

THE RAINBOW TIMES

Volume 9/Number 3



The Rainbowfish Study Group, Inc.

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Reprinting is available for not-for-profit organizations only. When reprinting articles please mail 2 copies to the Editor. Please include the address of the Editor in any reprints. This will insure that further reprinting will also be forwarded to us. Thanks.

It is likely that this column will often be devoted to “housekeeping” and there is a fair amount to be done this time.

Beginning with the last issue (Volume 9/Number 2) the addresses of all members were typed into a large spreadsheet for ease of manipulation. The typing was not a problem but finding the typographical errors was and continues to be. If there is an error in your address and you feel it may cause difficulty with the delivery of your Rainbow Times - please contact me.

Several issues ago the Rainbow Times was converted from a six/year to a four/year publication while maintaining the same total number of published pages per year. RSG membership expirations were only recently converted to reflect the March, June, September, December publication schedule. For example, an expiration of July 1995 (9507) was converted to September 1995 (9509).

You may have also noticed that we have been gradually losing ground with regard to maintaining the quarterly publication deadline. Based upon the former manner of naming issues - this would be the Volume 9/Number 3, Autumn 1995 issue. This leads new members to believe they are receiving dated material when in fact they are receiving the most recent issue. We would like to avoid this concern. It is likely that we will never be able to put together enough articles to get the Rainbow Times back on schedule. Issues will therefore be referred to by Volume/Number designations alone.. I will place a date on the heading of this column.

This brings us to the membership expirations again. Memberships are entitled to four issues of the Rainbow Times - regardless of the elapsed time that it may take to produce them. Expirations have been converted to reflect a lack of publication schedule and yet identify which issue (volume/number) will be a members last. For example:

(continued next page)

Please note your expiration code on your address label!

If your expiration code is 0902 or 0903: please mail your membership dues immediately to ensure uninterrupted receipt of the Rainbow Times.

9506	became	0902 (Volume 9/Number 2)
9606	became	1002 (Volume 10/Number 2)

We will still attempt to publish four issues per year. Please recognize that this depends greatly upon the general membership delivering articles to me. The first two issues I have been responsible for have not been a problem in this regard. HOWEVER, I must admit that I only have article suggestions for the next issue and appear to be running a bit short on authors. Some suggested topics are as follows:

P. signifer, Searys Creek
 hardyhead or gudgeon variety
 general article on dwarf varieties
 article regarding some successful technique with rainbowfish
 experience with hybridization
 interesting species to keep with rainbowfish
 importation of fish from Australia/New Guinea

Any subject as it relates to keeping fish from Down Under will be happily accepted. If you have any thoughts that might supplement any article in this issue - write those few paragraphs down immediately (before you forget) and send them to me.

If all goes well the next issue of the Rainbow Times will likely coincide with the arrival of spring in April or May. It should be safe to ship fish or eggs without any concerns soon after. Plan ahead and submit your fish and egg listing.

We currently have approximately thirty members that have e-mail addresses. Consider joining us on-line. It is an entertaining, informative and convenient mode of communication.

Cary Hostrawser (612) 422-9446
 12920 Zachary Cr N
 Dayton, MN 55327

Available

<i>I. werneri</i>		\$15/mop
<i>M. boesemani</i>		\$15/mop
<i>M. preacox</i>	\$50/sexed pair	
<i>M. trifasciata</i> , Goyder River		\$15/mop

Shipping is \$5 for eggs. Availability depends on the amorous intentions of the fish.

CHAIRMAN'S REPORT . . .

Gary Lange

When the winds blow cold a true aquarist turns to his fishroom, so I'm sure all of you on the east coast have tanks teeming with young rainbows ready for the spring market. Spring will be here soon enough and then we can get on about the business of sending eggs and fish. I would expect that the market for rainbowfishes will soon increase once people start reading "Rainbowfishes, In Nature and in the Aquarium" by Dr. Allen. Yes, the book by Tetra has finally hit the shelves of your favorite pet shop. However, heed this warning! This turned into a limited run which means that there aren't many copies of this book available. If you don't pick it up now you may never have the opportunity to buy it again, especially if they don't produce a second printing. If your local store doesn't carry it you can also pick up a copy through Jim Forshey at Aquatic Bookstores, listed elsewhere in this issue. He also has limited quantities so don't delay.

RSG CONVENTION 1996 - Has been set for September 20th-22nd in Erie, PA. This is the every other year New York-Penn Council meeting. This is a well organized group who knows how to put on a great show. Also in attendance will be The North American Breeder's Guild and probably FAAS. For the moment our plans are to have Peter Unmack speaking on Desert Fishes From Down Under. Some of the other speakers include: Mike Florez on captive breeding of endangered species, Gene Lucas on bettas, David Gustafson on Marines and Karen Randall, the plant baroness. If you want to get more heavily involved with plants Karen's lecture is one not to be missed. She talks about low tech tanks as well as providing the much needed information on hi-tech (CO₂ etc.) tanks. If memory serves me correctly Karen is the only one on the lecture circuit speaking about the wonders of the hi-tech plant tanks. For more information or to be placed on the mailing list call Dan Richardson, (814) 734-7729, or write him at 4829 Leacock Rd. Edinboro, PA 16412 or email (PLZL028.pro.com). We'll have more information in upcoming issues.

ONLINE? - Plans are in the works for the RSG web page. Rumor has it that ANGFA will have one online any day now. We will also shortly be starting an email based list server dealing with rainbowfishes and other native fishes from Oz & New Guinea. This will be a one time per day email that will be sent out to members on the list discussing various problems related to raising & breeding bows and native fishes of Sahul. Many of you have already expressed an interest in this and are on the list. If you haven't sent me a note yet and would like to be included email me, at GWLANG@ccmail.monsanto.com Be sure and include you email address in the body of your request so that it can be easily retrieved.

