

# AQUATICA

THE JOURNAL OF THE BROOKLYN AQUARIUM SOCIETY  
VOL XXIV MAY ~ JUNE 2010 No. 5

Koi posing for the camera at Aquatic Wildlife



Photo: John Todaro



# AQUATICA

VOL. XXIV MAY - JUNE 2010 NO.5

## CONTENTS

- 2 Calendar of Events ~ 2010/2011
- 3 Fish Diseases
- 9 NASA Find Shrimp, Jellyfish Below 600 Ft of Antarctic Ice
- 10 Crystal Red Shrimp
- 12 New Dwarf Shrimp Food From The Garden
- 13 Predatory Fish Now Spreading Throughout Keys
- 15 Anatomy of a Fish
- 16 Livebearing Fish Use In Tanks
- 18 Reef Nutrition Food Chart
- 19 Fish Tails Extravaganza
- 22 The Practical Plant: Propagating: *Lemna minor*
- 23 Propagating: *Shinnersia rivularis*
- 24 Exchange Editor's Report
- 25 Patronize Our Sponsors, They Support Us! We Must Support Them!
- 26 Membership Renewal Application

## AQUATICA STAFF

Editor: John Todaro  
Copy Editor: Kay Martin  
Freshwater Shrimp Editor: Dan Hagan  
Marine Editor: Open  
Plant Editor: Izzy Zwerin  
Illustrations: J. Todaro, C. Giam  
Advertising: Izzy Zwerin

Subscriptions: Vinny Babino  
Exchange Editor: Stuart Hershkowitz  
Contributing Writers: Anon Aquarticles,  
Cammy Clark, Dan Hagan, Stuart Hershkowitz,  
Fran Hackett, Dr. Adrian Lawler, The Palm  
Beach Post, John Todaro, Izzy Zwerin.

Note: The Editor takes full responsibility for misspellings and punctuation errors.

*AQUATICA* is published on line bi-monthly (except July / August) by BAS. Original articles may be reprinted by other non-profit organizations, provided proper credit is given to the author and *Aquatica*, and two copies are sent to the Exchange Editor. Transcriptions of lectures may not be reprinted without written permission of both Editor and the Speaker. A notice of where original *AQUATICA* articles have been published should be sent to the BAS Exchange Editor; Stu Hershkowitz, P.O. Box 290610, Bklyn, NY 11229-0111

*AQUATICA* will exchange publications with all interested societies. If we do not receive your publications for three consecutive months, we will assume you no longer wish to exchange and your club may be removed from our mailing list.

ALL CORRESPONDENCE CONCERNING THIS PUBLICATION SHOULD BE SENT TO:

- Editor: John Todaro, 247 Middletown Road, South Londonderry VT, 05155 - Phone: 802 824-3743 Fax: Same  
You can submit articles to the Editor by mail, fax, or E-mail to: [JTODDYBAS@AOL.COM](mailto:JTODDYBAS@AOL.COM).

All articles in *Aquatica* are the opinion and experiences of the author or authors, and do not necessarily represent the opinions of the editors or staff of *Aquatica* or the Brooklyn Aquarium Society Inc.

## BROOKLYN AQUARIUM SOCIETY CALENDAR OF EVENTS ~ 2010 - 2011

### THERE ARE NO MEETING IN JULY & AUGUST

**SEPT 10 Jeff Bollbach ~ A Year In The Fish Room** ~ Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction • Discount books & sales

**OCT 8 Fall Giant Auction** ~ Freshwater fish, plants, marine fish, aqua-cultured corals & dry goods auction including a new 55 gal. tank & stand • Discount books & sales..

**NOV 12 Pat Donston ~ Reef Care Conflicts, Who's Right?** ~ Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction • Discount books & sales

**DEC 10 BAS Holiday Party** ~ Members, their families and friends, all you can eat sit-down dinner  
• Fish Bingo & Prizes • BAS Awards presentations

#### 2011

#### 100 Years of Educating Aquarists ~ 1911- 2011

**JAN 14 Rit Forcier ~ Freshwater fish** ~ Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction • Discount books & sales

**FEB 11 Christine Williams ~ When Aquariums Attack! Bites, Stings, Infections & Other Unfortunate Events & What To Do!** ~ Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction  
• Discount books & sales.

**MAR 11 TBA ~ Freshwater Speaker** Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction • Discount books & sales

**APR 8 Leslie Harris Life Styles Of The Wet And Spineless**

**MAY 13 Spring Auction** ~ Freshwater fish, plants, marine fish, aqua-cultured corals & dry goods auction including a new 55 gallon tank & stand • Discount books & sales • Raffles • Door prize and much more.

**JUN 10 Possible Speaker: Ad Konings ~ African Cichlids** Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction • Discount books & sales

**JULY 8 100th Anniversary Party to be held at the New York Aquarium More information to follow**

**SEPT 9 TBA ~ Marine Speaker** ~ Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction • Discount books & sales.

**OCT 14 Fall Giant Auction** ~ Freshwater fish, plants, marine fish, aqua-cultured corals & dry goods auction including a new 55 gal. tank & stand • Discount books & sales.

**NOV 11 Anthony Stissi ~ Lake Tanganyikan Tropheus Species** ~ Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction • Discount books & sales

**DEC 9 BAS Holiday Party** ~ Members, their families and friends, all you can eat sit-down dinner • Fish Bingo & Prizes • BAS Awards presentations



# FISH DISEASES

## CAUSES

**Q: Why is my fish sick and how do I prevent more illness?**

**A:** Probably 80-90% of diseases in captive fish can be prevented by avoiding stress. Stress weakens fishes' immune systems, leading to increased susceptibility to disease. Actually, diseases and pathogens are almost always present in tanks, but a healthy fish's immune system will prevent that from being a problem. Some of the most common stressors for captive fish are:

- Poor water quality: measurable ammonia or nitrites, or very high nitrates.
- The water temperature is fluctuating more than 2 deg F/day
- Incompatible species in the tank.
- Too many fish in the tank (5 adult angelfish in 10g tank).
- The tank is too small for the fish (foot long fish in 10g tank).
- The water is too warm or too cold for the species (goldfish vs. tropicals).
- Wrong pH for species (Discus vs. African cichlids)
- pH fluctuations greater than 0.2 units/day.
- Insufficient cover or hiding places present.
- Wrong water hardness for the species (Discus vs. African cichlids).
- Insufficient oxygen in the water.
- Improper fish nutrition (wrong food, foods not varied).

## KEEPING YOUR TANK FREE OF DISEASE

**Q: Do I need a quarantine tank for new fish?**

**A:** Quarantining new fish is a good habit for all aquaria, but is not absolutely necessary for success. Quarantining is simply keeping a fish in a separate tank for long enough to be certain that it is disease free. Many beginners do fine without a quarantine tank, and object to the cost of another setup. A quarantine tank does cost more, but if a hobbyist has hundreds of dollars invested in fish, it is cheaper to have a separate quarantine tank than to replace fish killed by a newly introduced disease. Also, many of us become attached to fish and do not want to expose our pets to diseases from newcomers, no matter what the cost.

The purpose of quarantining is to avoid introducing new diseases to a stable system, and to be able to better observe new fish for signs of disease. A quarantine tank can also double as a hospital tank for sick fish. Hospital tanks are good because they lower the cost of using medicines and keep diseased fish separate from healthy ones. Quarantine is probably most important for saltwater tanks/reef systems because of the difficulty of treating diseases, or wild-caught freshwater fish because they are probably not disease-free. Quarantining itself can stress fish so be sure quarantine is as stress-free as possible.



# FISH DISEASES

## TO SET UP A QUARANTINE OR HOSPITAL TANK:

- Keep an extra filter -- a sponge filter is ideal -- or piece of filter floss in an established tank, so that you don't have to keep the quarantine tank set up at all times. Some people choose instead to keep the filter going with guppies or danios (for freshwater) or mollies (for saltwater).
- If you don't keep the tank running, use old tank water to fill the tank. So: old tank water + established filter = instant established tank.
- Add a spare airpump and heater. If you haven't messed with the heater during storage, it should come to wherever you had it last time.
- Consider using Amquel or equivalent when medicating the tank in case the biological filter bacteria are sensitive to the medication. Sick fish are especially susceptible to ammonia. (Note that ammonia which has been bound with Amquel still shows up on a nessler ammonia test. So, if you are planning on testing for ammonia in that tank, you need to use a salicylate ammonia test.)
- For a hospital tank, do small, frequent water changes (even every day).

If possible, quarantine all of your new fish for about three weeks. During that time, gradually acclimate the fish to your tank's parameters: hardness, pH, salinity, temperature, etc., and watch for and treat any signs of disease. Do not medicate quarantined fish "just in case." Only treat evident, definitely identified diseases. Treating all quarantined fish with a bunch of medicines will just lead to weakened fish and antibiotic resistant bacteria.

Once you are done with the quarantine, if you treated any especially nasty diseases, it is good to disinfect the tank and reestablish the filter. Chlorine bleach or strong saltwater (for freshwater) work well. Be sure all traces of bleach are rinsed off. Another good disinfectant is potassium permanganate (Jungle's Clear Water is one com-

mmercial way to get it).

If you choose not to quarantine, do not add store water to your tank with the new fish.

### Q: How about quarantining plants?

A: Plants can carry diseases into a tank, too. It is a good idea to disinfect new plants if there were fish in the tank with them at the store.

