



# AQUATIC**News**

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*Brooklyn Aquarium Society Online Newsletter & Magazine*

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No. 12





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## President's Message

**WE ARE COMING TO** a close on another year at BAS. We finished it off with a great holiday party at Dolce Vita in Brooklyn. With about 40 members and their families in attendance, we had terrific food and even door prizes! It was a very good night!

While rapping up our 111<sup>th</sup> year, we are on hold again. We find ourselves with no place to have our meetings which is rather unfortunate since we've built up some nice momentum meeting at the church's Parish Hall.

As I am sure most of you guys know, we have been meeting at St. Brendan's church since September, but are now told they have no empty dates available for us to hold our monthly meetings. We are still trying to get back in the New York Aquarium — no luck so far. We now find ourselves looking for another meeting place in Brooklyn. If anyone knows of a place or has any pull in getting back in the aquarium, please let us know. Keep checking our web site for events. ([www.basny.org](http://www.basny.org)).

On more happier news, members can look on our Facebook page for aquatic sales, from the club. We post things for sale periodically. We

always have tanks and equipment for sale. If you are looking for something aquatic, reach out to us. We have a lot of great equipment in storage.

Any hobby or aquatic information you hear or read about, please share with our Editor, Ginny Cahill. It can be your own short stories telling us about your personal aquatic experiences. Please send all emails to Ginny at [basny.editor@gmail.com](mailto:basny.editor@gmail.com).

We are always looking for your input on our events. Please let us know if you want speakers on any aquatic topic. We need our members to be more involved as we are always trying to better our club.

For more info, please call out hotline 718-837-4455, or visit our site at [www.brooklynaquariumsociety.org](http://www.brooklynaquariumsociety.org)

Happy Holidays and see you in 2023!

STEVEN MATASSA,  
President



Join us on Facebook

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# AquaticNews

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AquaticNews 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:

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The Brooklyn Aquarium Society Inc. is a non-profit organization 501(c) (3) for people interested in the aquarium hobby and the study of aquatic life. The Society meets the 2nd Friday of each month except July and August at the Education Hall of the New York Aquarium at Coney Island, Surf Avenue at West 8th St., at 7:30 PM. Meetings are open to visitors. Refreshments are served.

# Upcoming NEC Events

**JAN 15<sup>TH</sup>** – Danbury Area Aq. Soc. Annual Auction, Carmel, NY

**FEB 12<sup>TH</sup>** – Norwalk Aq. Soc. Winter Auction, Westport, CT

**FEB 26<sup>TH</sup>** – Pioneer Valley Aq. Soc. Annual Auction, Chicopee, MA

**MAR 19<sup>TH</sup>** – JSAS Spring Auction Manasquan, NJ

**MAR 26<sup>TH</sup>** – New England Cichlid Assoc. Annual Auction, Windsor Locks, CT

**APR 22<sup>TH</sup>** – Bucks County Aquarium Society Annual Auction PA

**APR 29<sup>TH</sup>** – CNYAS annual auction Syracuse, NY

**APR 29<sup>TH</sup>** – South Coast Tropical Fish Society Annual Spring Auction, New Bedford, MA

**JUL 13-16<sup>TH</sup>** – The Combo Plate ACA and CATAclysm - Better Together Madison, WI

**SEP 22-24<sup>TH</sup>** – Keystone Clash - hosted by ACLC and CCY PA

**OCT 1<sup>ST</sup>** – JSAS Fall Auction Manasquan, NJ

**NOV 18<sup>TH</sup>** – Aq. Club of Lancaster Co., Swap Meet, Lancaster, PA

\* Information collected from the NEC newsletter

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## Help Wanted

**Brooklyn Zoo is looking for experienced people to work at their store, located at 2377 Ralph Ave, Brooklyn, NY 11234! (718) 251-7389 • <https://brooklynzoo.shop/>**



## New Members

Adedeji Afolalu, Mark Borow, Brando Bringas, Nik Parris,  
Ronald Primas, Kevin Scott, Ji Eun Yu

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## Renewing Members

Norman Benjamin

## Donations – Thank You!

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### Individuals for Oct.—Nov. 2022

Bill Amely  
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Dan Smith  
Don Lang  
Nick Caputo  
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Alexandr Vinnitsky  
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### Stores/Mfg

All in 1 Petshop, Brooklyn, NY  
Monster Aquarium, Queens, NY  
Pacific Aquarium, New York, NY  
Brooklyn Zoo & Aquarium

## Open Board Positions

The board members meet once a month to discuss club business, and we can use your help! There are four board positions currently available: corresponding secretary, treasurer, webmaster and recording secretary. If you'd like to attend a meeting which are held the **1st Friday of the month**, September through June, please notify Steve Matassa at (347) 277-4793 by the Tuesday before the meeting.

# Why Join an Aquarium Club

Contrary to popular belief, the main reason for joining a fish club is not for the free cake and coffee. While there are free refreshments at meetings, and even great buys on products and livestock, the really great benefit is knowledge. Joining the Brooklyn Aquarium Society is a great way to learn how to raise and breed tropical fish. Experienced members pride themselves on teaching new hobbyists and sharing their expertise.

Established in 1911, the Brooklyn Aquarium Society is over 100 years old and growing. Many members have been in the club for decades, and they are still learning from each other. We have monthly expert speakers on different topics related to home aquaria. For a small membership fee, you get access to all this. Check out our web site at [www.basny.org](http://www.basny.org) for future events. — SM



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## Collecting Fish Under Difficulties

BY HERMAN RABENAU

(Mr. Rabenau recently made his second excursion in the interest of The Brooklyn Aquarium Society, Inc., for the collection of Southern Wildfish to be used in the scientific study of the Society.)

Once a man gets the "Aquarium Fever" he generally lets his enthusiasm carry him further than he originally intended and, at times, unpleasant experiences result.

