

February, 1968

# tropical fish hobbyist

DOMESTIC 35¢ / British Isles 2/6



breeding red-tailed black sharks

# tropical fish hobbyist

Vol. XVI, February, 1968 (#144) No. 6

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## features

Bettaphile - 64, Mail Call - 69, Guppy Corner - 75, Salts From The Seven Seas - 81, Your Fishes' Health - 84.

## cover

Our cover features red-tailed black sharks, *Labeo bicolor*, this month. Up until recently, this species was considered to be one of the unspawables. A few years ago, a small number of foreign commercial breeders began spawning red-tails with some regularity, but these breeders weren't about to let the rest of the world in on their methods. However, now, at last, we have information on how hobbyists can breed the fish. Our friend Fred Kerr, author of the column "Bettaphile", had just submitted an article "Spawning the Unspawables" when he found himself writing "Keeping and Spawning the Red-Tailed Black Shark". We thought the articles to be related closely enough to be presented in a single issue. The first article appears on page 19, and the second article appears on page 92. Cover photo by H. Hansen.

## exotic tropical fishes supplements

Pages 33 and 34, 67 and 68. These pages are perforated for easy removal and punched to fit into the Loesleaf Edition of EXOTIC TROPICAL FISHES.

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February, 1968

## editorial

Fishnutosis is a contagious disease. Ever notice that? Of course a few people seem to have a natural immunity, but take the average person and expose him to a well set up community tank or a good fish shop, and chances are he'll almost immediately get pretty agitated and start asking disjointed questions. These, of course, are the first symptoms of fishnutosis. If exposure to other causative agents, such as fish literature, follows, the victim has little choice but to succumb.

Though not curable, fortunately fishnutosis is controllable to the extent that the patient can live a relatively normal life. Control is achieved through the purchase of an aquarium, some fishes, and the various accompanying items of equipment and decor that are desired. Finally, the acquisition of several good books and a subscription to TFH assures complete and lasting control.

*Mike Reed*



1. A male rosy barb edges his mate toward a dense stand of water sprite.

2. Once in the plants the colorful male moves up alongside the female.

## A Photographic Record of the Spawning of the Rosy Barb, *Puntius conchonius*

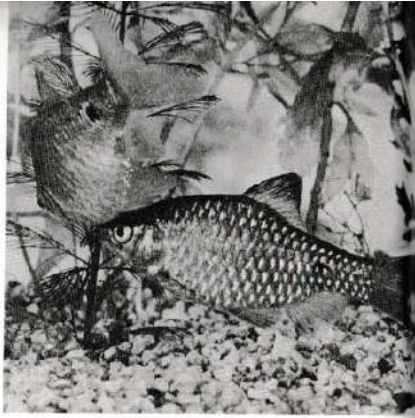
BY RUDOLF ZURAL  
BRNO, CZECHOSLOVAKIA  
Photos by the author

3. The spawning pair shakes and shudders just prior to producing eggs.

4. Spawning continues throughout the plant thickets.



5. Belly butting often precedes mating.



These barbs from the northern part of India, Bengal, and Assam are bred by many hobbyists. At the risk of slighting many advanced hobbyists who breed the fish, I recommend it as ideal for the beginner.

The old veterans in the aquarium hobby can remember that the fish was first introduced into Europe in 1903. It immediately caught the fancy of hobbyists. Not only were its colors outstanding but also its lively nature in the aquarium, its restless constant search for food, and its hardy nature.

The rosy barb's carplike body is greenish silver and has a black, gold-edged spot at the caudal base. The back is olive-green, and the sides and belly are silvery white with a rosy tint. The scales are quite large and shiny. The female's fins are without color or light yellow. The male is rosy to red in color and has pink fins. The point of his dorsal fin is black. The female's body is fuller and more pale in color than that of the male.

A temperature of 66° F. is sufficient for keeping them in a large tank that is well lighted. However, they also do well in the 74 to 78° F. range at which most other tropicals are kept. Normal aged tap water suffices, and a bottom of coarse gravel is ideal. This fish eats almost anything, and has a



6. If the female is ready, the spawning chase will not last long.

7. Sometimes the fish spawn very close to bottom.



8. The female bends her body into that of the male.

9. Look at how loaded the female is. Some eggs are visible at top.



constantly good appetite. Now and then a feeding of some sort of food which is of a vegetable nature is appreciated by the fish.

The rosy barb is best described as being a friendly, peaceful, hardy species. The water in its tank should have partial changes from time to time and be well aerated. This fish lives for up to 5 years and attains a size of about 2½ inches in the aquarium.

To breed this attractive barb, bring the temperature up gradually to 75° F., and give a pair a medium-sized tank (at least 8 gallons), without gravel. Add plenty of fine-leaved floating plants. The pair spawns in the plants. If the sexes have been separated for 10 to 15 days, spawning may be expected at once.

When spawning is over, the parents must be removed immediately. A single spawning sometimes results in 500 eggs or more. The average, however, is about 200. Hatching takes place in 48 hours, and after they become free swimming, the fry will readily accept infusoria and dried foods. At the age of 6 weeks, the youngsters should be sorted according to size.



Blood red swordtails are one of the most popular of the varieties that have been developed from the original wild type. Photo by Dr. Herbert R. Axelrod.

### A Swordtail Tank the Easy Way

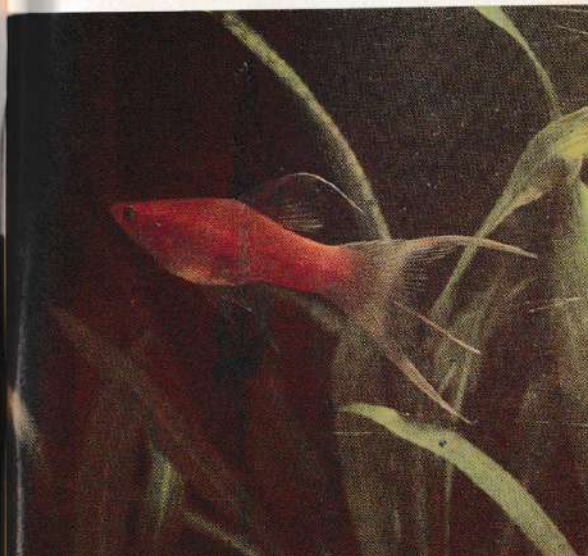
BY RALPH WOODBINE

Another well known variety of swordtail is the black Berlin type. Photo by Dr. Herbert R. Axelrod.



