Wet Pet Gazette

The Journal of the Norwalk Aquarium Society
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The View From Up-front

by Kenneth Balog, President
Norwalk Aquarium Society

Welcome to a new year in The Norwalk Aquarium Society. The Board of Directors has already been working to make this year an exciting one.

First, and very importantly, February 4, 2001 will be the date of our annual auction to benefit the Nature Center for Environmental Activities. All of the proceeds from this auction are donated to the Nature Center as our thanks for all of the effort they give us throughout the year. I hope to see everyone there to help out and spend some money.

We have been discussing the possibility of a bus trip this year. Various destinations have been discussed, and the Board seems to think that Boston would be the best choice. It is still too early to give any details and we're still open to suggestions if any of you have ideas.

Next, I have been in contact with the State Department of Environmental Protection (DEP) about the possibility of a freshwater collecting trip. They gave us a number of suggestions about possible collecting sites, regulations, and species we may find. Whether you are interested in native fishes, just want to get out of the house, or simply want to watch everyone splashing around in the water, this can be an excellent way to spend a day. This trip will be held on the DEP free fishing day in early June. Further details will be forthcoming.

Finally, our Membership Secretary will probably give me a sound thrashing if I don't take a moment to remind everyone that dues are due.

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Editor's Notebook

by Douglas De Ment
Norwalk Aquarium Society

This month we have a brand new author for the Wet Pet Gazette: Rich Grenfell! Rich's first article is about his success in breeding the Bolivian Ram. Great article, thanks Rich!

This month Ed Katuska again brings forth his column "Did You Know?" This column should win a first place prize. I love it.

I am also starting what will be a recurring series, "Oh – That's One Of My Favorite Fish." Believe me, it will be a while before I run out of my favorite fish!

This month we have two golden oldies, one each from Emil Bella and Walter Stevens Jr. You know, back when Walter was writing, he would sometimes be three or four months ahead of the Wet Pet Gazette with his book review column. Wow, if I read that much, my mouth sure would be tired!

We also have a reprint by Gary Smith of the Hamilton and District Aquarium Society on Peat Divers. I didn't translate the article, so readers could enjoy the full flavour.

WE NEED YOUR ARTICLES!

Write up a few! I'll take them in any format.

An article does not need to be long in order to make it good. Take the time to spread the information that you learned. If you haven't bred a fish, write about what you like about fish. Or how about something funny that happened to you? Tell us that story!

A GOLDEN OLDIE!

My Experience with

Apistogramma nijsseni

by Emil Bella
Norwalk Aquarium Society

Everybody at one time or another who is as seriously involved in the tropical fish hobby as I am, has had a quest or dream of spawning a particular fish. Mine has been to spawn *Apistogramma nijsseni* (I am mostly interested in South American dwarf cichlids, especially *Apistos*).

Since the early days of my hobby, when I first saw this particular fish at the home of a club member, I decided that I had to have this fish and eventually spawn it. But this was not going to be that easy, as I will explain later. This club member had some fry but they were too small. I patiently waited for a couple of months, purchased half a dozen juveniles and threw them into a ten gallon tank.

They were about one-half to three-quarters inch total length (TL). I guessed that the bigger ones were males and the smaller females, which proved to be true. A few months later, to my amazement, I had two males and four females. The males were already about one and a half inches TL and the females almost one inch. They seemed to grow more rapidly than the other Apistos I have in my collection.

The males were already forming territories. Squabbling among the females was the order of the day, so I decided to separate them. I set up a so-called breeding tank. I used a five

gallon tank, some gravel, a few plants, and a half coconut shell with a small hole in one side. For filtration, I used a sponge filter. Then I put two females and one male in the tank. But I soon found out that this was a big mistake because the females almost killed each other. I had done this before with other Apistos without this type of problem, but I guess this was not meant to be with *nijsseni*. I quickly removed one of the females ending up with one pair by themselves.

A few water changes later, I noticed that the female's color had intensified to a bright yellow with its typical contrasting black blotches. It was a sight to behold! I started to get excited about things to come. I knew from previous experience spawning other Apistos that the color intensification of the female signifies her readiness to spawn soon. But a few months went by and -- nothing. I guessed the fish were not sexually mature yet.