### Q: How do I avoid introducing diseases in the first place?

A: Never buy sick fish from a store. Especially do not buy fish or plants from a tank if \*any\* fish in the tank shows any signs of disease or if there is medicine in the water (water is colored yellow, green, or blue). Store people may say the fish are fine, but if they were, why is the medicine in the tank? Also ask how long the fish have been in the store. New arrivals may be carrying diseases that have not shown up yet. It is better to wait a couple of weeks before purchasing the fish. If you must have a fish that just came in, be especially sure to quarantine it properly.

### Diagnosis/common diseases or: How do I know the fish is sick?

Most important: watch your fish and know what their normal behavior and appearance is. If you don't know what normal is, you can't know what sick is.

### BAD SIGNS:

- Clamped fins (fins are held abnormally close to body)
- The fish refuses its usual food for more than 2 days.
- There are visible spots, lesions, or white patches on the fish.
- The fish gasps at the surface of the water.
- The fish floats, sinks, whirls, or swims sideways.



# FISH DISEASES

- The fish shimmies (moves from side to side without going forward).
- A normally active fish is still.
- A normally still fish is very active.
- The fish suddenly bloats up, and it's not due to eggs or young.
- The fish is scratching against tank decorations.

## AQUARIUM MEDICATIONS TO KEEP ON HAND

I suggest setting up a fish medicine cabinet. It seems like fish always get sick when the store is closed. The following list of items should be kept on hand by all home aquarists:

- Water quality test kits: pH, ammonia, nitrite, nitrate
  - Aquarium salt (NOT table salt. Most table salts contain additives to keep them from clumping. Kosher or rock salt is OK).
  - Malachite green/formalin ich remedy
  - Methylene blue
  - Chlorine bleach for disinfection
  - Maybe one antibiotic (Kanamycin or Furazolidone)
  - Antibiotic-containing food
  - Copper remedy for parasites
- And for fish big enough to handle:
- Q-tips
  - Malachite green or mercurochrome

## COMMON DISEASES/PROBLEMS OR WHAT'S WRONG WITH MY FISH?

Bad water quality. Fish are gasping at the surface, or very inactive, but there are no visible lesions when it first starts. Their fins may be clamped. Many fish of different species are affected, and possibly the whole tank. If the water has been bad for a while, the fish may have fin rot, or streaks of blood in their fins.

- If fish are gasping at the surface, or have purple gills: high ammonia or low dissolved O<sub>2</sub> may be the problem; test ammonia, dissolved O<sub>2</sub>.
- If the main symptom is inactivity: test nitrites, pH, dissolved O<sub>2</sub>, nitrates.

## DEPENDING ON YOUR TEST RESULTS, TRY THE FOLLOWING:

### AMMONIA

Change enough of the water to reduce ammonia levels to 1-2 ppm for freshwater or below 1 ppm for saltwater. If that means changing more than a third of the water, be sure the water you add is the same temperature, salinity, hardness and pH of the tank water. It is also okay to do multiple smaller water changes for a few days. Aerate, and make sure pH is at or below 7.0 for freshwater tanks. In addition to or instead of changing water, you can also add a dose of **AmQuel** to give fish immediate relief. Find out why ammonia is present and correct the problem.

### NITRITES

Change enough of the water to bring nitrites down to below 2 ppm (as with ammonia, if this is a lot of water, match water parameters or do multiple water changes), add 1 tbsp/gallon salt (not all fish may tolerate this much -- start out with 1 tsp), and add supplemental aeration. Find out why the nitrite levels are high and correct the problem.

### NITRATES

Change water and clean the filter. If your filter is dirty, there is more waste material present to break down into nitrate. Start feeding less and changing water more often.

### LOW OXYGEN

Run an airstone. If this helps a lot, the fish proba-



# FISH DISEASES

bly don't have enough oxygen in the water. Your tank may need cleaning, fewer fish, or additional water movement at the surface from a power-head, airstone, or filter.

## IMPROPER pH

If pH is too low: make sure carbonate buffering is adequate -- at least 5dKH. In general, adding baking soda at 1 tsp. per 30 gal. raises dKH about 2 degrees. For a 10-20g tank that just needs the pH a little higher, try about a quarter teaspoonful. If that isn't enough, add up to a teaspoonful more. You can scale this up to 1 tsp/30 gal for larger tanks. If the pH is still too low and the KH is at least 5-6 dKH, clean the tank. For long-term buffering in saltwater and alkaline freshwater systems, add crushed coral. If pH is too high, pH down (phosphoric acid) can be added. Don't rely on this stuff, except in extreme situations like ammonia poisoning because it can cause excessive algal growth. To lower pH long-term, filter over peat, or use distilled or deionized water mixed with your tapwater.

## FRESHWATER ICH

Symptoms: Fish look like they have little white salt grains on them and may scratch against objects in the tank. White spot disease (*Ichthyophthirius multifiliis*) is caused by a protozoan with a life cycle that includes a free-living stage. Ich grows on a fish --> it falls off and attaches to gravel or tank glass --> it reproduces to MANY parasites --> these swarmers then attach to other fish. If the swarmers do not find a fish host, they die in about 3 days (depending on the water temperature).

Therefore, to treat it, medicine must be added to the display tank to kill free-living parasites. If fish are removed to quarantine, parasites living in the tank will escape the treatment -- unless ALL fish are removed for about a week in freshwater or three weeks in saltwater systems. In a reef

tank, where invertebrates are sensitive to ich medications, removing the fish is the only option. Some people think that ich is probably dormant in most tanks. It is most often triggered by temperature fluctuations.

**REMEDY:** For most fish, use a medication with formalin and malachite green. These are the active ingredients in many ich medications at fish shops. Some products are Kordon's Rid Ich and Aquarium Products' Quick Cure. Just read the label and you may find others. Check for temperature fluctuations in the tank and fix them to avoid recurrences. Note that tetras can be a little sensitive to malachite green, so use it at half the dose. Use these products as directed (usually a daily dose) until all of the fish are spot-free. Then dose every three days for a total of four more doses. This will kill any free-swimming parasites as they hatch out of cysts. Another remedy is to raise the tank temperature to about 90° F and add 1 tsp/gallon salt to the water. Not all fish tolerate this. Finally, one can treat ich with a "transfer method." Fish are moved daily into a different tank with clean, conditioned, warmed water. Parasites that came off of the fish are left behind in the tank. After moving the fish daily for a week, the fish (presumably cured) can be put back into the main tank. The disadvantage of this method is that it stresses both fish and fishkeeper.

## FIN ROT

Fishes' fins turn whitish and die back. Fin rot often follows damage or injury. It can also be caused by poor water quality.

**REMEDY** First, fix the water and remove any fin-nipping fish. Change some water (25% is good) and add 1 tsp/gallon salt to promote healing. If bad water quality or an aggressive tankmate was the problem, that should be adequate. Healing will begin within a couple of days.

If it worsens, decide first whether it's fungal or





# FISH DISEASES

bacterial. Fungal finrot looks like clumps of cotton on the fins and usually follows injury. It is commonly seen in African cichlids or fish that have injured themselves against decorations. Bacterial finrot is whitish, but not cottony (unless it's columnaris), and can be contagious. The fish then need to be removed from the tank and medicated.

## FUNGUS

For fish large enough to handle, catch the fish, and dab malachite green directly on the fungus with a Q-tip. This is extremely effective. Repeat treatments may be necessary.

For small fish, a commercial fungicide such as Maroxy may work. For severe infestations, try a bath in methylene blue (enough so you can barely see the fish) until the fungus turns blue or for 20 min. If you add methylene blue directly to a tank, you will kill plants and trash your biological filter.

## BACTERIAL

Antibiotic treatment in a quarantine tank. This is stressful for the fish, and doesn't always work, so be sure of what you are doing before you attempt it. If the fish is still eating, the best bet is an antibiotic food. Tetra makes one that works well -- just buy the one for bacterial diseases and follow the directions on the can.

If the fish is not eating, a bath treatment is necessary. A combination of Kaynamycin and Furanace usually works, especially for Columnaris. Again, treat in a separate tank and aerate heavily.

## INJURIES

Cichlids and other "scrappy" fish may sustain injuries that are severe enough to draw blood from fighting. Other fish may run into tank decorations, walls, or rocks.

Larger fish can be netted and their injuries

dabbed with mercurochrome (available at drug stores) or Betadine (iodine-based antibiotic also available at drug stores) to help prevent infection. Be sure to keep these chemicals off of the gills and eyes. For really small fish, put the affected fish in dilute methylene blue (pale blue) and 1 tsp/gallon salt in a separate tank. If you want to keep the fish in the main tank just add salt, as methylene blue will trash your biological filter.

Watch the fish to be sure injuries are healing cleanly, and repeat the mercurochrome dosage if necessary. If finrot or fungus sets in, see the above section on fin rot.

## DROPSY

Fish swells up like a balloon and may show popeyes. It may recover with no treatment and may die despite it. The swelling is because the fish is absorbing water faster than it can eliminate it, and it can be caused by many different problems. High nitrates are one thing to check. Internal bacterial infections, including fish TB, are other possibilities. If there are no water quality problems, you may want to attempt antibiotic treatment in a separate tank.

## HEAD AND LATERAL LINE EROSION

(hole-in-head disease)

This disease can affect discus, other cichlids, and many saltwater fish. The fish develops holes in its head and sometimes along its lateral line. Causes are unclear but as in any disease, stress and poor water quality likely play a role. Fish in planted tanks rarely get HLLE, which supports the nutrition idea, since fish can nibble on the plants and obtain extra nutrition. Untergasser also observes that the protozoan Hexamita can be found in the lesions. Untreated cases can eventually prove disfiguring or fatal.

**REMEDY:** First, make sure water quality is opti-



# FISH DISEASES

mal and reduce stress. Stopping carbon filtration may help as it can remove nutrients from the water. Then feed a vitamin-enriched food, paying particular attention to vitamin C supplementation.

