving he asked me if I wanted a canister filter. He gave me a Magnum 350 Deluxe with all of the parts in working order for free!

When you get the tank home, take a long, careful look at the condition of the silicone! Make sure, after wiping it out, that the silicone is not brittle and turning yellow.

- If the silicone is questionable, take the time to scrape out the old silicone and replace it. When you do this, be sure to take out all of the old silicone. Old silicone will not bond well with the new and there is always the possibility of a leak. I bought a nice tank and spent a whole lot of time scraping out the old silicone and replacing it, but I neglected to replace the silicone holding the center brace. I got up one morning to find the brace hanging down in the tank and the front glass bowing out almost two inches! Take your time and do it all.

- Wipe down every area that is going to be caulked with a 25% vinegar solution and dry.

- I use GE-brand window and door silicone that I get at the local building supply. It's cheap and it's the same stuff that you buy at the LFS for a lot more money. Do not use the stuff labeled for kitchens and baths! It contains mould inhibitors that will kill your fish!

- Take some masking tape (I use the blue kind for painters) and mask both sides of every corner about 3/8" out from the corner. This will help you get real nice, professional-looking corners. If you don't, it won't affect the strength but it will not look as nice.

- Put the caulk in all of the joints in a continuous bead. Dampen your finger in a bowl of water and smooth the bead to a neat, concave surface. Wipe your finger on a rag or paper towel regularly and keep it moist, and you will make some real nice-looking joints!

- As soon as you are done smoothing out the beads, carefully remove the masking tape. Do not touch up the silicone again or you will probably have a mess on your

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hands.

- Finally, test your tank outdoors. Don't take a chance and have to replace the carpet or hardwood floor because you were impatient! Buy a piece of Styrofoam at the local building supply and cut it out to match the bottom of your new tank. Set your tank on this, fill it up all the way, and leave it for a couple of days if possible. The Styrofoam will take up any difference in the surface that you set the tank on and not create undue stress on the tank.

Keep your eyes open! Who knows what treasure is out there to be found? You may just come home with that tank you have been dreaming about but just couldn't afford. Now you can spend those extra dollars on fish instead of spending everything on a tank only to have it sit empty until you can afford to buy some fish to put in it! Good luck and happy fish keeping!

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Dave's Tip:

To give your fish a little variety in their diet, give them a little fresh fish when you are having some yourself. Any fish will do, just cut it up or freeze it and use a cheese grater.

FOR SALE / WANTED

- The VAHC steering committee is looking for volunteers to help us with club activities. There are many positions currently open including pet shop liaison, club liaison, speaker wrangler, etc. If you are interested in helping out in any way, please contact one of the steering committee members at the next meeting or email Dave at dave-carlson@shaw.ca.
- Dave Carlson has Albino and Bronze Corydoras for sale for \$2 each. He also have a few pairs of German Blue Rams left for \$15 a pair. If you are interested then contact Dave at dave-carlson@shaw.ca
- Steve Pushak has clay fertilizer balls for aquatic plants and various aquatic plants [Crypts, Anubias, Bolbitus...] for sale. If you are interested then contact Steve Pushak at 604-591-5512 afternoons or evenings or email teban@powersonic.bc.ca
- VAHC Club T shirts and sweatshirts are now available. Prices vary by style and size. See Dave at the February meeting if you are interested.

Home-made Rocks for the Mbuna Aquarium

By Jeffrey Legitt

Of Tacoma, Washington. (reprinted from Aquarticles.com)

I recently set up a new 125 gallon Malawi Mbuna tank for my family room. I wanted the aquascape to include a lot of rocks, but I also wanted it to look natural. I tried slate, river rock and even commercially sold holey rock. None of these looked natural, so I started researching on the internet for other types of rocks and came across Geothermal Aquaculture Research Foundation [garf.org]. They had several articles detailing how to make live rock out of cement and aragonite called Aragacrete™. Aragacrete™ has been used for quite some time by reef keepers with great success. Following their example, I decided to try my hand at a little rock making.

