

December 1967

# tropical fish hobbyist

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**APISTOGRAMMA BORELLI**

# tropical fish hobbyist

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Dr. Harhart R. Avalrod

Tropical Fish Hobbyist



The male *Apistogramma borelli* is even attractive when not in his spawning colors.  
Photo by H. J. Richter.

## *Apistogramma borelli*, an Often-Misidentified Fish

BY HANS JOACHIM RICHTER  
LEIPZIG, GERMANY

In a great deal of fish literature we find a fish which is incorrectly called *Apistogramma cacatuoides*. I received this same species some time ago as *Apistogramma borelli* and was somewhat surprised at this identification, having known this fish from the pictures as *Apistogramma cacatuoides*. My curiosity was aroused, and I delved into the available literature. In *DATZ*, 1962, on page 70, I ran into an article by Hermann Meinken. Here the identification for this fish was given as *A. borelli*. Arend van den Nieuwenhuizen also captions a picture of this fish as *A. borelli*. After getting the real *A. cacatuoides*, I can only say that its shape and colors are considerably different from those of *A. borelli*. *A. borelli* has a much more compressed shape than *A. cacatuoides*.

*A. borelli* attains a length up to 2½ inches and is native to the central and

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southern regions of South America. This dwarf cichlid has a dorsal fin which, like that of *A. trifasciatum*, reminds one of the colorful headdress of an American Indian. The third and fourth rays are greatly elongated and gleam in a very pretty red. The body colors can vary greatly: once the body seems an almost entirely grayish yellow with a few dirty gray patches . . . then again it is yellowish with a dark horizontal stripe running from the eye to the caudal base . . . then, especially during courtship, the entire body is dark gray in color.

The females are considerably smaller than the males and alongside them look quite modest. Their coloration varies from a dirty gray to almost lemon yellow. The yellow color is confined to females that have spawned and are guarding eggs or young.

A look at the males soon gives the impression that they place a great value on frightening their tankmates. Not just their appearance, but also their behavior is calculated to frighten, especially when they want to spawn. For this reason all of the other fishes in my 4-foot community tank prefer to give them a wide berth. In this tank, the pair of *A. borelli* are the undisputed rulers. No other fish dares approach the flowerpot which they have chosen

Like the male, the female *A. borelli* varies considerably in coloration. However, she is usually considerably drabber than is her mate. Photo by H. J. Richter.



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for spawning, because every intruder is driven away vigorously by both the male and the female. So fierce is this attack that refuge is often taken by the victim of the moment in the farthest corner of the tank. Thus, this species of *Apistogramma* can be considered as fairly aggressive.

It is a pleasure in any case to keep a pair of these fish alone in a tank of about 10 gallons capacity. The bottom should consist of a fairly fine-grained gravel, and a number of retreats should be provided in the form of flowerpots lying on their sides, coconut shells, or rock caves. These retreats give the female good shelter from the all-too-amorous advances of the male before spawning, and, later, they shield the male from the fierce protectiveness shown by the female when she is guarding the eggs and young.

The tank should also be well planted. For this purpose I use water wisteria, *Symona triflorum*, or the black-rooted water fern, *Microsorium pteropus*. Water characteristics for this fish's successful care and breeding are not very important. I keep mine at 12 DH and find it to be advantageous not to let the water hardness go much higher. The pH value should lie between 6.0 and 6.5. Water temperatures may vary between 70 and 77° F. My *A. borelli* spawn at 70° F., and this low temperature seems to have only a slight effect on the incubation time of the eggs.

A careful observer will be able to tell a few days beforehand that a spawning is going to take place. The female carefully cleans the spot she has selected to receive the eggs. Nearby there is generally a hole which has been excavated in the gravel. This hole may not be dug until the hatching of the fry is imminent.

Shortly before spawning the female shows a small nipple-like projection, her ovipositor. I have observed that not more than 2 hours after this becomes visible, spawning takes place. Naturally the male must be present at this time. He generally remains close by and is coaxed to the selected spawning site by the female. This she accomplishes by swimming alongside of him with her body slightly tilted and beating him lightly with her tail. This causes the edges of her tail to caress the belly region of the male and excites his desire to spawn. Finally, he cannot resist following her to the selected spot. Here she slides her belly over the spot, seeming to try it out. Then the first eggs put in an appearance. Usually the upper part of a cave or flowerpot is preferred, making it necessary for the female to swim upside down.

The eggs are red and have an oval shape. After 4 to 6 eggs have been deposited, the female moves aside and the male glides over them and sprays his sperm. These actions are repeated until 50 to 150 eggs have been deposited. Now the male is suddenly no longer tolerated and is driven away

**Correction**—The royal gramma picture that appeared on page 93 of our September issue was credited incorrectly. The photographer was Craig Barker, not Karl Knoack.

vigorously. Usually, he finds a safe retreat and makes use of it. I have seen pairs, however, in which the female tolerated the male at this time, but at a slight distance. At the other extreme, I have also had pairs where the female kept attacking the male until she had almost killed him. For this reason, I prefer to remove the male when spawning is over.