RSG STORE - There are still plenty of T-shirts, calendars, and posters left. For further information see listing elsewhere in this issue. We also have a few issues of the Best of the RSG available again.

1997 - TEN YEARS WITH THE RSG - We are contemplating putting together a major workshop in late September, 1997 with some of the best speakers in the world on rainbowfish and native fishes of Australia. The only other place you could ever hope to see this quality of speakers would be at an ANGFA conference in Australia. The plan as it stands now is to have this meeting on the west coast in conjunction with one of the best aquarium groups in the US. This city also happens to be one of the largest tourist attractions in the United States. Dr. Gerald Allen has already expressed a willingness to attend. By then he will have plenty of new rainbowfish to show you. The question is: If we produce a rainbowfish only show would you support it? It's almost two years away so that should give you enough time to save for the plane fare. Please send me your comments and whether you would be willing to attend.

Spring is coming so don't forget to get your F&E listings in to Kevin if you want to get in the next issue.

Jim Forshey (916) 622-7547
The Aquatic Book Shop
3050 Countryside Drive
Placerville, CA 95667

For Sale:

Rainbowfish: In Nature and in the Aquarium, by Allen	\$18.88
Australian Native Fish for Aquariums, by Legget and Merrick	\$22.50
Freshwater Fishes of New Guinea, by Allen	\$28.95
Freshwater Fishes of Northern Territory, by Larson and Martin	\$19.95
Artificial Plankton and Rotifer, 300 grams	\$19.95
Postgage: USA=\$2.95, Canada =\$7.50, all others \$15.00(CA residents add tax)	

The Exquisite Rainbowfish: *Melanotaenia exquisita*

by Doug Chamberlain

I first became acquainted with *Melanotaenia exquisita* about three years ago after picking up a bag of six - half inch fry at our fish club's auction. I found out later that the fish had been donated to the auction by Kevin Hosmer, our club's resident rainbowfish guru. I raised the fish with *Glossolepsis wanamensis* and some Gold Dust Mollies in a 45 gallon tank with heavy aeration from a bubble wand and fast water movement provided by an outside power filter. Sea salt was added at a rate of one teaspoon per gallon. Whether the water conditions were not to its liking or from intimidation by the *wanamensis*, the *exquisita* were exhibiting what I like to call a "failure to thrive." Of the original six fish I was left with only three reasonable looking fish at the end of their first year.

While in the process of relocating fish one day, I decided to move the *exquisita* to a heavily planted 50 gallon community tank. This was the turning point for this fish; they began to thrive. I have not a clue as to why they perk up, but perk up they did. It soon became readily apparent how the fish received their name; when put into the right setting, they are truly magnificent animals. The male quickly became the boss of the tank, even bossing around Pearl Gouramis that were three times its size. I can only hypothesize that the turn around for the fish maybe water related. While all the water for my tanks comes straight out of the tap, from a municipal water system with a pH of 7.5 and medium hardness, I use no salt in my planted tanks. I suspect that the *exquisita* may prefer softer water without the added salt.

A description of the fish is now probably in order. The first thing that strikes someone when seeing them for the first time is their unusual shape which is extremely elongated, almost torpedo like. Their finnage is yellow and brightly tinged orange-red on the borders. The upper part of its body is olive green and the lower portion is silvery white in color covered with black and red stripes. The operculum has an orange to red spot on it. My males seem to reach about three inches - maybe a little more and the females get about two and a half inches in length. When in breeding condition, the males are capable of flashing a yellow neon stripe from the tip of its mouth to the start of its dorsal fin. I wish I could tell you where a good photo of the fish can be seen, but unfortunately I cannot. There is a picture of a dead *exquisita* on page 1121 of the Baensch Aquarium Atlas vol. 2. Unhappily, this may be the worst photo of a fish in the entire book. It appears as if the fish was carried in someone's pocket for a couple of days, thrown into the washing machine, ironed and finally photographed on a pale blue tablecloth.

I kept the *exquista* uneventfully for the next year, enjoying it in the community tank and paying it little mind. About this time Kevin Hosmer informed me that, according to Gary Lange, the fish was in trouble in this country with very few to be found. Kevin's own stock was depleted; the fish had not done well in his water conditions. By asking other club members, Kevin was able to locate a male and two females, which when combined with the male and female that I had left have us a grand total of five fish. These five fish may have been all the *exquista* left in the U.S. I was elected to try and spawn them. I was very nervous about this, as at the time I had only been keeping fish for two years and spawning them for about six months.

I gave the fish their own thirty gallon tank filled with yarn mops. The next day I checked the tank and to my dismay discovered that one of the males had jumped out through a small hole in the cover and was dried up on the floor. My only consolation was that there were eggs in the mops. At first I very gingerly tried to had pick the eggs off and put them in a separate hatching tank but soon they were laying so many eggs I pulled and switched mops every couple of days. In short order I had two five gallon tanks filled with fry. Raising them was unproblematic; I fed Artificial Plankton Rotifers (APR) and vinegar eels as a first food and on to newly hatched brine shrimp within a week. For a rainbowfish, they grew very rapidly and I soon was able to ship over thirty one inch fish to Gary who distributed them to two other members of the Rainbowfish Study Group.

Well, it is about fourteen months since I shipped the fish and I understand there are still not many of these beautiful fish out there. I was trying to get out of the fish breeding business because of lack of time but I guess it is not meant to be. I have 17 adult *exquista* left and will be spawning them again shortly. If anyone out there is seriously interested in obtaining and raising the gem of the aquarium, they can contact me by E-mail at DOCHAMBE@STUDENT.CHAMPLAIN.EDU or phone me at 1-802-865-8975.