Having made one very successful trip in the interest of The Brooklyn Aquarium Society, Inc., for the collection of specimens of wildfish from Southern waters, for their use in scientific study and exhibitions, I was naturally elated to receive another assignment. I concluded to go in the cool Spring and to take in North Carolina.

Because of the concentration of varied geographical conditions at the upper headwaters of the different streams, and the consequent variety in species, I decided to make a round trip that would embrace as much territory as possible.

Going first to the upper branches of the Santee River in North Carolina, I found mostly sandy river beds. These branches are fed by cool springs; after each rain, however, the water is yellow from clay sediment with which the country is overlaid, the rocky formation being from four to ten feet beneath.

Following up a branch of the Santee River, the Catawba, great changes were found, new bridges having replaced those washed away by floods. The smaller tributaries, however, contrary to expectation, were clear and shallow.

Inquiring of a small boy if there were minnows in the brook, I was told that the druggist was selling them at

ten cents each but I was disappointed to find that the fish were common goldfish, *carassius auratus*. However the druggist, a Mr. Davis, proved of great assistance by granting me storage space for my paraphernalia.

During the next few days I became acquainted with the nearby brooks but found specimens scarce, most of the fish having been swept away during the floods.

As warmer weather approached, however, specimens became slightly more plentiful and I filled one can with them and expressed it to Brooklyn, preserving in alcohol one of each class.

Never having seen a person collecting fish in this manner before, the natives viewed me with astonishment and apprehension and finally verified my statements by communicating with the New York authorities. My next blow was advices that my fish had died enroute to New York, the reason for which later proved to be the unsuspected presence of wood alcohol, instead of grain alcohol, in the coating of the can used.

Next going beyond Asheville, N. C., to a point some 6000 feet above sea-level, I learned of an aquarist, a Dr. Von Rok, a philanthropist who maintains a beautiful conservatory with pools, aquatic plants and goldfish. In this territory I found only Blacknosed Dace and a variety of Sculpins, *Cattus ictalops*.

I next left for Shausville where I had collected on my previous trip. I was here received by a Mr. Taylor who lent me every aid. In this vicinity were small ditches inhabited by minnows from shoals of which I



collected fine, hardy specimens of *Crosmus oreas* and *Notropis cerasinus*. The water, which found its source in a small spring, was nearly still. The following day I took a wagon with my cans and a helper and in two hours had the cans, each 20 inches in diameter, filled with some 500 selected specimens.

My elation was short-lived, however, for a game warden, to whom complaint had been made, approached and I was placed under arrest for game fishing without a license. My documents, proving that my efforts were strictly for scientific purposes, were disregarded and a local Justice of the Peace fined me \$70. Not having this sum at the moment, I was placed in confinement, being taken ten miles by automobile to the county seat. Strange to say, these good-hearted people did not add a charge for this unsolicited ride.

The following day I was visited by more county officials who pleasantly informed me that the Justice had erred in his fine and that it had been increased to \$200 instead. It now dawned upon me that my cans, etc., had excited more than ordinary attention and that I was suspected of being an anarchist or worse.

After paying my fine under protest, I wired to Dr. Smith of Washington, D. C., Commissioner of Fishes and President of the Washington Aquarium Society, who courteously intervened in my favor.

The protest against the fine and confiscation will be appealed and decided in a few months and, as the District Attorney doubts the legality of the action taken, there is every probability of a proper refund being made.

Anxious about my specimens, I

hurried to the railway station and found they had received no care, the water being black and only some twelve fishes still living.

My next stop was at Washington where I visited the Aquarium and left bottled specimens for classification, which was made as follows:

*Minnows: Hybopsis kentuckiensis, Rhinichthys atronatus, Notropis ombratilis ardens, N. cerasinus, N. hudsonius, N. macdonaldi, N. procer, N. pyrrhomelas, N. chalybacus, Chrosomus oreas, Leuciscus vandoussulus* and an unknown specimen.

*Suckers: Catostomus commersonii.*

*Darters: Etheostoma flabellare, E. thalassinum* and three unknown specimens.

*Sculpins: Cottus icталops.*

*Madtoons: Schilbeodes insignis.*

*Note: Owing to these conditions it was impossible to procure any photographs as was planned.—Ed.*

## PTEROPHYLLUM SCALARE

(Continued from Page 13)

swim, they are carefully watched by the parent fish so they cannot go astray or be attacked by some enemy. After seven days they are able to swim about, but return to the pit the first night and huddle together in a lump.

The baby fishes look much like young *Helleri*; in about two weeks they have the appearance of an *Ambassis Lala*, in four weeks more it is first noticed that they commence to resemble their parents. In a further five weeks they attain the full shape of the parent fish. *Pterophyllum Scalare* grow rapidly and are of good size when eight months old.

# Photos from the Holiday Party!



# Tip of the Season

During the winter, the heating of your home will evaporate water in your tanks faster than in the summer. Keep an eye on the water level in your tanks; to make sure they're at the proper level. This is particularly important with marine setups. Water evaporates but the salt does not, driving up the salinity of the water.

Also, with cold weather setting in, transporting livestock home can be a problem.

If you know you're going to buy fish or corals, you should have an insulated bag with you — the kind used to carry a picnic lunch. These can be found at sporting goods stores or at Target or Walmart. Get one that's large enough to hold a few bags of livestock.

Keep it in your car, so you'll always be ready to protect any fish or corals you get this winter. They're perfect for taking to society auctions.

## Current NEC affiliate clubs

If someone wants to travel, they can visit another club. Here's a list of the clubs.