My first attempts looked like very good live rock, but didn't look natural for an African Cichlid tank, so I changed the recipe. I omitted the aragonite and used standard play sand. Since this is what I use as a substrate, I was hoping it would blend in. It worked perfectly. I made several pieces of sand rock with lots of holes and caves. Because I formed the caves in a bed of wet sand, the sand adhered to the rock and blended perfectly with the substrate. The number of holes and caves also made the rock very light, making it possible to stack the rocks very high. I built enough rocks to stack them all the way to the surface along the entire back and sides of the tank. My tank houses 23 Mbuna, including some of the more aggressive fish, with very little fighting. It is simply too easy for the dominated fish to flee and hide. I'm very happy with my tank and home-made rocks and I hope others will have luck with this technique also.

My recipe for home-made rocks:

One part Portland cement. [Type 3 is best, but 1 & 2 will work]

Four parts play sand. [Washing the sand will make stronger rocks]

- Mix cement and sand together to a pasty consistency.
- It should form balls in your hand.
- Cement is very alkaline, so use rubber gloves when handling.
- Place a fair amount of damp sand into an appropriately sized container.
- Dig holes in the damp sand to form a mold. You

choose the shape.

- Drop the cement mixture into the mold and form it with your hands.
- Additional damp sand can be used as a filler to create cave, tunnels and holes.
- Let sit for 24 hours before touching.
- Cure the rock! Cement is very alkaline and will raise your water's pH.

African Cichlids thrive in high pH. I added a massive amount of home-made rock to my tank after curing for only two days and my pH never climbed higher than 8.4. I list the following curing methods simply because most people have had different results.

Cure rocks in a bucket of water for several days - possibly several weeks - changing water often. Soaking the rock in hot vinegar can speed the curing process. Once the water in your curing bucket has a pH suitable for your tank, the rock is cured.

That's it. I hope this helps somebody with their Mbuna tank aquascaping.

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Ron's Tip:

For fish like mbuna who need lots of caves and little territories, make your own by gluing varying lengths and diameters of pvc pipe together. It's cheap and fish friendly. To make it look better, try spreading a very thin layer of tank silicone over the pvc and rolling it in sand or gravel.

Some Tips on Multiple Tank Maintenance

By Terry Ranson

Originally published in Vol. 1, No. 6 The Newsletter of The Tri-State Aquarium Society May 1999 (reprinted from Aquarticles.com))

Whether it's breeding fish and raising the fry, or completing a collection of rare Southeast Asian anabantids, advanced aquarists often have several tanks. This soon leads to a major problem: How to find time to perform the necessary maintenance on all those tanks?

I currently maintain seventeen aquariums ranging in size from twenty gallons to three hundred. Nearly half of these tanks are 50 gallons or larger, so it is important for me to be as efficient as possible when performing routine maintenance.

I have three different sizes of gravel washers to use in different sizes of tanks. These connect to flexible, clear plastic hose purchased from a hardware store. This hose is long enough to reach the drain in downstairs bathroom, or outside, from any tank I am working on, making it unnecessary to lug around buckets of water.

My water is treated in a couple of plastic 55-gallon barrels. These barrels were purchased from a local soft drink company for twelve dollars each. They formerly held soft drink syrup. They were cleaned by using generous amounts of baking soda, salt, and a lot of scrubbing. Most fish do well in tap water with the chlorine neutralized. I use De-Chlor.

In a multiple tank system like mine, a water pump is essential. Your local nursery or garden supply can often sell you one, or you may mail order one. A water pump enables you to fill one tank while you are siphoning water from another, saving you a lot of time. A water pump also provides a rapid method of dissolving salts, and water movement also quickly dissipates gas bubbles found in suspension in tap water.

Nearly everyone who keeps a large number of tanks sooner or later buys supplies through mail order. I realize this will displease most pet shop owners, but if I had to buy all my food and equipment from them, I could not afford to keep as many tanks as I do.

Setting up a multiple tank system does not mean running out and buying dozens of expensive, new aquariums. Used tanks are never in short supply. Check classified ads, pet shops which are going out of business, and even bait shops. Metal-framed aquariums are generally not a good idea because of their propensity for leaking, and they are difficult to repair. Sterilize used

tanks with a mild solution of chlorine bleach. Rinse the tank well and use a little chlorine remover in the rinse water.