Naturally, one can also resort to artificial rearing, where the eggs, together with the flowerpot, coconut shell, or rock on which they were laid, are transferred to a hatching tank where a stream of bubbles passing nearby keeps fresh water passing over the eggs. Personally, I avoid this method because with it the losses are too great, and the fry do not grow nearly as fast as those which were raised by the female. Depending on the water temperature, the fry hatch in 65 to 75 hours. They are then transferred by the female to a nearby depression. After all the youngsters have hatched,



When the *A. borelli* male is in spawning color, he's as beautiful as almost any tropical. Photo by Karl Knoack.

a new hole is usually dug, and they are transferred into this. The female seems never to tire of digging new holes and shifting the youngsters into them. Why this is done so often, I have never found out. My guess is that



This is the author's spawning tank. Note particularly the open-topped coconut shell. Photo by M. J. Richter.

she wants to keep the youngsters clean, because it is well known that dirt accumulates in these holes with time.

After about 5 days the fry become freeswimming and begin to hunt for food. It has been proven best to give them rotifers for the first 2 days and then brine shrimp. I feed cyclops nauplii besides, so that the fry will not become too accustomed to brine shrimp. I once found it difficult to convert youngsters that had been fed on brine shrimp for a week to cyclops nauplii.

In 3 months, the youngsters begin to mature sexually. They should not be put out too soon to spawn, however. When they have been kept together for a long time, the males begin to indulge in vigorous fights. Each tries to get a small territory for himself and then to enlarge it. The weaker males are constantly being driven and become runtied because they are always chased, including during feeding time.

In spite of a few disadvantages I believe that much fun can be had with these little indians. Try them some time!

**Note by the translator:** My first encounter with these little charmers was well over a decade ago when they were called "*Apistogramma U<sub>n</sub>*". The author here describes the females as "modest", but when in spawning and post-spawning colors, they achieve a yellow color the males can't touch. W.V.

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Left—Hardly a fish can match the blue gularis in beauty and grace. This fish is in perfect condition. Above—This fish has particularly long tail filaments. Photos by Dr. Herbert R. Axelrod.

### The Beautiful Blue Gularis

BY DOROTHY O'QUINN

"It takes ones to make hundreds," the little girl said as we pushed our way through a blackberry thicket, tediously filling our buckets with luscious ripe berries. It was a lesson in patience that has stayed with me through many years, but never so vividly has it come to mind as when I started working with the beautiful blue gularis, *Aphyotetodon coeruleum*. Although I am still a long way from the "hundreds," at least I am getting the "ones" and that is more than I could have said at this time last year.

I first saw this gorgeous fish on the mantle in my dealer's home several years ago when I was "young in the hobby." A single male, the only occupant of a narrow tank with a slanting front-glass and good front lighting, posed with his colorful tail spread wide, fins high, body slightly curved, and thought I had never seen anything so lovely. I immediately wanted to

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There may not be any eggs on the first day, or perhaps only a few, so leave the breeders in the trap 2 days and *do not feed*. If the fish have not spawned by the second day, put them back in tanks #1 and #2, feed well and wait a few days before trying again. If they then spawn, move both breeders back into tank #1 and feed.

The rather large clear eggs can be lifted from the bare bottom of the tank with a baster (a kitchen gadget that can be bought in almost any department store). Put the eggs in a small plastic container such as a sandwich box with about 1/2 inch of water from the breeding tank, cover with a tight lid, and mark the date on the lid. Store the container in a cool place in subdued light. The water in the breeding tank may be strained and put back into the cleaned breeding tank, ready for the next spawning.

The eggs should be examined every day for the first few days, and any fungused eggs should be removed with an eye dropper. Periodic checking must be continued. In about 3 weeks, there should be a definite change in the appearance of the eggs: they should be darker.

In 4 weeks the embryos will be developing nicely in the eggs and will require close watching. At this time I often lower them gently onto the

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white sand in tank #3, near the glass where they can easily be watched through a magnifying glass. This is not a necessary step, but an interesting one, for the eggs and embryos will begin to tumble around a bit and change their positions.

At the end of the fifth week (5 weeks seems to be the hatching time in my experience, but it may vary a little), lift the eggs with the baster again and put them back into the little plastic container which has been cleaned. The container should have no more than an inch of water in it. Let the container and eggs float in tank #3. If the eggs have been left in the storage container, simply change their water and float the container. Finally, add a pinch of dry powdered milk. This is an important step and should not be ignored. The powdered milk sets up the right conditions to soften the eggs' shells and allow easy hatching.

The eggs should hatch in 10 to 12 hours. If any fail to hatch, put them in another container with "fresh" water and another pinch of powdered milk. Keep the babies in the shallow floating container for a day and feed newly hatched brine shrimp. Then turn them loose in tank #3. Once the fry have hatched, they are extremely hardy and grow rapidly.

These fish may be spawned as often as you wish to go through the process, but the more often you do it, the more tanks you will have to set aside for them, for even a week's difference in age will not permit the young fish to be reared in the same tank. However, it is interesting to put some in with other fishes of the same size and watch how they outgrow the other fishes. For instance, when they reach baby guppy size, which will be in about a week or less, put some baby gularis with some baby guppies and watch their relative progress. It is amazing.

I have had my failures, and since we all learn from failures, or mistakes, I would like to relate a few of mine.

One pair of gularis produced a much larger quantity of eggs than any other pair I have worked with, but there was never a fertile egg from this pair. Therefore, it must be assumed that this pair was not compatible for some reason or other. If, however, you get even one or two fertile eggs from a spawning, especially an early spawning, this should be encouraging.