- |   |  |
|---|--|
| <b>Aquarium Society of Lancaster</b>      | <b>Norwalk Aquarium Society</b>              |
| <b>Boston Aquarium Society</b>            | <b>Nassau County Aquarium Society</b>        |
| <b>Brooklyn Aquarium Society</b>          | <b>New England Cichlid Assoc</b>             |
| <b>Bucks County Aquarium Society</b>      | <b>New England Fancy Guppy Assoc</b>         |
| <b>Capital Cichlid Association</b>        | <b>North East Live bearers Assoc</b>         |
| <b>Cichlid Club of NY</b>                 | <b>North Jersey Aquarium Society</b>         |
| <b>Central New York Aquarium Society</b>  | <b>Otter Valley Aquarium Society</b>         |
| <b>Danbury Area Aquarium Society</b>      | <b>Pioneer Valley Aquarium Society</b>       |
| <b>Diamond State Aquarium Society</b>     | <b>Pioneer Valley Water Garden &amp; koi</b> |
| <b>Erie Aquarium Society</b>              | <b>South Jersey Guppy Group</b>              |
| <b>Greater City Aquarium Society</b>      | <b>Southern New England killifish Assoc</b>  |
| <b>Jersey Shore Aquarium Society</b>      | <b>Tropical Fish Club of Burlington</b>      |
| <b>Koi Organization International</b>     | <b>Tropical Fish Society of Rhode Island</b> |
| <b>Long Island Killi Assoc</b>            | <b>Upstate NY killifish Assoc</b>            |
| <b>Long Island Aquarium Society</b>       | <b>Worcester Aquarium Society</b>            |
| <b>Metropolitan Area killifish Assoc.</b> |  |

# Photos from October's Giant Auction!







Today more axolotls are estimated to live in captivity than in the wild.

## Axolotls (*Ambystoma mexicanum*)

By Daniel K. Smith — BAS

**A**CCORDING TO THE Chinese zodiac 2022 is the year of the tiger, but an endangered Mexican salamander is giving the tiger a run for its money. The year 2022 was more like the year of the Axolotls.

The axolotls has an endearing face that seems to be perpetually smiling and its head is surrounded by a feathery ring of external gills. These unique features have made the creature an unlikely meme pet.

According to recent articles in *The Guardian* by Tess McClure and another on the *boingboing.net* website, the sudden popularity of the axolotl is due to social media especially Tik Tok, where the hashtag #axolotlsoftiktok has been viewed 2.6 billion times. Much of the interest is coming from the game Minecraft which added an axolotls character in 2021. Another online game, Axie Infinity, features cartoon fighter Axolotls.

Retailers like Amazon are selling Axolotls halloween costumes, Christmas ornaments, plush toys, and themed apparel. There are over a dozen how-to care books mostly aimed at children.

All this attention has driven demand for axolotls as pets much like the cartoon clown fish in the 2003 Disney film, *Finding Nemo*.

An animal shelter in Dunedin, New Zealand has around 2,000. Six hundred axolotls arrived in one week, "So if anyone is looking for an axolotl, feel free to send them my way," says Alison Vaughan the owner of the pet shelter. A breeding pair can produce hundreds of offspring quickly overwhelming the pet owner.

Royal Society for the Prevention of Cruelty to Animals (RSPCA) is urging parents resist the demands from their children that want to keep axolotls as pets, they are "not easy to care for once the novelty wears off" and "require constant attention."

Habitat destruction and poisoned water in its native Mexico have reduced the wild axolotls population down to 50 to 1,000 adult individuals. As of 2020 they are near extinction in the wild. However, they breed readily in captivity which makes it a great animal for scientific study.

Joshua Wiegert describes caring for axolotls



Photos by Virginia Cahill

**Top left:** A cartoon fighter axolotl from the game *Axie Infinity*. **Left:** James Matassa examines an axolotl that came through the Giant Auction in October. **Above:** An axolotl for sale at Pacific Aquarium.

at home in *Tropical Fish Hobbyist* magazine. The article can also be found at the TFH website. He recommends at least a 40 gallon breeder tank because these creatures grow to about a foot in length. The depth of the water isn't as crucial as giving them space to wander at the bottom of the tank. Although they are not shy they should be provided some hiding places. They don't require heated water and cooler is better — 40 to 72 degrees is their preferred temperature range.

A bare-bottomed aquarium is the best way to maintain axolotls. If a substrate is used it should be fine gravel because they tend to ingest gravel when they eat. They need well oxygenated and clean water and a bare-bottom tank makes it easier to remove wastes. Live plants that can be attached to wood or decorations like Anubias or Java ferns can help maintain clean water.

Don't plan on keeping fish in the same tank as

an axolotls. Fish will nip at the fragile feathery gills and most tropical fish won't tolerate the colder temperatures that the axolotls require. They will also try to eat any tank mates.

Axolotls are carnivorous and will eat shrimp, earthworms and beef heart. They also accept a variety of foods sold for tropical fish such as large sinking pellets.

Axolotls should never be handled or netted. Their bones are very delicate and can be easily broken. The dealer should guide the creature into a bag of water, not scooped out.

Equipped with this knowledge, if you're still considering keeping axolotls, there are many fish stores that carry this cutie. Just know what you're getting into from the get go, so you can provide the best home for this interesting salamander.



## Blue Angelfish

By Joe Graffagnino — BAS

**A**T A GREATER CITY Aquarium Society meeting last year, fellow member Jerry O'Farrell came up to me and asked, "Have you bred angelfish?" I said that I had, but it was over 25 years ago. He said, "Good, then it's time you did them again," and he thrust a bag of 8 beautiful quarter size blue angels in my hand. Before I could respond, he walked away. I looked at the plastic bag full of fish and marveled at how beautiful and majestic these little cichlids appeared. The blue on their heads stood out in

dramatic contrast to their silver bodies.

I brought them home and placed them into a 20 gallon aquarium. The pH was 7.2, the temperature was 80 degrees Fahrenheit and the General Hardness (GH) was 4. The angels grew quickly, especially the dominant male who soon eclipsed his tank mates. The group fared well with bi-weekly water changes of 30 – 40 %, and feedings of flake food followed by live black worms or frozen blood worms. Occasionally they were fed live brine shrimp and/or frozen



cyclopeeze. After 8 – 10 months, the group started to pair off. I moved the non-pairs of angel fish into a 10 gallon, when in less than a month another couple had paired up. This new pair was moved into another 20 gallon tank.