Meanwhile, I was working on the water chemistry. I had read that this particular fish required very soft, acid water for breeding. For my water changes, I was using 75% pure rain water and 25% tap water. With this mixture, I was getting a pH reading of 5.5. The softness of the water I couldn't measure, but I guessed it to be soft. The temperature was set at 80 degrees F.

By this time, the male was about two and a quarter inches TL and the female one and a half TL. I guess the fish were seven to eight months old. I noticed the female shaking her body in front of the male and immediately swimming into the coconut shell with the male following. They spent some time inside together. They repeated this for a few hours with the female finally chasing the male out of the shell. I kept waiting but did not see the female coming out of the shell, so I decided to investigate. I removed the shell from the water and to my surprise, eggs -- tiny red eggs, about 30 of them, so I put them right back and started to count the days. But nothing -- no fry. I thought that I had learned from my previous mistake with *A. agassizi* -- but no! (I also had removed the eggs to check and the female finally ate them).

In the next month, the fish spawned a few more times with the same results -- no fry. At this time I said to myself the next time they spawn, I will remove the eggs and hatch them artificially. I would gamble. I set up a two and a half gallon tank using pure rain water. I put the coconut shell with the eggs into it with an airstone and a few drops of methylene blue -- success, wrigglers!

To make a long story short, out of about 30 eggs, 14 hatched and grew up to be 14 males - not one female! I had read in some books that the pH influences the sex of the fish. If the water is too acid, you get mostly males. The rainwater had a pH of 4.5, so this could be a possibility. I will never know. The only thing I know is that I finally had spawned the fish I always wanted to spawn. But the quest is not over. It still remains. It will end when I finally see the beautiful female *nijsseni* swimming about proudly with her fry.

Footnote: Since I wrote this, I have fulfilled my dream! My *nijsseni* female can be seen parading about her tank with her brood.

KEEPING AND BREEDING *Microgeophagus altispinosa*

(The Bolivian Ram)

by Rich Grenfell (a novice)
Norwalk Aquarium Society

I have been in the hobby most of my life, but somehow I never really got into the breeding realm until I happened across the NAS website, and decided to join. At my first meeting I met a few people that were breeders and I was instantly hooked. I just HAD to breed some fish! As you can see by the title of this article, my first breeding experience happened with Microgeophagus altispinosa (AKA) the Bolivian Ram.

I first saw them at the store I happened to be working in at the time. And as was customary with fish that I was interested in, I put all 6 of them into a tank by themselves for a quarantine. I fed them well, with frozen bloodworms, and chopped frozen krill, and meanwhile, I did some reading. The book that gave me the most information was American Cichlids I (Linke and Staeck) and I discovered that it was recommended that the pH be in the slightly alkaline range. I thought that this might present a problem, as my tap water most always has a pH of 6.8. I tested the water in the store, and it was about neutral. They seemed fine, so I didn't worry about it. After 2 weeks, they started to develop nice round bellies, and good color. I saw no sign of disease so I took them home. At this point, they were about 1 inch in total length. I put them into a 46-gallon tank with the pH at 6.8 the hardness at 4dH and the temperature at 83 degrees. I planted with a few Anubias, some Water Sprite across the top, and a large piece of drift wood with Java moss. I also lay some flat rocks about the bottom, at the advice of another NAS member. As dithers, I added a small school of Rummynose tetras.

I fed 3 times daily, with a rotating menu of frozen and freeze-dried krill, frozen bloodworms, frozen brine, frozen glassworms, and color flakes. The water changes were done once per week, at 30% of the tank volume.

After about 6 weeks they had doubled in size and I knew I had a pair. There were 2 fish that would hover above the same rock, and chase all the other fish away. In talking to other NAS members, I was told that this meant that they were ready to breed and would do so soon. A day or two later, I went into my fishroom and there they were…. About 60 or 70 little eggs on top of the rock that they had been defending. This batch ended up being eaten, as did the 2nd batch. The 3rd batch hatched and were bought to the free-swimming stage, but disappeared 2 days after. As the spawns came with regularity, and I became more familiar with the pre-spawning behavior, I began to watch for it and one night I was talking on the phone to another member, and I was able to witness them spawning right before my eyes! The female, would make a few passes over the rock, and on the third or fourth pass she began to lay eggs. The male was standing guard and keeping all of the other fish out of the area. They were very aware of my presence so I