My first box of good eggs was set aside and watched diligently. Although I could see that they were developing, I waited 2 1/2 months for them to hatch in the container in which they had been stored. Twice I added powdered milk to help them, but they didn't hatch. Then three of the fry managed to get their tails out and one of these finally freed itself, but the other two died with their heads still in the tough little shells, and the rest of the eggs just shriveled up. This is the reason for having a definite time for hatching and helping it along. By the time I added the powdered milk, it was too late.

Recently I was called out of town because of illness in the family. I had

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14 eggs on the sand in the observation tank that were within days of being ready to hatch. When I returned, eleven of the eggs had hatched, but only one had survived and it was already the size of a newborn guppy. I lifted the three remaining eggs into a plastic container, added the "fresh" water and powdered milk and the three eggs hatched and survived. This is the reason for hatching in shallow water.

There were 9 fertile eggs in one box and I wanted to experiment a little further, so at the end of the five weeks, I moved six eggs to a clean container with "fresh" water and left the other three in the same water they'd been stored in. I added a pinch of powdered milk to each and left both containers floating in an empty tank over night. The next morning the six were hatched and the three were not. I immediately put the three in "fresh" water, added another pinch of powdered milk and they were hatched by that night. This is the reason for changing to "fresh" water.

There is a wonderful feeling of achievement when you finally succeed with this difficult fish. It is a real thrill to watch the male develop. He will be about half grown before he has any color at all, and can easily be mistaken for a female. But one day you will notice that the caudal fin, which up till now has been rounded, is beginning to get a point in the middle and there is a slight yellowing on the bottom half. Then a darker edge begins to show on the bottom of the caudal and anal fins, the yellow half of the caudal fin deepens in color, a bluish cast comes over the body with the characteristic reddish markings—and behold! **A BEAUTIFUL BLUE GULARIS!**

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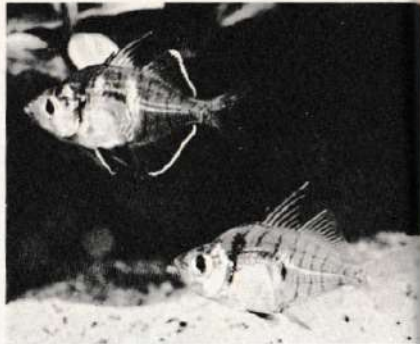
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1. A *Chanda ranga* pair that has been set out in a spawning tank. The male is the top fish. Photo by Rudolf Zukal.



3. The female dodges this way and that as she attempts to escape the pursuing male. Photo by Rudolf Zukal.

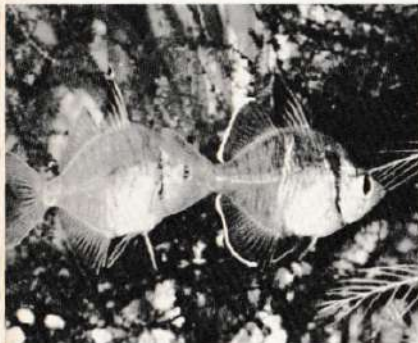


**A Photographic Record of the Spawning**

BY RUDOLF ZUKAL

**of the Indian Glassfish, *Chanda ranga***

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2. The male courts with his fins spread. His first dorsal has taken on a velvety black color. Photo by Rudolf Zukal.



4. The male finally catches her and grabs her in the belly with his mouth. Photo by Rudolf Zukal.

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5. The male changes his tactics. He courts his mate by posing and fluttering before her. Photo by Rudolf Zukal.

Many fanciers admire the Indian glassfish. The literature says that this is not a fish intended for the beginner, but I have to take exception to this statement: my experience is that keeping the Indian glassfish is not at all difficult. In order to make the species comfortable, keep it in a well planted and well lighted tank of medium size with water at a temperature of 80° F. Their water should be aged, clear tapwater containing some salt (3 to 6 teaspoonfuls per every 4 gallons). The Indian glassfish may safely be kept with other small species. They demand high-quality foods, with as much live food as possible.

The older generation of aquarists knows this fish by the synonyms *Chanda lala*, *Ambassis lala*, and *Ambassis ranga*. It is said to grow to 2½ inches in length. Personally, I have never seen a glassfish that big. The first

*Continued on Page 37*

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Continued from Page 27

importation of this fish into Europe was in 1905. The fish continued to be brought in from southern India, Burma, and Thailand. Hobbyists of the time wanted it because of its gorgeous colors, especially those of the male. In those days there were few other beautiful species to compete with the glassfish for popularity.

The adult male shows a golden color. Its swim bladder runs in a straight line along its body, and this line and the fish's dorsal and lower body fins



6. The male tries to induce the female into the plants. She hatches at the plants' edge. Photo by Rudolf Zukal.



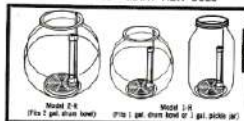
7. Finally, the male swims into the plants. The male is quick to follow. Photo by Rudolf Zukal.



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10. Tiny, crystal-clear eggs float through the water. Most of them stick to the plants. Photo by Rudolf Zukal.

plants, and aged, crystal-clear, neutral, soft water are all that is needed for successful spawning. The eggs are very small and translucent. The parents have to be removed after spawning, for they are egg eaters. After the young become free swimming, which happens on about the fourth day, they have to be fed. One has to offer them particularly large amounts of microscopic live foods, for the fish do not hunt their food out, but wait for it to come floating by their mouths before they snap it up.