The swordtail (*Xiphophorus helleri*) is both one of the most popular and one of the least popular of aquarium fishes. The beginning aquarist will invariably keep several of these attractive livebearers in his 10-gallon community tank with various small, peaceful tetras, barbs, and angels. Usually the fast-swimming male swordtail will keep the tank in a turmoil with his constant chasing and harassing of the smaller inhabitants. If there are two males in the tank one is frequently found, hollow-bellied and miserable, huddled in one corner of the tank or behind a bottom filter or rock. Under

Among the many fancy varieties of swordtails that have been developed are fish like this red wag lyretail sword. Photo by Jiri Taborsky.



This lyretail swordtail has a third elongated filament in the middle of its tail. Photo by Jiri Taborsky.

these crowded conditions, and in company with egg-layers, the swordtails seldom live very long. Because they are inexpensive and their color (especially that of the red varieties) provides a pleasing contrast to his other fishes, the beginner usually replaces them several times before his taste becomes more sophisticated and he moves on to other fishes. There is a very good chance that he will never again keep swordtails.

This is all very unfortunate because, if kept properly, the swordtail is a satisfactory addition to anyone's collection. You semi-professional breeders

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of swordtails can stop right here. I have no secrets for you; I am writing for the hobbyist who is interested in maintaining an attractive tank of lively and colorful fish.

A large tank is essential. I dislike dogmatic statements where fishkeeping is concerned, but in this case I see no way out. A large tank provides room for growth, and a well grown swordtail (female or male) will measure 4 inches, exclusive of sword. It also provides swimming space, and I believe that this is essential to the well being of any lively, fast-swimming fish. In addition, a large, well-landscaped aquarium provides a sufficient number of hiding places for any female or less aggressive male who wishes to get out of the main stream of traffic and rest.

I use a 29-gallon tank, thickly planted with water sprite at the back and sides and with additional water sprite floating on the surface. A thick growth of vegetation is necessary if the newly born swordtails are to survive and grow rapidly in the tank with their parents. I like water sprite because it grows well for me; there are other plants that would serve the purpose as well. My tap water is soft, has a pH of 6.8, and seems quite satisfactory

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although, according to some books, harder water with a higher pH would be better. Temperature is kept at a constant 75° F.

A tank such as this can easily support a population of approximately eight adult swordtails. The most harmonious tank seems to be the one in which there are slightly more males than females. In large groups, male swordtails tend to distract each other so that there is not likely to be any prolonged bullying of any one individual.

The young should be culled ruthlessly so that the tank will not be overrun with them. Approximately a dozen young of varying ages can be kept coming along at all times, the young serving to replace the adults, which age rapidly after about 1½ years. There is much variation in the speed with which swordtails mature. Some males develop sexually at 3 months while others take twice as long. There is little additional body growth after the sword is fully developed. Therefore, the big male with a short sword will usually develop into the best specimen.

Swordtails enjoy a well-lighted tank and spend a lot of time pecking at the algae that grows under these conditions. Apparently, vegetable matter is a necessary part of their diet. They are fond of dry food and feed upon it at all levels. To get top specimens, frozen brine shrimp should be fed daily. Liver-pabulum paste food with mashed green vegetables added is also good. The young do well on newly-hatched brine shrimp, but live food seems to be less essential to swordtails than to many other fishes. Two feedings a day are sufficient, more are better. I suspect that frequent feeding is less of a necessity for young swordtails in a large, thickly planted tank than for strictly carnivorous fish in a bare nursery tank, for the young swordtails scrounge ceaselessly.

A couple of *Corydoras* catfish will earn their keep as scavengers, but I believe that a Siamese algae eater (*Gyrinocheilus aymonieri*) is even better. In addition to cleaning up uneaten food, it will help to keep down excess algae. I once had one grow to a length of 5 inches in a tank of swordtails. Even at that size it seldom uprooted any plants.

In such a swordtail tank, a minimum of filtration is sufficient; I use a bottom filter containing an airstone. Cleaning is simple; once a week wipe the front glass, siphon off a bucket of water from the bottom and replace it with aged tap water. Clean the filter when necessary, and stir the gravel once a month or so.

**Correction**—The picture of the blue gularis that appeared on page 13 of the December issue was credited incorrectly. It should have been credited to William T. Innes.

## Spawning the "Unspawables"

BY FREDERICK J. KERR

One of the greatest challenges to the serious aquarist is the spawning of species of fishes which have never before spawned in the aquarium. There is a degree of mystery in this pursuit, because the aquarist cannot turn to a book for a recipe. He must, with his own skill, find the conditions necessary to achieve the spawning. At times spawning an "unspawable" brings a profitable reward, but often the aquarist is interested in spawning such a fish simply to meet the challenge.

How does the aquarist go about spawning these fishes? A surprising number of first spawnings are accidental! The aquarist happens by chance to provide satisfactory conditions, and the fish obligingly go about the business of procreation. This "method" is not without merit, and any species of fish can be tried using it before more elaborate attempts are made, but usually special procedures must be followed.

First, two requirements must be met. A male and a female fish must be in the same aquarium, and they must be fully mature. As obvious as the first requirement is, it is not always possible to fulfill. Occasionally fish of only one sex are imported. This is not because exporters are trying to prevent propagation, but because the females are so drab that exporters do not feel that they are of commercial value. On the other hand, the males and females may be so similar that it is difficult, especially when they are young, to tell them apart.

A careful aquarist can sometimes note minute differences which might be secondary sexual differences. Such clues as slightly more intense coloration, slightly larger or more pointed fins, or slightly greater girth might be enough.

Often there are no perceptible differences, and the aquarist simply has to take his chance that if he selects a number of individuals there will be at least one of each sex present; six is often given as the magic number of fish to get to assure yourself of acquiring a pair, but occasionally the aquarist finds himself with six of the same sex. The larger the number of fish originally purchased, the greater the chances of getting a pair.

A second problem is knowing if the fish are mature enough to spawn. No matter how perfect the conditions in the spawning tanks, the fish must be sexually mature. The aquarist has several clues to whether his fish are mature. One clue is size. If the maturation size of related species is known, there is a good chance that it will be about the same for a new species. There is a possibility that some species, such as the plecostomus, do not ordinarily reach maturity size in the average aquarium no matter how long we keep them. The only way around this is to give such fish very large aquariums

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or vats in which to mature. Another clue to maturity is age. Nearly all tropicals become mature in about a year, so they can usually be regarded as being mature at a year from purchase. Yet another clue is behavior. If one fish appears to be courting another, the chances are good that the two are a pair, although this is not always the case: two females may carry courtship to the point of egg-laying.

