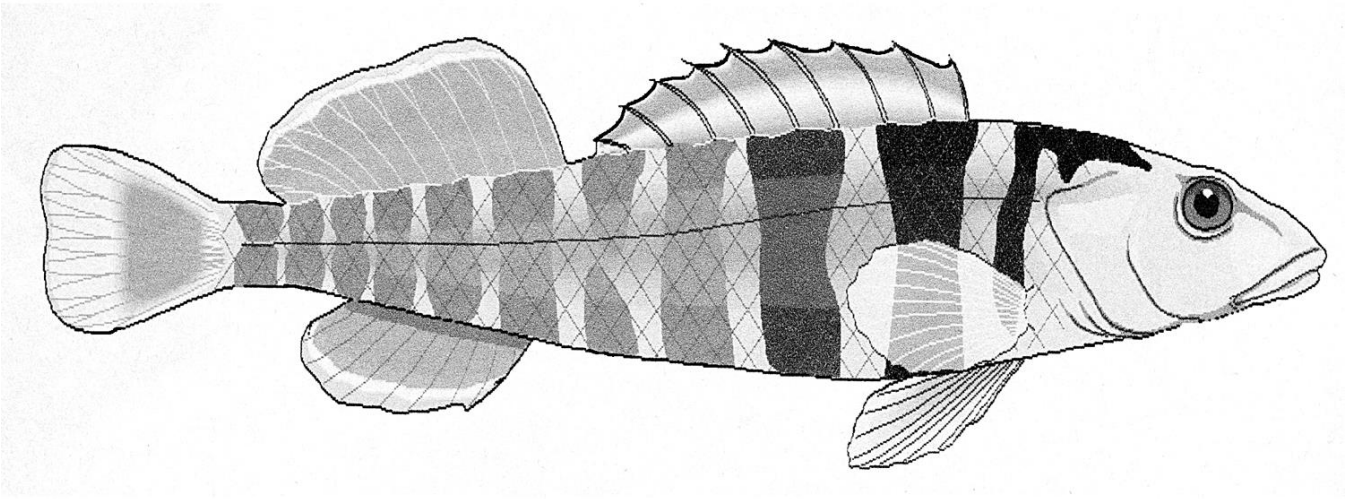
The Darter

March - April 2006



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St. Louis, Missouri

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The Missouri Aquarium Society will exchange their publication, THE DARTER, with other aquarium societies. Failure to receive three consecutive issues of a society's publication will be considered as a termination of our exchange with that society, unless advised to the contrary.

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Places to Be
Things to See

THURSDAY, April 20, 2006
General Meeting, 7:30 PM @ Dorsett Village Baptist Church

SATURDAY and SUNDAY April 22 – 23, 2006
Annual Weekend Workshop/Giant Auction
(Speakers all day Saturday, Banquet Saturday evening, Auction all day Sunday)
Contacts: Workshop: Marlon Felman – 636-536-4804, marlonf@bigfoot.com
Auction: John Van Asch – 618-277-6165, johnsfishy@att.net

SATURDAY, April 29th, 2006
Executive Council, 7:30 PM, Hosted by John Van Asch

THURSDAY, May 18, 2006
General Meeting, 7:30 PM @ Dorsett Village Baptist Church

SATURDAY, May 20th, 2006
Executive Council, 7:30 PM, Hosted by Steve and Kathy Deutsch

THURSDAY, June 15, 2006
General Meeting, 7:30 PM @ Dorsett Village Baptist Church

SATURDAY, June 17, 2006 (SATURDAY June 24 in case of rain)
MASI Picnic @ Jim and Brenda Thale's
Executive Council following Picnic

SUNDAY August 13, 2006
Annual Summer Auction @ Stratford
Contact: John Van Asch – 618-277-6165, johnsfishy@att.net

SUNDAY October 1, 2006
Annual Fall Swap Meet
Contact: Mike Hellweg – 636-240-2443, mhellweg511@charter.net

SUNDAY November 19, 2006
Annual Fall Auction
Contact: John Van Asch – 618-277-6165, johnsfishy@att.net

Presidential Preamble

By Mike Hellweg

As I write this we're experiencing the coldest weather of the year – in mid-February! I hope you were all able to take advantage of the warm January to get some outdoor projects done. If not, it's a perfect time now to start planning your pond or water garden.

It's also time to make plans to attend the Annual Workshop. As I've mentioned before, since no one stepped forward last year and volunteered to be the Show Chairman, we are not hosting a fish show this spring. This is pretty much in line with what other organizations around the country are also doing, as showing fish seems to have declined in popularity in the past few years. Instead, we, along with the folks from the St. Louis Area Killifish Association (SLAKA) are doing a Weekend Workshop. We will have some truly world-class speakers, all of whom have spoken at many venues both in the US and abroad. All for you, and all for **FREE**. Please take some time and come see the talks. Even with all the years that I've been in the hobby, I still learn something I can use in my own hobby at EVERY single talk that I attend, even those that are on subjects that I don't at first believe will be interesting to me. In fact, those are often some of the most informative talks! See the speaker lineup elsewhere in this issue of the Darter.

It's also Spring time, so it's time to start thinking about running for office. All of the folks on the Executive Council, myself included, are up for election in June. We can't grow and change without new ideas – YOUR IDEAS! So please consider running for office or for the Executive Council. It's your club –step up and make a difference. Contact either Vice-President Gary Lange or myself for more information or to sign up to run.

At this time, I would also like to take a moment to thank our out-going Postman, Jim Miller, affectionately known as Junior. He has decided that it is time to step down. For the last several years, he has been the one who has taken the Darters to the Fenton Post Office, made sure all the forms were filled out correctly, and in the past even made sure that they were labeled and sorted correctly. He was the one responsible for making sure that each and every one of you got your copy of the Darter. Thank you for your service Jim!

Gary McIlvaine will be taking over his post. Thanks for stepping up to the plate Gary!

We can always use volunteers to help out, whether it's at the meetings, taking fliers to the shops, working at the auctions, working at the upcoming workshop, or maybe helping out with one of the committees. This is also a great way to meet other members and get more out of your membership. It's your club – but you'll only get out of it what you put into it.

…and for now, 'nuff said…

M.A.S.I. Annual Weekend Workshop/Giant Auction

Co-sponsored by the St. Louis Area Killifish Association

Saturday and Sunday, April 22 - 23, 2006

Location: The Stratford Inn, Fenton, MO

Killie box sale and Killie displays on Saturday – 9:00 AM

Saturday Speakers featuring:

10:00 AM - *Adventures in Fish Breeding* columnist Mike Hellweg –
Anabantoids, Keeping and Breeding Fish that can Drown!

11:30 AM - Hobbyist, tour leader and explorer Jeff Cardwell –
Bolivia, the Search for El Prado

1:30 PM - *Sunken Gardens* columnist Karen Randall –
Modern Aquascaping

3:00 PM - A program by European Hobbyist and Explorer Mögens Jules –
Collecting Tropical Fish in Equatorial Guinea and Gabon **– presented by Charles Harrison**

6:00 Annual Awards Banquet
Featuring
7:30 PM - The intrepid Rainbowfish adventurer, explorer, photographer and writer Gary Lange –
Adventures in Paradise –
Searching for Rainbowfish in the Remote Jungles of Papua New Guinea

And of course our Giant All Species Auction all day Sunday!