turned the overhead light in the room out, got off of the telephone, and backed off a few feet. After she had laid a dozen or so, the male made some passes close to the eggs, and I assume that he was fertlilizing them. This went on for 45 minutes to an hour or so, and when all was said and done, there were about 75 to 100 eggs, in a tight little group. They hatched in about 60 hours at 83 degrees, and were free - swimming in about 72 hours. I was told that it was probably the tetras and not the parents eating the fry so as soon as the 4th batch became free- swimming, I removed them, filled a 5.5 gallon tank with water from the parent tank, added a mature filter, some Java moss, and put the babies in their own tank. I started them with microworms as a first food and fed 3 times daily. After about 2 weeks, I took some color flake, spirulina flake and small bits of freeze-dried krill and crushed it into a powder. After about a week of the flakes, I noticed that the number of fry was becoming smaller. I thought that maybe I wasn't changing the water enough, so I began doing 25% every other day, but the babies kept dying till I had only 10 left. At this point I moved them to a 10-gallon tank 'til they were about 3/4 of an inch long and they were auctioned off at the NAS auction.

While the rearing of the young was going on those fish just kept on spawning!

They spawned every 14 to 20 days or so. I didn't have the room for so many of them so I decided to let nature take its course. I watched carefully and was able to verify that it was indeed the tetras eating the babies. They would pick them off a few at a time.

For my first time, I must say, that it was pretty problem free (except for so many of the fry dying off). I would think that I was probably feeding a bit heavy and bought the Nitrogen content of the water up as a result. I need to thank Sal, Don, and Ken for all of their help and advice, and especially for putting up with all the phone calls!

I think that the most important lesson I learned about breeding (in my opinion anyway), is that good quality food and water are of the utmost importance. As well as providing the fish with a proper environment with which to breed. If I was hooked before, I am REALLY hooked now! I currently have five different types of Apistos and will be trying my luck with them in the months to come.

ANOTHER GOLDEN OLDIE!

A Review of

"Colored Atlas of Miniature Catfish"

by Walter D. Stevens Jr.
Norwalk Aquarium Society

When I think of the most active, some times cutest and most over looked fishes, I think of either the Corydoras, Brochis or Aspidoras miniature catfish. I would venture to say that most hobbyists do not realize that there are over 115 species of the genus Corydoras and approximately 14 species of the Aspidoras. I recently had some limited success breeding some Aspidoras catfish and was attempting to breed some albino Corydoras. Then someone asked me which Aspidoras catfish was I

breeding. I drew a blank, I didn't realize there was more than one. So I looked around for a book which had color plates of the fish, descriptions of the species, care, feeding and breeding habits. I found such a book.

The book "Colored Atlas of Miniature Catfish" is a hard covered T.F.H. publication (TS-183) written by DR. Warren E. Burgess. It is a 1992 publication that does not have the advertisements normally associated with the T.F.H. publications. This was a refreshing experience. There are well over 300 color (mixture) of photos and hand drawings of the different species. There is an abundance of information on each genus's natural habitant, breeding habits and requirements. In some cases I could get away with saying species instead of genus.

One thing that has always impressed me at club meetings and shows is how some members knew the names of all the parts of the different

I have had *B. modesta* almost continuously since 1980. I remember the year, because that's the year that we moved to Trumbull. First I had a single specimen. Then, about 1983 or thereabouts, I purchased four more fish from former N.A.S. president Bruce Smith, who was moving down south. I had these fellows in the same tank, a twenty-nine, for many years. I would occasionally see what looked like a nip, but I never saw any resulting damage. Which reinforces what I read in my reference book: "It is said that the fish will not tolerate other species but will school with its own."

Over the years, I lost one then another. Usually these losses were found on the floor, having found some small opening in the tank cover. (So maybe they do become quite active at night?) There was one or two that I never found, they simply vanished. Perhaps they flopped somewhere that I couldn't see. We don't have any cats, so I'm not sure where else they might have gone.

By 1995 I was down to a single fish (and I had finally learned to be *very careful* about the cover). I don't name my fish, but he actually got the name "Peek-a-boo" which hinted at his shy nature. Actually he got this name when my mother-in-law was visiting once. She slept in the family room where we had his tank. One time when we came in to watch TV after "Grandma Sarah" had gotten into her jammies, we noticed a bath towel over the tank. "Let me hang that towel for you." "No," she said, "Leave it there. If I wake up at night, that darn fish is there looking at me!" Peek-a-boo got his name.