The first pair decided to lay eggs on a thick piece of slate that was originally used to hold down a large wood decoration. Both parents cleaned the slate till it was immaculate, at least in their eyes. The gray eggs were laid in orderly rows of vertical succession. Both fish took turns in cleaning the area and fanning the eggs. It was definitely a model for teamwork. Within a couple of days, the eggs turned a dark brown/amber color and the parents proceeded to move the eggs to a new location. All cichlids prefer this birthing method. Normally in 5 days the hatched fry would start swimming, with the parents escorting their children around the aquarium. There were no free swimming fry! It appears that the parents ate the fry either during the move or shortly afterwards.

The second pair of angelfish was sharing a habitat with Glo-Lite tetras, but that didn't stop them from laying eggs on a tall piece of driftwood. Both parents kept the Glo-Lite tetras to the farthest end of the aquarium. They also took turns cleaning and fanning the eggs. I noticed from both breeding pairs of fish that the eggs that were fungused were left alone and not removed. I thought this was a poor cleaning job on the parents' part.

Since it was their first spawn, I believed that I should give them time to learn and educate themselves into proper birthing methods. I allowed them to have a couple of additional spawns hoping that they would improve. Both pairs of angelfish spawned every 15 – 19 days and a day apart. Both sets of parents never improved. I gave the second breeding pair to my friend Vinny Babino and kept the original pair. The next time the pair laid eggs, I removed the slate piece and placed it into a 5 gallon tank that was set up for hatching the eggs. I took the water from the parents' tank and filled the 5 gallon aquarium.

I had a 25 watt heater that had the heating coil wrapped with airline tubing. I did this to

prevent the fry from killing themselves on the heating coil. I placed the air tube with air-stone under the slate piece so the air bubbles would travel in front of the eggs. I also added a dose of Acriflavin to reduce the infertile eggs from becoming fungused. As the eggs hatched, 5 days later, I moved the air-stone into an existing sponge filter several inches away from the hatching eggs and performed a water change to remove most of the Acriflavin. I replaced the water with parent tank water. The unfertilized eggs that did fungus remained on the slate until I removed them with a pipette. Several days later, the newborn fry were attaching themselves via their egg sack to everything in the tank – plant leaves, the slate piece, pieces of wood and rock. The fry can't eat until they are free swimming so I do not feed them because the food will only pollute the aquarium.

When the fry start to free swim, I start them off with live vinegar eels, along with 50 micron Golden Pearls. As they grow, I switch to micro-worms and baby brine shrimp (live or frozen); in about 3 weeks I start on finely crushed flake food or micro-pellets and provide live food 3 times per week. They grow quickly and in another week or so they start to resemble their parents.

An interesting experiment was tried, accidentally, when I neglected to replace the slate board they lay their eggs on. There was a large wood piece that wasn't solid, having holes throughout it. I saw them evaluating the wood piece, but I guess they weren't satisfied with it. The only other object in the tank, except for the large sponge filter or the heater, was a small flat rock that I used to keep the slate board from slipping.

Yes, they used a flat rock to spawn on. Again they fanned the eggs and never removed the fungused eggs, but this time when the fry hatched they didn't relocate them. They also never assisted the fry that became stuck to the fungus. After 8 days when the fry started to free swim they escorted them around the tank. I believed that I had found the cure to angelfish cannibalism. Within 4 days after the fry were free swimming, the parents ate them anyway. I guess when the parents are bad they will remain bad.

# Breeding Anabantoids with emphasis on Bettas

By Joe Graffagnino — BAS

**A**NABANTOIDS ARE EXTREMELY interesting fish. Most anabantoids go through great lengths to prepare a nest site, attract a suitable mate and then place the fertilized eggs into the nest. After the fry hatch generally it is the father that cares for the fry and he chases mom away. As the children start to leave the nest, to explore their surrounding area, dad is kept very busy in protecting the fry, even to attack the hobbyist hand if it gets too close to the nest. You can feel the frustration on the harried father as the little fry start darting away from home. He must try to eat to sustain his strength and health, protect and recapture his fry and spit them back into the nest continuously. It is no wonder that after several days of this hectic activity that he starts to cannibalize his offspring. I'm sure that many of us have thought the same with human offspring – remember the terrible two's?

I deviate from the story. Anabantoids can be separated into three distinct classes:

Bubble nest builders - Examples of these are the majority of gouramies and *Betta splendens* (Siamese Fighting fish).

Submerged plant nest builders - Examples are *Betta brownorum*, *Betta coccinea*, *Betta tussya* and *Betta livida*. From Africa there is the *centropoma* species.