For stubborn cases, some books suggest metronidazole (Flagyl) to eliminate Hexamita (a mildly pathogenic protozoan) from the lesions. Your mileage may vary with that one. Metrozole and Hex-a-mit are commercial medications with metronidazole.

## SWIM BLADDER DISORDERS

Fish floats upside-down or sideways. This is particularly common in fancy goldfish because of their bizarre body shapes. Dry food eaten quickly swells up in the fish's intestine and keeps the fish from controlling its swim bladder properly.

To help, feed the fish pre-soaked or gel-based foods. Green foods are also helpful; peas in particular.

As with fin rot, these disorders can also be caused by bacterial infection. Treatment is much the same. Use antibiotic food if the fish is eating, or add antibiotic to the water in a quarantine tank if the fish is too sick to eat.

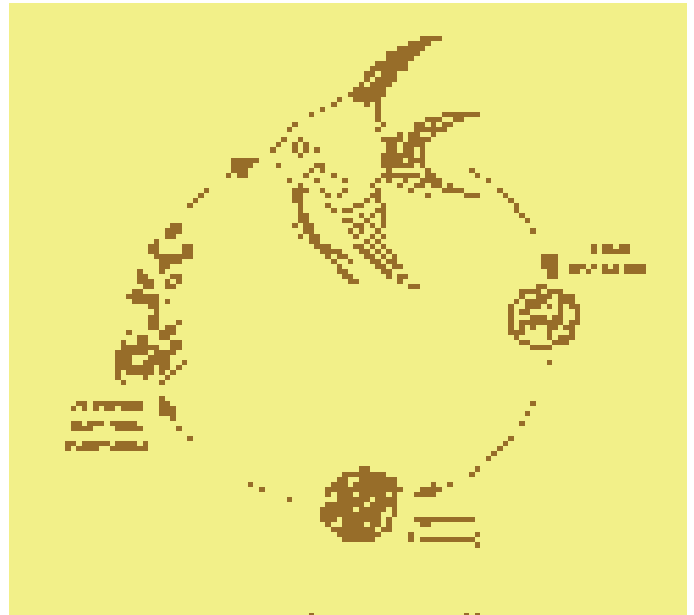
## LARGE EXTERNAL PARASITES

(as opposed to ich)

Add a copper remedy to the tank and monitor it with a copper test kit. Also, Mardel's Maroxy works well. For anchor worms or leeches on pond fish, remove them from the affected fish with tweezers and swab the area with mercurochrome to prevent infection.

## VELVET

Fish look like they have been finely dusted with flecks of gold. Fins may be clamped and the fish may shimmy. Treat with an anti-parasitic medication such as copper or formalin/malachite green.





The Palm Beach Post - The Associated Press  
Thanks to Ron Kasman who sent in this article he  
found while on vacation in Florida.

# NASA Finds Shrimp, Jellyfish Below 600 Feet Of

# ANTARCTIC

In a surprising discovery about where higher life can thrive, scientists for the first time found a shrimp-like creature and a jellyfish frolicking beneath a massive Antarctic ice sheet.

Six hundred feet below the ice where no light shines, scientists had figures nothing much more than a few microbes could exit.

That's why a NASA team was surprised when they lowered a video camera to get the first long look at the underbelly of an ice sheet in Antarctica. A curious shrimp-like creature came swimming by and then parked itself on the camera's cable. Scientists also pulled up a tentacle they believe came from a foot-long jellyfish.

"We were operating on the presumption that nothing's there," said NASA ice scientist **Robert Bindshadler**, who will be presenting the initial findings and a video at the American Geophysical Union meeting Wednesday. "It was a shrimp you'd enjoy having on your plate."


"We were just gaga over it," he said of the 3-inch long, orange critter starring in their two-minute video. Technically, it's not a shrimp. It's a *Lysianassidae* amphipod, distantly related to shrimp.



The video is likely to inspire experts to rethink what they know about life in harsh environments. And it has scientists musing that if a shrimp-like creature can frolic below 600 feet of Antarctic ice in subfreezing dark water, what about other hostile places? What about Europa, a frozen moon of Jupiter?

"They are looking at the equivalent of a drop of water in a swimming pool that you would expect nothing to be living in and they found not one animal but two," said biologist **Stacy Kim** of the Moss Landing Marine Laboratories in California.

Microbiologist **Cynan Ellis-Evans** of the British Antarctic Survey called the finding intriguing.

"This is a first for the sub-glacial environment with that level of sophistication." 



# Crystal Red Shrimp



Scientific Name: *Caridina cantonensis*  
Other Scientific Names: N / A  
Common Name: Crystal Red Shrimp  
Other Common Names: Red Bee Shrimp  
Origin: South East Asia  
Found in the wild: No  
pH Range: 5.8 - 6.8 Ideal Ph 6.2  
Temperature Range: 62° - 72° Ideal Temperature 68°F  
Hardness Range: 2-10 dkh Ideal Hardness 3 dkh  
Life Span: 1 - 2 years Size 2 inches  
Gestation Period: 30 days  
Diet: Omnivore

## Crystal Red Shrimp History

The Crystal Red Shrimp is the selectively bred red color variant of the Bee Shrimp. Originally selectively bred in Japan for its red coloration the Crystal Red Shrimp is becoming one of the most popular Dwarf Shrimp across the globe.

## Crystal Red Shrimp Care

Crystal Red Shrimp are a little more demanding

than many other Dwarf Shrimp, and have the same care requirements as the wild type of this species, the Bee Shrimp. The water is required to be soft and slightly acidic for the Crystal Red Shrimp to be happy. They also prefer a little less than tropical temperatures. As with all Dwarf Shrimp the aquarium should be well established and parameters should be kept stable. The higher grade Crystal Red Shrimp are more sensitive to nitrates



than many other Dwarf Shrimp so care must be taken to ensure high quality water.


### Crystal Red Shrimp Diet

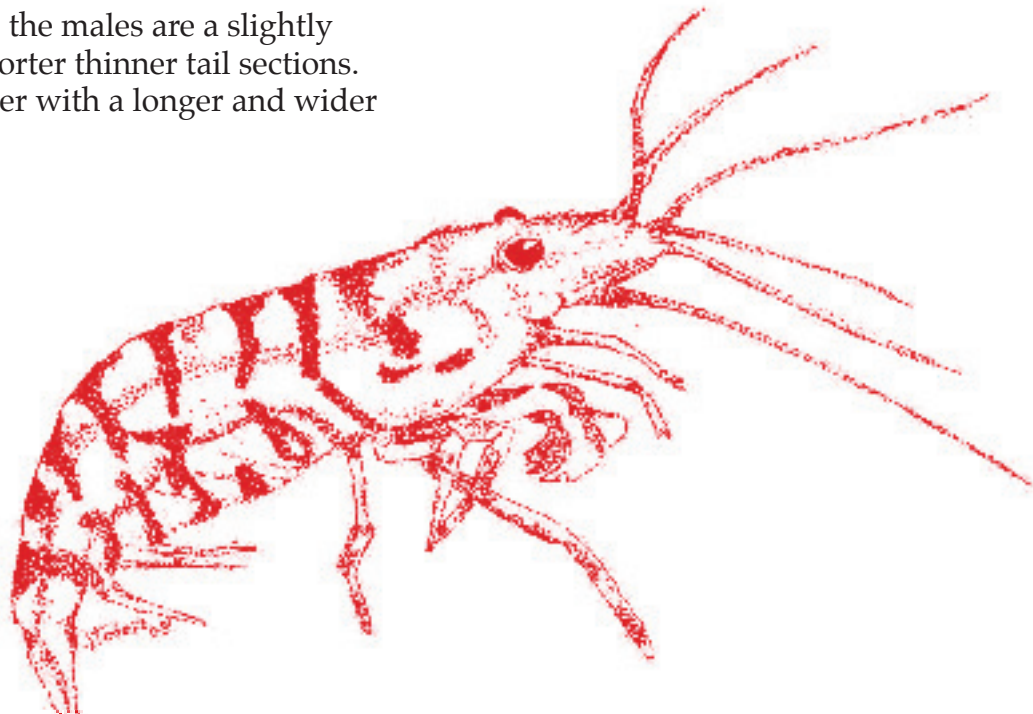
Crystal Red Shrimp are omnivores and share the same diet that most Dwarf Shrimp enjoy. Crystal Red Shrimp are algae eaters but will often times need supplemental feedings. Aquarium foods intended for bottom feeders and aquatic invertebrates are readily accepted, as are blanched vegetables (boiled until soft). There are foods made in Japan specifically for Crystal Red Shrimp that are high quality foods, but are not necessary.

### Crystal Red Shrimp Breeding

If optimal care requirements are met, the Crystal is fairly easy to breed. Crystal Red Shrimp carry their eggs a little longer than many other Dwarf Shrimp, and after hatching develop a little more slowly. It can be difficult to determine the sex of a Crystal Red Shrimp, the males are a slightly smaller and have shorter thinner tail sections. The females are larger with a longer and wider tail section.

**Crystal Red Shrimp Behavior** Crystal Red Shrimp are non-aggressive, and are quite active. In an aquarium that has no predators, Crystal Red Shrimp will often be observed grazing on algae on aquarium plants, decorations and on the substrate. When fed, the shrimp will often form large groups that are quite striking in appearance.

**Special Notes** As with all aquatic invertebrates, it is important to make sure copper does not get into the aquarium. Copper is toxic to all Dwarf Shrimp. Many medications contain elevated levels of copper, so it is recommended not to medicate an aquarium with Dwarf Shrimp in it. 