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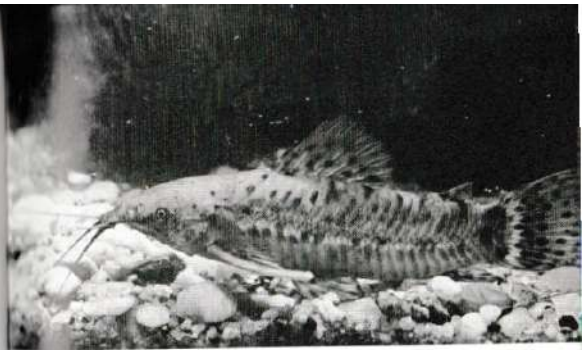
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*Hoplosternum thoracatum* has an elongated, torpedo-shaped body.  
Photo by Bernhard Teichfischer

Tired of the usual? These are fun!

## *Hoplosternum thoracatum*

BY BERNHARD TEICHFISCHER  
DRESDEN, GERMANY

Catfish are among the most interesting of all aquarium fishes. My interest was first whetted by *Corydoras paleatus* and *Corydoras schultzei*. Then I collected all the catfishes I could lay my hands on: *Corydoras aeneus*, *Corydoras elegans*, *Corydoras paleatus* (albino form), *Corydoras candimaculatus*, and, finally, *Callichthys callichthys* and *Hoplosternum thoracatum*.

The young specimens of *Hoplosternum thoracatum* which I got were about 1½ inches in length and gave me particular pleasure. These youngsters can take their place among the most attractive of all the known catfishes. The elongated body of the species is brown with black spots and little blotches. The head is greatly compressed and looks very wide from above. The little black eyes give this species a comical appearance. The two pairs of long barbels, which extend forward, are always in motion feeling the fish's surroundings. Everything edible is felt out with the barbels and passed to the mouth.

This catfish grows from 5 to 6 inches long in the aquarium and owes its name to the paired bony plates which cover its body; *Hoplosternum* means "armor-plated breast". Sexes can be distinguished easily from the time the

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### Tropical Fish Hobbyist

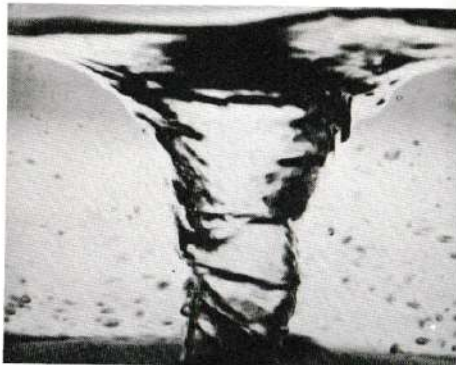


Photo by TetraMin Works, Marie W. Gorman

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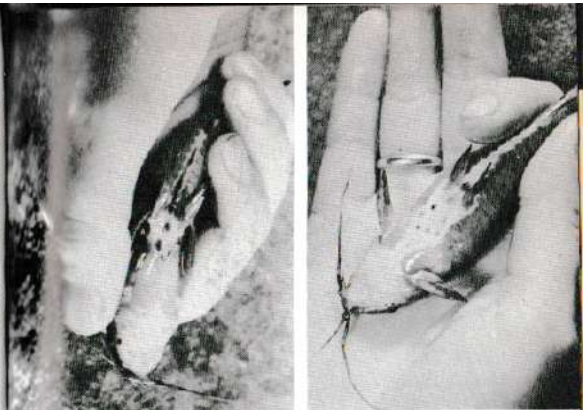
How does the lab make sure? With a tornado, no less. Our photo shows a magnetically released tornado in a vessel of water—and the wild agitation of countless flakes of fish food. Here the technicians visually and chemically can evaluate the proposed recipe.

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Males have a pair of large breast plates which meet in the middle of the abdomen (left). Females have smaller breast plates that do not meet (right). Photos by Bernhard Teichfischer.

fish are 3 inches long. This is accomplished by examining the pectoral fins. On the female these fins are rounded, while on the male they take the form of a pointed spike which has a red outer edge toward the front. One can also distinguish sex easily by taking the fish in hand and observing their bottoms: the male has armor plates that meet at the center of his belly, but the female has a considerable space between her plates at this point. This sexual difference can also be observed in *Callichthys callichthys*, which are also difficult to sex by the usual means.

Even when fully grown, *Hoplosternum thoracatum* is a very peaceful aquarium inhabitant. Other fishes, even those only an inch long, are ignored altogether. The fish's nourishment, like that of the other members of the Callichthyidae, consists mostly of worm-like foods such as tubifex worms, bloodworms, glass larvae, and white worms. The fish does not have these costly tastes alone, however. It also feeds on all sorts of dried foods, frozen foods, freeze-dried foods, boiled oatmeal, and chopped beef. When on the hunt for daphnia, the fish show an entirely unsuspected swiftness. The natural habitat of *Hoplosternum thoracatum* is calm, muddy bottomed bodies of water in the Amazon territory, the Guianas, and Trinidad.

Our thoracatums are kept in a large, not-very-high tank with a bottom of

57



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fine, well-washed sand. Preferred planting is with floating, wide-leaved plants, which are the natural nest-building materials for this fish. Water composition makes little difference; I keep and breed them at a water hardness between 12 and 13 DH and a pH value of 7.0. Best temperatures are those between 75 and 78° F. It is best to keep a good filter working actively, because these fish have been observed to dig their heads into the bottom up to their eyes when searching for tubifex worms, and this sort of thing can cause the formation of a cloud of debris.