Killie Silent Auction starts at 10:00 AM and runs 'till they're gone!
Giant All-Species Auction viewing 11:00 AM, Auction starts at Noon
As always, our Giant All Species Auction will feature Locally Raised Fish, Aquarium Plants, Pond Plants,Equipment, Tanks, Books and MORE!

Tank Raffle to be Drawn at 5:00 PM!

Workshop Info: Marlon Felman 636-536-4804 or marlonf@bigfoot.com
Auction Info/Registration: John at 618-277-6165 or Johnsfishy@att.net

For maps, updates, articles and information, check out our website

www.missouriaquariumsociety.org

Live Foods that I Have Cultured
(and some I have just killed repeatedly)

By Diane Brown
with the help of copious notes from Jack Heller

I have acquired quite a few different cultures gradually, and some work well for me and some don't. Some that are very easy for one person are hard for another—just like fish. My favorites are the BBS, microworms, and grindals, because these are easiest for me, and I feed them to my fish daily. In the last few months especially, my grindals have been producing so well that I am using much less frozen food for the evening meal (my fish get flakes, pellets, or freeze-dried foods in the morning). In order of size, smallest to largest, these are some of the most commonly cultured live foods for smaller aquarium fish:

Paramecia—for tiniest fry
Vinegar Eels—for tiniest fry
Microworms—for tiny fry; smaller than baby brine
Baby Brine Shrimp—for most fry and fish up to an inch or two in length
Grindal worms—fish up to several inches long will love these
Daphnia—all my fish love these, regardless of size
Confused flour beetles—larvae for many smaller fish, adults have a more limited appeal
Fruit flies—for just about any fish
White worms—fed in moderation to fish over an inch or so in length
Livebearer fry—whoever can catch them, gets them!
Red Wigglers—if chopped small, fish even a couple of inches long can take these
Snails—loaches, some cichlids, and goldfish love these

•**Paramecia** I have not been successful trying to keep single celled paramecia going, but since my tanks are all planted, there is a reasonable abundance of microorganisms for the tiniest fish. Jack Heller makes these guys sound so easy, however, that I might reconsider. Jack starts them in a Gallon Jar or jug partly filled with dechlorinated water, leaving plenty of surface area. He adds just a piece of corn husk, some starter culture, and caps the jar. He uses an eyedropper to feed paramecia from a well-established culture to small fry. He keeps extra corn husks in the refrigerator, and when the old corn husk rots, adds a new one. He feels these cultures keep for a long time and are excellent for small new born fry if fed in moderation. The only time I tried them, I got a starter from an old culture, and I didn't know about corn husks. I think I fed them some bits of fish food and the result was a horrid stinking mess. Try them Jack's way and I'm sure the results will be better.

•**Vinegar Eels** The newest addition to my collection of critter cultures, these are supposed to be small enough for even tiny rainbowfish fry. You can't really see the individual worms without magnification, but they make the water cloudy when they're doing well. They also have the advantage of swimming throughout the water column, which is important for those small fry that live near the surface. But although these are supposed to be very easy to keep--just cider vinegar with a tablespoon of brown sugar per gallon, maybe a slice of apple, and they are supposed to survive long periods of neglect--I haven't been able to keep them alive. I am trying again and this time I have diluted the vinegar 50:50 with dechlorinated water. I also will peel the apple slices before feeding the culture, in case there was something on the skin that was harmful to them. So far they're not dead yet.

I've never had enough of these going to feed them, but this is how Jack does it: he takes a bit of the culture and pours it through a coffee filter, then rinses the filter off in fresh water, and uses an eye dropper to feed them to the fry.

•Microworms and Walter worms These are very small, but at 1-2 mm long, are visible as tiny threads in the water when you feed them to your tanks. The fry of most fish can take these soon after hatching: they're considerably smaller in diameter than even newly hatched baby brine shrimp. They do fall rather quickly to the bottom of the tank, though, so top swimming fry may not get enough of them. I've had two different varieties that are available locally, and now only keep so-called "Walter worms". These are a type of microworm that survive longer after being added to the aquarium than the standard microworms.

I cultivate these on a mix I learned from Al Andersen's talk on live foods at the MASI show in 2003: Gerber instant oatmeal or mixed grain cereal plus a bit of brewers yeast plus a little instant dried yeast (about a pinch of instant yeast plus a tablespoon of brewers yeast to a cup of cereal). I think the worms are supposed to eat the live (activated) yeast, which feeds on the cereal and brewers' yeast. I make this up in bulk and just add equal parts cereal mix and water to a clean dish, so that it is a thick paste. I place a dollop of the paste in a small plastic container, and add a few drops of liquid from an earlier culture. As the culture matures, the paste will get thinner and darker , and that is normal. Jack extends the life of his older cultures by adding some puffed rice cereal, which will keep them going for several additional weeks.

A few days to a week after starting a new culture, the worms start crawling up the side of the containers. The cultures are harvested daily by wiping the worms off the side of the container with a finger and kept going until the yields drop, usually for about 3 weeks. I looked through the cheap disposable containers at the grocery store to find some that I could stack in a small container, because the easily harvestable worms come from the sides of the container. There are more worms living in the lower part of the culture, but harvesting them leads to putting a lot of cereal debris in my tanks. So I prefer to use multiple small containers, here trying to get the maximum amount of side-wall surface for harvesting. Yogurt containers and margarine tubs also work but may take up more space without giving you more worms. I poke holes in the lid with a pushpin for air exchange, but be sure the holes are small or fruit flies can find their way in (very very messy).

After swiping worms off the wall of the container, I swirl my finger in a clean cup of water. Then I rinse the worms through a brine shrimp next to get rid of the cloudy cereal debris. I swirl the containers daily to recoat the sides of the container after I take off the worms, which seems to encourage the worms to climb up the sides for easy harvest. When the culture turns darker and fewer worms come out, despite being stirred/swirled daily, I dump it and start a new one, usually every 2-3 weeks. There are typically 2-3 fresh, 2-3 medium, and 2-3 older cultures going at any one time, and still I don't get very many worms at once, but fortunately the little fish that need these don't need a lot of them to grow.

Sometimes a little skin of yeast or bacteria grown on top of the culture, but does not harm the worms, and the flakes of it that end up floating on top of the water are easily poured off before the worms are poured into the net for rinsing. If you don't see lots of worms on the side of the container, don't despair. They're probably still in there. If you swirl the culture and look at the surface closely, it should look like it is moving or bubbling. If it's moving, there are worms enough to start another culture in fresh media.

•Baby brine shrimp (BBS) Newly hatched brine shrimp nauplii are a favorite not only of small fry, but of most fish up to a couple of inches long. They're active swimmers, dispersing throughout the water column, and survive for hours after being added to a tank. I do these differently than most fishkeepers I've met, because I don't use air pumps at all in my fishroom (which is my living room, and

the live food area is my kitchen too). I hate the noise they make (yes, I know the new linear piston pumps are very very quiet, but even so....).