In ending this article, I will leave you with two miscellaneous notes on this fish. While all rainbowfish seem to be good jumpers, *Melanotaenia exquisita* is to be considered a great jumper. I have seen this fish vertically jump fourteen inches out of a five gallon pail and onto the floor. This fact should be considered when choosing a cover for the aquarium. Finally, according to the Baensch Atlas, the species hails from only two places in Australian Northern Territory: the Edith River and nearby Lake Malkyllumbo in Edith Falls National Park.

GUIDELINES FOR RAINBOWFISH MAINTENANCE AND REPRODUCTION

by Roy Hunter

I am writing this article based upon my observations over the past four years. Hopefully I can clear up some of the questions I am frequently asked by my “experience research.” These comments are purely my own and if they differ from yours then I encourage you to write an article as well to further enlarge the collection of printed material on our observations for future collectors of these beautiful fish.

- WATER CONDITIONS

I want to go over this first as this is the subject of most of the questions asked.

Water quality is of utmost importance for healthy rainbows. Water changes of at least 15% per week are required but I prefer 50%. Think about it...that is their “air”. You wouldn’t want to breathe dirty air all week would you?

Water hardness is a life or death matter as well. Too hard of water causes premature death due to the extreme stress it can cause. Some fish affected by too hard of water are: *M. praecox*, *M. duboulayi*, *M. trifasciata* (Goyder River, Wonga Creek, Wenlock River), *P. gertrudae*, *R. ornatus* (Kin-Kin and Seary Creeks), *M.s. splendida* (Kuranda), *I. wernerii* and *M. nigrans* are the most sensitive that come to mind. I am using anything over 450 ppm for my basis for comparison. Of course any rainbow would be best kept well under this hardness.

Some rainbows which seem to have a tolerance to harder water include most New Guinea species: *M. parkinsoni*, *C. campsi*, *C. bleheri*, *M. boesmani*, *M. lacustris*, *G. incisus*, *M. herbertaxelrodi*, *C. axelrodi*, *M. irianjaya*, *G. ramuensis*, *M. s. rubrostriata* and *C. fasciata*. As for the Australian species: *M. trifasciata* (Running and Skull Creeks), *M. s. tatei*, *M. s. inornata* and *M. fluviatilis* seem the most desirable. All others not named fall into the medium hardness category and should be kept between 80-200 ppm (4 - 12 GH) for best success.

Rapid pH changes over a short period of time should be avoided when possible. Dramatic changes can cause death within a matter of hours. All rainbows should be acclimated slowly to different pH ranges. A pH of 8.7 and

5.8 should not be exceeded with a pH between 6.5 and 7.5 being ideal in the majority of cases.

I presently only use addition of salt in the water as a non-drug cure for fungus. Some of the mangrove fishes, mainly the *Pseudomugil* species, require some added salt in the water. Presently I do not keep any of these species so I will leave that to your experience.

I am a big supporter of tannic acid additions to the aquarium. In the waterways where a lot of the rainbows are collected tannin levels are high - especially where a lot of the *M. duboulayi* and *R. ornatus* exist. It also does miracles in enhancing the fishes' colors. I also use Tetra's blackwater extract in my fry tanks for the added vitamins. I have seen an improvement in growth in the fry tanks where the extract is present.

Calcium is a very important component in water chemistry as it provides the "building blocks" for good bone structure development. In soft water conditions proper growth will not be attained when feeding calcium deficient foods. Therefore calcium must be added. I do this by simply adding some oyster shell grit. This is available at most livestock feed stores. Usually one teaspoon per 10 gallons is sufficient. Due to its slow dissolving rate this usually will not affect the pH significantly.

- BREEDING

This is the subject of a lot of frustration for many people - including myself. The biggest complaint I get is that "I can't get them to lay eggs. I've tried everything!" Some fish, no matter what you do, will not lay eggs. One of the least known factors in hobby fishkeeping is water chemistry. If you are not getting eggs, chances are it's not your fault. Just because Chris in Canada can spawn certain fish and Troy in Kansas can't does not mean Troy is not as good at it. Both Chris and Troy are capable but the water chemistry in these regions are different. There are a lot of different compounds in water and the compounds may vary from region to region. The only way to overcome this problem is to create the water needed to induce spawning. Adjusting water chemistry is expensive and time consuming. Unless you know exactly what you need to change the only method that works well is trial and error. I suggest that you keep fish that spawn well in your water and let someone else spawn the fish that do well in theirs.

Another problem you may have is that sources of city water change and therefore the water chemistry will also vary. In Colorado the water is usually drawn from reservoir stocks where it has had time to gain compounds from the reservoir substrate. In the spring and summer we get most of our water from snow run-off. Where I live in western Colorado the hardness of the Colorado

river can change as much as 100 ppm from spring to winter. The raising of fry is also affected by water chemistry but I'll get to that shortly.

The best way I know to encourage spawning is a combination of two things: food and water. Good diet is important for good healthy fry. The quality of the nutrients in the yolk sack is a direct reflection of the diet the adults are receiving. This will affect the health of the fry when it is developing in the egg and for the first few days after it hatches. A poor diet for the adults will hinder fertility and development of the eggs and definitely result in weak fry. A diet high in protein and calcium is required for good success. I use frozen bloodworms and freeze-dried plankton and obtain good results.

The water for your breeders should be as clean as possible to reduce stress and to induce spawning. Frequent water changes are done to achieve this. Large water changes usually will be followed by increased spawning activity.