With generous feeding, my little *Hoplosternum thoracatum* grew very fast, and in a year they were at a length of 4½ inches. At this size they were mature, and I did not want to miss the interesting spectacle of their spawning activities. For my first attempt I used a tank 24 by 16 by 8 inches, in which I put a pair. The water depth was about 6 inches. In order to minimize the danger of fouling, I placed about ½ inch of fine sand on the bottom. Of great importance in getting the fish to breed is a large leaf at the surface, because they are bubble-nest builders which require broad leaves for their nest. The bubbles are blown under the leaf. Water lily leaves or large philodendron leaves are particularly good for the purpose.

When I set my *Hoplosternum thoracatum* up to breed, it was winter. Water lily leaves and other large leaves were not available. It was up to me, therefore, to find another material which might not only be a substitute for but also be an improvement over the natural materials (leaves and wood are very apt to rot and be a menace to the entire breeding). This prompted me to try a disc of polystyrene foam. I was afraid that the fish would not accept these floating white islands in place of leaves. But later events proved that my fears were unfounded.

At first the fish were inclined to hide shyly behind the flowerpots I had placed in their tank. I contented myself with feeding them very generously. The consumption of large amounts of tubifex worms caused the female to become well rounded. Early one morning I was able to find some bubbles under the floating polystyrene. This was all, however, for the next 2 weeks. Then, one day when I returned home after work, my wife greeted me with these words: "The big catfish are spawning!"

I lost no time sitting down very quietly near the tank to watch the proceedings. The pair seemed to have lost all their timidity. Both were in constant motion. Under the polystyrene disc, there was a thick layer of bubbles. I could observe how the male swam upside down to the underside of this little island and busily explored the plastic surface with his barbels. Now and then he would come up for air beside the disc. Then he would return and reinforce the nest by blowing bubbles into it through his gills.

Continued on Page 87

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# MAIL CALL

By Mike Reed

If you have an aquarium question that you would like answered, send it to MAIL CALL, fish month the most interesting questions received and their answers will be published in this column. Letters containing questions cannot be acknowledged or answered personally. Address all questions to: MAIL CALL, T.F.H. Publications, Inc., 245 Cornelison Avenue, Jersey City, N. J. 07302.

### Fresh frozen fish

Q. Last week I was speaking to a friend, and he asked if I had tried freezing my fish over my summer vacation. He said that he froze his tropical fish and thawed them out in almost perfect condition after 2 weeks in a deep freeze. His fish are both tropical and native. I wish to ask:

1. If this has not been done before, can you explain this case?
2. If it has been done before, how long were the fish frozen and what per cent were lost?
3. Were drugs such as Evipan and Ultram used?
4. Can only certain fish be frozen and revived?

Fred Holland, Carthage, Texas

A. 1. This type of experiment has been carried out before, but it takes a highly

trained specialist, and I have my doubts that your friend was successful. However, if he would like to write in and explain

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his method, I am sure our readers would be interested. I am fairly certain that no fish could survive being frozen solid. However, if frozen into ice with a pocket of water surrounding it, a fish might well survive, for his metabolism would become very slow.

2. If I remember correctly, the fish were frozen for several months. I can not recall mention of losses.

3. Although I do not know if these drugs were used, it is very possible that they were. *Evipan* is used for rapidly induced surgical anesthesia, and *Ultrin* is a tranquilizer for anxiety states and minor neuroses.

4. The only fish that I am sure have been encased in ice and brought back to normal are cold water species. This includes goldfish and other varieties of carp indigenous to North America and Europe.

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**Golden severans**

Q. I have just acquired a breeding size pair of golden severans. I believe they were pool-raised in Florida. Could you please answer the following questions?

1. They are about 8 inches long. What size tank should I use for trying to breed them?
2. What is the best conditioning food for fish this size? How often should they be fed?
3. What is the correct pH and temperature? Should the water be soft or hard?
4. Should there be any plants or rocks in the tank?
5. What should the fry be fed? Will it be safe to leave the fry with the parents? For how long?
6. Is this fish difficult, moderately

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difficult, or fairly easy to come by? Is 100 dollars a high price to pay for such a pair of fish?

**Richard Anderson, Elmont, L.I., New York**

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A. 1. I would use at least a 50-gallon tank, but you might be successful with a 30-gallon tank.

2. Live earthworms, live fish, and frozen-dried and pelleted foods. I would feed these fish 2 or 3 times a day.

3. The best temperature for breeding is around 80° F. The water hardness is not too important. The pH should be neutral to slightly alkaline.

4. These fish will probably do a lot of digging before they spawn, so don't bother with plants. Rocks are necessary, for they provide both hiding places and suitable surfaces on which to spawn.

5. The fry will be able to take live baby brine shrimp as soon as they are free swimming. I have kept the parents with the youngsters for as long as 10 days after they became free swimming. This is

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risky though, for the adults may eat the fry.

6. This fish is not commonly seen, but it could not be described as rare. Whether they are worth 100 dollars for a proven pair is up to the buyer. If you have a good market for the fry, the pair could earn you 100 dollars in its first spawning or two.