When we were moving from one home to another, this fellow stayed in a spare tank with its "Uncle" Ed Katuska for a month or so. Although this individual fish was part of the original "pack" that I had in the late '80s, it wasn't tolerant of tankmates of other species. It did put up with a skunk loach for about 18 months. (Maybe the *modesta* thought the skunk loach was a funny color *modesta*?)

My *modesta* loaches would readily take flake food, although they loved meatier fare. (When Peek-a-boo stayed with his Uncle Ed, he loved the worms that he got daily. What a great uncle!) He also loved it when I would scour my other tanks for some snails, and drop a few into his tank. He would search out these snails and eat them up, shell and all, crunching them loudly.

I had this individual until 1999. He was at least seventeen years old, but I feel that we would have had him longer, if I hadn't rushed a water change. It was in a period of time when I was trying to use rain water for some of water being changed. I'm not sure if the rain water / tap water mix was a little too cool, or if it was the pH, or if there was some contamination in the rain water, or if the loach didn't agree with the Geo-Liquid that I tried. When the tank cleared, the loach was covered with spots. I was kicking myself for my haste. "Peek-a-boo" didn't make it.

Well in the February 2000 auction, there was a "orange finned loach." Everybody, stand aside: I would not be outbid. He is now situated in a fifteen. There is a foot long piece of a four inch PVC pipe, which he likes to stay in … "Hide-n-seek" is still quite somewhat shy. Now, let's go through these tanks … where are some snails?

Reference:

Aquarium Atlas. Riehl, Dr. Rudger and Baensch, Hans A. 1991, Tetra Press. P. 372

Jan./Feb.- 2001

Did you know?

by Ed Katuska
Norwalk Aquarium Society

The New Year is upon us already; I hope Santa was good to everyone this holiday season. I started the year off by diving into the ocean and I brought back some interesting fish facts to pass along. As usual, check out *The Wacky Fish World* segment for some humorous fish or hobby related stories making headlines. Our editor, Doug DeMent, knew the answer to last months trivia question that I pretty much thought was a stumper, way to go Doug. You can find the answer and a new question at the end of this column. Some of you trekky fans may know the answer. Good luck.

Did you know…

Taking your time

The slowest grower in the animal kingdom is the Deep Sea Clam, *Tindaria callistisormis,* which lives in the North Atlantic and takes one hundred years to reach a length of 8mm.

In the mood, NOW

The male grunt sculpin really plays hard to get. Willing females chase the male grunts until the female actually corners him in a cave or crevice where is only one outlet, which the female proceeds to block. Once she has the male cornered the female lays approximately 150 eggs and will only allow the male to leave once he has fertilized her eggs.

It's a bird, it's a plane, no it's just a fish

The marine flying fish has been observed leaving the water at a speed of 35 miles an hour, gliding for 42 seconds, soaring as high as 50 feet and covering a distance of 150 feet.

The Wacky Fish World

Goldfish hell

Japan- 10/19/00 (Reuters) - A new arcade game sweeping Japan is replacing soft toys - the lucky dip crane-grab game with goldfish. The new game has been launched after complaints of animal cruelty against an earlier version, the lucky lobster dip.

Makers KNT Co. of Fukushima say they designed the game to appeal to the Japanese love of festivals and fairs. Players try to maneuver an arm to try to scoop out one of the 200 goldfish in the tank. KNT says "the goldfish are wallowing in a luxurious tank equipped with a water purifier and a ladle that snares them is made in soft fabric." The initial 300 machines made were bought up and the company has inquiries from South Korea and Taiwan.

Pass the Dramamine please

Norway- 12/24/00 (Ananova) - Fish can suffer from seasickness, according to a marine scientist. Erland Moksnes says a Norwegian lighthouse keeper asked him to examine a cod he caught in stormy seas that was acting strangely — relaxed but also distressed. Mr. Moksnes put the fish in a calm bucket of water where it recovered after a few hours. He concluded that the fish was suffering from seasickness. He said "we humans have an organ of balance associated with our ears which makes us faint or queasy when we experience unexpected movements, as at sea. Fish have a similar organ which help them orient themselves in the water so they can tell whether they are moving up, down or sideways. If a fish is caught up in rough seas it will become ill." Once the fish recovered, the lighthouse keeper ate it. (Oh well.)