Ambiance is important for good spawning success as well. The goal here is to create surroundings where your breeders will be as comfortable as possible. I do this with a dimly lit tank with dark substrate and with three sides of the tank painted black or dark blue. No plants are present but I do use multiple mops in different places in the tank. This allows the fish to choose an appropriate spawning site and once chosen they will usually return to that same site. Yarn colors are combined (different shades of green) as sometimes different colors are preferred.

- FRY RAISING

In the sections before this some tips and methods are discussed and close attention should be paid to those. First I want to talk about tank setup. This is the simplest part. I use nothing but a bare 10 gallon (35 liter) tank with a Tetra billi sponge filter and a heater. That's it! Only when I am ready to hatch eggs do I fill the tank totally with new clean unused water with a teaspoon of shell grit. The hardness of water I use is 100 ppm and the pH is 7.0. I add 1/2 teaspoon blackwater extract to those tanks of known soft, acid water preferring fishes such as *M. duboulayi*, *R. ornatus* and *M. nigrans* but I doubt seriously that the addition of this to any tank is a bad thing. The addition of ramshorn snails after the fry hatch is a good way to process uneaten food in the tank.

In tanks which super small fry are being raised a solution of nalidixic acid, nitromersol and acriflavine is added at 1 week of age to inhibit fungal and bacterial attack. Basically I take a quart jar and add 1/2 tsp. nalidixic acid, 10 drops acriflavine and a few drops of nitromersol. Shake well and use 1 tsp. of this solution in 10 gallons of water. As you can see this is a weak solution but it does have some benefits.

The water temperature is kept at a constant 82°F (28°C) until the fry are at least 3/4 of an inch (2 cm). Then it is slowly lowered to 76°F (25°C) for the remainder of their stay in the tank. I use 10 gallon tanks because I do not like to transfer the fry as they grow. In my experience they are sensitive when small and the less you disturb them the better.

Another thing that should be avoided is handling the eggs. The best way I have found is to leave them on the mops and let them hatch normally. Tray hatching works but the bacteria present on our skin can and will harm the egg sometimes causing the egg to fungus even though it is fertile. When you are ordering eggs in the U.S. you should request mops and mops only unless the shipping time will exceed 4 days. (I have had eggs on mops in bags for 5 days and have been highly successful though.)

As for foods for fry - I use Artificial Plankton Rotifers (APR) almost exclusively with good results. Bio-Genesis is another product which works fairly well but it is nearly 10 times more expensive than APR in small quantities. Two pounds (about 900 gm) can be purchased for \$200 US and 2 pounds of APR can be purchased for around \$20 US - but this is more than you can use in 10 lifetimes.

Fry are fed APR for about 2 weeks or until able to eat baby brine shrimp. At this time a combination of the two foods for about 1 week will ensure the slower growers can be fed as well. Small feedings of ground flake food should be given at one half inch (1.25 cm) of length so that they can get used to their adult diet.

In closing I must apologize for the length of this article. (being too short that is!) There is a lot more information that should go along with this but after all, I am not writing a book. Should you have questions about this article or questions related to it please feel free to contact me.

Good fishkeeping.

Ed. note: In addition to the RSG's policies regarding reprinting, Roy had a couple specific requests regarding reprinting:

- a personal copy (for himself) of the publication in which this article is reprinted
- Roy Hunter P.O. Box 380, New Castle, CO 81647 (970) 876-2553
- reprinting of this article only in its entirety without any changes
- following the article that any local RSG member names and addresses be given (with their permission) for readers who would like more information on rainbowfish

WHEN TO USE TUMBLERS FOR BOW EGGS

by Mike Reed

An egg tumbler is essentially a sponge filter with a compartment in it through which newly filtered water flows. When you put fish eggs in the compartment, the filtered water flowing through it keeps them tumbling gently. This helps keep the eggs fungus free without the addition of any chemicals. The eggs hatch in the compartment, which can be opened to allow the newly hatched fry to swim free. You can buy a tumbler from the good folks at Wet Thumb Aquatics. The one they sell costs about 20 bucks, with shipping.

I have hatched out several species of bows (and many other fish) in a tumbler, but I usually prefer just hatching them from their mops in a tank containing fresh tap water and a few drops of methylene blue. It has not seemed worth the trouble to set the tumbler up and pick the eggs out of the mop. The hatch percentage sometimes is not great straight from the mop, but I usually get mops that are chock full of eggs, so some losses are not a problem.

Recently, I have been in a situation in which I suddenly found that the tumbler-hatching method was far more desirable than the mop method. I hope that by sharing my experience with you, you may find yourself benefiting from tumbler hatching in similar situations in the future.

The fish spawning were one very young and quite small *M. praecox* pair. Even though they spawned continuously, they produced only about 10 eggs a week. After the first week, I put the first mop into a 2-gallon tank with tap water and methylene blue and a heater and sponge filter. Eight fry hatched out. But now I had a second mop and no spare tank to put it in. Even if I had had a spare, I would rather have had the second mopful of eggs hatch out in the tank with the first fry in it: Rainbow fry are so small that eight of them were lost in the 2-gallon tank and they were very hard to feed efficiently (I was giving them eel worms and fine dry food).

But how could I hatch out the new eggs with my usual mixture of tap water and methylene blue if I put the mop in with the young fry. I had already begun diluting the methylene blue out of the tank with water changes and, of course, was not about to put large amounts of tap water in the tank. So, I just put the mop in the tank with the fry and prayed. Several days (without new fry) later, I pulled the mop out and looked it over. I quickly found about 10 fungused eggs.