I hatch brine shrimp eggs daily in a 2-liter flask, set on a magnetic stirplate. Each night I add 1L of room-temperature tap water to the flask and 1/2-1 tsp brine shrimp eggs (depending on how many small fish there are to feed). While giving a demonstration on live foods with Jack Heller at a recent MASI meeting, I got a new tip: I now add 3-4 drops of straight bleach to the flask with the eggs and water. The bleach helps keep down the bacterial overgrowth that makes the cultures stinky, and it probably also helps the eggs to hatch (a higher concentration of bleach is used by some to dechorionate the eggs to make them easier to hatch). The flask is set to stirring overnight on medium speed, enough to see a little whirlpool vortex in the middle of the liquid. Stirring needs to be fairly vigorous for good aeration. The next morning I add about 1 1/4 ounces of pickling salt to the flask. I keep the salt in a jar next to the stirplate and flask, and keep a scoop in it that is just the right capacity. It's all about making it easy to remember even when I am sleepy stupid in the morning. At night I pour the contents into a 1-liter fat-separator measuring cup (the spout comes off the bottom) and leave it sit for a few minutes while I harvest the microworms and feed the grindals. Then I pour off the hatched BBS from the bottom and leave the top-floating unhatched and empty shells in the separator, and I set up a new flask for the next night's BBS. I use two flasks in rotation to let one dry while the other is in use, and this keeps down the smell. When they get a nasty film on the sides, a dilute bleach solution and rub with a bottle scrubber will clear it right up.

I don't know what my hatch percentage is, but I get reliable BBS production on a 24hr schedule and that works for me and my fish. I may also be feeding some bad eggs, which hydrate but don't hatch, and sink; this reportedly can make fish sick. I haven't noticed any problems with my fish, but I also might just not be looking closely enough.

•Grindal Worms I love the grindals because they like comfortable room temperatures, unlike white worms that need it cool. I grow them in small plastic boxes, as shallow as I can get (you're really growing them only on the top surface, so deeper boxes just take up more room without providing more worms. I have a small rack that holds several of them under the sink, and can stack more on top as needed, giving me lots of growing surface area with a small footprint. Each box is filled with half an inch to an inch of Magic Worm Bedding (Magic Products Inc), kept quite moist with filtered tap water. I use this bedding for my worm compost bin, because it seems to keep the redworms happier, so I always have it on hand. Other people use various soil or peat mixes, or go entirely dirtless with sponges or green plastic scrubbies. I trim the lids of the plastic boxes off on two sides so they fit inset into the box, on top of the worms and their food, but cover most of the box. The more of the surface you cover with the lid, the more of it you can actively use for harvest. The edges of the lid that remain provide a handy handle, and the plastic lid is easier and safer to handle than a piece of glass that is often used. The boxes are loosely wrapped in a plastic bag and the bag is clipped shut to keep out fruit flies. Jack likes to cover the surface with a piece of plastic bag, and rinses that to harvest the worms. He also uses the plastic lid that comes with the box, cutting a large hole in the top and taping a piece of fabric over it, to create a fruit-fly-proof but breathable cover.

Each evening I take off the lid, return any visible pellets to the culture, and
and wipe the worms off the lid into a dish of tap water. The worms are swirled around and allowed to settle, the water poured off, and new water added, and rinsed this way several times while I'm preparing the other foods. By the time I'm done they are much cleaner and ready to be dropped into the tank from my baster. The box of worms gets a few fresh pellets of cat food (I started with Science Diet feline maintenance light, since that's what I had on hand, but Jack likes Purina kitten chow, which has higher concentrations of vitamins for the fish). Alternative foods for grindals include trout chow, other fish food, baby cereal, or slices of bread soaked in milk or yeast water: they're really not very picky. The

kibble I use is clean, easy to use, keeps them up on the surface for easy harvest, and resists mold better than baby cereal.

All my fish love grindals, and I love getting a couple of tablespoons of live food daily from a bit of cat food and a small investment in space. And I have not had to restart the cultures very often--they've gone about a year between restarts; if I add too much food and some molds (rare but it does happen), I remove the moldy bit and the culture goes on; if it gets a little too wet, a few days with the bag loosened dries it out a bit; if I leave on vacation I just let them go in their bags until I get back (refrigeration was a bad idea: the worms died and it was nasty). To split the cultures, I just take some cleaned worms in a baster, let them settle so they're very dense at the bottom of the tube, and let a few drops of the worm mass drop onto a piece of kibble in a fresh box of moist bedding. This seems to be a more efficient start than trying to break up the old bedding and mixing it with new.

•White Worms I gave up on these because my apartment was too warm for them (temps easily to 80 degrees in the summer, because I don' t like keeping the AC high all the time), and I could keep them going but never really thriving, whether I used synthetic sponges or dirt with ice packs in a cooler (and then I discovered grindals, which do thrive here). Most people who keep them have cool basements or use a refrigerator or wine cooler set to about 55 degrees F. They're otherwise cultivated identically to grindals.

•Daphnia The classic techniques of raising daphnia require two tanks—one for the daphnia, and one to raise the greenwater to feed them. In my apartment, I have used a different technique, so that I keep only the daphnia, and skip the greenwater step entirely. I keep these going in a set of open trays on a windowsill--in shallow water, figuring that without filtration or aeration, my carrying capacity is limited by surface area. I keep them on the windowsill because it's a handy surface; they have also done ok in a closed closet for a time. Light is not necessary.

I used to just toss them a pinch of dried brewers' yeast or a bit of baby food sweet potatoes every few days, and changed their water with aged tank water when I do tank water changes. I did not get many daphnia out of this--just a few dozen here and there as a treat for favorite fish. But it kept them going until I saw the light: during Joe Fleckenstein's talk on live foods at the 2005 MASI show, he said he used a little bit of everything he'd heard people use for daphnia, including, most intriguingly to me, paprika. So I went out and got several things he mentioned--soy flour, spirulina powder, and yeast from the health food store, a big jar of paprika from the international grocery, and (my own inspiration, no blame to Joe) some freeze-dried peas, also from the health food store. I whirled these together in the food processor (with a towel wrapped around it to keep from pepper-spraying myself) until the peas were powdered and all well-mixed. I put it in a spice jar and sprinkle a bit on the daphnia daily. I have seen an incredible increase in daphnia yield under this new regimen--so many that I suspect one of my trays actually crashed from overpopulation because I wasn't harvesting them fast enough.

I use a baster to harvest daphnia. Usually they're swimming most densely in the corners of the tray. I put the baster there to avoid the mulm on the bottom of the tray when I harvest. I use the baster to disperse them into my tanks too. I replace the liquid I remove from the cultures with water from the tanks, because they're supposed to prefer to live in aged tank water. The culture gets mucky on the bottom, but that's ok as long as it doesn't get stinky. I top them up at least once a week with tank water, and when the culture starts to stink, once every few weeks to a month, I drain the entire culture into a brine shrimp net (I think I have daphnia pulex, which are too large to go through), along with whatever goop is on the bottom of the box, and rinse it back into the box with tank water--in effect, doing a 100% water change, but with aged tank water.

The fish are quite pleased by the new abundance of daphnia. Although in theory they could survive in the tanks for days, they never last very long before the fish chase down every last one of them.