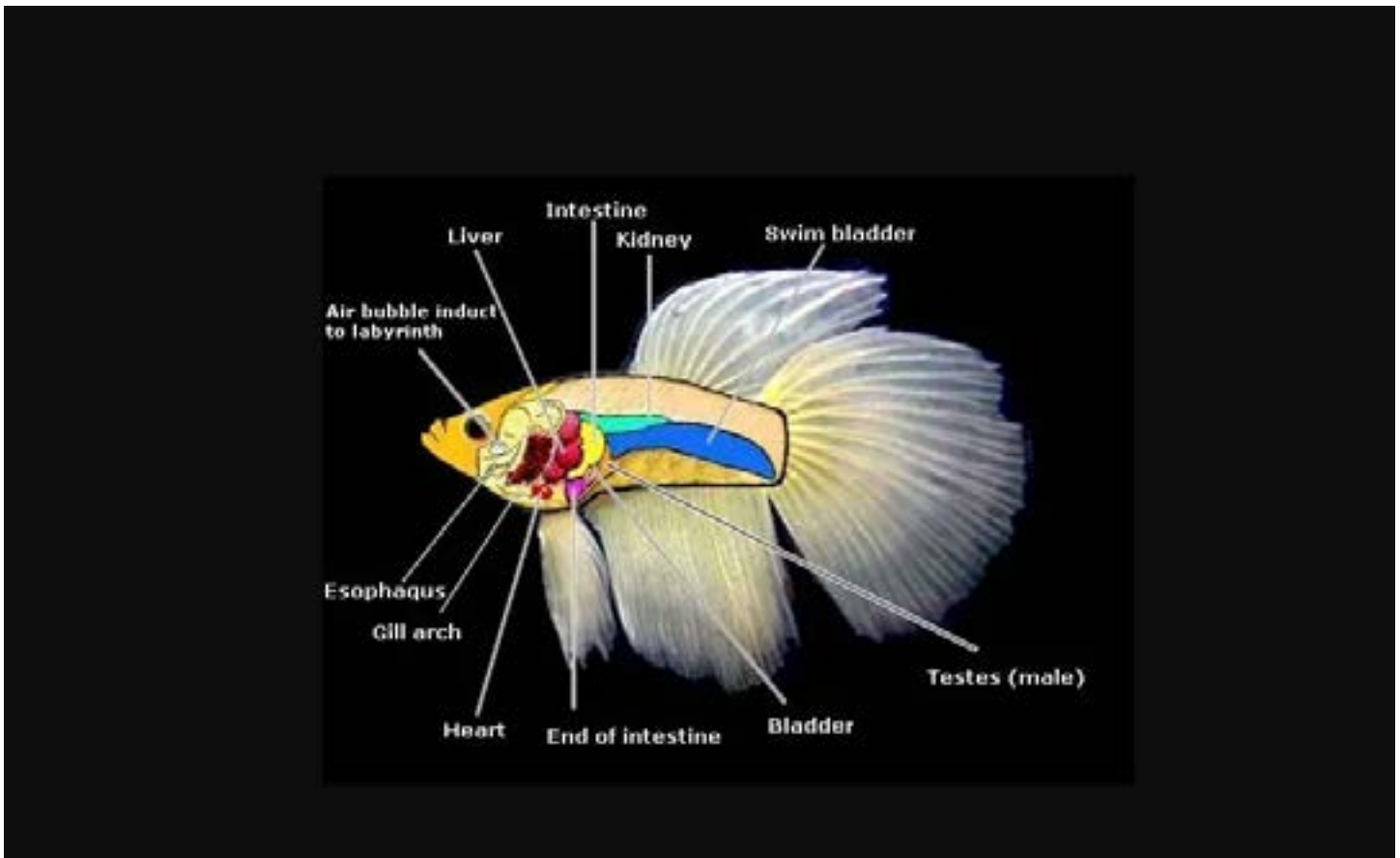
Mouth brooders - They include *Betta channoides*, *Betta albimarginata*, *Betta unamaculatum* and *Betta macrostoma*,

The bubble nest builders I have found to be the easiest to spawn. Bubble nest builders build their nest to impress and attract a female to spawn with them. I generally have a Styrofoam cup cut vertically so the long side is now in half.

I let that sit in a shallow tank, such as a 10 gallon with 6 – 9 inches of water at neutral pH (7.0) and a temperature of 80 degrees Fahrenheit. Water in Brooklyn comes from the tap soft (3-4GH) and neutral pH. Add floating plants such as duck weed and fairy moss so the fish can use the plant to anchor his bubble nest together.

At this point the male becomes very aggressive. He would even attack your hand or finger should it enter his territory. I keep the female in a small, clear glass container with the top of the container a few inches above the water line, in the same tank as the male, at the opposite side of his bubble nest. When the nest is complete and the females' abdomen has become full with eggs, it is time to release her into the tank. Within a couple of hours the breeding should begin. One method to know if the female has eggs in her is after feeding them a diet of live or frozen food such as black or blood worms for 5 continuous days, don't feed her for a couple of days. If she still has a round stomach area then it's eggs. After spawning the female should be removed from the aquarium to protect her from the male and to help her recuperate from her strenuous ordeal. Within a few days the male will start chasing the fry that are hatching from the nest. He wants to keep them in his nest. At this point I would remove the male and place him into a separate tank from the female.

Allow the fry to grow in their original aquarium. It is important to have the same water parameters for the male and female as was in the spawning tank. Also the surface air temperature cannot deviate more than 3 degrees Fahrenheit from the water temperature, for when the fry come up for their first gulp of air they could catch



pneumonia. The fry will grow very quickly on baby brine shrimp (live or frozen). Depending on how many fry you want to keep it would pay to start moving the fry to grow out tanks after their first month or for many of them their growth would become stunted.

Species that are submerged plant nest builders are more difficult mainly because you normally can't see the nest and if there are fry in it. The usual method of noticing a successful breeding is when you start seeing fry moving around the tank. Problem with this is that the parents may eat them and if there are other fish in the tank they will definitely eat them. Fish of this type generally like slow moving water and that the water is more acidic (4.5-6.5 pH). African centropomas fall into this category. I accidentally found a Betta brownorum nest inside a submerged 35mm film canister.

Mouth brooders such as *Betta macrostoma* utilize this type of spawning behavior. Breeding takes place between one pair of fish. When the female is gravid she initiates the mating process.

The male wraps himself around her and squeezes the eggs from her while he simultaneously fertilizes them with his milt. I have seen the female recover the eggs and at times the male will also recover eggs and while both fish face each other she will spit the egg into his mouth. Both *Betta channoides* and *albimarginata* the female gathers the eggs in her mouth and spits them up over her head where the male is positioned to catch them. The male then holds the eggs until they hatch and he will release them from 14 to 28 days, depending on the species.