When I pondered what to do, it occurred to me that placing a tumbler in the tank and the new eggs in the tumbler might be just the ticket to solve the problem. I had already found out from Cary Hostrawser of the Rainbowfish Study Group (I got my pair from him) that adult *M. praecox* do not bother their newborn young, so I knew that it would be safe to have fry of significantly varying sizes in the same tank.

In a hurry to try this method, I pulled the mop that was in with the spawning pair right away and found 6 eggs in it. I carefully removed them and dropped them into the now-waiting tumbler. As I write this, four of the eggs have hatched and the fry seem fine. The other two eggs are clearly visible in the tumbler, and with the aid of a magnifying glass, I can predict that they will be hatching into healthy youngsters in a day or two.

So, there you have it. In any circumstance where you want to hatch bow eggs at a very high percentage rate, without the aid of chemicals or fresh tap water, try using the egg tumbler. It works for me.

Kent Webster (310) 831-5695
6 Coach Road
Rancho Palos Verdes, CA 90275

Available

<i>M. affinis</i> , F-1 North New Guinea Blue Caught 10/94 in Madang P.N.G.	juveniles available	\$20/mop
<i>M. affinis</i> , F-1 Orange blue and yellow stripe Caught 10/94 from Emas Lakes near Karawari river basin, P.N.G.	juveniles available	\$20/mop
<i>G. incisus</i>		\$20/mop
<i>M. boesemani</i>		\$20/mop
<i>M. herbertaxelrodi</i>		\$20/mop
<i>M. lacustris</i>		\$20/mop
<i>M. maccullichi</i>		\$20/mop
<i>M. papuae</i>		\$20/mop
<i>M. preacox</i>		\$20/mop
<i>M. spl. fluviatilis</i>		\$20/mop
<i>M. trifasciata</i> , Goyder River		\$20/mop
<i>P. gertrudae</i>		\$20/mop

For full list of fish available (including other species) please send SASE or call.

VINEGAR EELS: SEPARATING MYTHS FROM FACTS

Or, how the hell do you get the little suckers out of their culture?

by Peter J. Unmack

Over the years I have heard many sorry tails from people who tried to culture vinegar eels. Or more to the point, how they tried in vain to collect them from the culture. Other people thought they were just too much trouble. Vinegar eels have many advantages to other foods for fry. They are very easily cultured, collected, and you cannot overfeed your fish on them unlike APR and other dead foods, because the vinegar eels will live quite happily in your aquarium until your fry eats them.

The Critter. What is a vinegar eel?

Vinegar eels belong to the phyla *Platyhelminths*, more commonly known as flatworms. Many aquarists have come across flatworms at one time or another when they have allowed too much crud to build up in their tanks. One ends up with thousands of little white worms crawling all over the glass in their fish tank. You can rest assured your vinegar eels will not cause this problem.

What to feed vinegar eels to.

Vinegar eels typically reach about 3mm or 1/8in. This makes them an ideal size for feeding to fry that are a little bit too small for baby brine shrimp. The other important consideration is that vinegar eels tend to congregate near the surface of the water. Thus, they are of little benefit to fry which live on the bottom. I have successfully used vinegar eels to as a first food to raise rainbows, blue eyes, hardyheads, and peacock gudgeons. No doubt they work well on other fry, these are just the ones that I have tried.

How to culture them.

First of all get two broad necked jars. The reason for having two is that if one crashes and dies you still have another to fall back on. They can be plastic or glass, as long as they are transparent (so you can see the little critters). I usually get something like a 1/2 gallon plastic coke bottle and cut the top of it. The size of the container doesn't really matter, you can culture them in anything, however, you can harvest more from a larger culture. The next required item is the culture medium. This consists of cider vinegar and water. Most recipes recommend a 50/50 mix. I have used everything between 20% vinegar or 80% vinegar, I don't believe there is a significant difference between them. Once you have all this, you can add the vinegar eels your good buddy generously donated

to you so that they may set forth and multiply in your culture. Many people recommend the addition of apple or sugar. I have never personally used apple, thus I cannot comment on whether or not it is beneficial. However, I have found the addition of sugar to be useful if I needed to get a culture up and running quickly. You will get higher densities of vinegar eels in shorter time. However, I have found that the culture will not last for as long, and you tend to get a thicker scum on the surface than normal (normal being the addition of nothing). For regular usage I don't recommend adding anything to the culture. The temperature doesn't seem to matter. I have had them reproducing at temperatures between about 60-85°F, no doubt they will reproduce in wider extremes. It is not necessary to cover the culture. However, this will reduce evaporation and keep dust and other items like bugs and air stones from falling into the culture. The culture should be viable for a minimum of three months or so, even with the addition of sugar. They have been known to go for several years. I would recommend cycling the cultures, that is, space out starting each culture by a month or two. That way you will never be caught short of worms when you least expect it. Never rely on one culture. It will let you down, just ask Murphy. When a culture dies it usually turns black with no cloudiness.

How to tell if there are any eels present.

First of all you require good eyesight. If you are visually challenged then the use of a magnifying glass may be helpful. The best way to see them is to hold the culture up in sunlight (it's far easier to see them in sunlight than artificial light). At a glance, the culture itself will look cloudy. Try to focus onto the individual specs within the cloud and you should see millions of tiny squirming worms. An alternative to this is to suck some of the culture up in a glass eye dropper and view them as above. Once you recognize what you are looking for they become very easy to spot at a glance.

The million dollar question. How to get them out of the culture.

