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AQUARIUM WATER CHEMISTRY. by Dr. Rolf Geisler. 50 cents from your dealer or direct from TFH.

Another in a series of tropical fish books designed to help both the novice and the advanced hobbyist is Dr. Rolf Geisler's *Aquarium Water Chemistry*. This thirty-two page book has eight information-packed chapters, and is profusely illustrated throughout.

All hobbyists will find it of extreme interest because of the vital information the book contains. Leading topics include Physical and Chemical Properties of Water and the Methods of Measurement; The Native Waters of Fishes; What Water do Aquarium Fishes Need?; How to Create Special Water Characteristics; Filtration of Aquarium Water; and Water Care and Fish Feeding.

Aquarium Water Chemistry reveals how to soften hard water, how to harden soft water, how to neutralize or acidify alkaline water, how to make acid water neutral or alkaline, and how to make black water.

Of special interest to the novice fish keeper is the section on how to properly test for water characteristics. Products are also discussed, detailing the functions of each.

Of definite interest to the salt-water hobbyist is a recently developed scientific formula for making a singularly successful synthetic ocean water. Salt-water effects on aquariums are also discussed. Equipment needed to successfully keep a salt-water aquarium is described.

A total of twenty-one illustrations picture either fishes, accompanied by a description of their water requirements, or aquarium chemistry products, with an explanation of their use. There are also photographs showing the natural habits of tropical fishes.

TROPICAL FISH HOBBYIST

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FEATURES
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COVER
Our cover this month features a billed cave characinid, *Acanthichthys jordanii*. This tropical fish has never been extremely popular, but for years it has been popular enough to make stocking it new and again available for dealers. Actually, the fish is an ideal aquarium inhabitant, and, since it is inquisitive, active, affable, and easy to care for, it is interesting that the billed cave has not ever really come into vogue among aquarists. It is possible that this is the result of a misreading of the fish without eyes. Any aquarist who has kept these fellows, though, will tell you that sightless new breeders them in no way at all. For more about billed cave characinids, including a number of color photos, turn to the article beginning on page 79. Photo by Dr. Herbert R. Axelrod.
EXOTIC TROPICAL FISHES SUPPLEMENTS
Pages 72 to 76, 81 to 84. These copies are perforated for easy removal and punched to fit into the looseleaf Edition of EXOTIC TROPICAL FISHES.

RATES: 35c per copy in the U. S., 35c per copy in Canada or Europe, \$3.50 for 12 issue subscription in U. S., Add 60c per year for foreign subscriptions. All back issues available at 25c per copy. Index available in every 12th issue.

In Canada Tropical Fish Hobbyist magazine and books are sold exclusively through Canadian Aquarium Supply Co., 1125 Talbot Street, St. Thomas, Ontario. All subscriptions and inquiries from Canadians should be directed to them.

In England and the western European area Tropical Fish Hobbyist magazine and T.F.H. Books are distributed exclusively through T.F.H. Publications (London) Ltd., 13 Notley Lane, Reigate, Surrey, England. All subscriptions and inquiries should be sent directly to them.

© 1966 T.F.H. Publications, Inc.
Second Class Postage Paid at Jersey City, New Jersey. Published monthly by T.F.H. Publications, Inc., at 245 Carmelien Avenue, Jersey City, N. J. 07307. Printed in U.S.A.

EDITORIALLY . . .

Just got told a story which some of you may find intriguing: a dealer in New York City has recently run into an unprecedented wave of prosperity, mostly on one species of fish, the betta, or Siamese fighting fish. On Saturdays, when his betta shipments come in, about 90% of his customers are people looking for them. No females; they just want males of any color. Finally he found out: these customers were mostly immigrants from Latin-American countries, where a favorite sport is cock-fighting, something they had to forgo when they came to this country, because here it is forbidden by law. Then one of them got the idea that you could get a pretty good battle out of two male bettas. There is, of course, a high mortality rate among the betta losers; so every Saturday there is a heavy demand for more fish. They don't even have to be pretty, just sturdy, aggressive and fast-moving. Long fins are considered a detriment rather than an asset, and a healthy, strong fish with a pug-nacious nature has it all over one with nice color. Can this form of cruelty be stopped? It seems you just can't discourage a "fish-fight" any more than you can stop a private poker game between friends, and you can't have the dealers question their customers as to how they plan to use the fish they buy and jeopardize their sales. Of course, you can't ban the sale of bettas altogether. The betta is one of our loveliest and most popular aquarium fishes. Just because a few people are abusing them, should we be deprived of the pleasure of having them?

William Vanderwinker

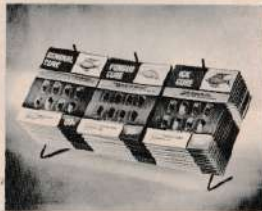


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This is a male red-finned blue topsail platy. In such mature males, the red of the dorsal fin often spreads down over the back and part of the sides. Photo by Dr. Joanne Norton.

Red-Finned Blue Topsail Platy

BY DR. JOANNE NORTON

The reason for developing a red-finned blue topsail platy was to have a blue platy that would have good color when two or three months old, in contrast to blue variatus platies which take six months or longer to develop good color.

A virgin female gold topsail platy was mated with a blue male having a red dorsal and tail. Among the F₁ from this pair were some of the red-finned blue topsail platies that I wanted. As expected, all of the F₁ were blue, since blue is dominant to gold. Those that were topsails had inherited the dominant hi-fin gene from the female parent.

The six best F₁ topsail females were put with the three best F₁ topsail

males. These produced the next generation of red-finned blue topsails. There were also some golds in the F₂—since each of their parents carried the recessive gene for gold. More blues than golds are produced by fish of this strain. The gold platy is also attractive with its gold body color and red dorsal.