•**Fruit flies (drosophila)** I have worked with them in several labs in the past, and even harvested the leftover flies from my colleagues' cultures as a treat for my frog, but I don't culture them for my fish. They are a terrific natural fish food favored by many fish breeders, but in my experience they are a relatively low-yield food for the amount of space and work it takes to keep them. I also don't keep a lot of picky top-feeding fish, for whom these might be a particularly important food. Jack, who does keep a lot of picky top-feeding fish, likes them a lot.

•**Confused flour beetles** I keep a few of these in a covered drum bowl in my closet with some whole-wheat flour. They're covered because I don't want them to make their way to my kitchen and start eating my wheat and flour. It is not easy to separate the beetles from the flour, so they mostly sit quietly and unbothered by me in the closet. Occasionally I grab a strainer and sift a few out to sprinkle into the tanks, where the fish enjoy the treat. They need whole-wheat flour--white flour doesn't have enough nutrients to keep them going in any dense, useful quantity. Once I thought I could cleverly recycle some stale gingerbread cookies made with whole-wheat flour as crumbs for the beetles, but the spices didn't agree with them and the large crumbs made it harder to separate out the beetles. That was a dumb mistake. They get straight whole-wheat flour only now.

Another tidbit I picked up at the MASI meeting was to sift the larvae out of the flour and feed those instead of the adults, who are mainly on the surface. The larvae are soft and easier to eat than the heavily armored adults.

[They're called confused because they were confusing to taxonomists trying to classify their species many years ago, but the beetles are not the slightest confused as they go about eating and breeding and otherwise doing their thing.]

•**Endler's livebearer fry** Since I have a few of these fish in most of my tanks, there are nearly always a few fry available to supplement the diet of the other fish, if they're hungry enough to chase them down. They're live food by default, not really by design. This also has the pleasant side effect of keeping the Endler population under control; they're not known as "Endless livebearers" for nothing.

•**Red Wigglers (aka earthworms)** I keep a bin of redworms to compost my kitchen scraps. Occasionally the fish get a treat of some fresh chopped worms. Recently I tested a rolling vegetable mincer vs my regular cleaver to see which most efficiently chopped the worms, and the cleaver won hands down because the mincer was too dull and didn't cut cleanly through the worms. For just a few worms at a time for my largest fish (smallish throrichthys cichlids), I just rinse them and pinch them off between my fingers into small chunks.

I learned most of what I know about vermiculture from *Worms eat my garbage* by Mary Appelhof, and from the forums at HappyDRanch, from whom I ordered my Can O' Worms worm bin. I use Magic Worm Bedding here too with good success.

•**Snails** My planted tanks produce an abundance of snails, mostly ramshorns, and when I was keeping goldfish, I'd toss the excess in their tanks, and they rarely hit the bottom of the tank before being snapped up. Loaches also love them (although my present dwarf Sidthimunki loaches don't seem to eat them), and so did my adult Thorichthys cichlids. Currently I don't have any snail eaters, so I compost the excess.

Some good web resources for more information on culturing live foods;

The Bug Farm website discusses which foods for which fish as well as culture techniques:
http://www.livefoodcultures.com

The American Killifish Association Beginner's guide has a good section on live foods:
http://aka.org/modules/tinycontent0/index.php?id=4

The Krib discusses an extensive variety of live foods:
http://fins.actwin.com/mirror/live-food.html

Mary Appelhof's web site, source for her book, *Worms eat my garbage*
http://www.wormwoman.com/acatalog/index.html

Happy D Ranch, a source of worm bins and worm forums for worm composting
http://www.happydranch.com

The Killietalk archives include many useful discussions of live food cultures:
http://fins.actwin.com/killietalk

I get my worm bedding directly from the manufacturer:
http://www.magicproducts.com/bedding.htm

Charles Harrison has some pictures of his live food setups on his own site:
http://www.inkmkr.com/fish
and I put some pictures of his setups here:
http://www.well.com/user/debunix/fish/CharlesLiveFoodCulture.html

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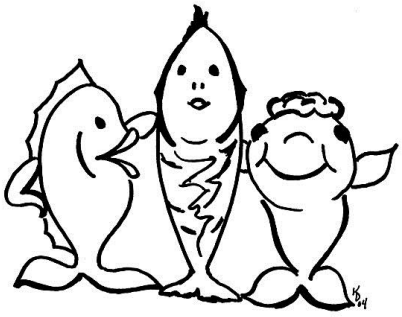

Membership

Yearly membership in the Missouri Aquarium Society, Inc. is $20 per calendar year. Membership includes the Darter subscription for the year, which is currently 6 issues. New memberships and renewals can be submitted at club functions such as meetings and auctions, or by contacting our membership chair, Kathy Deutsch at 314-741-0474, fishfan@i1.net, or 9 Old Jamestown Ct. Florissant MO 63034

R&J
FISH
FOOD

JIM
314-638-1134

BAP Report

Steve Edie

Member	Species	Common	Pts	Total
Jan 2006				
Don Atkinson	Ancistrus sp. "Albino"		10	50
Don Atkinson	*Apistogramma hongsloi*		15	65
Don Atkinson	*Crenicichla menezesi* **		25	90
Don Atkinson	*Geophagus steindachneri*		10	100
Don Atkinson	*Poecilia reticulata*	Gold Snakeskin Guppy	5	105
Don Atkinson	*Pseudotropheus socoloffi*		10	115
Jack Berhorst	*Puntius conchonius*	Rosy Barb	5	115
Charles Harrison	*Neoheterandria elegans*		15	1271
Charles Harrison	*Neolebias ansorgii*		20	1291
Lawrence Kent	*Cyprichromis leptosoma* "Utinta"	Blue Flash	15	35
Lawrence Kent	*Neolamprologus hecqui* *		15	50
Lawrence Kent	*Neolamprologus leleupi*		10	60
Gary McIlvaine	*Poecilia reticulate*	Powder Blue Albino Guppy	1	39
Gary McIlvaine	*Pterophyllum scalare*	Blue Blushing Angelfish	2	41
Gary McIlvaine	*Puntius tetrazona*	Tiger Barb	10	51
Gary McIlvaine	*Trichogaster trichopterus*	Gold Gourami	5	56
Feb 2006				
Diane Brown	*Melanotaenia parva*	Orange Rainbow	10	110
Lawrence Kent	*Lamprologus speciosus*		10	70
Rick Tinklenberg	*Carlhubbsia stuarti*	Stuart's Livebearer	10	970
Rick Tinklenberg	*Neoheterandria elegans*		15	985
Rick Tinklenberg	*Pelvicachromis taeniatus "Wouri"*		15	1000

* = First MASI species spawn (5 point bonus)

** = First MASI genus spawn (5 point bonus)

*** = First MASI family spawn (5 point bonus)

A Big Thank You

By Gary McIlvaine

I would like to say Thank you to all of you who make the auctions a success. I find myself in management meetings about once a month at work, where I am reminded how important it is to say Thanks to the associates I manage. It is the one thing that all of us like to hear. Thanks. I am saying Thanks to those of you who make MASI a successful organization. I appreciate all the behind the scenes stuff that has to happen to make the club work. I wish I could do more, and I will try. The reason I am saying Thanks is that the club allows me to enjoy the hobby that much more. The club provides an outlet for me to sell some of my fish with its quarterly auction. This provides me with more enjoyment as I see my hard work with my fish actually have value to others. It's 6 days until the big auction and I want to let you in on my excitement. First, I have made a goal of writing an article for every Darter this year. I have contemplated a couple weeks about what my article would be and I decided to stick with what I know. I am going to stick to topics that really drive my love of the hobby. I love to raise fish. I enjoy feeding them and watching my fish grow. I currently am maintaining 39 tanks. I like to keep clean tanks. I have found it to be the biggest Pillar in my success with my favorite fish. I love to raise and breed Angelfish and Guppies. Yes, I am that guy that will pay $150 to obtain a pair of guppies. I can't explain it fully myself, but it is part of the hobby that appeals to me. I like to raise fish and guppies and Angels are fish I can really count on to produce offspring. I dabble with other fish and have gotten the fish raising contest fish to spawn already.