If the aquarist is reasonably sure he has a pair and that the two fish are mature, he is ready to attempt to spawn them. It is usually possible to predict how a fish spawns and the requirements it needs filled for everyday living by knowing something about its relatives. Members of the same genus, and often of the same family, frequently spawn in a similar manner. Among the characins, most are eggscatterers... some laying non-adhesive eggs which generally fall to the bottom, others laying adhesive eggs which stick to plants, rocks, or whatever else they touch. A few characins depart from these common patterns. Some lay eggs in a depression in the sand and guard them. Others actually lay eggs out of the water. But take heart, if the fish to be spawned is a characin, it is possible to provide a spawning tank which will cover all possibilities. About half the tank bottom can be covered with marbles or pebbles to protect non-adhesive eggs, and the other half can be covered with fine sand to handle any nest-building propensities. Bushy plants anchored in one corner will be a suitable place for laying adhesive eggs.

In the cyprinid group there are two primary egg types: adhesive and non-adhesive. For an "unspawable" in this group a bottom of marbles or pebbles and a clump of some fine-leaved plants is all that is necessary unless the fish is a rasbora, in which case it would be good to provide a wide-leaved plant in case the fish spawns like *Rasbora heteromorpha*.

The catfishes are a large, heterogeneous group about which it is difficult to make generalizations. Some spawn with bubble-nests. Others lay adhesive eggs. Some prepare sand nests which they guard. Still others lay their eggs in clusters on rocks or leaves which they may or may not guard. The best preparation is to find out how members of the same or closely related genera spawn and to prepare the tank in a manner appropriate for these genera.

The killifishes have two ways of spawning: some lay adhesive eggs, and others bury their eggs in mud or peat moss. The tank is easily prepared for either event by using either fine-leaved plants or nylon spawning mops, and a ½-inch layer of boiled peat moss on the bottom.

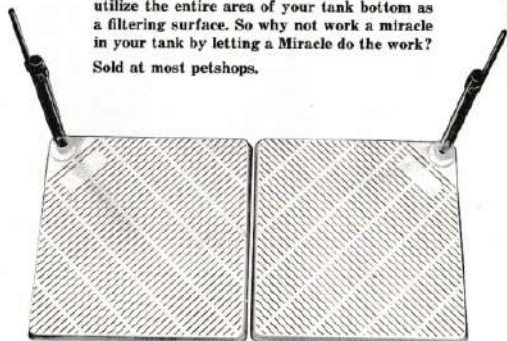
The livebearers provide little difficulty in spawning beyond that of providing hiding places for the young. The anabantids are mostly bubble-nest builders, but a few are mouth-breeders. In either case, gravel or sand is generally unnecessary in the spawning tank. Cichlids are all either mouth-breeders or rock spawners. Flat stones are generally used for the deposit of their eggs.

## WORK A MIRACLE IN YOUR AQUARIUM

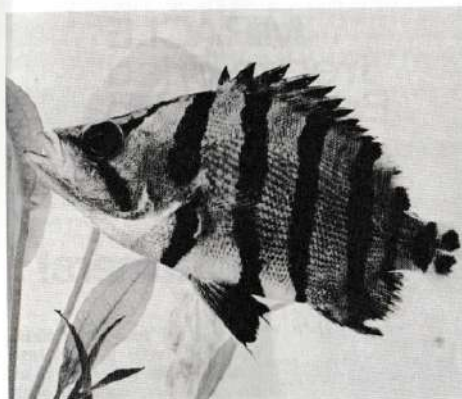
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*Dalmatoides quadrifasciatus*, one of the many tropicals that resist all efforts of hobbyists at spawning them. Photo by Dr. Herbert R. Axelrod.

Once the proper setup is determined, the all important question of what the proper water chemistry is must be answered. There is a considerable suspicion on the part of this writer and many other aquarists that we worry too much about water chemistry, and that we may do more harm than good by attempting to doctor water. If softer water is needed, snow, rain, or distilled water may be vastly better than water softened by resin filters. Acidification may be better done using peat moss than using chemicals. Likewise, I feel it is better to use limestone chips to make water more alkaline than to use chemicals sold for this purpose. Of course all this is a matter of opinion: many successful breeders alter water chemistry in their aquariums with chemicals all the time.

There are a number of possible clues as to what type of water to use. A knowledge of what closely related fishes require, the locality your fish comes from, and under what conditions your fish is most colorful are all clues for preparing water. A few generalizations can be made about pH. Unless evidence strongly opposes its use, a neutral to slightly acid water is the best bet. Strongly acid water is a poor choice in the spawning tank for a

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number of reasons. Fishes collected and shipped in highly acid water ship poorly and do not adapt well to aquarium life. For this reason collectors avoid them. A second reason for shunning highly acid water is that this condition usually occurs at the end of the dry season, and fishes usually do not spawn at this time.

The best water hardness is more difficult to guess. Most tropicals come from waters which are quite soft. A fairly good compromise can usually be achieved by mixing one fourth to one half tap water with rainwater. Some fishes do very well in pure rainwater to which a tablespoonful of salt per gallon has been added. The panchax are in this group. A few fishes such as the Nyasa cichlids and many livebearers prefer relatively hard water.

It is a little tricky to read accounts of water tests taken in collecting areas and then to try to match the readings in the water in your aquariums. There are few natural bodies of water (be they lakes, ponds, or streams) which do not fluctuate widely over the course of a year with respect to temperature, pH, and hardness. A heavy rainfall in a small body of water can change all

*Distichodus sexfasciatus*, another tropical which has not spawned for hobbyists. Photo by Dr. Herbert R. Axelrod.



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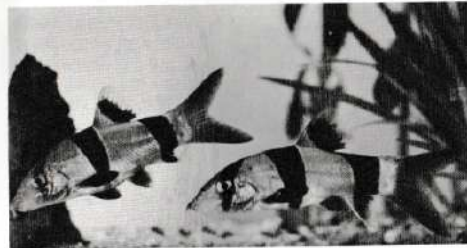
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The clown loach, *Botia macracantha*, has long been one of the most desired of tropicals. Anyone who discovers how to spawn them should make a lot of money selling the young. Photo by G. J. M. Timmerman.

these conditions in a matter of minutes. After a dry season tropical waters are likely to be highly concentrated with all kinds of dissolved chemicals which are abruptly diluted with the advent of a rainy period. Spawning frequently occurs shortly after the change of seasons, and a change of season means a change of water conditions. Fortunately, we can simulate these conditions by simply adding rainwater or distilled water to our aquariums. Such "water freshening" is a trick most breeders know and use quite often.

So, trying to breed a previously unbred fish is experimental at best. By knowing something about the fish we can make some guesses which may help, but at times the best guesses are flops. What do we do then? It seems as if it might be a good idea to do just the opposite of what seems logical! As an example, one breeder was attempting to spawn bumblebees. Since this fish comes from brackish water, the breeder provided these conditions but no spawning occurred. Finally soft acidic water was tried. There seems to be no plausible way that this goby would ever encounter this type of water in nature, but the fish spawned profusely. On the other hand, the Lake Nyasa cichlids, which come from fairly hard alkaline waters, have spawned in soft, slightly acidic water for some aquarists, while holding out for hard alkaline water with most others.