Blue and red colors appear in young red-finned blue topsails when they are about one month old. At two months, they are fully colored except for the red tail color that develops in many individuals at about three to four months. In a small number of these fish, the red dorsal color gradually spreads over the entire fish, resulting in a red platy. When Myron Gordon studied fish having the red dorsal gene, he found that swordtails carried dominant modifiers that caused the red dorsal color to spread over part or all of the body of the fish. I think that these modifiers were originally introduced into topsail platies when Hearin developed his variatus topsails from a platy-swordtail cross. Hearin's blue variatus topsails, which were used in the development of my gold topsail strain, could have carried one or more dominant red dorsal modifiers. Of course the blue variatus did not have red dorsals

A red-finned blue topsail platy female showing the typical "cut-crescent" pattern at the base of the tail fin. Photo by Dr. Joanne Norton.



In addition to the red-finned blues produced in the F₂ generation, some red-finned golds were produced. Photo by Dr. Joanne Norton.

because they did not have the dominant gene that causes red dorsal. The presence of the dominant red dorsal modifiers would then not be detected until they turn up in a fish that also has the red dorsal gene.

Many of the red-finned blues have two black spots near the tail, this being the "cut-crescent" pattern that Gordon found is due to a dominant gene. Both the male and the female in the photographs have this cut-crescent. There are, then, four main color types produced by this strain. Most of the individuals are blue with the cut-crescent pattern. There are also some each of blue without cut-crescent, gold with cut-crescent, and gold without cut-crescent.

There are two desirable features about red-finned blue topsail platies. First, their blue and red colors develop while they are young and still small. Second, the females as well as the males are colorful, whereas female blue variatus platies are grey like a female guppy.

Red-finned blue topsails are certainly not meant to replace the beautiful blue variatus topsail platies. Their main advantage is that they can be raised in much less tank space and in about half the time that would be required to raise blue variatus topsails, which take much longer to become colorful.

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My Trip to the Red Sea

BY DR. WOLFGANG KLAUSEWITZ FRANKFURT, GERMANY

The Meteor is a new German research vessel which was just finished in time for the great international Indian Ocean Expedition, of which I was a member. Technically the vessel is a "masterpiece" but it is constructed for the open sea. Thus a specialist, like myself, who is interested in the shore region and especially the tropical reefs cannot do much work from such a base. I discussed this problem with four other biologists in the expedition and we decided that we should be taken to a special place for our studies. None of us intended to work aboard like the other 25 scientists (oceanographers, meteorologists and geologists), so we decided to live in a camp on a small coral edged island. Thus for us the research vessel became nothing more than a passenger steamer.

Among the five of us there were two ichthyologists (one of them was the author), one specialist on invertebrates, one botanist, and one paleontologist. The island we decided upon is called Sarso. It is part of the Farasan Archi-

The German research vessel Meteor, which took the scientific group to its destination. Photo by Dr. W. Klausowitz



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A typical underwater scene from the area in which the research team worked. The two fish in the foreground are *Chaetodon fasciatus*. Photo by L. Silber.

pelago and is situated in the southeastern part of the Red Sea, not too far from the warlike border of the Yemen. Politically it belongs to Saudi Arabia.

Why did we choose these obscure islands and why the Red Sea? Are the reefs of the nearby Indian Ocean not of greater interest? These were the questions of our friends.

We chose the island of Sarso for good reasons: Three of us (including the author) had visited this place in 1957, during the Xarifa expedition. We knew

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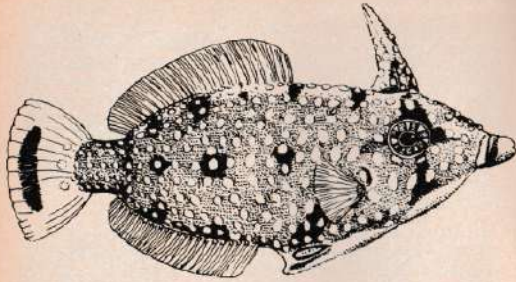
the special situations (i.e. the reefs, the place for our camp, etc.). And it is much easier to work in a place where you know the conditions, especially when the amount of time you can stay is limited. On the other hand staying in this place among these lost islands demanded much preparation, good food for eight people, more than a ton of water, medicine for all possible emergencies, technical and scientific material, etc. All these things were necessary, as we knew that there are no water sources, no people living there, and no facilities of any kind. A life like that of Robinson Crusoe (a modern one as we had our own facilities with us).

But why did we decide on a Red Sea island and not one of the islands of the Indian Ocean like the lovely Seychelles or Maldives? For this there was a special ichthyological reason.

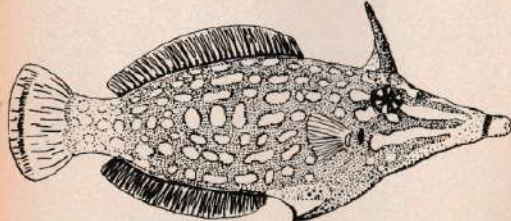
In former times, everyone thought of the Red Sea simply as an appendix of the Indian Ocean, unimportant from a scientific standpoint. When FOWLER published, in 1956, the first volume of his book "The Fishes of the Red Sea and Southern Arabia" he believed the ichthyofauna of the Indopacific and the Red Sea to be more or less identical. Therefore he studied the literature but did not compare any material: It was his opinion that his great collection of fishes from the Philippines (about 10,000 kilometers, or 6,000 miles, away from the Red Sea) was sufficient for a description of the Red Sea fishes. Meanwhile ichthyologists found out that this opinion is absolutely wrong. At least 10-20% of the species are so-called endemic forms of the Red Sea, which means they are found only in these waters. This is a high percentage, which indicates that the Red Sea is an evolutionary center in which many new species or subspecies are created. For this reason the Red Sea is of much more interest to ichthyology than the Indian Ocean with its well known fish fauna.

Of course, many of the species in the two oceans are closely related. In some cases the differences are only at the subspecific level: I found out that *Chaetodon auriga* of the Red Sea and *C. setifer* of the Indian Ocean are only subspecies. Similar cases are the puffers *Demotilus inspidus* (Indian Ocean) and *A. semistriatus* (Red Sea), as well as the triggerfishes *Sufflamen albicaudatus* (Red Sea) and *S. chrysoptera* (Indian Ocean). The relationship is also easily recognizable between the well known Picasso triggerfish, *Rhinocanthus aculeatus*, and the Red Sea Picasso, *R. assai*. In other cases it is difficult to decide from which Indopacific ancestor a Red Sea species may have been derived. Such a form is the beautiful surgeon fish *Acanthurus sohal*, which is abundant in the Red Sea but does not live in the Indian Ocean and may descend from *A. lineatus*. The same is true of the wonderfully colored Red Sea butterfly fishes *Chaetodon semilarvatus* and *C. larvatus* and the "yellow wedge," *Aruetta asfur*, a jewel of an angelfish. (It is not understandable that all these beautiful species from the Red Sea were never imported and kept in an aquarium.)