This is what brings me to what I really enjoy about MASI and that is the outlet they provide to learn new things and also get to know other 'fishy' people. I do not fully understand why I spend my time in my fish room. I spend probably way to much time and money on my fish, but it is an addiction to me. I enjoy spending time with my fish (I also listen to music while playing with the fish). I actually like doing routine maintenance and changing water. I do it for my fish friends, I enjoy watching them prosper. The auctions provide an outlet to sell some of my fish. They enable me to have movement in my fish room that would otherwise not happen. If I could not share my fish with others, there would almost be no point. I love the energy an upcoming auction provides me to prepare fish to be sold at the auction. I love the chance to pick the brains of some real fish experts. I have learned many things at an auction about keeping and raising fish. I like my special few tanks that are going to have the fish going to the auction. I feed these tanks the best of food and change the water that much more frequently. Thank You for making MASI a great organization, those of you who make it happen.

Member Classifieds

Charles Harrison (314) 894-9761, csharrison@inkmaker.net -
OTO Chlorine test kit, 4 ounces $12.50 last for about 2 years, detects traces of Chlorine in tap/tank water, and other "Chemicals for the Fish hobby"

MASI Members can place a classified ad in the Darter for free. Ads may be up to 30 words in length. Send your ads to the editor. The ad will run for one issue unless you specify how long to run in, in which case it will run as requested.

The Computer Page

Steve Deutsch

MASI's official web page: **www.missouriaquariumsociety.org**

Addresses are only printed with permission of the owner. If your address is not printed and you would like it to be, please email me at fishfan@i1.net. If you would like yours removed, or if it needs correction, also please email me.

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HAP Report

Mike Hellweg

Member	Species	Common	Rep	Pts	Total
January '06					
Jerry Jost	Bacopa lanigera	Hairy Leaf Bacopa	V	10	770
Jerry Jost	Blyxa japonica		IB	20	770
Jerry Jost	Blyxa japonica		V	15	770
Jerry Jost	Echinodoras sp. Kleiner Bar	Kleiner Bar Sword	V	15	770
Jerry Jost	Echinodoras sp. Kleiner Bar	Kleiner Bar Sword	IB	20	770
Jerry Jost	Echinodoras tenellus narrow leaf	Narrow Leaf Chain Sword	V	10	770
Jerry Jost	Ottelia ulvifolia		V	20	770
Jerry Jost	Ottelia ulvifolia		IB	20	770
Jerry Jost	Rotala macrandra narrow leaf		V	15	770
Charles Harrison	Cabomba piauhyensis		V	10	380
Charles Harrison	Hydrocotyle leucocephala	Brazilian Pennywort	V	10	380
Charles Harrison	Lilaeopsis brasiliensis	Micro Sword	V	10	380
Mike Hellweg	Bacopa lanigera	Hairy Leaf Bacopa	S	15	2465
Mike Hellweg	Myriophyllum matogrossense	Southern Milfoil	V	10	2465
Gary Lange	Cryptocoryne retrospiralis	Retro Crypt	V	15	1110
Jack Berhorst	Cabomba caroliniana caroliniana	Fanwort	V	10	125
Jack Berhorst	Myriophyllum spicatum	Green Parrot's Feather	V	5	125

Reproduction Key: V = Vegetative, OB = Outdoor Bloom, IB = Indoor Bloom, S = Seedling

*= MASI First

Club Hopping

Steve Edie

Mar 24-26 – Pittsburgh: Greater Pittsburgh Aquarium Society – Show & Auction

Mar 25-26 – Fridley, MN: Minnesota Aquarium Society – Annual Show

Mar 24-26 -- TX: Texas Cichlid Association – Annual Show

Apr 7-9 – Hartford, CT: Northeast Aquarium Council – Annual Convention

Apr 8 – Cincinnati: Greater Cincinnati Aquarium Society – Spring Auction

Apr 16 -- Chicago: Greater Chicago Cichlid Association – Swap Meet

Apr 15-16 – Cedar Rapids, IA: Eastern Iowa Aquarium Association – Spring Show

Apr 22-23 -- St Louis: Missouri Aquarium Society – Workshop & Auction

Apr 23 -- Chicago: Illinois Cichlids & Scavengers – Auction

Apr 28-30 – East Hanover, NJ: American Livebearer Association – Annual Convention

May 5-7 – Des Moines, IA: Midwest Cichlid Association – Expo 2006

May 26-28 – Tampa: American Killifish Association – Annual Show

July 19-23 – Chicago: American Cichlid Association – Annual Show

Aug 13 -- St Louis: Missouri Aquarium Society – Summer Auction

Sept 17 -- Chicago: Greater Chicago Cichlid Association – Auction

Oct 1 -- St Louis: Missouri Aquarium Society – Swap Meet

Oct 14 - Cincinnati: Greater Cincinnati Aquarium Society – Fall Auction

Oct 20-22 – Laurel, MD: Potomac Valley Aquarium Society - All Aquarium Catfish Convention

Oct 22 -- Chicago: Greater Chicago Cichlid Association – Swap Meet

Nov 17-19 – Strongsville, OH: Ohio Cichlid Association – Cichlid Extravaganza

Nov 19 -- St Louis: Missouri Aquarium Society – Fall Auction

Nov 19 -- Chicago: Illinois Cichlids & Scavengers – Auction

Nov 26 -- Chicago: Greater Chicago Cichlid Association – Swap Meet

How I Spawn Angelfish - Part I: Getting Angels to Pair off

By Gary McIlvaine

I know there are no shortage of articles on this matter. I also realize that my methods may not work for you, but I have been pretty successful with Angels and would like to share what I do. I have read many articles and books about how to spawn and breed Angelfish. It is through all these books and trial and error that I have come to rely on my methods of handling these beautiful fish. I have no doubt that I can get any group of 3 month old angels into breeding condition in 7 months. I love angelfish. Many hobbyist do and it is that fact that makes spawning and raising these fish that much more enjoyable. I have had pairs develop in all kinds of tank conditions. I have had two angels spawn in a ten gallon community tank with 6 tetras and some guppies!! I have not ever duplicated that setup though and it is part of the learning process.

I have always gotten my angelfish to pair off with the tried and true method of obtaining 7-9 of a particular variety that I know I want to have. I usually get these when they are 3 months old as you can see by then who the really active angels are. In my experience you will usually lose a couple. Sometimes you have one that or two that just don't want to grow. I always cull these out with an ice bath. The two things that I believe keep my fish in prime condition is feeding quality food and changing the water frequently. It is not unusual for me to change water in my angel tanks 2+ times a week. I usually do 25% water changes. I also keep most of my tanks with gravel. I will siphon out the gravel and try to hit about 50% of the surface, but I always rely on what looks the dirtiest to choose my spots to siphon. For getting a pair I find this level of maintenance to be more than sufficient. This maintenance schedule only applies to fish that are in grow out tanks, or pairing off tanks.