**Convict conflict**

Q. I have been reading several books on tropical fishes, and I have run into something I hope you can explain. In one book it says that *Cichlasoma severum* are the same thing as the fish commonly known as the convict fish. Another book claims that *Cichlasoma nigrofasciatum* is the convict fish. Which is correct, if either.

**David L. Rogoza**

A. Here is a prime example for the somewhat-tedious but necessary use of scientific names. One person calls a fish one name, another calls it something else, and pretty soon there are too many common names and none of them "right". The best thing to do in such cases is to remember the scientific names.

**Weatherfish**

Q. I have recently purchased a Japanese weather loach of what I think is an unusual size. It is about 4 or 5 inches long. Is this unusual for this species of loach? Is there a sure way to sex them? Also, what conditions are necessary to spawn them?

**Jeffrey Schultz, Dickinson, Texas**

A. *Misgurnus arguillionudatus*, the Japanese weather fish, sometimes attains the size of 8 inches. The loach family is notoriously difficult to spawn, and the fact that sexes are almost impossible to distinguish is part of the reason.

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**Red-tailed black sharks**

Q. I was planning to buy several red-tailed black sharks. Then my dealer said I would have to keep each one in a separate tank. Why?

**John Virgadamo, San Diego, Calif.**

A. Red-tailed black sharks tend to be a bit scrappy among themselves, especially

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if they are males. It is highly unlikely, however, that they could hurt each other. I have kept as many as eight of these fish together and have never seen a split

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fin. To be on the safe side, be sure that all your sharks are of approximately the same size.

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Q. I have just bought a pair of red

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devil cichlids (*Cichlasoma erythraeum*), and now I have a few questions. I would appreciate it if you could answer them for me.

1. Can they grow scales back?
2. What do they like to eat?
3. Why do they dig holes in the gravel?

**Dan Kacmarek, Franklin, Wisconsin**

A. 1. Nearly all fishes can grow scales back to a certain degree.

2. They eat just about anything. Earthworms and beef heart are especially relished.


3. This could be the preliminary to spawning, but it just might be that your fish like to dig.

**Coolie loaches**

Q. I recently purchased several coolie loaches. Since then, I have tried to find

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some information on them with little success.

1. Could you please give me some information on coolies as to temperature, hardness, pH tolerance, size of tank required, food, and any other habits they have?

2. I have heard from a friend that coolie loaches like to hide. He suggested using half a coconut shell with a small opening in it. Would such an object need to be treated, and if so, how?

**William Mittak, Lyons, New York**  
 A. 1. *Acanthophephalus kuhlii*, the coolie loach, is often treated as though it needed no special conditions at all. This is far from the truth. Coolies are best kept in water ranging from 76 to 82° F. They are tolerant to a wide range of water conditions, but hardness is best kept low and the pH should not go over 7.

Although coolies are excellent scavengers, they should be fed enough living foods to keep them in good health. They enjoy tubifex immensely and will take the freeze-dried worms if they are stuck to the glass just above the gravel line. Be sure that the gravel in your aquarium is not too coarse, as the coolie likes to dig a lot, and coarse gravel might injure his delicate nose and mouth.

2. Coolie loaches are nocturnal, coming out at night to feed. In the daylight, therefore, they need a place that is relatively dark in which to hide and rest. A coconut shell is an excellent place for your coolies to hide. If you can purchase one from a pet store, it will probably require no special treatment. Otherwise, I would advise carefully cleaning and washing the shell before putting it in your aquarium.

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**Jewel cichlids**

Q. I have one female and two male jewel cichlids (*Hemichromis bimaculata*). The female has spawned once with one male and twice with another. Two batches of eggs were eaten by the parents, and the other I tried to hatch artificially. The methylene blue and airstone did not keep the eggs from fungus.

1. Where should the airstone be placed if the eggs are on a rock?
2. Can the eggs be hatched in some sort of container besides an aquarium?
3. What is the best food for these fry as soon as they have absorbed their yolksacs?
4. Would too much infusoria foul the water and kill the fry?

**Rusty Rancey, Pine Bluff, Arkansas**

A. 1. Be sure that in separating the parents from the eggs, you move the parents (not the eggs) to a new tank. This will increase your chances of success. The

airstone should be placed so that it plays a vigorous stream of bubbles close to, but not touching, the eggs. This is a substitute for the parents' fannings, and it keeps the eggs clean and well oxygenated.

2. Yes, but it is always best to use an aquarium for this job.

3. Jewel cichlid fry are large enough at birth to eat newly hatched brine shrimp. They should also get micro-grained dry food and freeze-dried fry food.

4. Infusoria is not needed in this case. In cases where it is used, too much of it can, indeed, foul the water and kill the fry.

**Brachyobius doriae**

Q. Recently I obtained a mature pair of Doria's Bumblebee, *Brachyobius doriae*. Since then I have run into several problems with them and would appreciate it if you would answer the following questions:

1. Do they prefer fresh or brackish water?
  2. Do they eat only live foods?
  3. Can a group of young be raised in a 10-gallon tank?
  4. Can they be kept with others of their kind and with other fish peacefully?
  5. I think your magazine is tops.
- Joseph Barry, Ft. Myers Beach, Fla.**  
 A. 1. They are native to waters along the East Indies region which are not far from the shore; their water should be made slightly brackish by the addition of a little salt, one heaping teaspoonful per gallon.  
 2. Unfortunately they like to see their food move, and seldom pick up any that does not.  
 3. By themselves, yes.  
 4. They will be peaceful enough with

other fishes, but are so small themselves that it is best to give them a tank of their own.