Dan Hagan runs [TheShrimp Farm.com](http://TheShrimpFarm.com). This site sells freshwater shrimp. Dwarf freshwater shrimp are the perfect aquatic inhabitants for your under water planted garden. If you're interested in keeping dwarf freshwater shrimp or have a question about them, go to Dan's blog site and ask your question. It's a great site with reliable and accurate information on dwarf shrimp, [ShrimpFarm.com](http://ShrimpFarm.com).





# New Dwarf Shrimp Food From the GARDEN

**A**s some of you know I am an avid gardener (see my Vegetable Garden Blog). Well, over the last few days I have decided to try a new food from the garden for my Dwarf Shrimp.


## SWISS CHARD AS A DWARF SHRIMP FOOD

When cooked Swiss Chard has a flavor that is very similar to spinach and it also has very similar nutritional values. The one major advantage that Swiss Chard has over spinach is that it will grow almost year-round down here in Central Florida. Once the heat shows up, spinach goes away!

To feed my shrimp, I simply pull one leaf off the plant and blanch (boil it until soft) it in the microwave. It takes only 3 minutes to prepare

and after washing it off in cold water I place small pieces of it in my shrimp tanks.

## OBSERVATIONS:

*Neocaridina* seem to like it more than *Caridina*. If offered both Swiss Chard and prepared commercial food the shrimp take the commercial food. I often feed my shrimp either Swiss Chard or Spinach (when in season) as the only food for the day. After a few hours the shrimp will completely finish off the food. The next day I will follow up with a commercial food. 

## NUTRITION FACTS

Swiss chard (*Beta vulgaris* subsp. *vulgaris*) fresh, raw leaves, Nutritiove value per 100 g.

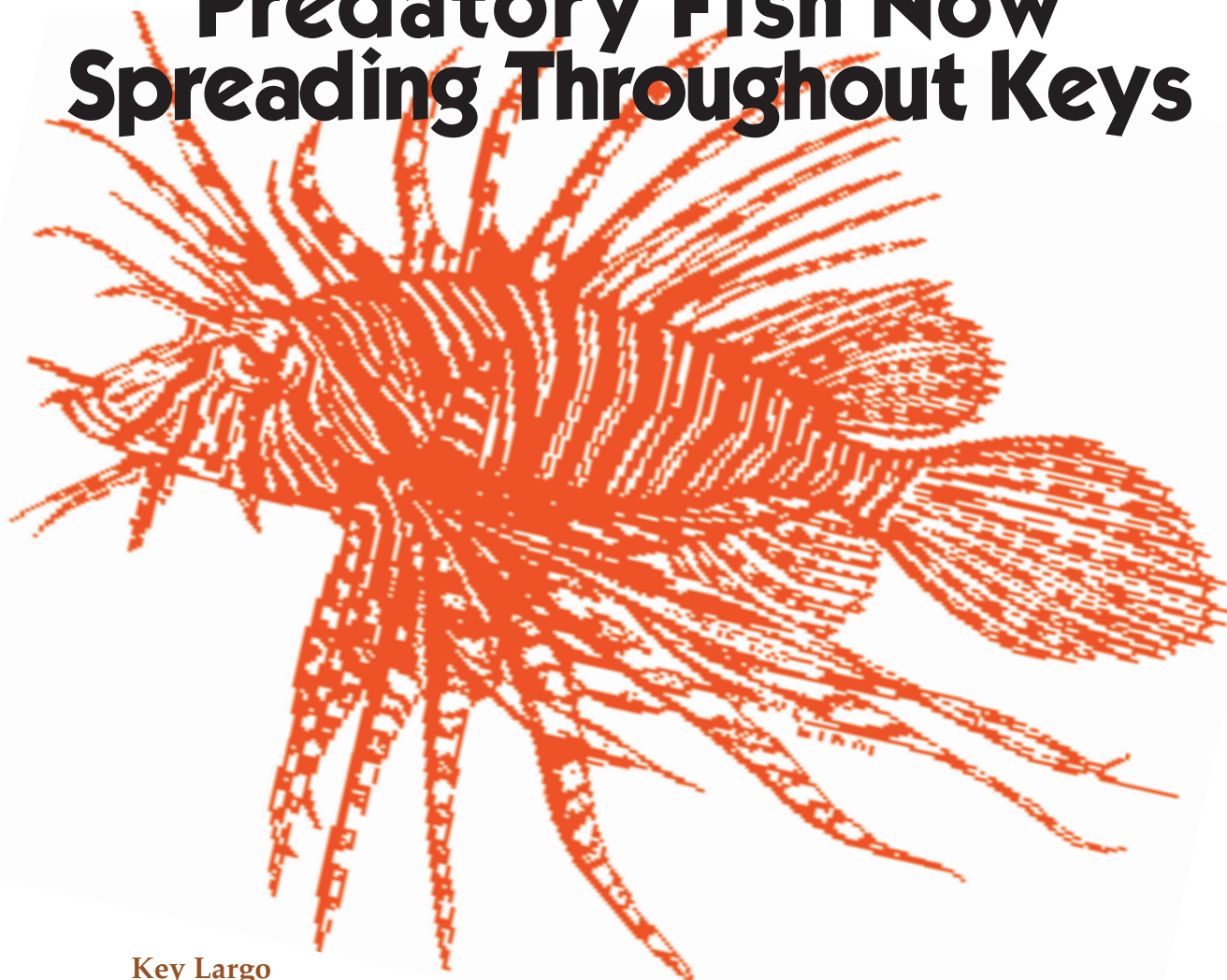
Principle	Nutrient Value	Percentage of RDA
Energy	1%	19 Kcal
Carbohydrates	3.74 g	3%
Protein	3.27 g	6%
Total Fat	0.20 g	1%
Cholesterol	0 mg	0%
Dietary Fiber	1.6 g	4%
<b>VITAMINS</b>		
Folates	14 mcg	4.5%
Niacin	0.400 mg	2%
Pantothenic acid	0.172 mg	3%
Pyridoxine	0.99 mg	7.5%
Riboflavin	0.090 mg	7%
Thiamin	0.040 mg	3%
Vitamin A	6116 IU	204%
Vitamin C	30 mg	50%
Vitamin E	1.89 mg	12.5%
Vitamin K	830 mcg	692%

Principle	Nutrient Value	Percentage of RDA
<b>ELECTROLYTES</b>		
Sodium	213 mg	14%
Potassium	379 mg	8%
<b>MINERALS</b>		
Calcium	51 mg	5%
Copper	0.179 mg	20%
Iron	1.80 mg	22.5%
Magnesium	81 mg	20%
Manganese	0.366 mg	16%
Phosphorus	46mg	6
Selenium	0.9 mcg	1.5%
Zinc	0.39 mg	3%
<b>PHYTO-NUTRIENTS</b>		
Carotene-B	3647 mcg	—
Carotene-alpha	45 mcg	—
Lutein-zeaxanthin	11000 mcg	—



Cammy Clark *The Miami Herald*  
Reprinted from *The Palm Beach Post* 2/8/10  
Thanks to Ron Kasman who sent in this article he found  
while on vacation in Florida.

# Predatory Fish Now Spreading Throughout Keys



## Key Largo

**A**t French Reef, 30 feet below the ocean's surface, Sea Dwellers dive instructor, Dave Jefferiss was on a mission to find and capture one of the gorgeous but dreaded new invaders of the Florida Keys: a lionfish.

Jefferiss searched the reef's numerous nooks and crannies where an underwater photographer had spotted the territorial lionfish a few days earlier. But after an hour, he surfaced with empty nets.

"There are so many places for a lionfish to hide," he said. "Somebody will try again. It's too important not to try."

There have been 68 marine-invading species in Florida, the Caribbean and the Gulf of Mexico

over the past century, according to the U.S. Geological Survey, but none has wreaked as much havoc to the main environment as the voracious red lionfish that devours native fish populations wherever it invades.

The Nature Conservancy said the lionfish, with its floating, striped headdress, looks like a Las Vegas showgirl. Its beauty is the reason it was once a top-10 imported tropical fish for aquariums





in the United States.

But the lionfish, native to the Pacific and Indian Oceans, is a menace to humans and marine life. It has venomous fins, and no known marine predators in the territory it is invading.

**Pete Kehoe**, who collects and sells marine life for aquariums, said he has captured three lionfish in different habitats in the Keys.

He gave one to the Florida Keys Eco-Discovery Center in Key West for an educational display. He kept the other two which are in tanks at his business in the Lower Keys.

"I think a lot of people underestimate what the problem can be," Kehoe said. "I'm amazed. They are like the perfect eating machine. They eat until they are about to explode."

The lionfish reached the Florida Keys a year ago. Its arrival was expected, with scientists calling it the completion of a circle that began a generation earlier when the first lionfish was spotted off the coast of Miami in 1985 and more were reported there in 1992 after Hurricane Andrew. Most believe the original invaders came from aquariums.


Since then, the prolific breeder had conquered most of the U.S. Eastern Seaboard, Bermuda, the Bahamas, Cuba and the Turks and Caicos. Its path has followed that of the Gulf Stream and other currents, which carry their eggs and larvae.

During the past year, the lionfish has slowly but surely spread throughout the Keys, as scientists expected and feared, with more than 80 of the intruders documented from Key Largo to the Dry Tortugas. So far, all have been juveniles, with the biggest about 10 inches long. They can grow to 18



inches or more.

**Lad Akins**, special projects manager for the Key Largo-based Reef Environmental Education Foundation, has worked with several countries on the issue. He said that even at this early stage the likelihood of eradicating lionfish in the Keys is "almost nil" because the marine world is dynamic. It's not like land, where fences can contain some wildlife, he said.