I also want to say it is a good idea to obtain your stock from a reputable source. I have obtained some angels in the past that just would not do good. The angels would look lethargic and did not behave like angels should, despite superior care If you want to breed angels you will have much better luck with fish that you know where they have been and how they have been handled. I have found Angels to be a very hardy fish, when most of their parameters are being met. If the fish grew up though in over crowded conditions it could have a serious impact on their future appearance and potential. I also believe in out breeding Angels to obtain maximum vigor. It holds true in every other species and I believe it to be true with Angels. I ordered some angels before on Aqua bid and was burned with the results. This seller sent me fish I would have culled and eventually did. Some of the more exotic varieties like some strains of blacks and albino's are very weak, I also have heard about this with the half-black varieties, but have not experienced this myself. I believe this to be from in-breeding. I have also gotten some beautiful double darks in the past only for them to not get very large, or act as though angels should, being active and always seeking food. This is something I would like to stress and why I speak of observation being key. Angelfish should rush to the front of the tank when you come by. This is a sure sign that things in the tank are going right. This is the one behavior I can say for sure can be counted on to tell you if the angels are in superior condition.

I feed a variety of foods. This is what I believe drives my success with Angels. I do feed my angels heavily and Angels in good clean water will eat amazing amounts of food if given the chance. It is one of the things that makes me really like these fish. I use Angel flake food from Angels Plus. I feed this in the morning before I go to work. I only feed at this feeding what I know will be eaten in a minute. This is because I have been known to dump too much food in and one of my driving points of success is clean water and too much food can be a problem. This brings me to one point that I will make about my rearing out for pairs tanks and that is I always use some Cory's and snails, as I said I like to feed a lot and these guys help me keep the water clear by cleaning up extra food. When I get home from work I usually will feed another variety of flake food from angels plus. I feed some of their

earthworm flake and egg flake that I have mixed together. This is another quick feeding, as I do not want to foul the water. Then a couple hours later I will feed them more of the staple flake food and then I top it off with Frozen blood worms and Frozen Brine shrimp. At this point my angels bellies will be noticeably full and their bellies will be a little distended. This is another thing that I personally do and that is to make sure to feed enough that their bellies are a little distended and not too much. I can not imagine that really being healthy for them. I also do not have 9-5 lifestyle and so the feeding program is not as rigid as I would like it to be, but again I think this is where I think experience helps. I rely heavily on observation. I also like to feed baby brine shrimp at least a couple times a week to angels 6 months and under. I have found there to be no substitute for using this live and nutritious food. I will tell you I got some advice about not feeding my fish every day and I usually have a day where I will not feed my adult fish at all. I do this about once every 10 days. This also seems to help tank conditions.

The tank setup I use mostly for Angels I want to pair off is a 55 gallon tank. I use Penguin Bio Wheel 400 for this tank and I always have a sponge filter rated for a 30 gallon tank as well. I like decorated tanks so I always have some Rocks and driftwood in the tank. All my tanks are covered, so I have never lost an angel to jumping. My optimum stock level for an older group of angels meaning 6 months plus would be 7. I have found them to grow very rapidly when I have low stock levels. I also want to tell you if you do stock to many when they are being fed well and are in spawning condition they will fight!! My favorite fish that I own is a big Calico Koi male. He had killed 3 other Angelfish in my community 125. I was housing about 12 adult angels in that tank. I watched him polish off his nemesis one day when I was eating dinner. If there are too many angels they will damage one another. By polish off I mean he caused the final injury which eventually lead to the other angels death. This is something I don't see mentioned in too many books though it was also something I was not prepared for. I had read that 7 angels is about right for a 55 gallon community tank, and I followed the logic that if 7 is good for a 55, then a dozen would be fine for a 125. I have only had this happen with the one male. I have seen other angels fight plenty of times though, but not to the extent that this one has done.

I have always obtained my pairs from allowing them to pair off naturally. I know there are many other articles that talk about sexing the fish and selectively breeding them. I also have never bothered to learn to sex angels until they are spawning. I do cull ruthlessly and if there is a bent fin it gets culled. If it's body is growing irregularly, it gets culled. It is this culling that will allow all your fish to be good breeders, this allows you to maintain superior stock. There is nothing like the feeling of walking up to a tank of angels you have been raising since they were young and seeing their first clutch of eggs on a spawning slate, or sword plant. Next Darter, get ready for Part II, which will be Spawning Behavior of Angelfish

Xenotilapia Bathyphilus - Subtle Tanganyikan Beauty

by Cory Koch

Let me begin by stating…I love Lake Tanganyika! While I have not been there (yet!), Lake Tanganyika is, for me, the epitome of diversity, so many species, so many habitats, and so many odd & interesting behaviors! The fish of this ancient lake have evolved to fill seemingly every possible nook and cranny of habitat available. From the surge habitat of the lake shores to the mud floor, in everything from rock caves to empty snail shells to open water, the fish of Lake Tanganyika continue to amaze me.

One of these odd little Tanganyikan gems, *Xenotilapia bathyphilus* (say it with me, zē-nō-tə-lă-pē-ə băth-ē-fĭ-ləs) ,is the subject of this writing. Found throughout Lake Tanganyika in deeper water (65-330 feet), *Xenotilapia bathyphilus* is a monomorphic, maternal mouth brooder. The fact that these fish live in deep water in the so called “mud floor” habitat may explain there flattened jet black

oversized eyes. Bigger eyes must come in handy on the dark mud floor, where these fish feed on plankton.

The large black eyes of Xenotilapia bathyphilus remind me of the hieroglyphics found in the tombs of Egyptian pharaohs, the paintings on those walls seem to look out at you with an ancient wisdom. Bathyphilus look out at you in much the same way.

Not a very flashy or particularly colorful fish, bathyphilus does have its moments when feeding and especially when spawning. A vaguely torpedo shaped body, silver in color most of this fishes real color is centered in the dorsal fin. This dorsal contains a subtle neon blue combined with a spectacular orange that intensifies dramatically down the flanks during spawning.

I received my fish (a MFF trio) from a fellow hobbyist as mature wild caught fish, so I have no clue as to how old they were when I brought them home. I do know that I had not planned on getting these little beauties and so was NOT prepared for there arrival.

Upon bringing these fish home all I had available was an empty 20 gallon long tank, so that is where they went .Four weeks later I came across a deal on a forty gallon "breeder" tank and stand complete. Perfect for my little oddities! Plenty of floor space, and significantly deeper than the 20 gallon. To say that the change was a dramatic one would be an understatement as one of the females spit several fry upon landing in the new tank!

This change was followed by the equally dramatic disappointment as the other two fish quickly devoured the majority of fry until Mom caught on and finished of the last two young herself!
It was a bittersweet moment, as I was disappointed but also happy as this proved that I had at least a pair of these fish and I had never known that one of them was holding. If she held once, chances were good she would hold again.