Anabantoids are beautiful and amazing fish. If the hobbyist wants to experience a different type of spawning behavior I highly recommend them getting a group of anabantoids.

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## AN AQUASCAPE THAT APPEARS MORE NATURAL AS IT MATURES

by Aqua Design Amano

Translated by Tomoko Schum Photos by Aqua Design Amano

It is important that an aquascape appears natural in Nature Aquarium. We arrange driftwood and stones, to which we attach ferns and mosses, and place cosmetic sand in the foreground to enhance the natural appearance of an aquascape. However, the natural feel of an aquascape is enhanced more by time than a layout technique. An aquascape matures and its natural appearance improves while being maintained over a long time without much compositional change or plant re-arrangement.

### EXPRESSION OF LIGHT AND DARK USING STEM PLANTS AND FERNS

Plants in the family of ferns, such as *Bolbitis* and *Microsorium* sp., grow densely, producing layers of fronds over time. As a result, shadows are cast, and a nuanced atmosphere develops in the aquascape. Let's compare some photographs of the aquascape in this article to its previous photographs, which were taken one year ago, and compare the changes that occurred over time in various parts of the composition.



**TANK DATA**

<p><b>Aquarium:</b> Cube Garden W180 x D60 x H60 (cm)</p> <p><b>Lighting:</b> 150W metal halide x 4 units, turned on for 10 hours per day</p> <p><b>Filter:</b> Super Jet Filter ES-2400 (Bio Rio L, NA Carbon)</p> <p><b>Substrate:</b> Cosmetic sand, Aqua Soil Amazonia, Power Sand Advance L, Bacter 100, Clear Super, Tourmaline BC</p> <p><b>CO<sub>2</sub>:</b> Pollen Glass Beetle 50, 6 bubbles per second via CO<sub>2</sub> Beetle Counter (using Tower)</p> <p><b>Aeration:</b> 14 hours after the light is turned off using Lily Pipe P-6</p> <p><b>Additives:</b> Brighty K; Green Brighty Mineral, Green Brighty Iron</p> <p><b>Water Change:</b> 1/3 once a week</p> <p><b>Water Quality:</b> Temperature: 25°C (77°F) pH: 6.8; TH: 20 mg/l</p>	<p><b>Aquatic Plants:</b></p> <p><i>Rotala</i> sp. 'Ceylon'</p> <p><i>Rotala rotundifolia</i> 'Green'</p> <p><i>Rotala rotundifolia</i></p> <p><i>Rotala nanjean</i></p> <p><i>Myriophyllum mattogrossense</i> 'Green'</p> <p><i>Gratiola</i> sp.</p> <p><i>Pogostemon</i> sp. 'Dassen'</p> <p><i>Anubias barteri</i> var. <i>nana</i> 'petite'</p> <p><i>Bolbitis heudelotii</i></p> <p><i>Mirosorum</i> sp. 'narrow leaf'</p> <p><b>Fish:</b></p> <p><i>Paracheridon simulans</i></p> <p><i>Hemigrammus armstrongi</i></p> <p><i>Hyphessobrycon sweglesi</i></p> <p><i>Crossocheilus oblongus</i></p> <p><i>Otocinclus</i> sp.</p> <p><i>Caridina multidentata</i></p>
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^ Fishes are relaxed in the open space in the center. Willow Moss attached itself naturally on the stones.

v Stem plants form beautiful thickets through repeated trimming.



^ Sciophytic epiphytes will grow into impressive bushes over time.

v The cosmetic sand in the foreground not only enhances the appearance but also maintains the open space and the composition of an aquascape.



v The appearance of the aquascape one year ago (overall appearance). Brightly colored stem plants gave a colorful impression to the overall appearance.





^ *The current appearance of the aquascape (overall appearance). The appearance of the ferns and mosses strengthened, and the aquascape has developed a tidier appearance.*

> *One year ago (stem plants). The tips of the stem plants are growing neatly to the same length, but they look somewhat sparse.*



> *The current aquascape (stem plants). The stem plants have grown densely and appear more beautiful together.*





^ One year ago (fern). Bolbitis growing on driftwood hides the lower part of the stem plants.



^ The current aquascape (fern). Bolbitis has grown dense with fronds over time and casts shadows in the aquascape.



< One year ago (stones). The stones below the driftwood added a natural appearance to the aquascape and produced a relaxing area for fishes.



< The current aquascape (stones). Small pieces of Willow Moss have grown on the surface of the stones and give an impression of passing time. 🐟



# The Basics of Keeping Fresh Water Invertebrates

**I**T'S OFTEN THOUGHT that aquarium enthusiasts do not have much to choose from when it comes to fresh water invertebrates, but this really isn't so. Even when compared to the richness of the sea, there are still many possibilities for fresh water aquariums.

Generally, there are two types of invertebrates that aquarium keepers can choose from, yet within these two choices we can find a surprisingly large variety of creatures that are suitable for living in an aquarium environment. The two choices on offer are mollusks and crustaceans. On the whole, these animals are usually very undemanding, hardy, and therefore pretty easy to keep.

## Problems With Fresh Water Invertebrates

But this doesn't mean there aren't some difficulties involved with fresh water invertebrates - they certainly require proper care if they are going to lead healthy, fulfilling lives in your aquarium.

The first challenge with lots of types of invertebrates is that many of them are not compatible with the kinds of tropical fish we like to keep in our aquariums. Many fresh water invertebrates need a combination of brackish water and cool temperatures, which is damaging for many of our favorite fish. Another consideration is that lots of types of invertebrates require some kind of land to walk around on.