When I speak of a multiple tank system, I do not mean the same system pet shops use. The goals and methods of a fish dealer differ substantially from those of a hobbyist. Whereas the dealer seeks only to maintain fish long enough to sell them, the advanced hobbyist attempts to keep fish in an environment which enables them to thrive. The ability to supply differing environmental conditions is perhaps the greatest advantage to a multiple tank system. It should be noted, however, that unless you are willing to keep fish with same requirements as to water chemistry and temperature, a central filtration system is out of the question. If you are only interested in a specific genre of fish, such as tropical salt water fish or rift lake cichlids, then a central filtration system may be the best method.

Getting fish to spawn and raising the fry is the most rewarding part of the hobby, and the best reason for having several tanks. When fish breed, you know they have been provided optimal conditions. If the fish you are breeding are commercially desirable, you can sometimes trade them for supplies or sell them outright. Captive breeding also prevents depletion of wild stock.

Multiple tank maintenance doesn't have to break your back or your bank account, and it can be highly rewarding. Just be sure you have a game plan before you begin - and enjoy yourself.

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Ron's Tip:

When setting up a new tank, label the electrical cords at the plug end. This prevents using the trial and error method of unplugging each one from the power bar to find the correct one when doing tank maintenance.

Beef Heart Recipe

By Patrick Tamkee (VAHC member)

Do you know what is in your fish's food?

Many people who keep fish either for breeding or as a pet have a common goal, and that is to keep their fish from dying, right? One of the most important factors which people often focus on is water quality, because often water quality becomes the main factor influencing the fish's survival. We are repeatedly reminded to do water changes as the water becomes cloudy, an algae bloom occurs, fishes start behaving differently, or when fish start dying. However, has the diet of the fish been taken into consideration too?

Diet plays an important role in the fish's survival. These animals like humans need certain proteins, vitamins and minerals to grow and stay healthy. Lacking in certain vitamins for instance may stress the fish and consequently the fish become prone to disease. I have seen poor quality foods such as those that have become stale and opened for many years cause problems with fish health. In fact, vitamins and other important nutrients lose their beneficial properties once left exposed to air where it becomes oxidized. This oxidation process may not occur rapidly, but it does happen and that is why many fish food products have expiry dates. Also, some foods have cheap ingredients which will ultimately affect the fish's life span. Knowing the longevity of the ingredients in the fish food and what goes in it is important.

All too often, many hobbyists are guilty of feeding their aquatic pets with the same food for the whole duration of the fish's life. I am not implying that it is bad to always feed one type of food. Especially with the newer food products on the market enriched with vitamins, minerals and high quality proteins, etc...these new lines of fish food may be the only food you will need. However, to my opinion, I believe that it is important to give your aquatic pets variety in their diet. Not only is it good for their digestive system, often, certain food sources may contain certain vitamins and minerals which may not be present in others foods.

So how does this relate to a fish food recipe? Well, my point is that variation in diet is good, but if you know what goes into your fish's food, even better. For my fish, I feed them a variety of foods including frozen blood worms, frozen brine shrimp, a variety of flake foods, daphnia, freshwater shrimp, and beef heart. However, I often like to use beef heart especially when

I am trying to get fish conditioned to breed, although I still mix their diet occasionally. The reason why I like to use beef heart is because I know what goes in it and especially for breeding fish, they need as much proteins as they can get. If you ever look at the ingredients of flake foods and even frozen foods, the amount of protein in them vary considerably as well as the other nutrients. Making your own food allows you to customize to your fish's needs. The mixture I have listed below has worked wonderfully for me especially when I am getting my fishes (cat fishes, discus, angel fishes, tetras, and live bearers) conditioned to breed. Diet will NOT make your fish spawn but it does play an important factor in getting them to spawn.

Patrick's beef heart recipe: * This is what I use for my fish and I will not take any responsibilities resulting from people using this recipe.