The next time these fish spawned I was able to at least witness a part of the event by accident. The male had excavated a shallow "sandpit" under the sponge filter that helped to filter the tank. The male and one of the females seemed to be taking turns entering under the filter into the spawning pit, one would enter then leave. the other followed. I could not really see what was taking place as the tank light was already out due to its timer, so I only had a small room lamp to illuminate the spawning. The only thing I know for sure is that the next morning I had a female holding a mouthful of eggs!
The female held her eggs for exactly eighteen days and then they were gone! I assume she ate them.
More disappointment!

However, after another two weeks the *other* female was holding! I had been very busy at work and was not sure exactly when the fish had spawned this time so with much hand wringing fifteen days after noticing the holding female, I decided to attempt to strip her of the fry. Now this sounds very simple on paper and in retrospect it really is very simple. nonetheless I was very nervous about hurting "Mom", I had never attempted to get a mouth brooding female to "spit" her fry before and, I must admit .I very nearly lost my nerve, I mean what if I injured or *worse* killed my female? In the end I guess I was more concerned about losing another batch of fry because I filled a five gallon bucket about halfway with tank water and went about netting "Mom".

It took me about half an hour to catch her as I was trying to be very careful not to stress her or myself anymore than absolutely necessary , for me because I was worried that clumsy handling of such a delicate fish would result in injury or death for the fish . And for the fish since these fish live at such deep depths they seem to have no clue about the surface and can be world class Olympic jumpers in tanks. (This may be a good time to recommend a very tight fitting lid and few (if any) smooth rocks if you decide to attempt these fish at home)

When I did finally catch her I held "Mom" in the net with wet hands in the net and maneuvered her so that only her head was out of the net. Keeping a firm but not to tight grip on her with my left hand I positioned "Mom" over the bucket and used the index finger of my free hand to try and gently pry open her mouth. She was not having any of it and kept her mouth firmly clamped shut! This entire process had already been going on for at least thirty seconds or so and as I stated I was VERY nervous

about harming “Mom” so I decided to abort. I removed my index finger from “Mom’s’ mouth and as soon as I did she spit out a rapid fire stream of fry!! I ended up with nine miniature versions of “Mom”!! I was not entirely certain that all the fry had been spit out, but did not want to risk “Mom” anymore so I put her back into the main tank right away! I would estimate the fish was out of the water for less than one minute, but it seemed much longer than that to me. I’m sure she felt the same way!

I initially placed the fry into a five gallon clear Rubbermaid container with a seasoned sponge filter and a “junior heater” from Wal-Mart. I filled the container with water from the main tank (ph about 8.5-9.0 and very hard). The Xeno fry grew quickly on cyclpoeeze, freshly hatched brine shrimp and micro-worms; soon it was time to move them to larger quarters. I decided to house them in a ten gallon tank that contained a few clumps of java moss and a small group of Endlers livebearers that my son had been given at his first MASI meeting .The Xenotilapia fry continued to grow well and the Endlers fry disappeared almost as fast as they were born. It didn’t take long for my son to request that I move my little Tanganyikan jewels from “his” tank! I was amused by the fact that no matter how delicate and docile this species is, they are still more than proficient when it comes to keeping livebearer populations in check! Needless to say the fry continued to grow well and had hit the inch mark in a little under 90 days.

While Xenotilapia Bathyphilus are not suitable for all set ups they are worth the extra effort in my opinion. I don’t believe they would do well with many other species, but could possibly do well with a school of either *Cyprichromis Leptosoma* or *Paracyprichromis nigripinnis.* They do seem to do quite well with Endlers Livebearer’s however!!

But seriously, given a fine sandy bottom, lots of floor space, and calm tank mates that do not compete for the same territory these fish are just plain easy! And one more reason the fish of Lake Tanganyika are tops on my list!

Editor's Notes

Steve Deutsch

Well, another day, another Darter. I am able to compile this publication because of all the help I get printing, collating, and mailing it after it is complete. Jim Miller has been the postman since before I was editor. He has recently asked to pass this on, so starting with this issue Gary McIlvaine is taking over the position. My thanks to Jim for all the past help, and to Gary for taking on this position. Charles Harrison continues to print your Darters. Steve Edie, as Exchange Editor, supplies the articles that fill the Darter after all original MASI articles are published. Between article submissions and publication help, the Darter is what you all make of it, and I appreciate everything that goes into the publication.

This month we have several good articles. For anyone who missed Diane Brown and Jack Heller talk about live foods, or anyone that could not take notes fast enough, Diane has submitted much of their information as an article. Gary McIlvaine sent in two articles, including one that is the first of a two-parter - so I know of at least one article coming for next issue. Rounding out the lineup for MASI authors is Cory Koch. We also have one exchange article this issue from Alexander Priest of the Greater City Aquarium Society.

I hope you enjoy the issue, and remember, it's never too early to start that article you've been thinking about writing for the next Darter.

Put A Leopard In Your Tank

by Alexander A. Priest

reprinted from Sept 04 ***Modern Aquarium*** of the Greater City Aquarium Society

The leopard *Ctenopoma* (*Ctenopoma acutirostre*) is also commonly referred to as the African climbing perch, spotted *Ctenopoma*, spotted climbing perch, spotted bushfish, leopard leaf fish (because of its resemblance to the South American leaf fish of the genus *Polycentrus* and *Monocirrhus*), or panther *Ctenopoma* (this last name I saw only once, in an African exhibit at the Bronx Zoo, but since panthers are leopards, this is another way of saying "leopard *Ctenopoma*"). As might be expected of a fish that goes by the names "leopard *Ctenopoma*" and "spotted bushfish," the dark gold bodies of these fish have dark leopard-like spots that enable the fish to blend in with vegetation.

As for those common names that include the word "perch," these fish are Anabantoids (meaning that they have an organ in their heads allowing them to utilize atmospheric air directly). Anabantoids are a suborder of the taxonomic order Perciformes, or "perch-like fishes."

The leopard *Ctenopoma* has been reported up to 8 inches (20 cm) in length in the wild. However, most aquarium species rarely reach 6 inches (15 cm), with the majority attaining a maximum adult length in the aquarium of no more than 5 inches.

Most Anabantoids are native to Asia. However, all species of *Ctenopoma* come from Africa. *Ctenopoma acutirostre* are native to the Congo River system and the Malebo Pool (formerly called the Stanley Pool, a lake-like widening in the lower reaches of the Congo River). Although first identified in 1899, it was not imported into Europe (specifically, Germany) until 1955.

Their body shape can best be described as laterally compressed (like a discus or angelfish), and roughly oval, with the mouth tapering to a snout-like shape. This makes the fish ideally suited to a densely planted environment, both in its camouflage coloration, and with a body shape that provides ease of maneuverability between plants. Their fins are short and spiny. Extreme care must be taken when transferring them, as their spines will catch in a net, and can cause a fair amount of discomfort (but not serious injury) to an aquarist who attempts to transfer them barehanded.

These fish hide most of the time. They are usually more active in the evening (similar to their feline leopard namesakes). One hint that these fish are nocturnal, or crepuscular (meaning active at twilight or before sunrise), is their large eyes. Therefore, their tank should have dark gravel, low-level lighting, dense plants capable of surviving low light conditions (I use *Anubias coffeefolia*), and hiding places (I have several large caves, and a tangle of driftwood roots). They will hide in these caves or under driftwood until something edible swims by, and then they will rapidly attack the food, and return to hiding.