5. Thanks. We try!

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**Guppy Corner**  
By Paul Hahnel

**"New" disease**  
Q. I have a real problem with fancy guppies. Disease showed up first in a tank with new females, and before I knew what was happening, had spread to 18 out of 20 tanks. The sickness manifests itself as a yellowish blotch that may show up anywhere on the fish, but it is usually in the form of a band that runs clear around the fish, just back of the dorsal fin. On an adult fish, this band may be an eighth of an inch wide or it may cover the entire fish from the dorsal fin to the tail. Females are infected more often than males, but it does hit males also. In the first stages the fish develops the spot or band which is easy to see but seems to be internal, for the scales lie normally. The fish dies in a day or so. Can you help me?  
Brantz Von Mayer,  
Mexico City, Mexico

A. My friend Bob Fischer up in Canada tells me that they have a seasonal type of disease in his area which is very similar. It occurs in the spring when the water warms up, and large amounts of snow water off the slushy streets drain off into the lakes and finally find their way back in the public water supply. Every spring the hobbyists in his area are plagued by this disease until the thaw is finished. The Department of Water Supplies up there claims that it is a "water mildew", halfway between a true fungus and a true algae. Bob Fischer's description of the disease is the same as you gave me, Mr. Von Mayer. The simplest treatment at the onset is simply adding salt, about one handful to 10 gallons. If this does not clear it in 24

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hours, add 1 drop of "standard" formaldehyde per gallon.

Note: A second letter has just reached me from Mr. Von Mayer, saying that he cured the disease by putting copper sponges in his tanks, plus two drops of formalin per gallon.

**Guppy society**

Q. 1. I would like to join a guppy society and would like to know the best one to join if I am interested in fancy guppies. Also I would like to know if there is a publication strictly for guppy breeders.  
2. I am now interested in breeding fancy guppies on a semi-professional basis. Before I start, I would like to

know what would be reasonable and prudent in reference to—(a) number of tanks, (b) size of tanks, (c) lighting, (d) strain of fish.

3. Is there a manufacturer of aquariums from whom I could buy directly in order to reduce the initial expense of establishing my breeding setup.

4. Finally, I find it a great honor to have the opportunity to correspond with you, for you are definitely the foremost authority on and greatest contributor of scientific information to the guppy world today.

David D. Caveny,  
Douglas, Ariz.

A. I. do not know of any guppy society in your vicinity, but there is a Valley

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Aquarium Society, P.O. Box 36993, Phoenix 30, Ariz. Get in contact with these people; they'll probably give you some useful information. Some societies print a monthly publication that deals only with guppies. The people in the Valley Aquarium Society may be able to help you by telling you which of these societies sell their bulletins.

2. I consider myself a semi-professional breeder of guppies in that I don't make my living entirely from it nor do I do it on a large scale. I have 16 tanks which range in capacity from 10 to 23 gallons. I use incandescent bulbs with all these tanks. As far as the strain of fish goes, choose one that is both pleasing to you and popular with other hobbyists. This will assure you not only of raising a strain that you like, but of having a ready market for excess fish.

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their products through your dealer. There are many reasons for this that I cannot go into here. You still have to take my word for it that this is best for everybody involved.  
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By Alfred A. Schultz

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Local fishes can be obtained in many ways. With the help of a friend you can

scare for your fishes close to the shore. This involves dragging a 6-foot chesecloth net through the water and trapping the fishes between you.

Another method is to use a killer trap, leaving it anchored in the water overnight with some bait in it. Fishes that enter the trap cannot get out, so all you have to do is to empty your catch into a jar and take it home. I have even caught fish by putting a gallon pickle jar, weighted down, in the water. Fishes that swim into the jar don't seem to have enough sense to swim out of it.

Still another overlooked source of fishes is the commercial bait catchers. Contact a local bait shop to get the name

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local invertebrates such as snails, hermit crabs, starfish, and anemones.

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Q. In my saltwater aquarium I have three fishes. They are a *Monodactylus*, a *Scatophagus*, and a beau gregory. They are all healthy and doing well. I do have a problem, however: the scat chases after the mono and the beau gregory chases after the scat. Is there anything I can do to stop this mayhem?  
Stanley Goodman, Flushing, N.Y.

A. There are two things that you can do: you can load your tank with a lot of coral so that the fishes can find places to hide from each other or, by far the best solution, place the fish in separate tanks.

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Continued from Page 61

After a time the female approached him, making the same spawning gestures that we have seen in cichlids: she turned her side toward the male and approached him with snakelike wriggles which ended in her curving her body. Then the male swam away from the nest and the female began to swim around it on her back, feeling the polystyrene disc with her mouth and barbels and at the same time pressing her body against its underside in the same manner as many *Corydoras* do when attaching their eggs.

While the female was doing this, the male watched from a little below the nest. He tilted his body keeping his head a little down, and he was in constant motion. Then he approached the bubble nest again, and for a short time both fish were near the nest. The female was now darker than the male.

Next the female left the nest, hurried along by short nips from the male. The male then swam on his back under the nest again with quivering motions in the manner previously described. This whole procedure was repeated every 1 to 5 minutes for more than 5 hours, and I was sure that the pair was spawning. After they had quieted down somewhat and I had turned the light off, curiosity overcame me, and I looked at the underside of the polystyrene disc. Not a single egg was to be seen!