- 1 pound of trimmed (fat and blood vessels removed) beef heart
- 0.5 pound of trimmed liver
- 0.5 pound of fish (cod or salmon deboned)
- 5 Cloves of fresh garlic (internal worms generally don't like garlic, you can check the internet for other references)
- 2 sheets of sushi paper (non-seasoned nori good for fiber and minerals)
- 2 multi-vitamins
- 10 leaves of raw spinach (fiber and iron)
- 3 tablespoons of paprika (color food)
- 12 whole raw prawns (carotene for fish color)
- 2 whole boiled carrots (carotene for fish color)

*Optional:

I often like to make some medicated beef heart ahead of time for sick fish. For example, when my young discus are infected by intestinal flagellates I would normally add powdered medication to the tank after a water change, also I like to add it to the fish food. If I already add the medication to the beef heart when I make it, then I wouldn't have to add it later, also I know

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for sure if the fish is receiving the medication when it eats some of the medicated food.

First, I cut and tear every thing into smaller pieces so that they will fit in a meat grinder. I also crush the multi-vitamin into powder form. I combine everything and run it through the grinder at least twice. If the beef heart will be fed to small fish like tetras, then I like to have very fine pieces so I run everything in the meat grinder at least 5 times. For larger fish such as angel fish, I only run it through the meat grinder 3 times. If the mixture is too dry then add water. If it is too wet, then add dry flake food till it reaches the right thickness. The overall thickness should be like cooked oatmeal. Once mixed, package in zip lock bags so they are flat, and half a centimeter thick and freeze. You can break off pieces to feed your fish, or if the pieces are still too big, then you can grate the frozen food with a cheese grater or cut thin slivers with a razor blade.

I have found that the beef heart mixture also helps plants grow better due to the added minerals which may be lacking when no other source of plant nutrients is used e.g. fertilizer. Keep in mind however, that one can add too much minerals and cause algae blooms

and possibly poison the fish. Also feeding beef heart is often messy and especially when feeding lots, it is important to do frequent water changes or at least have many animals such as snails that will eat all the left over foods. Still water changes are necessary due to increased levels of nitrogenous wastes. I hope this recipe will keep your fish happy, I know it does for mine!

Good luck. Cheers—Patrick

Ron's Tip:

Use a vinegar solution to clean your plastic plants. I use 1-cup in a gallon of warm water and it helps to loosen the algae in fine leaf structures.

Use a mild bleach solution to clean and disinfect old tanks. I've also used CLR to remove heavy crusty mineral and salt buildups on old tanks. Rinse well when you are done—you'll be surprised how clean they can get. A few drops of bleach in a little water also makes a good net dip. Just make sure you rinse the net before using it again!

When setting up a new tank, use a sponge filter from one of your existing tanks. It'll help get the cycle started much quicker and avoid that nasty new tank syndrome.

Fish Jell-O

By Frank M. Greco

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What follows is the recipe I use to make gel diet, or as I call it, "Fish Jell-O". It can be tweaked as needed (more veggies, more meat, etc), depending upon the species being fed. Unflavored Knox gelatin can be used as the carrier.

Recipe

1. Non-oily fish 400 grams
2. Clam 275 grams
3. Tetra Marintm 600 grams (you can leave this out. Just increase the greens, fish, and/or clams)
4. Greens* 300 grams
5. Carrots 150 grams
6. Torula yeast 200 grams (I use Salt Creek Micro-Feast L-10. If not available, Just increase the greens, fish, and/or clams or add 200 grams of a good quality flake food. DO NOT use bakers' or brewers' yeast!)
7. Vitamin E 1-250 mg capsule, opened (do not add capsule)
8. Vitamin C 1-250 mg tablet, well crushed
9. Potassium iodide 20 milligrams (can be omitted if unavailable)
10. Gelatin 700 grams
11. Liquid multivitamin 100 ml
12. Water 700 ml cold with food
13. 1600 ml hot with gelatin

* Use kale, collard greens, parsley and the like. Do not use spinach or lettuce as both are lacking nutritionally. See <http://www.frankmgreco.com/fruitveggieprofile.htm> for more information on the nutritional properties of selected fruits and vegetables.

Directions

1. Place the first 9 ingredients into a blender, and add the 700 ml of cold water and 100 ml vitamins.
2. Blend on high until well mixed. Set aside.
3. Warm up 1600 ml. of water until just about boiling. Add 700 grams of gelatin, a little at a time, and stir well until it is all dissolved (do not let gel settle to bottom of container as it will burn).
4. Once gel has dissolved, add it to the blended ingredients in the blender, and mix on high until well blended.
5. Pour this mixture into a pan, and allow to gel. Once set, cut into small squares, and freeze.