Extracting vinegar eels from their culture is exceptionally simple. Never, ever, pour your culture through a coffee filter or anything else, it is just too labor intensive, messy, and not very effective. All you need to do is hang something porous in the culture. In Australia, we usually use a plastic coffee filter. Unfortunately, I have not seen these available in any supermarkets in the western USA. Your imagination as to what to use is the only limit. Just keep trying different things until you find one that works best for you. In the absence of a plastic coffee filter I would use the abrasive (usually) green side of a sponge used for cleaning the dishes (obviously buy a new one and rinse it well first). The reason why I would use an abrasive sponge rather than a regular sponge is that the culture medium will drain out of it fairly thoroughly without having to squeeze it. You shouldn't have to get your fingers wet. I would poke an ice-cream stick through one end of the sponge so that you can hang it in the

culture. You only need about 1/2 an inch of sponge hanging in the culture as most of the vinegar eels are at the surface. To feed your fish just lift the sponge out and allow it to drain. Vigorously swash the sponge in some water and you have your eels ready to feed to your fry, just pour it into their aquarium. Hang the sponge back in the culture and you are ready for next time. One thing to be wary of is that you will transfer very small amounts of vinegar to your aquarium which will drop the pH. To counter this I add some sodium bicarbonate to the water I swash the sponge in containing the vinegar eels once every few days. As I pour this into the various fry tanks it buffers the tank from acidic conditions. You do not need to be too concerned about making your tank too alkaline. Most Aussie fish can tolerate a high pH, (say 8) and sodium bicarbonate cannot raise the pH up over 8.2 no matter what concentration you put in the aquarium. Trial and error over a couple of weeks will soon teach you how much to add without making the pH too high. I have tended to over stress this problem just so that people should be aware, it is really not that bigger deal. Most people I know don't worry about it all and they have no problems.

Conclusion.

The greatest advantage to my mind with vinegar eels over APR is that it is a live food. You cannot overfeed your fry. They will survive for long periods of time in the aquarium and they can tolerate high pH. I usually add copious quantities of vinegar eels in with the fry. When I can hardly see any left then I add some more. That way the fry always have food available to them to eat. Irrespective of which foods you feed it is important to remember that a diversity of foods is always best. Happy eeling!

Dan Helwig (717) 854-1043
26 North Albemarle Street
York, PA 17403

Available

M. preacox

\$12.50/juvenile

Express mail shipping only.

Wanted

M. spl. australis

M. maccullochi, red fin var.

RSG STORE

- Count The Days With A Rainbowfish Calendar

This is a small, free standing calendar by Dr. Allen. Calendar size is 7"x 5 " with the picture just a tad smaller than 3"x 5". It will fit nicely on any desk.

You won't find any cichlids hanging out on this calendar, only bonafide uncrossed rainbowfish straight from the wilds of Australia or New Guinea. What fish are included? *C. bleheri*, *C. fasciata* (the hypnotic one - not the one in the hobby), *G. incisus*, *M. herbertaxelrodi*, *M. species* (Kantobo, PNG), *M. species* (Lake Kamaka, Irian Jaya), *M. boesemani*, *M. eachamensis* (Dirrin Creek), *M. lacustris*, *M. trifasciata* (Coen River), *M. vanheurni*, & *M. irianjaya*. The price of this calendar is only \$5 US plus shipping.

Shipping for calendars:

U.S.:	1 @ \$1.25	2 @ \$2.00	3-8 @ \$3.00	9-12 @ \$4.00
Canada:	1 @ \$1.70	2 @ \$2.10	3 @ \$2.60	4 @ \$3.00 5 @ \$3.50
Airmail:	1 @ \$3.40			

- Poster: Blue-eyes and Australian Rainbowfishes

The last poster from '89 is now a memory. Get yours while they are available. Unsigned copies are \$12 and signed copies are \$15.

Shipping & Mailing Tube for posters:

U.S.:	1 @ \$2.70	2 @ \$2.95	3 @ \$3.20	4 @ \$3.65	5-18 @ \$4.00
Canada:	1 @ \$2.65	2 @ \$2.80	3 @ \$3.20	4 @ \$3.40	5-7 @ \$4.30
	(surface mail)				8-12 @ \$5.10

- T-shirts

This is a Karen Randall design depicting *P. furcata* and *M. praecox* (the neon rainbow). "Rainbowfish Study Group" proudly arches in rainbow colors over the top of artwork while "Living Color" balances below. A quality shirt was used in the process - Fruit of the Loom "Best", a 50/50 cotton/polyester blend. There really isn't any shrinkage. As with all shirts with a silkscreen design it should be washed in cold water and drip-dried.

L & XL: \$12. XXL: \$13.

Shipping & Mailer for T-shirts:

U.S.:	1 @ \$3.00	2-3 @ \$3.60	4-5 @ \$4.60
Canada:	1 @ \$3.00	2 @ \$3.30	3 @ \$4.50

Combination: 1 Poster, 1 Calendar & 1 T-shirt

U.S. - The combined weight will be in the under 2 lb \$3.00 priority mail rate.
You won't have to pay for a mailing tube or a padded mailer. I'll scrounge for an appropriate box.

Shipping & Mailer for Combinations:

U.S.:	1 @ \$3.00	2 @ \$4.00	3 @ \$5.00
Canada:	1 @ \$4.07	2 @ \$5.67	

Figuring this out was a little easier than some of the income tax forms, but not by much!

- Best of RSG

This is a compilation of the best articles originally published in the Rainbow Times - encompassing (approximately) the first 7 years of publication.

RSG book with shipping

U.S.	book rate	\$13.50
Canada	surface	\$14.00
	air	\$15.00
Overseas	surface	\$15.00
	air	\$18.00

Send requests for items to:

Gary Lange
2590 Cheshire
Florissant, MO 63033

Payable in U.S. funds only, checks payable to the Rainbowfish Study Group.