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The Red Sea file fish *Oeymanacanthus halli* (above) derives from the closely related species *O. langirostris* (below) from the Indian Ocean. Drawings by Dr. W. Klauswitz.



And in many cases the differences between the species are not yet clear and must be studied further.

It is strange that there are such great differences between the ichthyofauna of these two oceans, which are joined through the Gulf of Aden. But the Red Sea is imbedded in a very hot and dry, desertlike region, has almost no rivers flowing into it and gets very little rain. As a result, the average temperature and salinity of the Red Sea water is distinctly higher than that of



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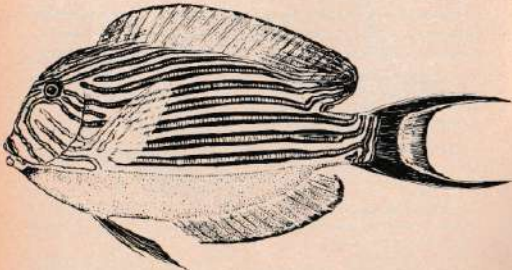
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It is not yet clear whether the banded, but rather dull, surgeon fish *Acanthurus schah* (above) of the Red Sea derives from the brilliantly colored *A. lineatus* (below) of the Indian Ocean. Drawings by Dr. W. Klauswitz.



the Indian Ocean. Besides this, the connection between both seas, the so-called Bab-el-Mandeb or Street of Tears, is a rather narrow and shallow canal which does not allow much intermingling between the fishes of both waters. These ecological factors may be the reasons for the previously mentioned differences and the fact that—at least for the fishes—the Red Sea is virtually an isolated body of water.

Anyway, it was for all these reasons that we decided to have our camp on

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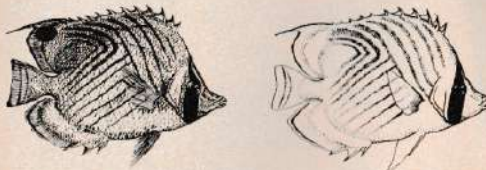
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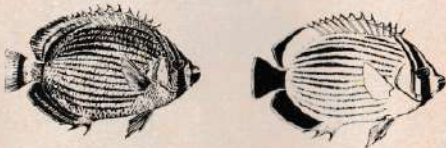
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an island in the Red Sea, and therefore to have the *Meteor* take us on a dangerous trip through approximately 15 miles of corals and shallow water to the island Sarso, where for several weeks we would study the fishes of the different coastal zones and the reefs, and make a great collection and investigations of functional anatomy.



Anibaethodon setifer from the Indian Ocean (left) and *A. ouiga* from the Red Sea are subspecifically connected. Drawings by Dr. W. Klausewitz.

The closely related *Chaetodon trifasciatus* and *C. anebriatus* are sporadic species. Drawings by Dr. W. Klausewitz.



When our research vessel, *Meteor*, sailed through the rather dangerous girdle of corals, we encountered some small boats manned by Arabian fishermen. At first they showed a hostile attitude. But, as we found out later, it was not directed against European people. They told us that they had thought and feared that the great white ship belonged to Egypt. Since the Egyptians are at war with Saudi-Arabia (through the Yemen), the fishermen had readied their long knives to kill us. But when our interpreter (he is a specialist in Arabian dialects, as well as a great diver and a very good underwater photographer) told them that we had nothing to do with Egypt they changed their minds instantly, and within a few days they became our good friends and helpers. As an ichthyologist, I gained particularly from this friendship, for they helped me collect fishes. They brought especially fine



The Arabian fishermen anchoring in front of the scientists' camp bring freshly collected fishes. Photo by Dr. W. Klausewitz.

specimens from deeper water and the open sea where I could not collect. Thus we brought home very fine material from the different zones and areas of the coast, the coral reefs, and the open water.

Hopefully the wonderful coral fishes of the Red Sea which are very different from those of the Indopacific will soon be available to hobbyists. Many of the "endemic" species are also living in the Gulf of Eilat (Aqaba), which is situated in the northeastern part of the Red Sea. Perhaps it will be possible to export these remarkable species to Europe and the United States. Then hobbyists could also see the evolutionary changes when they compare the fishes of the Red Sea with those from the Indian Ocean. There is no change in behavior but there are great differences in coloration. Many of the Red Sea fishes are colored much more brilliantly than their ancestors from the Indopacific.

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Ctenopoma fasciolatum pair. The male is the upper fish. Photo by Krenner.

An interesting African species . . .

Ctenopoma fasciolatum
(Boulenger)

BY RUDOLF ZUKAL
BRNO, CZECHOSLOVAKIA
Black and white photos by the Author

In spite of its majestic beauty, this fish is avoided by many aquarists, possibly because of its reputed quarrelsome nature (which I could not observe with my specimens). The fish was first brought into Europe from its native waters in the Congo region near Leopoldville, where it was found in densely overgrown waters. It was originally described as *Anabas fasciolatum*. Not until well after its first importations, in 1952, were there any spawnings reported.

The *Ctenopoma* species are African fishes which are classified with the climbing perches in the Anabantidae. *Ctenopoma fasciolatum* has a compressed

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Ready to breed, the male chooses a spot to his liking and begins to build a bubble nest.

to high build and is capable of very flexible motion. The dorsal fin is long than the anal fin. Its head and rump are markedly scaled. The mouth opening is quite large. The labyrinth organ is not very well developed. The male attains a length of slightly over 3 inches, and the female is a little smaller. The colors are somewhat like those of *Macropodus opercularis*; on a grayish yellow background there are 8 to 10 dark bands, which extend into the fins. A gleaming blue spot is present on the gill-cover. The male has longer dorsal, anal, and ventral fins. The female's overall coloring is lighter than the male.