Sir Billy Bass

London, England- 10/26/00 (Reuters)- Britain's Queen Elizabeth has been entertaining guests at her Balmoral estate in Scotland with renditions of "Don't Worry Be Happy" in a duet with a rubber singing fish. The monarch has even mounted the grotesque "Billy Bass" singing fish toy – which looks like an angler's trophy – on top her grand piano. Buckingham Palace could not confirm the bizarre report, but it stopped short of ruling it out altogether. "The Queen may have a singing fish, but more than that I couldn't say," a Buckingham Palace spokesman said. The Queen was given the toy by another member of the royal family and bursts out laughing every time it is switched on and starts to twich and croon. "The Queen thinks Billy is a scream—he's always on her piano," A Balmoral insider told the paper. "It's so funny to see all these mounted deers' heads and stuffed animals hanging on the walls of this grand room and there in the middle of it all is the Queen and a mounted fish on a plague singing "Don't Worry Be Happy", the source added.

Last months trivia question

The golden trout, *Salmo aquabonita,* believed to occur only in Golden Trout Creek, high in the California Sierras, once bore a patronymic scientific name in honor of a former, now deceased, US president. Name this president.

Answer

Our 26th president, Theodore "Teddy" Roosevelt.

This month trivia question

In the TV series "Star Trek the Next Generation" Captain Jean-Luc Picard had a pet lionfish, *Pterois volitans,* in his "ready room." Like most pets, this fish had a name. Name that fish.

THE PEAT DIVERS

by Gary Smith
Hamilton and District Aquarium Society

When discussing their breeding habits, killifish fall into three main categories: plant spawners, soil spawners and peat divers. In this article, I will discuss the Peat Divers.

The peat divers have perhaps the most interesting and unique breeding habits of all killifish. Their spawning behavior is unique in that a pair will completely burrow or "dive" into the bottom soil during the spawning process. These fish are true annual species with eggs capable of surviving extremely long periods of drought. Among this group are members of the genera Cynolebias and Pterolebias.

In their natural habitat, the peat divers live in small ponds and ditches in South America, which evaporate during the dry season. The adult fish die, leaving behind hundreds of eggs buried beneath the mud. On the arrival of the wet season, the rain begins to fill up the dry ponds. The eggs, which are embedded in the mud and silt, begin to hatch into tiny fry that will mature, reproduce and die in less than one year.

Some literature states that peat divers should only be tried after the aquarist has successfully spawned the soil spawners. This is not necessarily true. There are some species of peat divers that are easily bred and equally beautiful too. Cynolebias whitei, Cynolebias constanciae and Pterolebias longipinnis can all be spawned very successfully without having any experience with the soil spawning killies. Then again, there are some species that should be tried only when the hobbyist has had success with easier ones. Such species that may be considered difficult might include Pterolebias zonatus, Pterolebias hoignei and Cynolebias dolichopterus.

Most species of peat divers are quite comfortable in aquariums of 2 1/2 to 3 1/2 gallons. Some of the larger species such as P. zonatus or C. wolterstorffi can reach a size of 5 or 6 inches and therefore require a larger aquarium, perhaps about 10 gallons. Filtration can be simple, a box filter being quite adequate. Temperature plays a major role in keeping peat diving killis (as well as all other killis). If kept at lower temperatures (64' to 68'F), the Cynolebias and Pterolebias seem to do better. They grow a bit more slowly but do not die as quickly as fish kept at higher temperatures. At lower temperatures they are also more active, in better colour and attain larger sizes.

In the aquarium the peat divers do not readily accept dry foods, but live and frozen foods are consumed greedily. Live and frozen brine shrimp, live tubifex, live white worms and live or frozen mosquito larvae are all eaten readily.

A spawning medium must be used to breed the peat divers. The most commonly used medium is peat moss or peat fibre. Two methods are commonly used: 1) the margarine dish method and 2) the bowl method. Both ways work very well and it is simply a matter of preference as to which one the hobbyist chooses.

The margarine dish method employs an aquarium of appropriate size (depending on the

size and the temperament of the species), usually 2 1/2 to 10 gallons, containing a box filter. The filter also serves as a hiding place for the female if the male gets too rough. The peat is placed in a margarine dish or something similar, to a depth of 3 or 4 inches. This allows the fish to bury themselves completely when spawning. The lid an be placed on the dish but remember to cut a 3" hole in it to give the fish access. The lid helps to keep the peat moss in the dish to some extent, during the spawning.