Lionfish not only eat juvenile fish of other species at an unsustainable rate, they also take away the food source from such important species such as grouper and snapper. 



# ANATOMY OF A FISH

The position and shape of the mouth depends on its feeding habit and dwelling place in the water.

Fish with upturned (superior) mouths are surface feeders; a downturned (inferior) mouth facilitates a bottom feeding fish, while a mouth situated at the tip of the snout (terminal) often indicates a mid-water feeder.

Fish's nostrils are not used for breathing, only for smelling. Fish's sense of smell is much more sensitive than a human's. Fish detect food through smell often over great distances, some fish also have extra taste buds, usually on barbels.

Fish can navigate by detecting external vibrations through tiny scale openings along the "lateral line." A fish's nervous system is linked to the world through tiny perforations in a single row of scales. The row runs horizontally along the length of the fish. Vibrations caused by the fish's own movements are reflected back from obstacles or by other fish and then detected by nerve endings deep inside the "portholes" in the lateral line scales.

A feature exclusive to fishes is the hydrostatic buoyancy organ. This enables the fish to position itself at any level in the water column, automatically giving the fish neutral density. Some fish, notably the marine sharks, lack this organ.

The second dorsal fin may be found on *Corydoras* species, fish in the *Gobiidae* family and the *Atherinidae* family, rainbow fish. This fin should not be confused with the adipose fin found in some species, notably the *Charadrioid* family.

The dorsal fin will often consist of hard and soft rays. In some species, two dorsal fins may be present. It helps fish steer through the water.

**SECOND DORSAL**

**MOUTH**

**NOSTRIL**

**LATERAL LINE**

**DORSAL**

**SWIM BLADDER**

**ADIPOSE**

**EYE**

Fish eyes are located on the sides of the head; fish do not have binocular vision, and judgment of distance is often inaccurate. Colors, however, are perceived very well. Focusing is achieved by movement of a fixed-shape lens, while in humans, it is the lens shape itself that is adjusted.

A fish's eyes do not need eyelids because they are permanently lubricated by the water.

This small fin is usually made up of fatty tissue and is found primarily in some species, notably the *Charadrioid* group between the main dorsal fin and the caudal fin, such as tetras.

**CAUDAL**

The caudal fin provides the chief propelling power in swimming; its shape and size affects the swimming performance of the fish.

Its color may aid in identification between the sexes.

**GILL**

**ANAL**

**VENTRAL**

**SCALES**

Fish require oxygen to live. Water passes through the mouth to the gills where oxygen is absorbed into the blood by diffusion. The blood flowing into the gills has a lower oxygen concentration than that of the surrounding water, so the oxygen moves into the blood to reduce the imbalance. The process is enhanced by the fact that blood is pumped in the opposite direction to the water moving over the gills. This ensures that the blood oxygen level remains lower than that of the water right across the gill and allows many fish to remove up to 80% of the water's oxygen. The oxygen is picked up by haemoglobin in the red blood cells and carried to the body tissues.

The ventral, or pelvic, fins are paired and are carried forward of the anal fin. Pelvic fins in some species like *Corydoras* genus use their ventral fins to transport their eggs to spawning sites.

In some species of Gobies, they are fused together to form a suction cup that anchors the fish to the river bed and prevents them from being swept away by the current.

The unpaired fin just behind the anus of the fish, opposed to the dorsal fin is used as a stabilizer. In male live-bearing fishes, it has become adapted to serve as a reproductive organ. In some *Characinoidei* fishes, the anal fin of the male carries tiny hooks that help to hold the two fishes together during spawning.

**PECTORAL**

The forward paired fins are the pectoral fins, which correspond with land animals legs or the arms of a human. These fins are used for swimming.

The majority of scale types fall into two categories: ctenoid, with small teeth on the rear edge; and cycloid, with smooth edges. Scales are bony plates found on many catfishes.

Scales reduce friction and protect the soft tissues from predators, parasites and even sunburn.

## References:

- *The Encyclopedia of Tropical Aquarium Fish*, Dick Mills & Dr. Gwynne Vevers Crescent Books, 1986
- *The Manual of Fish Health*, Dr. C. Andrews, A. Exell & Dr. N. Carrington, Tetra Press, 1988
- *Eyewitness Handbook Aquarium Fish*, Dick Mills, Dorling Kindersley Book, 1993
- *Exotic Aquarium Fishes*, W.T. Innes, Innes Publishing Co., 1952





# Livebearing Fish Use in Tanks

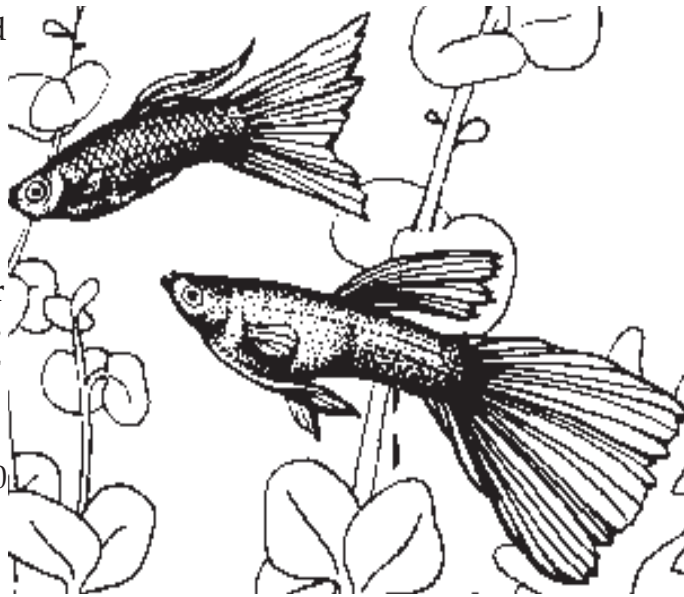
**L**ivebearers such as guppies (*Poecilia reticulata*) and mosquitofish (*Gambusia affinis*) can be very useful in the tank systems of public aquariums and other fish-holding facilities. They are fairly easy to raise in moderate to large numbers in a facility. When raised in a facility, as opposed to being collected in the wild, they do not normally carry various internal parasites that might be passed on to your display fish when they are eaten unless they are raised with recently caught wild snails or other possible intermediate hosts.

Since both guppies and mosquito fish, though usually found in freshwater habitats, can also survive in salt water, both can be used for various tests in fresh and salt water tanks. Guppies prefer hard water and can survive in salinities up to 1.5 times that of sea water (Wikipedia), or in excess of 52 ppt. Mosquitofish can tolerate up to about 40 ppt salinity. Acclimate fish to the salinity of the test tank before introducing them.

When used in various tanks for tests, they can then be observed or sacrificed to verify/confirm that various toxins or diseases/parasites are present in the tanks. By using the smaller livebearer fish, you are not sacrificing your display animals to possibly find out what might be going on in a tank.

## TEST WATER QUALITY

After a new tank is set up or a re-worked tank is ready for display, livebearers can be introduced to give you a "survivability" test. If the livebearers survive at least two days in the tank without signs



of stress or disease, then the water quality, toxin level, and bacterial presence in the tank can be considered safe enough to support your more expensive display organisms. You can leave the test fish in the tank (inside a floating net chamber if you want to sample them later) so you can test the tank for a longer period of time. Or you can leave them free in the tank so that the new display occupants can chase some live food and thus get food and exercise.

## TEST WATER TOXICITY

Livebearers can be used to verify whether a new tank (or re-worked tank) is ready for display organisms and has no strong toxins (from chlorine, fiberglass, paint, aquascaping, etc.) in it. Introduce several fish to the tank and observe over the next few days. If the fish do not show signs of stress, or die, you should be able to add your display organisms. You can leave the livebearers in the tank for exercise and snacks for your display fish.



However, low (non-lethal) concentrations of toxins may still be in the tank. Low levels of toxins may not cause a noticeable stress response in the fish, and may or may not, cause problems over a long period of time. You can place several fish into tank floating net chambers, sample them over an extended period of time, and then analyze the fish for any increase in toxins (above the concentrations that were already in the fish prior to exposure in the test tank).

### TEST FOR PRESENCE OF SOME PARASITES/DISEASES

Acclimate livebearers and introduce them to tanks (inside floating net chambers) with suspected parasites or diseases that can also infect and affect them. You want to sacrifice them rather than expensive or hard-to-collect/obtain display fish.

One example: I was the first to find that guppies held in salt water could be infected with *Amyloodinium ocellatum* in 1984 (unpublished), and had previously found (Lawler, 1980) that another freshwater fish held in salt water could be infected with the dinoflagellate. I passed my findings on to **Ed Noga**, who then developed guppy tissue cultures that he could use in studies on *A. ocellatum* in the laboratory (Noga and Bower, 1987). He kindly acknowledged my help.

I also used my findings to employ guppies in display tanks of the Scott Aquarium in Biloxi, Mississippi, to check for the presence of *Amyloodinium*. I could then move my limited number of diatom filters to a tank to control any *Amyloodinium* (Lawler, 2007) that might have survived treatment procedures used on the display fish prior to display, or *Amyloodinium* that somehow got introduced to the tank.

If you suspect *Amyloodinium ocellatum* is in a tank, put some livebearers inside a floating net chamber in the tank after they have been acclimated to the tank salinity. Test fish should be separated from display organisms in the tank so they are not eaten, or killed. At daily intervals, remove a fish and examine it with a microscope for the presence of *Amyloodinium* on the skin, fins, and gills. If *Amyloodinium* is found, put a diatom filter on the tank to filter out infective dinospores.