In 1957 Hans Frey wrote that these fish had not been bred, but since that time it has been found that they spawn very much like paradise fish. However, a temperature of 80 to 82 F. is required. They can be kept at 74 to 76 F. when not spawning. The species is hardy but has the reputation of being very peaceful. Because they are definitely predatory, they require good feedings of living foods, including small fish.

I had a male and three females and kept them in a 20-gallon tank with *Cotisa lala*, *Cotisa chuna*, and *Trichogaster leeri*. Never did I witness an attack on their tankmates. Instead they appeared to be timid and hid in the plants. During feeding the other fishes approached my hand, but never touched. *Ctenopoma fasciolatum*. They were not yet fully grown when I noticed that one of the females had filled up and seemed ready for spawning. A tank



February, 1966

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The female signals her willingness to spawn by poking the male.



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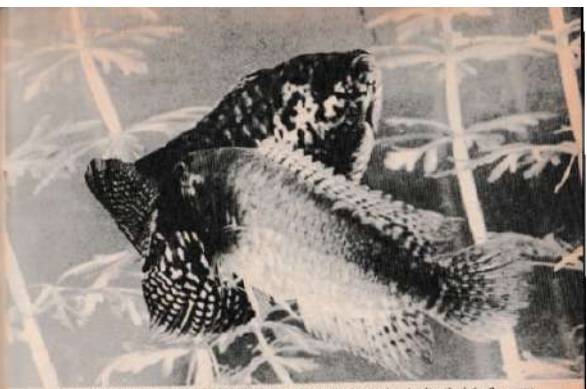
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The male curves his body under the nest, and the female swims horizontally into the curve.

The embrace has just begun.



Ollie the Octopus

A FINNY FANTASY

BY DIANE SCHOFIELD

Ollie was never meant to be an Octopus. From the day that he was hatched he could never do the things that were expected of Octopuses. It wasn't that Ollie didn't try. The other Octopuses took a great deal of delight in occasionally letting loose great clouds of black ink, but every time that Ollie tried this he would choke and sputter and his little squirmy body got all black and blue from bumping into things, because, as any fool knows, you can't see a darned thing when you're swimming in a bunch of ink.

Another thing—Ollie couldn't ever seem to remember to loosen the suction cups on his tentacles once he had fastened them onto an object. He was always swimming away, only to be snapped back like a big black rubber band.

The thing that really bothered him the most was food. You could always avoid shooting ink, and being snapped like a rubber band didn't really hurt so much, but dog-gone it, you had to eat! The horrible little creatures that the other Octopuses flipped over turned Ollie's stomach and he marveled

Octopus vulgaris, an interesting aquarium pet.



"Ollie couldn't ever seem to remember to loosen the suction cups on his tentacles once he had fastened them onto an object."

at how his relatives could catch crabs, deftly cracking the shells and eating the tender interior portions. Whenever Ollie screwed up his courage to try, the crabs would nip Ollie a good one on his tender under-sides. He soon had to give up and content himself with nibbling on a dead fish or shrimp. Of course, with such eating habits, Ollie never grew as large as the other Octopuses, and they made his life miserable. They were always dancing around Ollie jeering, "Ya, ya, Ollie is a sissy! Ollie is a sissy!" Unfortunately for the other Octopuses, Ollie was not only a square, he was an octagon. Whenever they tired of such sport they would hide menacingly in a rocky crevice, scaring the wits out of any skin diver that happened by. Ollie once bumped into a diver when he was tiptoeing along the ocean bottom. Ollie was delighted and reached out toward the diver with a big smile. However, since an octopus sits on his mouth, the diver couldn't see Ollie's welcome and Ollie was blinded by a stream of bubbles as the diver beat a hasty retreat. With all

these things, Ollie became neurotic and began to bite his nails and, as everybody knows, when you have eight arms to work on, this alone can become a full-time job.

Poor Ollie couldn't even get any peace at home. Papa was forever sitting around holding his head in all his hands and moaning, "What did I ever do to deserve a kid like you? Jake next door was bragging how his boy took first prize in Plain and Fancy Indoor and Outdoor Ink Shooting, but what could I say? What did you ever do that I could brag about?" Mama would sometimes take Ollie's part and interrupt Papa with, "But he's only a boy, Papa, he'll learn to do those things soon enough!" Ollie knew, though, deep down in his little Octopus heart, that he never would and he walked silently out of the cave.

One day while Ollie was curled up with his arms wrapped around himself for comfort, a black object with arms drifted by him. Ollie winced and closed his eyes, waiting for the inevitable, "Ya, ya, Ollie is a sissy!" to start. When it didn't, Ollie tentatively opened one eye and peered at the object. It was resting against a rock near him with its "arms" waving in the current. Ollie was shocked to see that the poor thing only had five. This filled Ollie with sympathy, because he knew how it was to be handicapped, even though in a different way. Ollie tried to strike up a conversation and although the object didn't answer, Ollie figured that the poor thing was too shy. What Ollie

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"From that day on Ollie had a friend."

didn't know was that the object was a black rubber glove that a passing boat had tossed out.

From that day on Ollie had a friend. He brought it part of his dead fish and carried on long conversations with it. His new friend never taunted him for not being able to eat crabs or squirt ink, so they lived happily ever after. MORAL: If ignorance be bliss, 'tis Ollie who is wise.



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Tropical Fish Hobbyist

Freshwater Shrimp in the Tropical Aquarium

BY ROBERT E. WATTS

The freshwater shrimp of the family Palaemonidae is an interesting addition to the tropical aquarium. This little animal will capture the eye of even the most critical hobbyist.

An average adult specimen is about 2 inches long, measuring from the tip of the head to the end of the tail. This crustacean is known as the "grass" shrimp, or freshwater prawn. Its remarkable transparent body looks much like clear glass.