Keep in mind that spawning does not mean that the eggs will hatch, and hatching does not mean that the fry will live to grow mature. At times the adult fishes seem to be more adaptable to various water conditions than are their eggs or fry. In such cases more experimentation is needed until just the right conditions are found.

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Tropical Fish Hobbyist

## Bits About Bugs

BY JERRY CURRIER AND MARTY SMITH

You may have noticed that spawning and raising the fishes you keep is considered a mark of success in most circles of the hobby. And no wonder! Getting some fishes to spawa is difficult and sometimes impossible. And even if a spawning attempt is successful, failure is frequently experienced in the first week of the youngsters' lives. Every hobbyist who wants to spawn and raise different varieties of fishes is usually confronted with this situation. Often such failures with fry are due to improper or inadequate food being offered to them. With the exception of most livebearers and certain large cichlids, newly hatched fry are too small to eat the usual prepared foods. Even when adequate food is available fry may starve if the food does not swim directly in front of them! The only answer seems to be living foods that are mobile and nourishing.

The waters of the world abound in microscopic animals generally referred to as infusoria. Although the word "infusoria" should only be applied to the Ciliata (animals which have hair-like organs called cilia), the aquarium hobby has adopted the name for any one-celled animal useful for feeding fry.

Unfortunately, the cultivation of infusoria has long been a problem for the aquarium hobbyist. The methods used in the past were messy, and the resultant cultures were difficult to feed and often developed a pretty wild odor.

Today's hobbyists can dispense with such methods and still get excellent results. Modern research has developed new products that completely eliminate the need for messy, odorous infusoria cultures. In this article we are going to examine two of these products, infusoria tablets and liquid fry foods, and give you some hints on their use.

First of all let's look at the infusoria tablet. Your dealer will usually carry this item packaged under a variety of brand names. Regardless of which product you buy, the principle is much the same. The tablet is a highly nourishing food substance for infusoria. The introduction of the tablet to the aquarium increases the food available to the infusorians, and they naturally multiply in large numbers.

In an established aquarium there are always small numbers of infusorians present, but they are usually kept to a bare minimum by lack of proper food. Just how the little creatures get into the water remains something of a mystery. Even a completely bare aquarium that has been sterilized and filled with distilled water will suddenly develop numerous organisms after standing a few days. The generally accepted theory is that infusoria spores are abundant in the air and hatch upon being deposited in water. Be that as it may, the tablets will definitely cause an increase in the infusoria population.

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The paramecium is a protozoan (single-celled animal). It is one of the most common infusorians found in hobbyists' cultures. It can be seen but not identified with a good hand lens.



The amoeba is another common protozoan. Its shape is not fixed. It too can be seen with a good hand lens but must be examined under a microscope for positive identification.

In as much as there seems to be a certain amount of confusion concerning just what the tablets do to increase the quantity of infusoria, we ran a number of tests in an attempt to clarify the matter.

The conclusions we reached are based on tests conducted with ordinary tap water, tap water with a tablet added, water from an established aquarium, and aquarium water with a tablet added. All test cultures were protected from

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February, 1968

direct contact with the air to prevent invalidating the results by outside contamination.

Under microscopic examination the tap water showed no infusorians at the start of each test, and the aquarium water showed a very small population. At the conclusion of each test run, the tap water with and without tablets had no infusorians. (The solution with a tablet was cloudy and had an odor, no doubt due to bacterial action.) The infusorians in the plain aquarium water had disappeared, probably from lack of food, while the aquarium water with a tablet showed a tremendous increase in population. All this seems to indicate that the tablets contain only a food substance and not infusoria spores.

Since the introduction of a tablet to an aquarium causes a tremendous increase in the infusoria population, and since infusorians are busy little creatures, fry in a tank in which such tablets are used are kept in easy reach of a meal at all times. Thus the twofold problem of quantity and mobility in microscopic food is solved.

Liquid fry food is another useful product that is available to aid the prospective fish breeder. Here again there are numerous brands which for the most part are similar to one another in content and application. They are composed of various finely ground, highly nutritional foods that are suspended in a liquid medium. They are used by adding the required amount to the aquarium containing the fry. The real disadvantage of this method is the lack of movement on the part of the food. The fry must come upon it, and many baby fish will not. This problem can be solved to some extent by adding the food to a cup of aquarium water, stirring, and then pouring the mixture into the tank. This method makes for a less concentrated feeding area, spreading the food throughout the tank so that some of it will come within reach of all or almost all the fry.

Mike Reed, the editor of *TFH*, has pointed out to us that a slight overfeeding of liquid food will have an effect similar to infusoria tablets, with the infusorians feeding on the "left overs" and increasing in number. Our experience indicates that this may be risky, if care is not exercised, as a corresponding increase in bacterial count is noted and may foul the water. In his column "Your Fishes' Health" in *TFH* June 1967, Reed goes still further, offering a method of culturing infusoria in milk bottles by using small quantities of liquid fry food to nourish infusorians. We have not tried this method, but at least it does not threaten the tank with fouling.

We have found that using a combination of both tablet and liquid foods gives highly satisfactory results while reducing the risk of fouling the water. Much of our fish breeding is done in 5-gallon tanks which, except for the spawning medium, are completely bare. The water and tank are kept as free of bacteria and other microorganisms as is possible. The purpose is to

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reduce egg losses caused by bacteria or parasites. Obviously this is not the ideal situation for the natural development of infusoria. Consequently, we add a half of an infusoria tablet to a 5-gallon aquarium after the fry have hatched and before they become freewimming. This allows time for sufficient numbers of infusorians to develop since most egglayer fry draw nourishment for the first few days of life by absorbing their yolk sacs.

After the fry are freewimming (the yolk sac has been absorbed), we add 2 or 3 drops per day of one of the liquid fry foods. This assures a ready and plentiful source of food immediately, as well as stimulating the growth and multiplication of the infusorians. Very light aeration is maintained throughout this period to create a slight movement of the aquarium water and diffuse the infusorians evenly. (Because most baby fish cannot swim against a violent current for extended periods, we must stress that aeration should be gentle, thus preventing excessive water movement.)

After 2 or 3 days (hardly ever more than a week) on this diet, the fry can be graduated to newly hatched brine shrimp and microworms. At this point filtering can be begun by means of an outside filter. To prevent ingestion of the fry by the filter, a plastic sponge designed for this purpose is placed over the filter's water intake. Filtering helps clear the water of the now-useless infusorians and, more important, any harmful gases that may have built up from decaying material. One word of caution: filtering should not be started until you are sure that the fry are eating brine shrimp. This is easily determined as the fry will develop a bulging, yellowish stomach from feeding on this fare.