Thaw out what you need to feed your fish. Will last about 1 year if kept frozen. Can be grated using a cheese grater.

email: Franksaquarium@hotmail.com

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Dave's Tip:

Use snails in your fry tanks, they will eat any leftover food and keep things really clean.

Beef Heart Recipe

By Bill Stone

Revised Version, first published in a previous VAHC newsletter (reprinted from Aquarticles.com)

I use very little commercially prepared flake or pellet foods to feed my fish except for the ones contained in my Beef Heart recipe. Apart from the live foods I produce and the ones I collect from the ponds, all my fish from fry to adults get Beef Heart (grated to size) prepared as described below. It is suitable for any fish that eats insects, worms, or is carnivorous in the wild; even the so called vegetarian ones like my newly acquired Siamese Algae Eaters just love it and can be noticed chasing the bits and pieces when I feed the fish.

The cost is fairly cheap (between \$2.50 and \$5.00 per two-cup bag), which lasts approximately 7 days in my fishroom. Cost depends on the price you pay for the Beef Heart (currently I pay \$1.29 when I buy 25 lbs at a time) at my local butcher's shop. I find Beef Heart to be readily available and very convenient, although it is time consuming to prepare. The other ingredients are purchased at a supermarket or grown in my garden.

This recipe is one I learned years ago when I lived in Montreal, from Hans Roth of the Montreal Aquarium Society. My methods are similar to those that Hans used, his original recipe is the Single one shown below. One of the main ingredients missing in my recipe is beef liver. Hans used ½ lb of liver per 5lbs of heart. I have modified the original recipe in that I use a combination of flake food and trout chow. I also use fresh carrots the 'carotene' is very good for enhancing colour in your fish.

Ingredients	Single	Double	Quad
Beef Heart	5 lbs	10 lbs	25 lbs
Tetra Min Flakes	3 oz	3 hndfls	6 hndfls
Trout Chow	0	2 cups	4 cups
Spinach	3 oz	6 oz	12 oz
Knox Gelatine	2 pkgs	6 pkgs	12 pkgs
Paprika (Red Pepper)	1/2 tsp	1 tsp	2 tsp
Carrots large	2	4	8
Beef liver (optional)	1/2 lb	---	---
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Finished Product (1 L milk bags)	8	15	30

Start by preparing the beef heart. I get mine from my local butcher's shop and it's usually frozen. I make the Quad recipe and start with 25 lbs of beef heart. I leave the heart out overnight to thaw slightly; I have learned from experience that it is easier to trim when the heart is slightly frozen. First, cut the heart into four large segments. I cut it up using the large valves as guides. Next, cut the heart into smaller pieces and start trimming off the skin, fat and blood vessels. This is quite a lengthy process – approximately five hours for a 25 lb batch, depending on how fussy you are and your dexterity with a knife. You will be left with approximately 60% to 70% of the heart once trimming is complete. As the pieces are trimmed out, place them on a flat cookie sheet and put them in your freezer, as they grind up better when semi-frozen.

Next, prepare the spinach and carrots. Cook the spinach for five minutes after removing most of the coarse stems. Then place spinach and water in a blender and blend into a fine mixture (make sure the blender cover is on or you'll wear the mixture – ugh!). Prepare the carrots by peeling and dicing them, cook for ten minutes and liquefy in the blender as for the spinach.

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Now gather together the dry ingredients: trout chow, flake food and paprika. Mix them thoroughly by hand. Place the combined dry ingredients in a bowl and add water (approximately 1½ cups per cup of trout chow) a ratio of 1½:1. Allow the dry ingredients time to soak up the water, then pour into your blender and liquefy the mixture. As you complete each blender-full, put the portions into a large container (I usually use the turkey roaster). You'll use the roaster pan eventually to combine all the ingredients.

The next step is to grind the semi-frozen beef heart pieces putting them through the grinder twice, using a coarse then a fine disc.