The freshwater shrimp belongs to the order Decapoda, which includes the crayfish, edible shrimp, lobsters, and crabs. The family Palaemonidae contains about 11 species of freshwater shrimp. Of the 11, six are reportedly found in the United States, and five of these are found in Louisiana.

Freshwater shrimp are distinct swimmers and are continuously on the move. They are capable of lateral, forward, and backward movement. When alarmed they can move surprisingly fast by darting backwards. This fast

When thinking of shrimp, most people think of saltwater species like this one. Photo by Douglas Faulkner.



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Back lighting shows the transparency of this freshwater shrimp (*Leander modestus*). Photo by Iwanfuchenko and Nicolov.

movement is accomplished by ventrally doubling up the tail fan and the posterior end of the abdomen.

The freshwater shrimp is as valuable a scavenger in an aquarium as it is in its native environment. It does well in a tank of any size, provided that there is plenty of vegetation. It can be kept with most of the smaller species of tropicals. I have about 20 of the shrimp in a 50-gallon aquarium with eight medium angels, but this aquarium has a dense stand of watersprite which offers protection for the shrimp.

The grass shrimp is a tireless worker; at feeding time it will dig into the gravel for particles of food that have become lodged there. Thus, the feeding of your shrimp is no problem. It will thrive on leftovers of most of the dry foods that are available to fish hobbyists. I have found that they like pelleted or coarse grades of foods best.

Grass shrimp are found in varied environments, including most types of running water, shallow parts of lakes, ponds, swamps, and brackish water. One species has even been reported from subterranean waters near San Marcos, Texas.

The freshwater shrimp is equipped with chelas, or claws, on the second pair of legs, differing from the crayfish's clawed first pair of legs. This claw is used for offense and defense in the crayfish and undoubtedly serves the same purpose in shrimp. The grass shrimp's claws are smaller and less powerful than the crayfish's. The grass shrimp is not, like his bigger cousin, a fin-nipper and can be kept with fancy guppies without fear. Yet, if you keep a freshwater shrimp, you will seldom find a dead fish in your aquarium. When one of your finny pets comes to its unavoidable end, it will be consumed by the shrimp. Freshwater shrimp can best be collected in the early spring, when they

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are at their maximum size. A small dip net with a long handle is the best collecting device to use. The shrimp can be found in almost any aquatic vegetation. In some areas several sweeps with a net may be needed to collect a few, whereas in other areas many can be collected with just one dip.

There does not seem to be a great deal of information available on the breeding habits of this crustacean. During the spring, when the adult shrimp are most abundant, females can be collected with eggs attached to the underside of the abdomen. The eggs develop in about 18 days, so females with eggs attached are not normally collected after July or August.

Even though these shrimp occur in most bodies of fresh water, they are of little economic value. Some bait companies preserve them for resale. And most experienced fishermen know these shrimp as an important and irresistible bait for our native sunfishes of the genus *Lepomis*. There is little doubt that grass shrimp make up a part of our native fishes' diets.

Freshwater grass shrimp can and will help in keeping your aquarium clean, but a word of caution, acclimate them to the temperature of your aquarium slowly. An abrupt 5° change will cause the shrimp to go into shock and could result in their deaths. Use the method of gradual change in water temperature as you would with new fish.

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MAIL CALL

By William Vorderwies

If you have an aquarium question that you would like answered, send it to MAIL CALL each 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 Cornell Avenue, Jersey City, N. J. 07302.

How to get a HiPower Filter

Q. As I'm a fish hobbyist, I was very impressed with your article in the November issue of *Tropical Fish Hobbyist* concerning the new Miracle HiPower Undergravel Filter. Since reading the article, I've been inquiring at all fish and petshops around here, but no one here has it listed in their catalogues. Would it be possible for you to mail me the name of the manufacturer so that I may find out from them who my nearest dealer is?

G. R. Augustine, Green Bay, Wis. A. The response has been overwhelming, and you might have to wait a little while before your dealer can supply you. The manufacturer is: Miracle Plastics Corp., P.O. Box 9128, Long Beach, Calif. Have your dealer write them with his order.

Negative reaction to HiPower Filter Q. I am pretty sure, right from the

beginning, that you will not like all I will say in this letter and might even take a dislike to me, but it was your invitation, issued at the end of Dr. Axelrod's

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Tropical Fish Hobbyist

article in T.F.H.'s November issue which has prompted me to write. As you've probably surmised by now, I am referring to the article on the new Miracle HiPower Undergravel Filter, an article which I read thoroughly and enjoyed, even if I have braisily (I'm sure you'll say) "allowed" myself to disagree or doubt some things it says.

1. Its very title, in fact, I disagree with. "Never Need To Change Water Again." Indeed, sir, this is the claim made by ALL filter makers generally, and undergravel filters in particular, but later we hobbyists ("guinea pigs" for all products" in relation to the hobby) find out otherwise, usually when it is too late!

2. Still I for one, haven't met with what you call "leaking outside filters." Their ugliness, though, as they get dirty, I have seen. Then, too, hanging

said outside filters in the back of an aquarium hasn't occurred to me. I have always done it up front, or at the aquarium's sides.

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February, 1966

3. Calling it a "do-all filter" is indeed a far-fetched claim, I would say. For one thing, I am not interested (as I am sure fellow hobbyists aren't) in how it slopes, what dimensions it has, and how it can be assembled.

4. I certainly hope, on the other hand, it does have the air-output capacity you report!

5. I don't much care for the "looks" it gives an aquarium, only its performance.

6. I AM interested to see if it doesn't suck in babies as others do. I am also interested in seeing if it breaks down dirt into microscopic pieces (as you claim) which in turn fertilize (and make grow) aquarium plants, something other aquarium filters are said to do and I have found to do the opposite, sucking

in roots and clogging with gravel and food that has gotten into the slits.

7. Perhaps the HiPower Undergravel Filter is not so high and mighty if it should or could be used in connection with a regular Miracle Undergravel Filter, in your own words.

I would be honored if you answered this letter in all fairness and explained, disagreed or agreed with these points, to help me and others.