The greatest danger in any feeding program is overfeeding. With fry the situation is the same but with one bothersome complication: UNDERFEEDING CAN BE JUST ABOUT AS DANGEROUS!

It is our experience that feeding young fishes heavily promotes rapid growth with better color and appearance. But unless great care is taken to reduce the amount of leftover food lying about the tank, the fry may be killed by foul water. Unfortunately there is no concrete rule to be applied about how much to feed. This has to be determined by the number and size of the fry and by that bothersome old thing called "experience". About the only advice that can be given is to say that if the water starts to become overly cloudy and takes on a rotten odor you are feeding too much.

Many users of infusoria tablets become nervous due to their appearance after a day or so of immersion in water. A heavy fungus growth usually develops on the tablets' surfaces. This seems to be perfectly normal and appears to do no harm to the fry. The best thing to do is to ignore it. We should also note that the instructions printed on or given with liquid fry food are usually overly generous in the amount they advise to feed: Our experience shows that 2 drops twice daily to a group of 500 to 800 zebra danio fry is quite sufficient if fed in conjunction with infusoria tablets.

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A fish breeder in New Zealand.

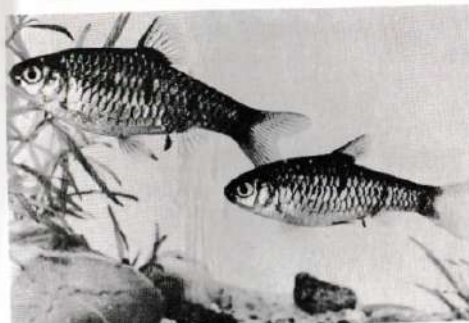
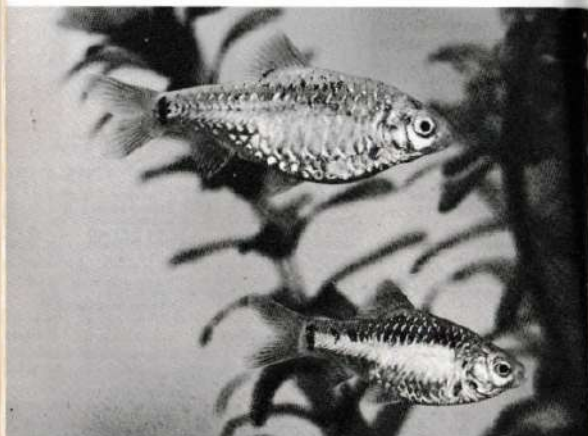
### A Barb Hybrid (?)

BY ALEX PARKER  
Auckland, New Zealand

For the past few years, I have been trying to breed Barbs of various kinds, with not very spectacular results. In outside ponds in summer, we found Rosy and Ticto Barbs prolific enough, but Black Rubies got gobbled up, unless the baby fish were picked off and put safely away from hungry parents. It was Golden Barbs that we had no success with. If we had females full of roe, males would be unobtainable.

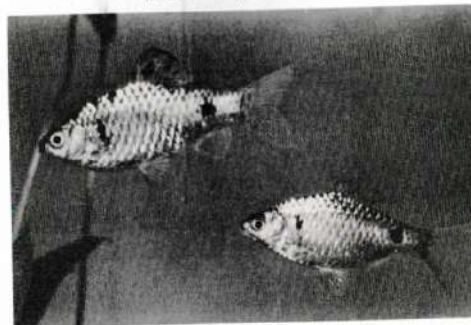
At least that was the position about a year ago. I obtained one sickly looking male Golden Barb from a colleague. It seemed that this one was the only one in the country at the time. But alas, the effort was too much for him,

The golden barb, *Puntius sochsi*. Photo by Dr. Herbert R. Axelrod.



Like the golden barb, these half-striped barbs (*Capoeta semifasciatus*) reach 2 1/2 inches in length. Photo by Milan Chvojka.

The author found ticto barbs, *Puntius ticto*, to be prolific in his outdoor pools. Photo by Gunter Senft.



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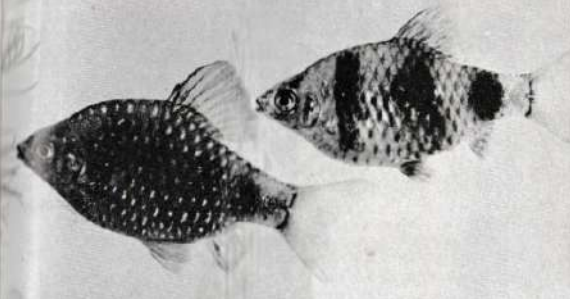
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Black ruby barbs, *Puntius nigrofasciatus*, ate nearly all of their young in the author's outdoor pools. Photo by G. J. M. Timmerman.

and he expired without fulfilling his destiny. While interring him in the garbage can it suddenly occurred to me that Mr. Schubert's claim was that his Golden Barb was a spot of the Half-Banded Barb, so why not mate a Half-Banded male to the Golden female?

I promptly grabbed my net, and before the male Half-Banded Barb was over his surprise he was out of his tank and into the tank of the recently made widow, who didn't stay in mourning for long. They were compatible at once and proceeded to go through their spawning routine. After about six hours I could see numerous eggs scattered about, and Mrs. *Puntius sochsi* had regained her girlish figure. Some 36 hours later, there were some fry sticking on the sides of the tank. The tiny fry were hard to find among the *Nitella*, and it was several weeks before we found that we had a total family of about three dozen. Rather a poor spawning, but at least a start!

It wasn't long before the Golden Barb lost her schoolgirl figure again and started whistling at the male Half-Banded Barb once more. The process was repeated, but this time, to safeguard the eggs, more marbles and pebbles were heaped on the bottom of the tank, and a good-sized clamp of *Nitella* plus Watersprite weighted with lead was added. This time the score was five dozen.

About this time I obtained two male Golden Barbs which a petshop had

imported. As they were immature, we popped them into the community tank for future reference.

Batch number 1 was steadily growing by this time and the young of batch number 2 were not far behind. Now what, we wondered, are these baby fish going to look like? Impatiently we waited and at last we knew. Can you guess? They all took after their father's side of the family! Half stripes and all, and no sign of Golden Barb color or shape. I later had another batch, this time about seven dozen fry. This brought the total up to twelve dozen, tying up quite a few tanks with one kind of fish. So for a variation the Golden Barb female was mated to one of the male Golden Barb which had been growing up in the community tank. This time it was just about the jackpot. Eggs flew everywhere, and it proved to be a spawning of more than twelve dozen. That family is now doing well and growing steadily, if somewhat slowly.