If you would like to order larger quantities of any item(s), we'll check UPS rates. If you have any questions you can call me, Gary Lange, in the evenings (6-10 CST & most weekends until 10 pm CST) at (314) 837-6181 or email at GWLANG@CCMAIL.MONSANTO.COM

The Dumb Blondes Of Sahul

by Andrew Boyd

The ancient continent of Sahul covered what is now Australia and New Guinea. The area hosts many of the most interesting fish on the face of the earth - the grey-green sluggish ancient Lungfish (*Ceratodus*), the lovable hopping clown Desert Goby (*Chlamydogobius* sp.), and the mysterious bigmouth forehead-spawner (Nurseryfish *Kurtus gulliveri*).

Most people know the fishes of Sahul by their gregarious ambassadors, the Rainbowfish (Genus *Melanotaenia* and relatives). These, in my humble opinion, lack the behavioural quirks of the others, but they make up for it with their sheer colour. They may be a bit short on brains, swimming endlessly backwards and forwards like Tetras, but like their human counterpart - the Dumb Blonde of urban myth - who cares when they look like they do?

They are aptly called the Rainbows: Red Orange Yellow Green Blue Indigo and Violet are found aplenty among them. For the red one need not go past a good Salmon Red Rainbowfish, *Glossolepis incisus*, or *Melanotaenia splendida rubrostriata* from New Guinea, as well as in the ear-spots of many Australian 'bows, or over the whole body in great stripes of the *Melanotaenia trifasciata* (Goyder River). I would not expect to see a more orange fish than *Melanotaenia parkinsoni* (other than some strains of Goldfish! But even they don't seem to have the fluorescent brilliance of the parki). The Yellow is divided amongst two closely related species; *Melanotaenia herbertaxelrodi* and *M. goldei*. Green is found in many different shades. from the emerald green of the Lake Wannam Rainbowfish, *Glossolepis wannamensis* to the more subtle colouration of *Melanotaenia splendida splendida*. Blues are legion, from *Melanotaenia lacustris* and the bluest of all, *Melanotaenia praecox* from New Guinea to the *Melanotaenia trifasciata* (Cape Arnhem) and our own local *Melanotaenia fluviatilis*. Indigo and Violet are there as well.

But unlike their human counterparts (although some may disagree) the Rainbows need to be in the right mood to look good. Other authors from time immemorial have harped on the need for the right lights, well planted tank, the odd beam of sunlight etc. enough to fill whole books. Suffice to say that these learned folk are right, they do need the right conditions to really dazzle. But when the male 'bow flashes madly displaying first thing in the morning in the light of the sun - BANG! - for just one half second he is the most beautiful fish on the face of the earth, and a joy to own.

Some species seem to keep their every-day colour a bit better than others. Parkinson's Rainbow and the Lake Tebera Rainbow being two good examples.

So there you have them, the Dumb Blondes of Sahul. While I love to watch the mock territorial antics of the Desert Goby, or the sheer magnificence of the Saratoga, I'm sure you will agree that it is good to take time out to watch a Dumb Blonde every now and then!

Ed. note: This article was reprinted from Sept 1995 issue of ANGFA-ACT. (ACT = Australian Capital Territory)

Roy Hunter (970) 876-2553
P.O. Box 380
New Castle, CO 81647

Available

<i>C. bleheri</i>	juveniles available
<i>M. affinis pagwi</i>	juveniles available
<i>M. duboulayi</i> , Kin Kin Creek	juveniles available
<i>M. duboulayi</i> , Ocean Lake	juveniles available
<i>M. nigrans</i> , Scott's Creek	juveniles available
<i>M. trifasciata</i> , Giddy River (dk. blue body, red fins)	juveniles available
<i>M. trifasciata</i> , Goyder River	juveniles available
<i>M. trifasciata</i> , Running Creek	juveniles available

Other juveniles and eggs are available from time to time. Please call for availability. Shipping is \$30 for fish. Availability depends on the cooperation of the fish. Fish by express mail or priority mail are at your own risk.

Carl and Sherry Taylor (615) 268-4010
171 Campbell Lane
Cookeville, TN 38501

Available

<i>M. batanta</i>	\$30/mop
<i>M. boesemani</i>	\$18/mop
<i>M. sp.</i> "Moorhead"	\$18/mop
<i>M. sp.</i> "Tapini"	\$30/mop

Note: Tapini and Moorhead are localities for possible new species - not specific names. Shipping: \$5-8 depending on desired method. Styrofoam shipping box must be returned. Eggs will be shipped in order payment is received and as fish cooperate.

A Most Significant *Signifer*: *Pseudomugil Signifer* from Harvey's Creek

by Kevin Hosmer

Pseudomugil signifer is a relatively small member of the rainbowfish family. What it lacks in stature it more than atones for with other desirable qualities. The Harvey's Creek variety of signifer is one of the larger members of the genus *Pseudomugil* - males attaining a total length of 1.5 to 2 inches. The general body coloration for both sexes is silverish. The anal and dorsal fins of the males are bright yellow, trimmed in black and quite elongated. The finnage of the females is very, well, insignificant - as it is with all female *signifers*.

This fish is of special interest to me because I was once fortunate to observe the fish in their natural environment. Harvey's Creek flows eastward into the Pacific Ocean approximately 50 miles south of Cairns, Australia. It is indeed a small waterway that is easily accessed from Rte. 1 - the main highway linking the coastal cities of Cairns and Townsville. This region is well south of any saltwater crocodiles. The size and location of Harvey's Creek make it suitable for investigation wearing shorts and watershoes.