Carlos F. Reichard, Aguadilla, P.R. A. 1. "You Never Need To Change Water Again." This is what the article said and this is what it means. Of course, you will find that you must replace water which evaporates, as you would have to do even if the tank were not filtered. Then too, you might want to change the

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pH or hardness of your aquarium. This may necessitate removing some of the old water and replacing with water which will give the desired result. What you never need to do is take reasonable care in feeding, to make a complete change or even a major change.

2. Most aquarium hobbyists keep their outside filters in back, where they do not block part of the viewing surface and they do not intrude their ugliness on the viewer's field of vision. Mounting the filter in front certainly does make it easier to get at, but it detracts greatly from the aquarium's beauty. A filter box can become cracked and leak, and you yourself admit that they do become dirty!

3. Whatever your reactions may be, we'll stick to our claims! You see, we know we're right. Also, your "fellow hobbyists" have shown great interest in the facts you feel they don't care about.

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more thoroughly. It explains that a Miracle HiPower can be used in conjunction with a regular Miracle Undergravel Filter in an aquarium that has no gravel.

Infertile eggs
Q-1. My Jack Dempseys (*Cichlasoma maculatum*), have spawned three times in the last 2 months. Unfortunately the eggs turn white. This I have been told means that the eggs have been unfertilized. Therefore it is possible that the male or female is sterile?

2. During the spawning period of *Pelmatochromis amietensis* it is common for the female to go hollow-bellied. If so, why?

Derek Haig,
Edinburgh, Scotland

A. 1. Probably your male is sterile if none



A young Jack Dempsey pair.

of the eggs hatch. There is also the possibility that you do not have a pair, and that there are two females. Sometimes two females undergo a mock spawning, resulting in a tremendous number of eggs, all of them, of course, infertile.

2. *Pelmatochromis amietensis* females are naturally a bit hollow-bellied to begin with. This does not show very strongly when the belly is rounded with eggs but after spawning, wow!

Pelmatochromis amietensis pair. In adults of this species, females are larger than males.

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A fishy Florence Nightingale
Q. One day we saw that a male brick swordtail had a very bad case of "ich." He was so sick that he was lying on the bottom and would not get up. At feeding time, to our surprise, we saw the female brick swordtail go up and take a mouthful of food and spit it out right in front of him, and he gobbled it up. She repeated the process several times. Is this an oddity?

Ira Schwartz, Flushing, N.Y.

A. If this was a deliberate act on the part of the female, it certainly is. Personally, I would never give a fish credit for as much intelligence as such an act would indicate. I have heard of fish that are caring for their fry by blowing broken bits of food amongst the youngsters. Such an action is purely instinctive, and perhaps your female was acting on a similar instinct.

Aquarium background
Q. My aquarium is next to a window and the window looks terrible through the aquarium. Could you suggest something to put on the back so the window won't show through? I don't like plastic scenery because it looks too artificial, and I don't like crystal paints.

Jerry MacKinnon, Miami, Fla.

A. There are a number of things you could put in back of your aquarium, but of course you have to put them on the dry side of the glass. You can get some pieces of linoleum which are made to resemble mosaic tile, which are very attractive. You can also cement some stones together, and fit them behind your tank. There are any number of things you can do, limited only by your imagination and artistic ability.

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Spawning angelfish.

Nonconformist angelfish

Q. Approximately 10 days ago my angelfish laid about 200 eggs on a broad-leaved plant. The pair were very good parents and continued fanning and taking care of the eggs for 3 days. After this period the eggs turned white and the parents ate them. Since then, the leaf the eggs were on died, and the parents have not started cleaning any new location. I have been feeding them generously with dried foods plus plenty of frozen brine shrimp. The temperature is 81° F., and the pH is 7.0-6.8. I have two undergravel filters, and the water is crystal clear.

1. Why did the eggs turn white after 3 days when most books say they will turn white in the first 24 hours?
2. Why didn't the parents eat the white eggs right away as most books say they do?
3. Why did the leaf die?
4. Why aren't the parents starting a

new batch of eggs, again like most books say they will, in 8-14 days?

Donald W. Kent, Lake Minchumina, Alaska

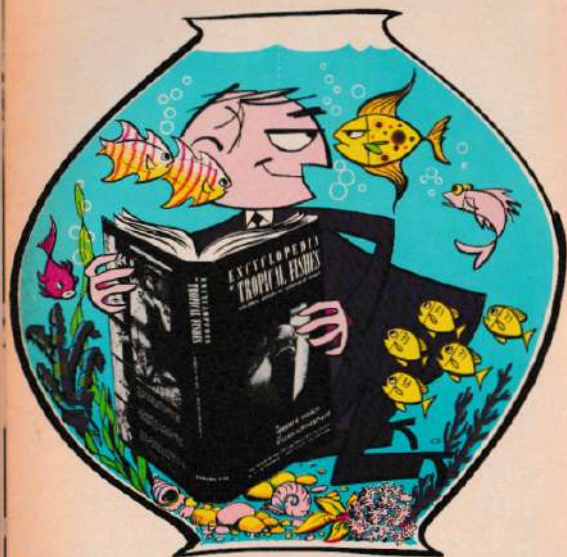
A. 1. Possibly your water was near the 8.8 side. Eggs fowl less quickly in acid water than in alkaline. It could also be that your eggs had a bit of life in them at first.

2. Here is a very popular misconception, that the parents eat the eggs when they foul. What I think actually happens is that the parents "mouth" the eggs one by one after they are laid. When they come to a bad one, it usually bursts, and the egg is not eaten but pushed out through the gills. A fish would have to be pretty hungry to swallow a spoiled egg.

3. The leaf might have been on its way out when the fish used it. If so, it would have died in any case.

4. Perhaps you are not feeding your fish well enough. Try concentrating on live foods while the fish are breeding.

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By Paul Hahnel

Strange bugs

Q. I read your column in **TROPICAL FISH HOBBYIST**, however have never run across a similar problem to the one which has occurred in our guppy breeding tank. A few days ago, I noticed something hopping on the surface plants and on the edge of the glass. After further investigation, I found it to be a bug of sorts, and there were a number of them. Not knowing what they were or how to rid the tank of them, I asked the dealer. After I described them, he frankly stated that he didn't know anything regarding this sort of thing. He suggested removing all the plants which reached to the surface, and perhaps they would drown or be eaten by the fish without the plants to rest on. A breeding tank requires some plants, and it didn't solve the problem. Netting the fish into another tank also transfers the bugs into

the new tank. They are smaller than the head of a straight pin, almost transparent in color, and hop like fleas.