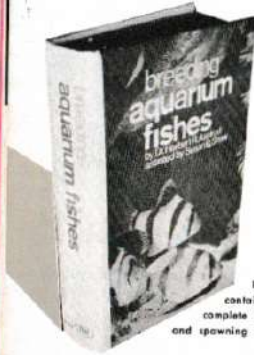
Some of the first baby hybrids went into a community tank, where there were some true *Capoeta semifasciatus*. These little hybrids grew steadily until it was difficult to tell which were the crosses and which weren't. At the time of this writing I would say that it would be impossible, as their sizes are about equal. If an expert were to do a scale count and take them apart

The author in his fish room.



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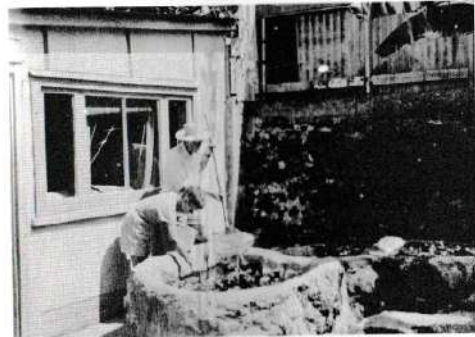
3. How about young guys like me? TUBIFLAKES are great for you too. They have added vitamins and sex stimulants.

4. Sex stimulants? Are you that old? Not for me, you idiot. It's for my wife, she has egg production problems.

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Fish are collected and sorted from one of the author's outdoor pools.

bit by bit, he might find a difference, but I doubt it. Perhaps this doesn't prove anything, but it may strengthen Mr. Schubert's claim. If this fish is a spurt and not a separate species, Mr. Schubert deserves a great deal of credit for creating a lovely little fish, when the odds were very great against such an occurrence.

To end my story: I tried for one more spawning, but it was not to be, for the female Golden Barb died that night, not worn out but still in the prime of life. To her memory are close to 400 offspring from two different fathers.

Note by W.V.: There are some differences which form a distinction between *Capoeta semifasciatus* and *Puntius sachsii*. One is the reason for the two generic names: *Capoeta* has two barbels and *Puntius* has none. The scientific description of the two fishes shows one more difference: *Capoeta semifasciatus* has two stiff anal rays, whereas *Puntius sachsii* has three. According to Günther Sterba, *P. sachsii* and what we call the Golden Barb are probably closely related, but not *Capoeta semifasciatus*. This leaves a job for the taxonomists, to decide if the Golden Barb is another species or merely a golden form of *P. sachsii*. To Mr. Parker would then go the credit for a successful hybridization of two separate species, and even of two different genera.



It has been a great satisfaction to see how the readers of T.F.H. have responded to the request for letters and questions about the betta. Because of the time-lag realities of the publishing business, it is not possible to present letters from readers in this issue, so this is a good time and place to make a few miscellaneous remarks about bettas and the column.

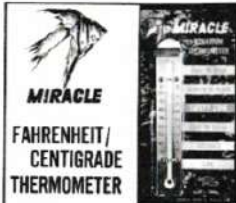
Many of the letters received indicate confusion about the meaning of the name of this column. "Betaphile" is a made-up word. The root is "beta" and needs, I trust, no explanation. The suffix "-phile" means to have affinity or love for something, in this case, bettas. So, if you are reading this column, the chances are that you are a bettaphile.

In the course of doing my homework for this month's column, I became interested in the species of bettas. There are about seven of them: *Betta bellica*, *B. brederi*, *B. fasciata*, *B. picta*, *B. pug-nax*, *B. splendens*, and *B. uacnata*. Although none of the wild bettas can approach the color and finnage of the cultivated varieties of *B. splendens*, all seem to be interesting and well worth the attention of the bettaphile. Unfortunately these species are extremely hard to get. This is not because they do not abound in nature, but because collectors do not feel that there is sufficient market to warrant shipping them. If any of our

readers are currently breeding any of these species of bettas or knows where to obtain them, why not write to me, and I'll pass the information on to our readers.

You can never expect bettas to act predictably. I have, for years, looked with suspicion on those authors who indicated that the female betta may make a nest of her own and raise the young. I had based my opinion on my own experience of carefully watching the spawning behavior of many pairs of bettas. Not once did I observe a female that showed the slightest inclination to take over the nesting duties. That is . . . not until a few weeks ago.

I had set up a pair of green bettas to spawn. This pair represented the third generation of brother-sister matings. Hoping that improvement of finnage and spread of the iridocytes would continue, I watched the spawning with



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casual interest through the second or third embrace. Up to this point everything was as usual. On about the fourth embrace, the male was slower to recover than the female, who went to the bottom and began picking up eggs. My first thought was that she was eating them, but she rose to the top and carefully deposited the eggs in the nest. The male, who had recovered from the embrace, finished picking up eggs and putting them in the nest. This unusual behavior of the female was not repeated on subsequent embraces. It just goes to show that no matter how contrary to our own experience a statement might be, it just might be true.

Several letters have been received from readers interested in a national betta society similar to the American

Guppy Association and the American Killifish Association. There are many reasons why such a society should be formed. Not only would it promote research on the betta, it would help to establish strains and assure the survival of desirable mutations through exchange between interested breeders. It would also arrive at a standard for judging the betta that would be acceptable to the greatest number of breeders.

The problem arises as to how to best go about creating such an organization. The writer of this column is reluctant to pledge its help to any individual, because of the chance that a single person may lose interest. Many of the larger aquarium societies have sections devoted to the betta. One or more of these seems to be a natural parent club for a national betta society. If the president of one of these societies will write to this column pledging his group to the task of organizing such a society, I will give what help I can in making the work of the group known to bettaphiles.

Gene Lucas, whose betta articles you have seen in this magazine, is now producing what he calls the "Betta Breeder's Newsletter." He describes it as "a publication dedicated to the improvement of communication between persons concerned with the biology and genetics of *Betta splendens*, the Siamese Fighting Fish." If you are interested in getting the Newsletter, write Mr. Lucas for particulars. Write care of the Dept. of Biology, Drake University, Des Moines, Iowa 50311.

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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. 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 Cornwall Avenue, Jersey City, N. J. 07302.

**Aeration without filtration**  
Q. I have decided to breed white clouds, and I have a few questions to ask.  
1. Can a catfish be kept in the tank while white clouds are being bred?  
2. How can I aerate the water without a filter?  
Jesse Bornfreund, Pearl River, N.Y., N. J. Absolutely not. Catfish should never be allowed in a tank in which egg-layers are being spawned. Not only do they tend to distract the breeders, but they also eat the eggs.  
2. The best way is to use a simple stone or metal-and-felt aerator along with an air pump. Such devices are quite commonly used, and I'm surprised you have never heard of them.