Dr. Jorg Vierke has described the leopard *Ctenopoma* as being: "Very compressed laterally. Soft portions of caudal, anal, and dorsal fins with transparent margins covered with small scales. Sharp-nosed fish with large, striking eyes. Ground color light beige with dark brown, irregularly distributed spots. Spotted climbing perches can also be transiently uniformly dark brown, especially older fish."

While a few aquarists have reported success in feeding these fish commercially prepared food, it has been my experience that they will only occasionally attack a pellet or flake if it is moving or falling; but once that pellet or flake lands on the substrate or a rock, they completely lose interest in it. They are highly predatory, and will eat virtually anything live that they can fit into their surprisingly large mouths. They very rapidly open and extend their mouth, creating a vacuum that sucks in anything edible passing by. (This is sometimes called a "protrusible" mouth, meaning one that is capable of being thrust forward, protruded, or stretched out.) For this reason, they should either be kept by themselves in

a species tank, or with similar or larger size fish, as smaller tankmates will almost certainly become expensive "feeders" for them.

Almost any filtration can be used, as long as it is not too extreme in its movement of water. (In a 20-gallon long tank, I am currently using two sponge pond filters, one rated for 100 gallons, the other for 500 gallons. These have the additional benefit of providing a breeding ground for microscopic organisms, such as infusoria, as food for any fry.) Since these fish are Anabantoids, it is important to leave an inch or so space between the water and the tank lid, as these fish need to go to the surface periodically for a gulp of air.

I have read several conflicting accounts on the proper water parameters for these fish, from slightly acid, to neutral, to slightly alkaline. I have kept leopard *Ctenopomas* for several years in soft, slightly acid water. In his book Labyrinth Fish. Horst Link states: "The water values of their biotopes are well known from a variety of reports. On average, the recorded general hardness levels have been from 2 to 3° dH and the pH from 7 to 7.5. Water temperatures are stated as being 25 to 29°C. We can also conclude from these reports that they should be kept in water with the lowest possible mineral content."

For my specimens, I use dechlorinated New York City tap water, which is normally soft and neutral; and I let the tannins from the driftwood roots acidify it naturally. My guess is that they would do well in water with a pH anywhere from 6.0 to 8.0, and with a dH hardness below 10.0 (although I keep my fish at the lower end of both of these ranges). It has been my experience that they are not sensitive to slight changes in pH or dH within these ranges, as long as sudden changes are avoided. Water temperature should be in the 76°-84°F (25°-29°C) range.

They seem to be very susceptible to Oodinium, or "velvet" disease, an infestation caused by a parasite; and they are sensitive to any degradation of water quality (requiring frequent partial water changes). I noticed a condition in my adults that I have not seen documented anywhere, but one that at least one other person I consulted (Marleen Janson, Editor of Osphronemid. the journal of the International Anabantoid Association) has also experienced. This is the sudden appearance of a white or cloudy growth on the eyes. Without any medication or treatment, this goes away (at least it did for both of us). This may be a reaction to poor water conditions. (Marleen thinks it might be related to nitrate levels.) As I mentioned before, these fish are very sensitive to water conditions and, for both Marleen's and my fish, the condition cleared up after water changes. Whether water change "cured" the cloudy eye, or are unrelated to its going away, is unknown at this time.

Once they have become established in the home aquarium, these fish can live a fairly long time, if provided with frequent water changes, avoidance of extreme water parameter changes, and good quality food (I use blackworms and occasional brine shrimp). *Ctenopoma acutirostre* have been reported to live twenty years in captivity.

However, don't get them expecting easy breeders award points at your local aquarium society. This is not an easy fish to breed. In fact, the September 2002 issue of Tropical Fish Hobbyist ("TFH") stated (erroneously) that they have never been bred "in the hobby or trade." (Actually, the first documented captive spawning was not until 1982, at Switzerland's Basel Zoo. Since then, there have been a few scattered, albeit infrequent, reports of spawning in the home aquaria.) That same TFH article listed the leopard *Ctenopoma* as being among "The Top 50 Fishes of the Past 50 Years," an evaluation with which I heartily concur.

These fish are egg scatterers. However, there have been several reports of the presence of a small bubble nest prior to spawning. One British website (http://www.thetropicaltank.co.uk/) lists this fish as a "Bubble-nest builder," and the Baensch Atlas states that this fish "Builds a bubble nest." Because of these scattered reports of bubble nests, I always keep floating "domes" (made from empty plastic fish food containers cut lengthwise) in their tank, as well as plants whose leaves extend up to and along the water surface, "just in case." Fortunately, despite the considerable difficulty in breeding and raising these fish to adulthood, which I will now discuss, they are not currently on any list of threatened

or endangered species.

The first (and most obvious) step in breeding any fish is getting a sexually mature male/female pair. That is a bit more difficult for these fish, as the most widely reported method for sexing them is to find small spines on the gill covers of males. Imagine looking for tiny spines on a fish that hides all of the time, and that blends almost perfectly with the vegetation in a dark tank! (I have never been able to identify these spines with certainty.) In addition, these fish take a long time to reach sexual maturity. (The first captively bred pair were estimated to be about 10 years of age.) Some aquarists report better breeding success with a higher male to female ratio, but this also increases the likelihood of egg and fry predation.

O.K., let's assume that you have a healthy, sexually mature, pair. The next step is knowing when the fish have spawned. After a spawn, there is an oily sheen on the surface of the water, with very tiny eggs suspended in it. One aquarist described this as resembling a tank with accumulated waste that is badly in need of a water change. The parents, and any other adult fish, should be removed once you have confirmed a spawning, to reduce both the risk of predation and the tank's bioload. (Once the eggs have been scattered, there is no parental care, either of the eggs or the resulting fry, so there is no reason to leave the parents in with the eggs or fry.)

After this, probably the greatest challenge of all is simply raising the hatched fry to adulthood. The fry of *Ctenopoma acutirostre* are surprisingly small for such a relatively large fish. They require very small live food (such as rotifers, infusoria, green water, and newly hatched brine shrimp). Even more than the adults, the fry are very prone to disease (especially velvet), and are very sensitive to any degradation in water quality.

Ctenopoma acutirostre fry have also been reported to be cannibalistic among themselves, so the aquarist must keep a careful and continuous watch on the growing fry, separating them by size as they grow, to keep the smaller ones away from their larger siblings. The difficulty in raising the fry, the slow growth of the species, and the length of time before the fish become sexually mature, mean that virtually all *Ctenopoma acutirostre* you are likely to see for sale were wild caught. Therefore, any newly acquired members of this species should be placed in a quarantine tank for an extended period of time before being added to an existing population, to avoid introducing diseases or parasites from the wild into a healthy tank.

Ctenopoma acutirostre are not for everyone, and almost certainly not for the beginning or casual aquarist. They are challenging to breed, require a relatively large tank, are sensitive to even slight degradation of their water conditions, are prone to velvet infestations, and they hide most of the day. On the other hand, they can be long-lived, and they have a distinctive (almost "prehistoric") appearance. Once established in an aquarium, they can live a very long time with just regular water changes and good quality live food.

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