After two weeks have elapsed the peat is removed. The peat, which by now should contain eggs, is placed into a fine mesh net to drain and any excess water may be gently squeezed out. When the peat is dried to the consistency of fresh chewing tobacco it is put into a plastic bag, sealed and labeled with the name of the species, the date collected and the expected hatching date.

The bowl method employs a gallon goldfish bowl as a breeding tank. The fish are first kept in a conditioning tank either together or separately. Fish that are kept together will not spawn as long as there is no spawning medium. When the females have filled with eggs the breeders are introduced into the spawning bowl which has been filled to a depth of 3 or 4" with peat moss. No feeding should be done while the fish are in the spawning bowl. After about two days, when the female begins to look spawned out, the breeders are put back into their original tank to be conditioned for the next breeding session. The peat in the breeding bowl is removed and processed as before.

When the proper incubation time has passed, the eggs are ready to be hatched. Incubation time for Cynolebias and Pterolebias species ranges from 1 1/2 months to almost a year. When hatching time has arrived, the peat is dumped into a container (1 gal. tank, plastic shoe box, etc.), and cool water (68' to 70' F), is poured in to a depth of about 5 or 6". Most eggs will hatch within 24 hours of their first wetting but some may not yet be quite ready. If the hobbyist wishes to do so, he may collect the peat and store it again for another 3 or 4 weeks and then rewet it. This may result in more or less fry than the first attempt and the process can be repeated until no more fry hatch out. But one hatched, the fry are very easy to raise. Most are large enough to accept newly hatched brine shrimp or microworms immediately. Some species such as C. boitonei and A. affinis are rather small and would benefit from feeding of infusoria for a day or two before starting on brine shrimp. With steady feedings and partial water changes two or three times a week, Pterolebias species can start to sex out in four weeks while Cynolebias species can be sexed within six.

In closing I would like to recommend these fish for anyone who is looking for something unique and beautiful. Although the Pterolebias species lack the brilliant colours of other killifish, they surely make up for it with their graceful finnage and attractive markings. The Cynolebias species however are the jewels of the peat divers. Many species closely resemble each other with either greens, blues (light and dark), turquoise or black colouring, covered with small light blue or white dots or stripes, producing a very striking pattern. The colour of Cynolebias splendens will make any marine buff think twice. Imagine if you would, a fish about two inches in length with alternate vertical bars of intense "Paris" green and vermillion red! A very beautiful fish indeed!

REGULAR MEETINGS AND PROGRAMS
Meetings are on the third Thursday of each month except July and December, starting 8:00 PM at the **Nature Center for Environmental Activities**, 10 Woodside Lane, Westport. Meetings are open to members and the public. Each meeting includes a short business meeting, refreshments, a raffle of goods, and a program/event.

BOARD OF DIRECTORS' MEETINGS
Board of Directors' (BOD) meetings are held in member's homes. They are generally but not always the first Thursday of the month. You do not need to be a board member to attend or to host a BOD meeting. Attending a BOD meeting is an excellent way to get better acquainted in the society, it also gives you a chance to see another aquarist's set-up. Just let the host/hostess know if you plan to attend. Hosting a BOD meeting is an excellent way to have some experienced hobbyists review your set-ups. Just let a BOD member know that you are interested in hosting a meeting and when. The BOD will gladly relocate a meeting to a member's home.

N.A.S. EXCHANGE PROGRAM
N.A.S. will exchange its publication with other societies that send their publication to us.
Articles may be reprinted by not-for-profit aquarium societies by acknowledging the source and sending us two copies (one for our library, one for the author).

WET PET GAZETTE ADVERTISING RATES
The Wet Pet Gazette will offer a web page on our web site for any business that will display and offer our membership flyers. (We supply the flyers, the business simply provides the space.)

For ad spaces in the Journal, the cost per issue is
FULL PAGE $ 25
HALF-PAGE $ 15
These ads must be paid in advance of printing.

AFFILIATIONS
N.A.S. is a member of the Federation of American Aquarium Societies (FAAS), and the North East Council of Aquarium Societies (NEC).

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