**Discus diet**  
Q. I am a fairly new reader of T.F.H. I

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would like to say that the articles and photographs are very interesting, and I will be a reader for a long time to come. As for my questions:

- 1. I would like to know in your opinion how many large adult discus as well as small discus can be kept in a 20-gallon tank.
2. I have two large discus in a 20-gallon tank, and they are very fussy eaters. I have tried feeding them a number of things, but it seems they will eat only live and freeze-dried tubifex worms. Is there anything else that they will eat besides worms?
3. What is the size and age that discus have to be before they will breed?

Ronald Drucker, Flushing, N.Y.

A. 1. You can keep a pair of adult discus in a 20-gallon tank, but this is really a bit crowded. A 50-gallon tank is ideal for a pair and is large enough in which to raise a batch of their young until they reach half-dollar size.

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pair and is large enough in which to raise a batch of their young until they reach half-dollar size.

2. They should welcome frozen and freeze-dried brine shrimp. Beef heart is also relished by many discus.

3. When they are ready to breed, they will let you know by pairing off. Don't give up if breeding is unsuccessful the first two or three times.

Feeding native fishes

Q. Last August, after having obtained a license to capture native fishes, I brought six small fish from Indiana. All were 1 inch long. Today two are left, one is 4 1/2 inches long, the other is 3 inches long. They have been identified as bluegills. The larger is in a 15-gallon tank with a few tiger barbs. The smaller is in a 5 1/2-gallon tank with a couple of catfish. My problem is feeding them. They only ate brine shrimp and tubifex

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when they were smaller. Now they only eat chopped and cooked shrimp, king crab, spinach, and freeze-dried brine shrimp and tubifex. They will not eat eggs in any form, chicken, or chicken liver. They sometimes take ground beef. I feel their diet is not varied enough. Could you suggest what else I could feed them, or is their present diet substantial?

Mrs. J. A. Blair, New York, N.Y.

A. I should think that what you are feeding them is just fine. If you want to give them a special treat, try some earthworms. Keep the worms in moist wood shavings or sawdust for about a day before using them though. In this amount of time much of the mud they have in them will be excreted. This avoids clouding your tank with the fine particles of earth of which the mud is composed.

Leaky tanks

Q. I have been raising tropical fishes for 2 years. I enjoy the hobby very much. I own a 5- and a 10-gallon tank and would like to get one of about 35 gallons in capacity. In this larger tank I would like to raise Cichlasoma maculata, C. biocellatum, C. severum, Hemichromis bimaculatus, Anostomus anostomus, and possibly Geophagus parupari. If I use a high-speed outside filter and two or three airstones how many of these fish can I raise to adult size?

2. Recently I purchased two 10-gallon tanks, thinking both were water-tight. But one had a thin crack down the middle which couldn't be seen until water was placed in it. Of course, it leaked. The other tank was badly made in that there was not sufficient cement in one corner, so it also leaked. I bought

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Louis Strombach, L'Anse, Mich.

A. 1. You will be able to raise two of each of the species you mention. All these fishes are rather aggressive, however, and several precautions should be taken to keep them from hurting one another. First of all be sure you buy fishes of approximately the same size. Second, be sure you give them sufficient food. Third, give your fishes plenty of places to hide. This is best

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will hardly ever get a leaker. These tanks may cost a bit more than bargain tanks, but in the end they are more economical, because they last longer and are more trouble-free. One good brand of tank is Dader, but there are a number of others too.

3. It is always difficult to say how much light is ideal in an aquarium. There are so many variations to deal with. What is the duration and intensity of the light received from natural sources? How deep is the tank? What plants are being grown? Are there floating plants present, and how dense are they? All these factors play a role in proper lighting. The only thing to do is to vary the lighting until you are getting good plant growth, and then stick

with that amount of light.

4. Just as some people have a "green thumb" with plants, other people are particularly skilled at keeping fishes. Usually such people do all the right things automatically. Your friend is probably one of these people. She undoubtedly won't be able to tell you just what she is doing right, but it would be wise of you to watch how she cares for her fishes and try to follow her lead.

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direct me to a book that would give me some information about breeding them?

2. I paid 7 dollars for a discus and wondered if I got a good buy. Could you tell me what a 2-inch *Symphysodon aspidofasciata asotardi* would usually be sold for?

I like the magazine, and this column is a big help to me.

**Matt Collins, San Francisco, Calif.**

A. 1. A tank of at least 50 gallons in capacity would be my choice. The best book to start with would be the book called DISCUS and advertised in the list of T.F.H. Publication's books in this issue. After

reading that book, read as many others as possible that include discus information.

2. You can never really say what a fish is worth. In San Francisco, where you live, prices are lower than in many other parts of the country. What a fish is really worth to you ultimately depends upon how

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badly you want it: what it is worth to the dealer depends upon a number of factors. If you and the dealer are in each other's range on the worth of a fish, fine. If not, you don't have to buy.

**A plant combination**  
Q. I recently purchased a dozen anacharis plants, and would like to purchase a similar quantity of myriophyllum.

1. Could these plants be kept together in the same tank?  
2. If the above is true how much light should be provided, and what should the pH value be?  
3. Some people say anacharis does not do well in an aquarium. Others say it does. What is your opinion?

**Carey Deltzell, Glendale, Calif.**  
A. 1. These plants thrive under similar water conditions: hard and alkaline. Thus, they are ideal together in a tank.

2. Regulate your light until the plants are growing satisfactorily. The pH should be kept alkaline; about 7.3 or 7.4 would be fine for the plants and still not harm many aquarium fish species.

3. If you give it the right conditions and do not have any fishes that pull its leaves off, it will be one of the best plants you will ever keep.

**Sexing discus**  
Q. About 2 months ago I went against my better judgement and bought a discus. At the time I was under the impression that it would be a particularly difficult fish to care for, which is why I bought only one. Surprisingly, I haven't had any trouble caring for the discus. It is in a 10-gallon tank with five small angel fish. The pH is at about 6.5, and the tank is well planted but roomy considering its size. The fish is content and looks well.

Now I would like to get a companion discus of the opposite sex. The one I have is tan with nine vertical bars (the first and last bars are dark brown while the others are lighter) and has yellow ventral fins. The light blue streaks on the forehead and fins are vague.

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**Tropical Fish Hobbyist**

**Q.** I have been promised a 20-gallon tank as a gift. I would like to know if I can use this size for a saltwater aquarium and what precautions I must take before putting fishes in the aquarium.

**Harry Millinger,**  
Jersey City, N.J.

**A.** A 20-gallon tank makes an ideal tank as a starter. The larger the tank, the better your chances of success. The tank should be well washed and should have about three rinses of fresh water before adding your salt water. Your hydrometer

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reading should be 1.020, and the water should be clear. Use a good filter and a few airstones, and you are off to a fine start.

**Q.** Can Dwarf seahorses be fed baby fish such as guppies? Can they be fed frozen brine shrimp instead of live shrimp, and should an airstone be used in their tank?