Livebearers can also be used to verify the presence of other parasites that can attack a wide range of hosts (having low host-specificity), like Ich, and also various bacteria that may cause disease problems in tanks.

### AS FISH FOOD

Livebearers raised in the lab and thus parasite-free (as opposed to wild-caught fish which may have all sorts of internal parasites that might be passed on to other organisms) can be introduced to display, or holding, tanks as live food for fishes. The live food can be eaten when the fish want to eat, rather than the display fish being on a set feeding schedule determined by humans.

### AS EXERCISE

Livebearers can be introduced to various tanks that contain organisms that eat live food so they get some exercise chasing the live food. The chasing is more activity in the tank which may have appeal for your viewing audience.

### AS TANK CLEANERS

Livebearers can be used in tanks to clean up small scraps of food missed by larger organisms.



### References:

- Lawler, A. 2007. Diatom Filters.  
Lawler, A. R. 1980. Studies on *Amyloodinium ocellatum* (Dinoflagellata) in Mississippi Sound: Natural and experimental hosts. Gulf Research Repts. 6(4): 403-413.  
Noga, E. J., and C. E. Bower. 1987. Propagation of the marine dinoflagellate *Amyloodinium ocellatum* under germ-free conditions. J. Parasit. 73 (5): 924-928.  
Copyright 2009 by Dr. Adrian Lawler, Author  
Copyright 2009 by Aquarticles, Internet Sponsor



## Reef Nutrition Food Chart.

For more information about these foods for invertebrates  
visit their website at [www.Reef-Nutrition.com](http://www.Reef-Nutrition.com)

Invertebrates	<i>Phyto-Feast</i>	<i>Oyster-Feast</i>	<i>Roti-Feast</i>	<i>Arcti-Feast</i>	<i>Tigger-Feast</i>	<i>Fuzzy-Phytes</i>	<i>Macro-Feast</i>
SPS - Small Polyp Stony Coral		✓	✓	✓	✓		
LPS - Large Polyp Stony Coral		✓	✓	✓	✓		
Soft Corals	✓	✓	✓				
Sponges & Tunicates	✓	✓	✓				
Gorgonians & Sea Fans	✓	✓	✓	✓	✓		
Ricordea & Mushrooms		✓	✓	✓	✓		
Polyps (zooanthids, etc)		✓	✓	✓	✓		
Shrimp		✓	✓	✓	✓		
Anemones		✓	✓	✓	✓		
Basket & Feather Stars	✓	✓	✓		✓		
Urchins						✓	✓
Snails, Cowries & Abalone						✓	✓
Clams, Mussels & Barnacles	✓						
Sea Hares						✓	✓
Feather Dusters	✓	✓					



Fran Hackett Associate Manager, Communications  
N Y Aquarium & Prospect Park Zoo 718-265-3428 [fhackett@wcs.org](mailto:fhackett@wcs.org)

**New York Aquarium  
Welcomes Summer with a Celebration Of Favorite Children's Books:  
Sponsored by Pepsi**

Every weekend in June is filled with family-friendly entertainment. Headliners include **John Tartaglia's** ImaginOcean, author **Seymour Simon**, author **Edel Rodriguez** and **Gigi and the Lend Me a Hand Band**. Live music, interactive attractions, author appearances and readings, crafts, and more. Connect to the wonderful world of marine life at

# Fish Tales Extravaganza

The Fish Tales Extravaganza will bring a full schedule of live family entertainment to the Aquarium. Weekends include an amazing array of top-rated children's entertainment. Don't miss the **Alice Farley Dance Theater**, **John Tartaglia's** ImaginOcean, a theatrical performance of *One Fish, Two Fish* by **Dr. Seuss** by Manhattan Children's Theater in celebration of World Oceans Day, a special reading of *The Little Mermaid* in celebration of the Coney Island Mermaid Parade, Disney's Pixar Pictures featuring a reading of *Finding Nemo*, **Denisha** and her puppets from the Sprout Channel, and many more on the Explore the Shore Plaza. Children will also be able to make their own "Fish Tale" book adventure each weekend in the Pavilion Tent from 11am to 4 pm each weekend. After your visit, join in the new exciting happenings in Coney Island and the Aquarium is part of it all. Visit [ConeyIslandFunGuide.com](http://ConeyIslandFunGuide.com) for more information.

## Fish Tales Extravaganza June line-up

### Saturday, June 5

#### Explore the Shore Plaza –

Author appearance and reading - 11am, 1pm, 3pm

#### **Sharks** (HarperCollins), read by author **Seymour Simon** –

Exceptional nonfiction for children on sharks from two of the most trusted names in science education: Seymour Simon and the Smithsonian Institution. Seymour Simon has been called "the dean of the (children's science book) field" by the New York Times. He has written more than 250 books for young readers and is the recipient of the Science Books & Films Key Award for Excellence in Science Books, the Empire State Award for excellence in literature for young people, and the Educational Paperback Association Jeremiah Ludington Award.

#### Explore the Shore Plaza –

Performance - 12:15pm, 2:30pm

**John Tartaglia's ImaginOcean** is a magical undersea adventure for kids of all ages. Tank, Bubbles and Dorsel are three best friends who just happen to be fish, about to set out on a remarkable journey of discovery. And it all starts with a treasure map. As they swim off in search of clues, they'll sing, they'll dance, and they'll make new friends, including everyone in the audience. Ultimately they discover the greatest treasure of all: friendship.

#### Pavilion Tent –

Arts & Crafts - 11am to 4pm

### Sunday, June 6

#### Explore the Shore Plaza –

Theatrical reading and giveaways - 11am, 1pm, 3pm

**One Fish, Two Fish** by **Dr. Seuss** (Random House), Theatrical performance by **Manhattan Children's Theater**





### in celebration of World Oceans Day

"Did you ever fly a kite in bed? Did you ever walk with ten cats on your head?" Such are the profound, philosophical queries posed in this well-loved classic by Theodor "Dr. Seuss" Geisel. While many rhymes in this couplet collection resemble sphinx-worthy riddles, Seuss's intention is clear: teach children to read in a way that is both entertaining and educational.

**Manhattan Children's Theatre** is committed to producing affordable, high quality theatrical experiences for both children and families. It exists to ensure that the community has access to important works of classic literature and timely, poignant new work. Ultimately, the group provides a live theatrical experience that encourages reading, critical thinking, curiosity of the world today and the world of tomorrow, as well as communication between children, their families and their educators. World Oceans Day is an opportunity to learn about our world oceans and our personal connection to the sea, to raise awareness about the crucial role the ocean plays in our lives, and the important ways people can help to protect our shared world oceans.

#### Explore the Shore Plaza –

Musical performance- 12:15pm, 2:30pm

**Ernie & Neal** – Ernie & Neal is a rocking dynamic musical experience from the Philadelphia, New York, and New Jersey area. They bring the joy and art of creating and performing live children's music to a whole new level. Dubbing their act "music for the young mind," Ernie & Neal have been entertaining children – and the child in all of us – since 1999. While rocking out, they feature a musical combination of song, play, storytelling, entertainment and education.

#### Pavilion Tent –

Arts & Crafts - 11am to 4pm

### Saturday, June 12

#### Explore the Shore Plaza –

Reading and giveaways -11am, 1pm, 3pm

**Finding Nemo**, (Disney) - read by **Courtney DiGiovanni** from Disney, – This Disney\*Pixar celebration at the Aquarium will include three readings of *Finding Nemo* and *Toy Story*. There will also be tons of handouts for Aquarium visitors, including *Finding Nemo* toys, activity sheets, posters, and a chance to win tickets to the advance screening of *Toy Story 3*.

#### Explore the Shore Plaza –

#### Alice Farley Dance Theater -

Story and Musical Performance (performing *The Girl from the Sea*, an original story with music and dance) 12:15pm, 2:30pm

You'll see the mysterious creatures of the sea come alive through fantastic sculptural puppets, circus arts and dance. In a story written by **Alice** and **Tuli Farley**, you follow a young girl's adventures as she travels from sea to river to the shores of the city. Haunting music by **Peter Garland** together with texts from **Walt Whitman** and **St. Jean Perse** make real the magical dreams of the sea.

**Alice Farley Dance Theater** – This award winning company

specializes in creating imaginary landscapes for public spaces and has performed throughout the world (Shanghai, Bangkok, Aruba Dance Festival, Quebec Festival D'Ete, Smithsonian, **Andy Warhol** and Whitney Museums). The River to River Festival will present their production, *Hell-Gate Love Letter*, in Manhattan this July.

#### Pavilion Tent –

Arts & Crafts - 11am to 4pm

### Sunday, June 13

#### Explore the Shore Plaza –

Author appearance and reading- 11am, 1pm, 3pm

**Sergio Makes a Splash**, read by author **Edel Rodriguez** – (Hachette) - Sergio is a penguin. He loves fish, soccer, and water. He loves drinking water, bathing in water, spraying water, just about anything with water. But he has one big problem; he can't swim. So when his class takes a field trip to the ocean, Sergio must decide whether he should face his fear or avoid something he loves.

**Edel Rodriguez** was born in Havana, Cuba. He left for America on a boat with his parents and sister when he was 8 years old. His drawings and illustrations have appeared in four picture books, including *Float Like a Butterfly* and *Oye, Celia!*, on stamps for the U.S. Postal Service, *The New Yorker*, and posters for Broadway shows. Edel has also been an art director at *Time Magazine* for over a decade. His first book with Little, Brown was *Sergio Makes a Splash*.