1. Could you tell us what it is?
2. What causes them?
3. How would you get rid of them?
4. How would you prevent them?
5. What does the diet of a red-eyed puffer consist of?

Patricia Ayotte, Southgate, Calif.

A. 1. Looking over my literature on insects, I found a bug that may be close to your description, with the name *Aphorus armatus* or *Lomocorus plumbeus*.

2. You must have acquired them with plants or live food. These little creatures

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are harmless. European hobbyists raise them as food for small terrarium animals.

3. Whenever you see them in your tank, scoop them out with a fine net, which must be rinsed out well after every use.
4. There is no safe way of preventing them.
5. Puffers require live foods: tubifex worms, mosquito larvae, earthworms, small mussels, and snails, etc. The puffers particularly love to crack the shell of a snail, which they do easily with their sharp teeth.

Thin film on surface

Q. 1. I quite recently purchased a trio of red veiltail guppies. I prepared a 10-gallon tank for them. Planting was with spiral Vallneria and a swordplant. I used an inside filter and provided a temperature of 77° F. and a pH of 7.4. Just before I put the fish in, I added 4 tablespoons of aquarium salt. I have noticed a thin film on the surface; could you explain this?

2. The two females were pregnant on arrival, and 3 days later they both had babies. I have heard various ways to sex young fry; a beam of light and a magnifying glass, a triangle on the forehead, or a dark spot. Which is most dependable?

3. Is 25 watts too much light for a 10-gallon tank? How long should this light be on per day?

4. Is there a guppy society or an aquarium society in my area?

Robert Appel,
Elkins Park, Pa.

A. 1. A pH of 7.4 seems a bit high to me. The thin film on the surface of the water is caused by both live and dead bacteria and infusoria, which greatly interfere with the interchange of air. A brisk stream of bubbles from an airstone breaks up the film, and a filter picks up the dead organisms.

2. If I want to sex my young guppies I do not go by a spot or triangle. At an age of 6 weeks the males begin to show marks or a bit of color in the tail, at which time I separate them.

3. I use 25-watt bulbs on a 10-gallon tank for 8 hours a day.

4. Write to the Harrisburg Aquarium Society, State Museum Bldg., Harrisburg, Pa.

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*Salts From
The Seven Seas*



By Alfred A. Schultz

Caught in the Net . . . Who says that saltwater fishes are not a hardy lot? A good friend and saltwater hobbyist just returned from a trip to Bimini. While there, he did a little snorkeling and managed to collect about 15 fishes. Although this friend had his own plane, he did not come prepared for collecting. He managed to get a few 1-gallon jars, into which he put the fishes that he collected. Unfortunately, after he left Bimini he stayed a week in Nassau. (Unfortunately for the fish, that is!) All this time, the

fish were kept in the 1-gallon jars and fed some dried food. He managed to change the water once during his stay in Nassau, and then he finally reached home here in Jersey City. I'm not going to tell you that all his fish managed to survive this ordeal, however five of the fish did and are now alive in his aquarium. The survivors were three blue gregorys and two sergeant major. Could it be that we pamper our fish too much?

Q. A few months ago I started a 30-gallon saltwater tank. Among the fish I started with was a clown fish. It was healthy when I bought it from the dealer, but from the time that I put it into my tank, it refused to eat. Respiration is normal, and color is good. All the other fishes in my tank have died, and now I fear for the clown. I keep

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the temperature at 76, and my hydrometer reading is 1.019. I hope you can give me some advice so that I may do better with my future fishes.

R. Jochems,
Willowdale, Ont., Canada

A. Perhaps the sudden change from the dealer's tank to yours was enough to shock the clown fish. However, I think that you should add more fresh water to bring your hydrometer reading up to 1.025. And, if possible, I would lower the temperature to 73. When buying new fish for your tank try to get a hydrometer reading of the dealer's tanks, and, if possible, get the pH of his water. If it differs from yours, match the readings before putting the fish into your tank.

Q. 1. I have a problem that I am sure many inland marine hobbyists have. I would like to own a marine tank but no one in my area can supply me with any marine fish. My family is not going to the sunbath so I cannot collect them there. Can you tell me how I could obtain some?

2. Would I need to supply any rocks, coral, plants, etc.? If so, what?

Robert Updegrave, Jr.,
Williamsport, Pa.

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2. Coral, rocks, and plants are not an absolute must. They are used for decoration, although coral helps keep the water from becoming acidic. Plants should not be used in a marine tank.

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A small group of blind cave characins against a dark background is a truly impressive sight. Photo by Dr. Herbert R. Axelrod

Satisfy your urge for the unusual by . . .

Raising and Breeding the Blind Cave Characin

BY MIKE REED

I think every serious tropical fish fancier gets the urge now and again to get a fish that's a little different. Most unusual fishes, however, are not only expensive but also must have either a tank to themselves, special water conditions, regular feedings of live food, or a combination of these requirements. The only truly unusual fish that I know of that doesn't require special care is the blind cave characin, *Anoptichthys jordani*.




It is believed that the blind cave developed from *Astyanax mexicanus* when some of the latter became trapped in some Mexican caves. Here, in the



Astyanax mexicanus, the fish from which it is believed that the blind cave characin developed. Photo by Dr. Herbert E. Axelrod.

In strong lighting from the front and above, the blind cave characin often takes on a particularly pure pink coloration. Photo by Hansen.



 Can you identify this fish? Do you know where it comes from? What are its spawning habits?  How about this one? Could you breed it for money? If you can answer these questions definitively, or if you can get an authoritative answer in a jiffy, don't read further. But if you don't know all the answers and can't get them in a hurry — in short, if you are a hobbyist who really is bent on learning all there is to know about tropical fishes, aquarium management and, yes, commercial breeding, — buy this  book. Its 892 pages alive with almost 600 illuminating color photographs by the world's foremost authorities makes it the best investment you, as a hobbyist, can make. Exotic Tropical Fishes is available at your pet shop in two editions: hardbound and looseleaf to accommodate supplements by the authors.