Another challenge for fresh water invertebrates is their feeding habits which often present an issue for aquarists. Many types of invertebrates need to eat living

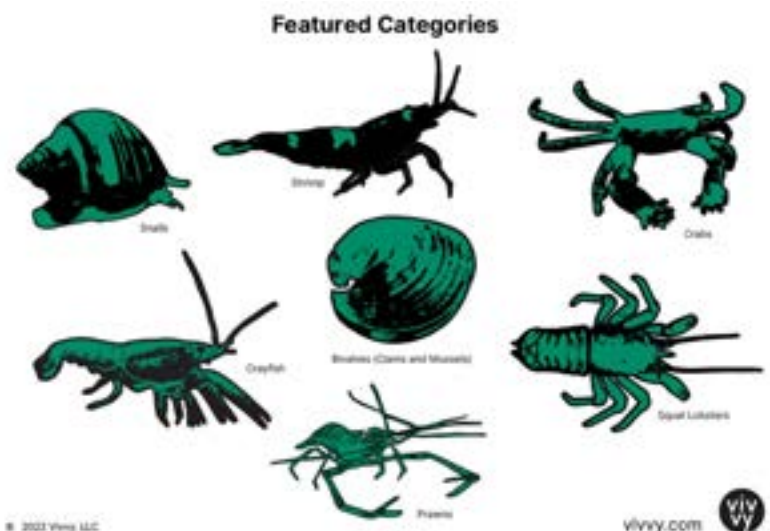
plants, others like to eat fish, and yet more exist primarily as filter feeders – which are almost impossible to feed.

A third, more manageable problem is that some types of invertebrates like to multiply at terrific rates, quickly becoming more pests than pleasures to keep in our aquariums.

## Pets or Pests?

Fresh water invertebrates can in fact make excellent pets to keep in our aquariums. They are often fascinating to observe, yet we need to be very careful about which ones we choose. The main point is to avoid impulse buying of different types of invertebrates without doing your research first. Many fresh water invertebrates are totally unsuited to life in a fresh water aquarium and will quickly die. Even those that are suitable for aquarium life need a lot of care and attention.

So which invertebrates are suitable for your fresh water aquarium? Let's take a look at some



## Types of Invertebrates Suitable for Aquarium Life

Name	Pros	Cons
of the most commonly kept invertebrates.	Algae Shrimp	Peaceful creatures, consume algae, flake etc.
Apple Snails	Beautiful, easy to find and fun to watch	Can damage aquarium plants, short lifespan in aquariums.
Clams & Mussels	Always an interesting addition!	Require cool water and filter feeder food, are often nibbled by fish, like to burrow out of sight.
Crabs	Fun novelty creatures to add to your aquarium, very active.	Need brackish water, dry land, can be predatory.
Crayfish	Attractive, brightly colored shades of red or blue.	Can be predatory and territorial, will fight each other, nocturnal.
Fan Shrimp	Large size makes them very interesting to observe.	Territorial, sensitive to poor quality water, difficult to feed.
Long-arm Shrimp	Hardy and large.	Can potentially grow very big, highly territorial, predatory.
Pond Snails	Inexpensive, easy to look after.	Can damage aquarium plants, high reproductive rate.
Nerites	Harmless to most plants, consume algae, don't breed in aquariums	Some require brackish water, can be difficult to identify.

eaten by larger fish.

## Fresh Water Invertebrate Health Considerations

Most types of invertebrates are quite low maintenance as far as healthcare goes, so long as the quality and chemistry of your water are kept in optimum condition. With the exception of the pond snail, most types of invertebrates are vulnerable to poor quality water, or water containing high levels of nitrates. While some fresh water invertebrates are able to breathe air, for example apple snails and crabs, most cannot do so, and could quickly succumb in tanks that have poor water conditions.

One of the most important issues to be aware of if you want to keep fresh water invertebrates is that of copper-based medication. These types of medicines should be avoided at all costs, because most types of invertebrates are extremely intolerant of these compounds. Most aquarium medications use copper, and so you will need to check carefully before you go treating your tank.

Another important consideration is that many fresh water invertebrates like to molt. Molting is a complex process, and depends on the animals receiving the right kind of diet and living in the right conditions. Under the wrong conditions, many invertebrates will not be able to molt, and will therefore die.

## Dietary Needs

Fresh water invertebrates have special dietary needs that need to be considered. Often overlooked, many aquarium kept creatures eventually starve to death. What you need to remember is that most fresh water invertebrates are essentially scavengers, while others may be filter feeders.

Filter feeders are especially difficult, as they need the appropriate amount of particulate matter to be provided for them on a regular basis. Ideally, you should add a small amount of specialized food for them each day. Algae-eaters meanwhile, will need to be provided with an

alternate source of food, because any algae you have in your tank is never enough to sustain them long term.

Regarding snails and many types of fresh water invertebrates, these creatures need to eat certain kinds of aquarium plants, which will have to be provided for them. Note that many snails will also happily eat your fish eggs, and so they are a definite no-go for any breeding tank.

You also need to beware of certain types of invertebrates that can eat your tropical fish, such as many crabs, long-arm shrimp and crayfish, which are able to catch and eat surprisingly large fish.

## Summary

To cap it all, fresh water invertebrates can make excellent additions to your aquarium, but don't go kidding yourself that they are easy creatures to keep. Virtually all types of invertebrates require a level of specialist care, and so you will need to research carefully any kind of creature you are considering keeping, to see if it really is a viable option for you.

Some of the easier fresh water invertebrates to keep are red cherry shrimp!