Now for the final step in preparing your mixture. Take the ground up heart and add it to the other ingredients in your roaster pan. Add the spinach and carrot mixtures and combine all ingredients thoroughly. This is done by getting into the mixture with both hands and mixing up all of the ingredients. When you are satisfied that all is uniformly mixed, you are ready to add the gelatine. Prepare the gelatine by dissolving the packages slowly into hot water (3 cups water to 6 pkgs of gelatine); do this twice for the Quad batch. Now add the gelatine into the mixture and hand mix thoroughly into the food so that it is all covered. The gelatine is all protein and very sticky, its use is to bind all of the mixture together.

You are now ready to bag up the Beef Heart mixture. I use 1 litre milk bags that are saved for that purpose. I find them to be excellent. Unfortunately, here in BC the milk jug has taken over from the milk bag, so substitute a suitable bag. A fish bag 6½ X14 inches would work well. To get the mixture into the bags, a large funnel type gadget used for ladling jams/fruit into jars during canning season works well. Simply put the funnel into the bag and grasp it around the edge, then using a one-cup measure put two cups of the food into the bag. I fold the bags down halfway before inserting the funnel to keep the food off the sides at the top of the bag, which hinders sealing. Now seal up the bag ensuring that as much air is squeezed out of the bag as possible. I use a Phillips 'Sealabag' Electric Bag Sealer which has a vacuum cycle for extracting the air, to seal the bag. Once the bag is sealed, cut off the excess portion of the bag, my sealer does this for me. Next press the bag as flat as possible, this will tell you if there are any leaks and makes it easier for storing and for use. The finished size of my sealed bags is approximately 5½ X 8½ X ¾ inches. Place the bags in your deep freeze lying flat and freeze for future use.

To prepare the Beef Heart for grating, take the milk bag

and break it up into three or four equal size pieces; I do this by scoring the block with a hammer and chisel and then striking the frozen block over my work bench. I caution you not to use the edge of the deep freeze or the dining room table unless you want to end your marriage. Take each of the smaller pieces and put them into a separate bag – a good use for used fish bags. Place the broken up pieces back into the freezer until ready to use.

To feed the fish simply grate up the Beef Heart into the proper size for your pets. I use three different size graters; a cutter that makes small slivers the width of the block and a knife to get the heart to the size to feed my fish. Grate up and feed the heart while frozen, the small worm-like pieces are eaten vigorously by the fish. Feed enough but do not over feed. Any uneaten food should be removed after feeding.

Of course many other ingredients can be added to the mixture like Kelp, Bone Meal, Torula or Brewers Yeast (I add ½ Cup each in my Quad batch) or multiple Vitamins, all obtainable at a Health Food Store. The paprika, by the way, helps keep the mixture a natural red, because the spinach tends to make the mixture look unappetisingly green

"BON APPETIT"

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VAHC 2004 Membership Application

New Membership: _____ Existing Membership Number: _____

First Name: _____ Last Name: _____

Postal Address: _____

City: _____ Province: _____ Postal Code: _____

Contact Number: _____ Email Address: _____

Individual Membership (\$20.00) Family Membership (\$25.00)

Additional Names (Family Membership Only): _____

My main areas of interest are:

As a club member you are expected to assist with the planning, organising and running of club activities. I would like to assist with (Check all that are applicable):-

- | | |
|--|--|
| <input type="checkbox"/> Monthly Auctions | <input type="checkbox"/> Annual Auctions |
| <input type="checkbox"/> Write an article for the Fishmonger | <input type="checkbox"/> Printing and distribution of the Fishmonger |
| <input type="checkbox"/> Chair a monthly meeting | <input type="checkbox"/> Co-ordinate club membership |
| <input type="checkbox"/> Guest Speaker co-ordination | <input type="checkbox"/> Co-ordinate with fish stores |
| <input type="checkbox"/> Organizing Summer Social Event | <input type="checkbox"/> Let me know what I can do to help |
| <input type="checkbox"/> Other (please specify) _____ | |

YES - I agree to the sharing of my telephone and email address with other club members.

NO - Please do not give out any of my personal details.

(Please circle your response)

Signed: _____

Date: _____

Please submit your payment (Cheques payable to VAHC) to: Jack MacKay, Unit #84, 17097 - 64 Ave, Surrey BC V3S