The first impression of the habitat is that it is remarkably clean. The second impression, once standing in it, is that it is very cold. The water was a brisk 68°F. The pH was measured at 5.5 via bromthymol blue* and the hardness was only 10 ppm total dissolved solids via calibrated meter. (< 50 ppm, Tetra test kit*)

The resident *Pseudomugil* share this habitat with a variety of other fish: *Tandanus* catfish, *Melanotaenia splendida*, Jungle perch, a type of gudgeon, fly-specked hardyheads and even introduced blue platys. The bright fins of the male signifers always made them easy to identify. I distinctly recall noting that I never saw *signifers* in still, shallow water among the vegetation. They seemed to prefer deeper (3') water and were readily flashing their finnage among the submerged boulders of the stream bed.

Before discussing my experiences maintaining Harvey's Creek *signifers* I would like to describe my water situation. It is my understanding that I share a problem common to many hobbyists that obtain their household water from a well. As it enters our home, the water is extremely hard and requires softening. Using this water, the pH skyrockets with aeration from 7.0 to 8.5 - a result of residual carbonates based upon what I have read. I like to have plants in my aquariums so I therefore lower the pH to approximately 7.0 with acid prior to adding to the tanks. My water should be very soft at this point.

I currently maintain a colony of perhaps thirty *signifers* in a 110 gallon aquarium equipped with undergravel filtration and kept year-round at 80°F+. This aquarium is aquascaped with various plants and many rocks. Tankmates include numerous larger *Glossolepis incisus* and otocinclus catfish. The fish are not fussy eaters, readily eating various flake or frozen foods. I might mention they have voracious appetites and have a tendency to overindulge when frozen foods are being served.

P. signifer is an extremely active fish and males can be described as aggressive. Dominant males establish territories which they vigorously defend against all intruders - including the much larger *incisus*! The display is impressive as they defend these territories - the elongated dorsal and anal fins are held erect and physical contact does occur. The *signifers* frequent the mid-water level of the aquarium except for the males defending territories in the bottom. Like many rainbowfish species, *signifers* panic readily and quickly learn that a net is to be avoided. I suggest netting them from large community aquariums after the lights have been off for awhile - with the aid of a flashlight.

Only once have I set up an aquarium with the intention of spawning these fish in quantity. In hindsight, I should not have been surprised with the results. Approximately twelve fish were housed in a 40 gallon "long" aquarium with water and temperature as previously described. Numerous mops were available - some hanging vertically, some on the bottom. I checked the mops every few days and removed the very few eggs I found. I was disappointed. I then began to find fry regularly every morning when I turned on the light. It became a race to catch the fry before the predatory adults caught them. The adults obviously shunned the mops and spawned in the gravel. Even today I keep a mop on the bottom of the 110 gallon aquarium. It is a rare occurrence to find a *signifer* egg although I find *incisus* eggs regularly.

I doubt that *signifer* females release large numbers of eggs at one spawning because the eggs are unusually large: approximately 1-2 mm in diameter. The eggs take much longer to hatch - perhaps twice as long as larger rainbowfish species at equivalent temperatures. Clean water conditions must be maintained for a longer period of time to avoid fungus when eggs have been removed to small containers for "controlled" hatching. Fry are large enough to immediately eat newly hatched brine shrimp and they grow very rapidly. A cannibalistic situation arises within days if newly hatched fry are continuously added to the rearing tank.

Signifers do not appear to be a long-lived fish, their lifespan being approximately little more than one year. There is an obvious physical deterioration preceding death. This seems unusually short to me and I attribute the premature aging to the elevated temperature of my fishroom. This I cannot

easily remedy. Other rainbowfish species that I maintain do not seem to exhibit premature aging.

Pseudomugil signifer is perhaps a bit more difficult than most rainbowfish species to rear and maintain. The rewards are worth the effort.

* as measured by Gary Lange, October, 1993.

FISH AND EGG LISTING

Send fish and egg listings to: Kevin Hosmer
RR3 Box 4353
Milton, VT 05468

Your listing will run for two issues unless you specify otherwise. The standard for listing a mop is at least 24 eggs in the mop. Most rainbowfish usually produce more than that. If not, price should be specified per dozen eggs.

Chris Drew (519) 641-1082			Marc Beattie (519) 641-7237		
90 Inverary Road			231 Berkshire Drive		
London, Ontario CANADA N6G 3L6			London, Ontario CANADA		
Available			N6J 3R5		
<i>C. bleheri</i>			\$15/mop		
<i>G. ramuensis</i>			\$15/mop		
<i>G. wanamensis</i>			\$15/mop		
<i>I. weneri</i>			\$15/mop		
<i>M. herbertaxelrodi</i>			\$15/mop		
<i>M. lacustris</i>			\$15/mop		
<i>M. nigrans</i> , Scotts Creek			\$15/mop		
<i>M. papuae</i>			\$15/mop		
<i>M. parkinsoni</i>			\$15/mop		
<i>M. preacox</i>			\$40/mop		
<i>M. pygmaea</i>			\$20/mop		
<i>M. trifasciata</i> , Running Creek			\$15/mop		
<i>M. trifasciata</i> , Skull Creek			\$20/mop		
<i>M. trifasciata</i> , Wenlock River			\$15/mop		
<i>M. trifasciata</i> , Wonga Creek			\$15/mop		
<i>P. furcatus</i>			\$12/doz eggs		
<i>P. gertrudae</i> , Giddy River		\$8/pair	\$12/doz eggs		
<i>P. signifer</i> , Bool Creek		\$8/pair	\$12/doz eggs		
<i>P. signifer</i> , Harvey's Creek		\$8/pair	\$12/doz eggs		