#### Explore the Shore Plaza –

Musical performance - 12:15pm, 2:30pm

#### Alice Farley Dance Theater

#### Pavilion Tent –

Arts & Crafts - 11am to 4pm

### Saturday, June 19

#### Explore the Shore Plaza –

Appearance and reading - 11am, 1pm, 3pm

**Manhattan Children's Theatre** – Theatrical reading and Little Mermaid giveaways

**Pout Pout Fish**, by **Deborah Diesen** (Macmillan) and **The Little Mermaid** (Disney) – to be read by **Manhattan Children's Theatre** – *The Pout Pout Fish* is a fun, rhyming picture book about a gloomy fish who discovers that being glum isn't really his destiny. Bright ocean colors, playful language, and engaging characters make the story perfect for sharing at home or at school. The story of *Pout Pout Fish* is all but guaranteed to turn a cranky child's pout (or even a grown-up's pout) upside down. Disney's *The Little Mermaid* tells the story of Ariel, a young mermaid who gets the chance to be human after making a deal with an evil sea witch

#### Explore the Short Plaza –

Performance - 12:15pm, 2:30pm

**Two of a Kind** - An award-winning husband and wife duo, **Two of a Kind** presents concerts for families and children of all ages, including songs, puppets, movement, and stories – all with an emphasis on interaction and participation. These of songs and stories range from read books, friendship and animals to social issues such as the environment, conflict resolution and diversity.



Two of a Kind has released eight recordings; seven for children and families, and one for adults. Two of a Kind's recordings have won a total of 12 national awards, including Parents' Choice, Children's Music Web and Kids Radio Mania Awards. In addition, two individual songs have won awards – "Think of it as an Adventure" won a Children's Music Web Award for "Best Song for Younger Children," and "I have 2 Stomachs" won in the **John Lennon** Songwriting Competition and is a finalist in the International Songwriting Competition.

**Pavilion Tent –**

Arts & Crafts - 11am to 4pm

**Sunday, June 20**

**Explore the Shore Plaza –**

Author appearance and reading - 11am, 1pm, 3pm

**Where Should Turtle Be**, by **Susan Ring** (Sylvan Dell) – Little turtle was lost. Free from his egg, he climbed out into a big, beautiful new world. Lost and alone, he wondered – where did he really belong? Author Susan Ring helps turtle in this whimsical story of self-exploration and nature.

**Explore the Shore Plaza –**

Performance by **Two of a Kind** - 12:15pm, 2:30pm

**Pavilion Tent –**

Arts & Crafts 11am to 4pm

**Saturday, June 26**

**Explore the Short Plaza –**

Two **Leo Lionni** books to be read by **Denisha & Chica** from The Sunny Side Up Show on Sprout - 11am, 1pm, 3pm  
**Swimmy and Fish is Fish** (Random House) – Leo Lionni wrote and illustrated more than 40 highly acclaimed children's books. He received the 1984 American Institute of Graphic Arts Gold Medal and was a four-time Caldecott Honor Winner – for *Inch y Inch*, *Frederick*, *Swimmy*, and *Alexander and the Wind-Up Mouse*. Leo Lionni died in October of 1999 at his home in Tuscany, Italy, at the age of 89.

**Explore the Shore Plaza –**

Performance - 12:15pm, 2:30pm

**Gigi and the Lend Me a Hand Band** – "Rockin' in the Ocean" is a rollicking collection of rock, swing and doo-wop songs about sea mammals and other ocean inhabitants from a highly interactive show written for elementary school children and their parents and teachers at the request and under the guidance of the New York Aquarium. Gigi, a

multi-award winning singer, was asked by the Aquarium to write and produce a show celebrating sea mammals in a fun and stylized form reminiscent of blasts from the past, and "Rockin' in the Ocean" is the result.

Gigi and the Lend Me a Hand Band is a highly acclaimed, interactive family band that keeps families singing, laughing and dancing with a variety of musical styles, puppets and floats. The inter-generational family band led by multi-award winning singer, Gigi received national recognition as finalists in the 2008 Children's Music Web Awards for both Best Album and Best Song for Pre-Schoolers, for the Movement & Merriment CD

**Pavilion Tent –**

Arts & Crafts 11am to 4pm

**Sunday, June 27**

**Explore the Shore Plaza –**


Two Leo Lionni books to be read by Denisha & Chica from The Sunny Side Up Show on Sprout - 11am, 1pm, 3pm

**Explore the Shore Plaza –**

Performance by **Gigi and the Lend Me a Hand Band**  
12:15pm, 2:30pm

**Pavilion Tent –**

Arts & Crafts 11am to 4pm

Wildlife Conservation Society New York Aquarium opens every day of the year at 10am, and closing times vary seasonally. Admission is \$13.00 for adults, \$9.00 for children ages 3-12 and \$10.00 for senior citizens (65 and older); children under 3 years of age are admitted free. Fridays after 3pm, admission is by suggested donation. The Aquarium is located on Surf Avenue at West 8th Street in Coney Island. For directions, information on public events and programs, and other Aquarium information, call 718-265-FISH or visit our web site at <http://www.nyaquarium.com>. Now is the perfect time to visit and show support for the New York Aquarium, Brooklyn's most heavily attended attraction and a beloved part of the City of New York. 



**EDITORS NOTE:** Members with questions about aquatic plants or setting up a planted tank can contact Isidore (Izzy) Zwerin, our plant editor. You can call him at (718) 449-0031 between 7pm to 10pm, Monday to Friday.

# The Practical Plant


## TWO PLANT PROFILES

### 1 Propagating: *Lemna minor*

**L**emna minor, many call it “Duckweed,” I call it a plague. Oh, it looks innocent enough for sure, but don’t let it fool you. This is a tiny plant measured in fractions of a millimeter and has just a single root. Yet this diminutive plant has conquered most of the world. It can be found in temperate, tropical and sub-tropical waters around the globe.

The question should not be how to propagate it, but how to make it stop. Although this plant rarely reproduces from seed (sexually), it is a master of vegetative reproduction (asexually). It is so good at vegetative reproduction that it can perform this feat every thirty hours under favorable conditions. Unfortunately, aquarium conditions are quite favorable and this plant will double almost every day, overrunning a tank in record time. These little plants become so dense that light cannot enter the tank at all. Obviously, this is not a good thing for your other plants.

My encounter with this plant happened when I purchased another plant at an auction. One of these little guys must have snuck into my tanks un-

noticed as a hitchhiker. All it takes is a piece of a leaf. Before I knew it the stuff was in multiple tanks, probably transported from tank to tank via nets and my “Python” water changer. The battle was on. I discovered that the best way to eradicate this pest is to take a disposable plastic cup and use it to skim these little guys off the surface. You will have to repeat this procedure a number of times till you get it all out. Remember that the tiniest remnant that you miss will reproduce like crazy. It seems to me that the only good this plant can possibly serve is as a food source for herbivorous fish. I understand many fish love to eat this stuff. I hope they have good appetites. 



## 2 Propagating *Shinnersia rivularis*

**S***hinnersia rivularis* is commonly called Mexican Oak. It's native to Northern Mexico and Texas. It is a very attractive plant which gets its name because the leaves resemble that of an Oak tree. The stem of this plant is thick and will branch profusely. I picked up a specimen without knowing what I was getting into. This plant is the vegetable equivalent of a Red Tail Catfish. It has got to be the fastest growing plant in the hobby.

When I read up on this plant, I found out that it can grow up to 16" a week. I know it sounds like an absurd claim, but after you own one of these you will become a believer. It was amazing.


Obviously, you are going to need a really large tank if you wish to maintain this plant.

I planted my specimen in a 37 gallon aquarium. The lighting is a 130 watt compact fluorescent fixture. The water was kept at a pH of 6.8, hardness 4 - 6 GH and a temperature of 78° F. I am also making use of CO<sub>2</sub> enrichment. A Fluval canister filter (model #303) with the output being directed through a submerged spray bar is doing my filtration. I use the Estimated Index system of fertilizer dosing. This means that once a week I perform a large water change (50-75%). This is usually done on Saturday. Do not be concerned about the large volume of water that is being re-

placed; your fish will love it. This large water change is necessary to reset the nutrient balance in the system. Then on

Saturday, Monday and Wednesday, I dose the macronutrients, and on Sunday, Tuesday and Thursday, I dose the micronutrients. Friday, I take the day off. The lighting is timer controlled and on for 12 hours a day.

This aquarium is 22" tall and I still had to prune this plant every couple of days. The plant is easily propagated via stem cutting, of which you will have plenty. It's a shame

this plant is so aggressive because it is quite attractive. Although I had to get rid of this plant because I could not house it, it would be a good choice to combat algae. Any plant that grows this fast has got to be an excellent nutrient sink. 







If you're interested in reading any of these articles, contact Stu at a meeting or call him at 718-976-1321. There is a small copying fee of 25¢ per page, plus postage if articles are mailed. No postage if you pick up the article at a meeting.

# Exchange Editor's Report

**T**he Exchange Editor's job is reading publications from different clubs and suggesting items of interest to our members.

**E**astern Iowa Aquarium Association, *Fin Flap* March 2010, tells us that they were forced to cancel their last month's (Feb) meeting thanks to a substantial snowstorm, probably 2 feet. But two hearty insane members showed up, dug out their vehicles after they were snowed in once they got there and left without picking up something they needed from the night's auction. Isn't that terrible?



**North Jersey Aquarium Society**, *The Reporter*, March/April 2010. **Fred Sharpell**, Chairman of the Breeder's Award Program told us of NJAS/BAS member **Frank Nell** reaching the 1,000 point plateau. He is only the 7th person to reach that mark in the history of the NJAS. Our own President, **Joe Graffagnino** pens an article about purple passion danios in March and Columbian tetras in April. **Chuck Davis** has an unusual tale of south Florida going through a cold snap titled "*Dead Fish Stink*" and they sure do in March 2010. **Hugh Jaas** in the March issue writes "*Cool Water Isn't Always About Goldfish*" telling us that there plenty of attractive and exciting cool water fish to put in a home aquarium. Also in April 2010, **Yaanni Maris** has a nice anecdotal article titled "*Breeding Surprises*."