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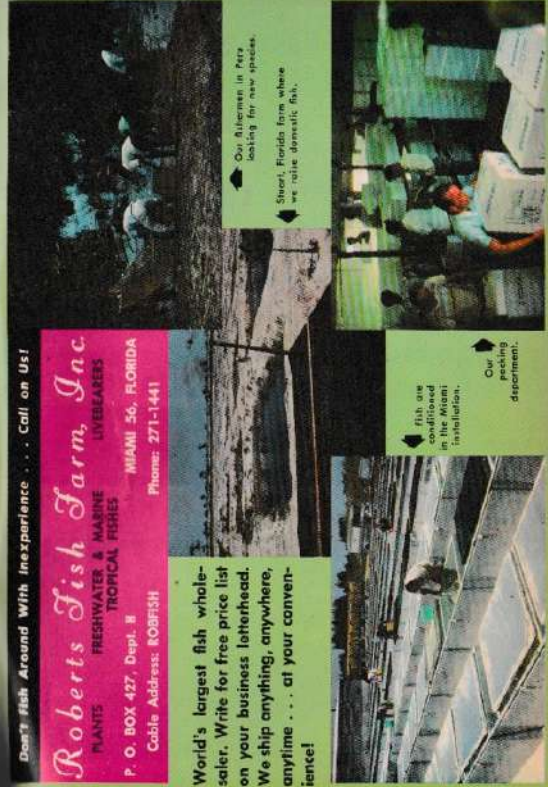


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darkness, there was no need for eyes, so the eyes were lost, as were the original silver and black colors.

For those who aren't familiar with blind cave characins, they are silvery pink in color, have an adipose fin and, most important, where their eyes should be there are only small pinched indentations. They stay nearly exclusively near the bottom of the tank, where they swim back and forth with a constant and smooth cruising motion. They reach 3½ inches at maturity and (although this point is disputed by some) are perfectly compatible with all but the smallest or largest of tropicals. They eat virtually anything greedily and are fine scavengers because they search the aquarium bottom for leftovers. With the exception of kissing gouramis, which grow too large for the average aquarium, and various albinos, which are sometimes extremely delicate, there are no pink aquarium fishes available other than *A. jordani*. In addition, the fish is easily bred and raised.

Why then, with all these advantages, is the blind cave characin not found in more hobbyists' aquaria? The answer is a misplaced pity. I believe that the average fancier thinks it would be cruel to keep these blind fish. He pictures them constantly bumping into other fishes and plants, rocks, and ornaments. Worse yet, he fears that they will starve to death because they are unable to see food.

One need only keep the fish for a few days to have these fears quelled. With the aid of some extraordinary sense, the fish never bumps into anything except occasionally a fish that swerves quickly into its path. When this happens, the blind fish reacts by touch with amazing speed and accuracy, nipping at the other fish with such vigor that the discourtesy will not likely be repeated.

As for locating food, blind cave fish are so successful that they are often the first to begin feeding. Just how they do it I don't know. Many aquarists think the most likely explanation is that they respond to the noise of the removal of the aquarium top or the vibrations set up by the particles of food hitting the water. As for their uncanny ability to spear small falling pieces or even darting live foods, the theory is that they have an unusually highly developed sense of smell.

Another thing yet to be explained satisfactorily is the fish's negative reaction to bright light. This reaction was probably developed in the wild as insurance that the fish would not blunder into sunlit waters, where sighted predators would obviously have a great advantage over them. At least one noted aquarist indicates that this light reaction may be triggered in tiny sensory cells located in the fish's sides.

At 2½ inches or more blind cave characins are relatively easy to breed,



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especially considering the difficulties one might expect to encounter because of their sightlessness. Sexing is simple, the males being much more slender than the females. A tank of as little as 5 gallons capacity may be used, but because of the large number of fry produced a 10- or 15-gallon tank is more practical. The fish are not too choosy as to water conditions. A pH of about 7 is fine, and a moderately high DH, simulating the water conditions prevailing in the limestone caves from which the original specimens came, seems best. They are usually spawned at about 75°F., but a difference of up to 5 degrees in either direction seems not to deter them in any way. A double layer of marbles or some other standard egg-saving method should be utilized, for the fish are avid egg eaters. No plants are necessary.

An active pair is placed in a dimly lit or dark aquarium. They will circle one another for a fairly long time (sometimes for several hours) in what seems to be an attempt to establish an absolute contact. Finally the male moves to the female's side and they press together, swaying and trembling excitedly as they rise toward the surface. The female expels her eggs at this time, and the male fertilizes them. There have been reliable reports that sometimes the male tires before the female does, the female continuing to release eggs despite the male's absence. To compensate for this possibility, at least one breeder uses two males for each female. However, if reports that the female is able to store viable sperm and use it when a male is not present are accurate, a second male is not necessary.

A single spawning produces anywhere from a few hundred to 800 eggs; unless the breeders are removed quickly when they are finished, they will find and eat every one that is exposed. Spawning seems to be particularly exhausting for these fish and, if possible, they should be rested in small individual tanks for a day or so before they are returned to their original aquarium. They should be ready to breed again within three weeks.

The eggs are almost impossible to see amongst the marbles. Within a day to three days (depending on water temperature), however, the fry begin to appear. By the fourth to sixth day nearly all the fry should be free-swimming. They are as blind as their parents, but are equally capable of finding food. Infusoria is the best first food and should be supplied in great quantity, for the fish are eager eaters and extremely fast growers. In a few days to a week the babies are ready for newly hatched brine shrimp and the small-grained dry food that is prepared especially for fry. Cannibalism is a great problem here, for growth amongst the youngsters is rarely, if ever, uniform. Since a number of fairly large tanks are needed to raise the fry to maturity anyway, this problem can be solved by sorting the fish by size. If sufficient food and space is provided, most of the young will grow to adulthood within four months.