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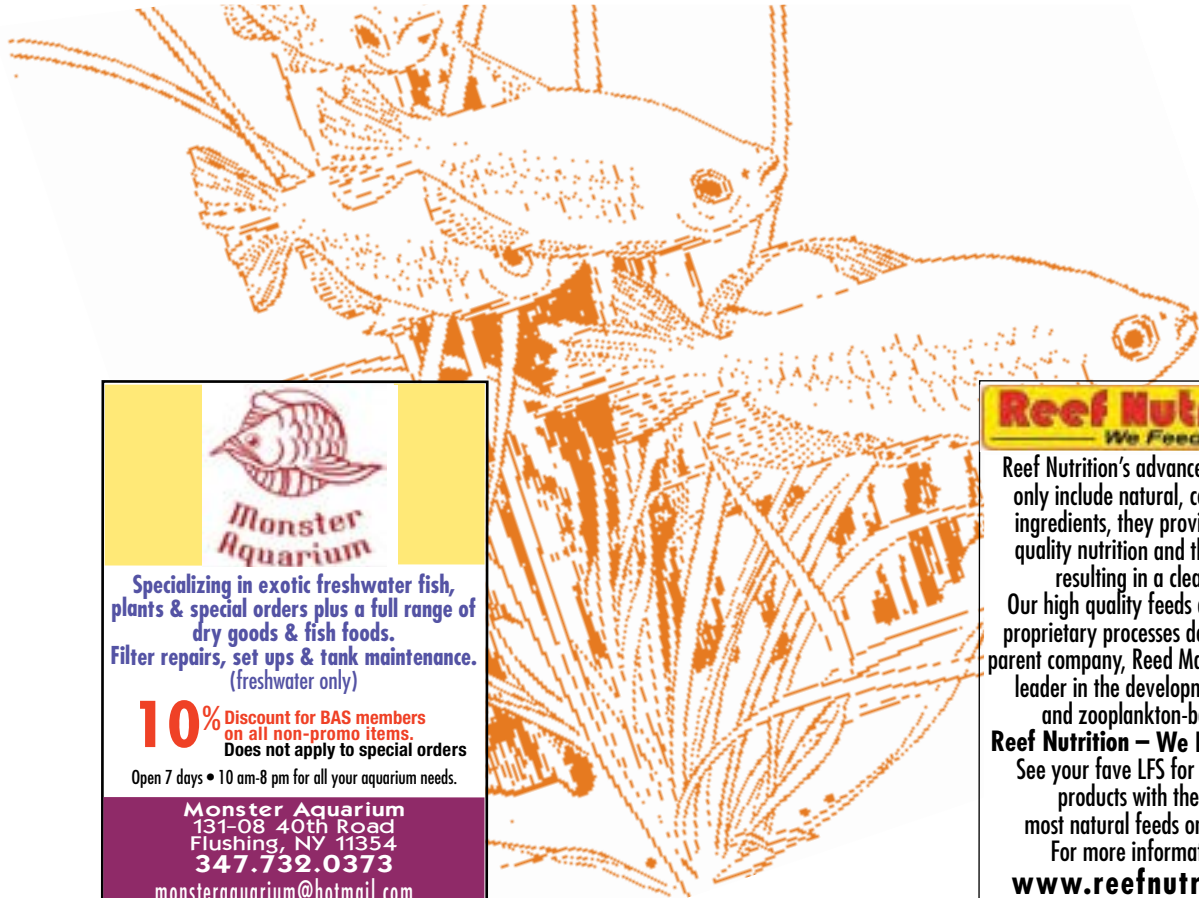
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Your Membership Card is your Passport to Becoming an *“Educated Aquarist.”* Don’t lose it. Put it in your wallet or purse. You’ll need it to attend Monthly Events and get discounts at participating pet stores.

## **YOUR MEMBERSHIP BENEFITS INCLUDE:**

**Free Admission** to all general meetings, held on the 2nd Friday of the month (except July & August) at 7:30 pm at the Education hall of the New York Aquarium, at Coney Island, Surf Avenue at West 8th Street, Brooklyn, N.Y. The Society presents expert speakers on all aspects of the hobby, from freshwater fish to marine aquatic life. Door prizes and raffles at every meeting. Breeder Awards Program (BAP) – Certificates and trophies awarded. General meetings are open to the public (\$5 donation is requested for non-members). Free parking and free refreshments.

**Special Interest Groups (SIGs)** hold meetings, free at members’ homes, for members only. Here’s your chance to network with members with the same interests. Discuss, ask questions, learn, teach and develop your expertise in freshwater and/or marine aquarium keeping.

**AquaticNews The Journal of the Brooklyn Aquarium Society**, our tri-monthly (4 issues except July & August) award winning publication is on our website. Each issue is filled with articles on both marine and freshwater aquaria keeping. Articles can be downloaded.

**Meeting reminder!** All members receive flyers announcing speakers via email, keeping members up to date.

**Calling all writers, artists and photographers!** All members will have the opportunity to submit articles, photography and illustrations for publication in the **AquaticNews!**

**BAS is on-line at BASNY.ORG.** You’ll find up-to-date information about our monthly events, links to other aquarium societies in the US and stores, manufacturers and related aquarium sites. We have an on-line library with downloadable articles. We have our own BAS forum, where you can interact with other freshwater, marine or reef members and post free hobby-related classifieds where members sell and trade fish, corals, plants and equipment.

**BAS Hotline:** For the latest information call the BAS 24 hour Hotline 718 837-4455 for event and inclement weather information. If you need advice on fish keeping, breeding or where you can find rare or hard to find fish, you can often get help calling the Hotline. Help from the Hotline is always free.

**Volunteer:** The Brooklyn Aquarium Society is an organization run by volunteers. Without them there would be no BAS. Volunteers help set up events, write articles, coordinate projects, assist and work on committees, help at auctions and meetings. Join in, help, learn and have fun doing it. Call Steven Matassa, President (347) 277-4793.

**Video Tape Library:** We have a video tape library on different aspects of fish care and breeding plus past BAS Speaker Events. These video tapes are available via our BAS Forum. You must be a member of our Forum. Membership is free.

**Discounts for Members** at many BAS participating pet stores when you present your current BAS membership card.

Welcome and we hope you take advantage of the many benefits BAS has to offer.

**Educating Aquarists Since 1911**

# Become an educated aquarist



## Membership & Renewal Application Brooklyn Aquarium Society

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



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, and fish auctions. Free parking and refreshments. 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
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\* 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 \_\_\_\_\_