**Greater City Aquarium Society** - New York, March/April 2010 *Modern Aquarium* There is a story titled "*My Favorite Aquarium*" by **Stephen Sica**, and he talks just about that. This is worth reading.


President and Editor **Dan Radebaugh** has an article titled "*The Chocolate Cichlid*" (*Hypselecara temporalis*)

which goes into detail about how a one or two inch cichlid can even look distinctive, but some of the photos of a grown up one can convince anyone. They are really beautiful fish.

**Diamond State Aquarium Society, Inc.** - *The Gravel Gossip* Volume 47 Numbers 4 & 5, April and May 2010 **Tom Stevenson** inks a nice two parter titled "*Shell Dwelling Cichlids of Lake Tanganyika*."

**Missouri Aquarium Society, Inc.** *The Darter*, Mar/Apr 2010 has a nice story by **Tony McMillan** titled "*Fish Stories... Invasive species hits too close to home literally*." It's his personal tale of his 2007 trip on the Kaskaskia River Day Use Recreation Area. He revisits his life in the late 80's and early 90's fishing that area. It is truly a nice human interest story, but it also touches on the important ecosystem that affects our fish and you and I too.

**Jersey Shore Aquarium Society** *The Shoreline*, May 2010, **Jake Blatt** talks about fish addiction in "*Good Things Do Come In Small Packages*" and it's worth a look.

**Honolulu Aquarium Society** *I'A O Hawaii* March 2010 has a reprint of an article taken from **Motor City Aquarium Society** of Roseville, MI titled *Loaches*- "*The natural way to eliminate snails in the aquarium*." This is good reading. Anyone that would like to attend one of their meetings, they are held the first Friday of the month in one of the local elementary schools and I can get you a free pass to attend. The rest is up to you. 



## **SUPPORT OUR SPONSORS. THEY SUPPORT US. WE MUST SUPPORT THEM!**

**Absolutely Fish's** staff is knowledgeable and can help you solve your aquatic problems. **They offer a 15% discount on select fish, marine life & supplies with current BAS membership card.** A really great aquatic shop. Well worth the trip.

**Absolutely Fish** 1080 Route 46 W. Clifton, NJ 07013

Ph: 1 (973) 365-0200

Open 7 days a week: Mon-Fri 12-9 Sat 12-8 Sun 12-5

**Aquatic Wildlife**, features 11,000 gal. of freshwater fish, plants & marine life. **Discount with current membership card.**

**Aquatic Wildlife**, 179D Demming St, Manchester, CT 06040 (In Panera Plaza) Ph: 1 (860) 648-1166

[www.aquaticwildlifecompany.com](http://www.aquaticwildlifecompany.com)

**Brooklyn Zoo & Aquarium Inc.** A classic pet shop with a full line of aquarium supplies, freshwater, marine fish and corals. **BAS members get a 10% discount with a current membership card.** Some restrictions apply.

**Brooklyn Zoo & Aquarium Inc.**

2377 Ralph Ave., Bklyn, NY • Ph: 1 (718) 251-7389 Hrs: Sat - Sun 10am - 6pm & Mon - Fri 10am - 8pm

**"C" The Jungle Pet Store** In the heart of Brooklyn carries a full line of pet supplies, tropical fish, birds, and small animals. They offer a **10% discount to BAS members with a current membership card.**

**"C" The Jungle Pet Store**

247 New Lots Ave., Bklyn NY 11207 Ph: 1 (718) 649-2536  
Hrs: Tue-Sat 10am-8pm • Sun 10am-6pm

**Fauna** is Manhattan's largest exotic pet boutique and a new sponsor of the BAS. **Dan offers a 10% discount to members.** They keep over 2,300 gallons stocked with freshwater, marine fish and corals. They also carry small animals, birds and reptiles. Make a point to visit and tell them you saw their ad in the *BAS Bulletin* and *Aquatica*. This store will blow you away!

**FAUNA 265 West 87th St.**

**between Bway & West End Ave., NY, NY**

Ph: 212-877-2473

Hrs: M-W-T-F 11am-7pm • Closed Tues.

Sat 11am-7pm • Sun 11am-6pm

**Petland Discounts**, the complete pet store, carries a full line of pet supplies for fish, dogs, cats, birds, reptiles and small animals. Also a variety of fish, birds, small animals and reptiles. Open 7 days a week. Locations in New York, New Jersey & Connecticut. Over 15 stores in Brooklyn. Shop on line at: See the white pages, for a store near you.

[www.petlanddiscounts.com](http://www.petlanddiscounts.com).

**Mark's Discus:** over 4,000 gallons of hormone free Brooklyn bred discus & angelfish. Mark stands behind his quality fish with a live delivery guarantee. Feel free to contact him with your questions. **10% discount for BAS members with current membership card.**

**MARKSDISCUS.COM**

You're welcome to visit their hatchery by appointment only. Call for directions.

Ph: 917-202-7699

Open 7 days and all Holidays • 9am -11pm

**Manhattan Aquarium** has one of the largest Selections of Marine Fish & Corals on the East Coast. Located conveniently at 522 West 37th St. in Manhattan. You should check them out for all your Marine Fish & Coral needs.

**Manhattan Aquarium**

522 West 37th Street, NYC, NY 10018

Ph: 212 594-2271 • Fax: 212 594-2271

[www.ManhattanAquarium.Com](http://www.ManhattanAquarium.Com)

[www.UniqueCorals.Com](http://www.UniqueCorals.Com)

**Pet Shanty.** Family owned & operated; 3 rooms of freshwater fish & 1 of marine fish & corals. They stock a vast list of fish, posted on line at <http://pet-shanty.com>. They also carry other pets and pet supplies. Check them out; they probably have what you want. **Members get a 10% discount.**

**Pet Shanty**

2507 U.S. Hway 22, Scotch Plains, NJ 07076

Ph: 1 (908) 889-8262 • Fax: 1 (908) 889-0803

Mon-Fri: 10am-9pm • Sat: 10am-7pm • Sun 10am-5pm

**Pacific Aquarium & Pet Inc.,** in Manhattan's Chinatown, carries ornamental goldfish, koi, freshwater fish, & aquatic plants. **BAS members get 10% discount with current card** (Discounts not to be combined with other specials). They have a full line of aquarium supplies. You can order custom size tanks.

**Pacific Aquarium & Pet Inc.**

46 Delancy St., NY, NY 10002 • Ph: 1 (212) 995-5895

Open 7 days a week and all holidays 10am to 7:30pm

**Royal Aqua World Inc.** Over 100 tanks of marine fish, hard & soft corals, freshwater fish, goldfish & koi imported from Japan, plus plants and pond supplies. **BAS members get a 10% discount on all purchases with a current membership card.** Open 7 days a week.

**Royal Aqua World Inc.**, 815 65th St, Bklyn, NY 11220

Ph: 1 (718) 238-0918 Hrs: 7 days a week 10:30am-8pm

### Membership & Renewal Application Brooklyn Aquarium Society

Mail This Form Or A Copy And Your Check Payable to Brooklyn Aquarium Society to  
**BROOKLYN AQUARIUM SOCIETY, ATT: MEMBERSHIP CHAIRPERSON**  
**P.O. BOX 290610, BROOKLYN, NEW YORK 11229-0011**



Please check your address label to see when your membership expires

Meetings are held at the NY Aquarium Education Hall on the 2nd Friday of the month at 7:30pm. Knowledgeable speakers on fish care and culture, door prizes, raffles, and fish auctions. All meetings are free to members. Visit us on line:  
[WWW.BROOKLYNAQUARIUMSOCIETY.ORG](http://WWW.BROOKLYNAQUARIUMSOCIETY.ORG)

NAME \_\_\_\_\_ OCCUPATION \_\_\_\_\_

ADDRESS \_\_\_\_\_ CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

PHONE (DAY) \_\_\_\_\_ (EVE) \_\_\_\_\_ (FAX) \_\_\_\_\_

E-mail Address \_\_\_\_\_

TYPE & LENGTH of MEMBERSHIP: (CHECK ONE)

INDIVIDUAL				FAMILY				[ ] \$15 STUDENT 1 YEAR (UNDER 18 YEARS)	
1yr. \$20	2yr. \$36	3yr. \$51	4yr. \$68	1yr. \$25	2yr. \$45	3yr. \$63	4yr. \$85		

\*If family membership, please list all family members. Only first two listed will have voting rights.

1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_

4 \_\_\_\_\_ 5 \_\_\_\_\_ 6 \_\_\_\_\_

Number of tanks [ ] marine [ ] freshwater [ ] Do you breed fish?  
 [yes] [no]

If yes, what types do you breed: \_\_\_\_\_

Special interest (if any) \_\_\_\_\_

How did you hear about BAS [friend] [dealer] [flyer] [Aquatica] [mag ad] [online] other \_\_\_\_\_

To volunteer check [yes] [no] A board member will contact you if you check yes.

On occasion, the Brooklyn Aquarium Society uses its mailing list to send notices of interest to our members.

If you **DO NOT** wish to receive these mailings please check here [ ]

#### Official use

Member number: \_\_\_\_\_ Type of membership [F] [I] [S] Date paid: \_\_\_\_\_  
 Board approved date \_\_\_\_\_  
 Amount paid: \_\_\_\_\_ Renewal/member since \_\_\_\_\_