**Alanna Grammes,**  
Lehigh, Penna.

**A.** Due to the small size of the mouths of dwarf seahorses, they cannot eat baby guppies. However, they will eat frozen baby brine shrimp or live baby brine shrimp. An airstone is always helpful in a saltwater tank. I advise the use of more than one stone if possible.

**Q.** How many days in advance should I set up a saltwater tank before adding fish to the aquarium? I use a synthetic saltwater mix.

**Kenneth A. Brown,**  
Kalamazoo, Mich.

**A.** After the water has become crystal clear, wait one day. Then it is a safe time to add your fishes.

**Q.** If I were to keep a clownfish and an anemone, could I also keep two neon gobies, or would the anemone harm the gobies?

**Eric Holt,**  
Vancouver, Wash.

**A.** I have kept neon gobies with an anemone and they were not harmed. However, it is possible that they could be.

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**YOUR FISHES' HEALTH**  
by Mike Reed

**wasting**

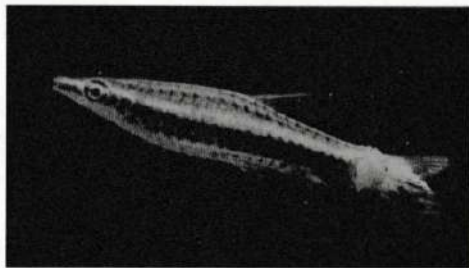
Wasting, also known as hollow belly and tuberculosis, is seen fairly frequently in aquarium fishes. The main symptom of this disease is a rapid loss of weight on the part of the victim. This results in a clearly visible hollowing of the affected fish's belly. Considerable time may pass before it happens, but such a fish will usually die if left untreated.

Wasting may be caused by any of a number of diseases or parasites that affect a fish's appetite adversely. In such cases the disease or parasites should be treated if they can be diagnosed. In cases where there is no other discernible cause for the loss of weight, you can assume that the fish has tuberculosis.

Surprisingly, fish tuberculosis is similar to the tuberculosis which is contracted by humans and other warm-blooded animals: the two diseases are caused by related bacteria. However, the species that attacks fishes cannot attack humans and vice versa.

Fishes showing wasting should be removed from the community

Anything that attacks a fish and causes it to lose its appetite may cause it to begin wasting. In the case below wasting has just begun. The fungus should be treated to restore the fish's appetite.



**Tropical Fish Hobbyist**

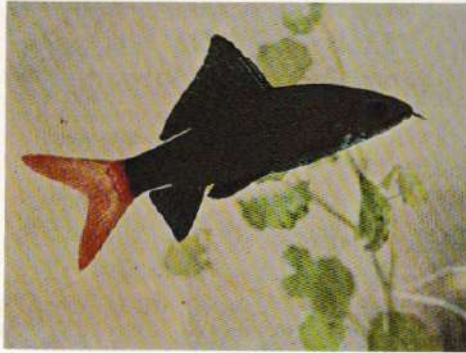


A zebrafish (above) and a swordtail (below) in relatively advanced stages of wasting. Photo by Rudolf Zukal.



tank as quickly as possible, for fish tuberculosis is contagious, particularly to fishes in weak condition. In the not-so-good old days, the only thing you could do for a fish with tuberculosis was to kill it to put it out of its misery. Today there are an increasing number of reports of cures of fish tuberculosis by using drugs which have been effective against human tuberculosis. At this time, the drug which seems to be best is streptomycin.

Before treating wasting with an antibiotic, try a progressive salt bath. I have seen such treatment result in an increased appetite and subsequent filling out of the hollowed belly. If wasting is observed at an early stage, you have plenty of time to try the salt treatment, because tuberculosis kills slowly.



The red-tailed black shark, *Labeo bicolor*, has at last been spawned by hobbyists. Photo by Dr. Herbert R. Axelrod.

## Keeping and Spawning the Red-Tailed Black Shark

BY FREDERICK J. KERR

The red-tailed black shark, *Labeo bicolor*, is one of the most outstanding imports in recent years. Its superficial resemblance to the notorious killers of the seas is amusing in such a small fish. *Labeo bicolor* is not even remotely related to the sharks, but is closely related to such aquarium favorites as the barbs and rasboras.

Like the barbs and rasboras, the red-tailed black shark is to a large extent a vegetarian. The appearance of the fish gives a clue to this: the fish has an underslung mouth with strong sucking lips. The inner surfaces of these lips are covered with hard ridges which aid the fish in scraping algae from rocks, plants, and glass surfaces. Algae is not the only food for the red-tail, however. Cooked spinach and crushed lettuce are both excellent substitutes for or additions to algae. Tubifex, brine shrimp, and prepared foods are also taken with great gusto.

*Labeo bicolor* is not difficult to care for. The primary difficulty is the

aggressive nature of this fish. The red-tail possesses strong territorial instincts and will attempt to drive away any fish which it regards as competition. It is not always possible to tell which fishes the shark will allow to share its territory and which it will not tolerate. Red-tailed black sharks and Chinese algae eaters (*Gyrinocheilus aymonieri*) are constantly battling each other when they share a tank. Red-tails at times also exhibit low tolerance for the presence of catfishes. The red-tail's scrappiness is usually not a serious problem, for it consists of merely chasing the offender from the territory. Small red-tail specimens are less aggressive than are large ones.

One fish a red-tailed black shark will not tolerate in its territory is any member of its own species. In a small tank it is often impossible to keep two of these fish together, because of the unmerciful bullying of the stronger over the weaker. In large tanks several sharks may be kept together, often with more harmony than could be achieved with a single pair. The important thing is to be sure that each fish has enough space in which to establish his own territory.

The aquarium for the red-tail is not difficult to set up. In addition to the usual materials, the aquarium should be provided with at least as many caves as there are sharks, although *Labeo bicolor* spends a great deal of time grazing on algae, it likes to retire to a dark spot periodically. Halves of coconut shells make excellent retreats for this purpose. A fairly heavy planting provides bullied fishes with a place to hide. Although the shark is

*Labeo erythrurus*, the red-fin shark, is often mistaken for the red-tailed black shark. Photo by Dr. Herbert R. Axelrod.



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The Chinese algae eater, *Gyrinocheilus aymonieri*, will not live peacefully with the red-tailed black shark. Photo by Rudolf Zukal.

not particular about hardness and pH, the best hardness is in the broad range between 5 and 25 DH, and the pH is best on the slightly acid side. A temperature range between 75 and 80° F. is ideal.

Red-tailed black sharks have been bred on a number of occasions, but the accomplishment is uncommon enough to attract attention. This fish has been bred commercially in Hong Kong and Singapore for a number of years, and the fish is generally shipped at about an inch in size. About six of these characters in a 30-gallon aquarium is a display in itself. If the aquarist does not wish to devote a large aquarium to the sharks, they can be