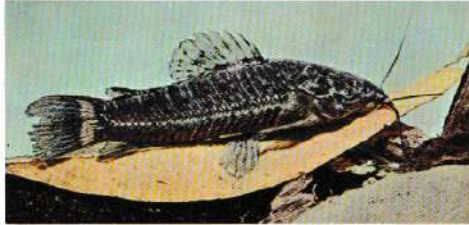
The next day I discovered that what I had seen the day before was merely a prelude to the spawning to come. Again the male busied himself with the nest. The female swam up soon afterwards. Both fish swam carefully for a while on their backs under the nest. Then they returned to their normal position, and the female began to touch her mouth to the male from his tail to his genital region. She then ran her barbels over more of the male's body until she reached a point below his pectoral fins. At this time he clamped down on her barbels and both fish swam slowly in this position between the bubble-nest and the bottom. The female's back arched sharply toward the surface. She folded her ventral fins to form a pouch in a similar manner to the *Corydoras* species. Then the male freed the female's barbels, and she sank slowly, in a curved position, to the bottom, where she remained quietly with folded ventral fins. The male swam quickly to the nest and began to occupy himself with it.

After a while the female swam up to the nest with folded ventral fins, in which there were one to six eggs. It was difficult to count them, because *Hoplosternum thoracatum* eggs are mottled and not as transparent as those of *Corydoras paleatus*.

Then the male and female swam together, as before, belly-up under the nest. The female went over the polystyrene disc restlessly for a long time in a manner similar to that of *Corydoras paleatus*. At last she seemed to find a proper place, and with a single motion she fastened the eggs by pressing

her body to the underside. It turned out that the actual spawning act lasted several hours.

After this phase the male took over custody of the nest. Again and again he made repairs with new bubbles. The female had backed off into a corner, where she seemed quite frightened. I wanted to get her out of the tank, as is advised in literature on the subject. I carefully slid the cover glass off and tried to net the female, but a gush of water right in my face caused me to



The similarity between *Hoplosternum thoracatum* (above—photo by Harold Schultz) and *Callichthys callichthys* (below — photo by Klaus Foyten) can be seen in these photographs.



The rich dark brown and golden brown coloration is shown here. Note, too, the tiny eye which gives the fish a rather comical look. Photo by H. Hansen.

draw back frightened. The male had become protective and had made a splashing attack. Then he proceeded to swim about in the aquarium as if berserk. As he swam he flipped over on his back and pushed the polystyrene disc by grasping it with his mouth. In order to avoid further disturbances, I decided to give up trying to get the female out.

On the second day, the male was still guarding and tending the nest in a very stormy manner. A large depression was hollowed out of the gravel under the nest by the male. On the third day after spawning, the vigor of the male's defense had abated considerably. Now it was easy to get the female out. The male stayed away from the nest and did not let my poking around there disturb him. On the underside of the polystyrene disc, I found 300 to 400 round, yellowish eggs that were about 2 mm in diameter. (Later

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spawnings sometimes resulted in as many as 600 eggs.) Most of the eggs showed clearly an advanced development. Their almost-transparent outer coverings make *Hoplosternum thoracatum* eggs very easy to watch as they go through all the stages of development. At a temperature of 76° F., the incubation time of the eggs is 5 to 6 days. At the end of this time, the fry had spread over the entire bottom of the tank. It was very difficult to distinguish them, because their protective coloration is quite effective in guarding them from discovery by prying cys. A light rapping on the tank bottom, however, caused the little fellows to scatter like frightened chickens, and their motion made it much easier to spot them.

As the male was no longer guarding the nest, I thought it advisable to take him out of the tank, even though I could not see if he had any intention of eating the fry. The newly hatched youngsters could be recognized easily as little catfish. They already had and were able to move their tiny barbels. On the third day after hatching the fry had absorbed their yolk-sac, and I carefully began their first feeding. On microworms and dead infusoria, they put on good growth. (You can kill infusoria by heating their culture to just below the boiling point. The dead infusoria sink to the bottom, making them ideal food for bottom-feeding fry such as catfish young.)

When raising these fry it is very important to change part of the water from time to time. Above all, leftover food that could cause foulness must be removed; this material supports bacteria which can consume much oxygen and the little catfish require a great deal of this gas themselves. When dissolved oxygen is no longer available in sufficient quantity, the little catfish move to the upper layers of the water; they can be seen hanging from the glass sides near the surface or resting on leaves in that vicinity. At this time aeration should be increased immediately.

As the fry grow they should be fed Grindal worms, chopped tubifex, and cyclops. Later they can take daphnia, brine shrimp, and a variety of dried foods. At age of 3 to 4 months the little catfish look exactly like their parents and are 1½ to 2½ inches long, depending on how heavily populated the aquarium in which they were raised was. To make it easier to check on the youngsters, it is best to raise them in a tank with a bare bottom. It also makes more sense to allow the eggs to hatch without the male's attentions than to risk his eating them. It is best to remove the leaf or polystyrene disc with the eggs and place it in an aquarium of aged fresh water (about 6 inches deep). The aquarium should have a bare bottom. Gentle aeration is necessary near the leaf (or disc). The airstone should be arranged in such a way that the eggs get a good flow of water but are not touched by the bubbles. Water temperature, in order not to retard development for too long, should be between 76 and 78° F. It is important to remove fungused eggs daily to prevent damage to the good ones.