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☼ exotic tropical fishes supplements

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Cover

En-Yu koi, a relatively new koi variety produced by Tadao Yoshioka. Photo by Teikichi Tarusawa, Executive Director of Kodansha Ltd.

rates

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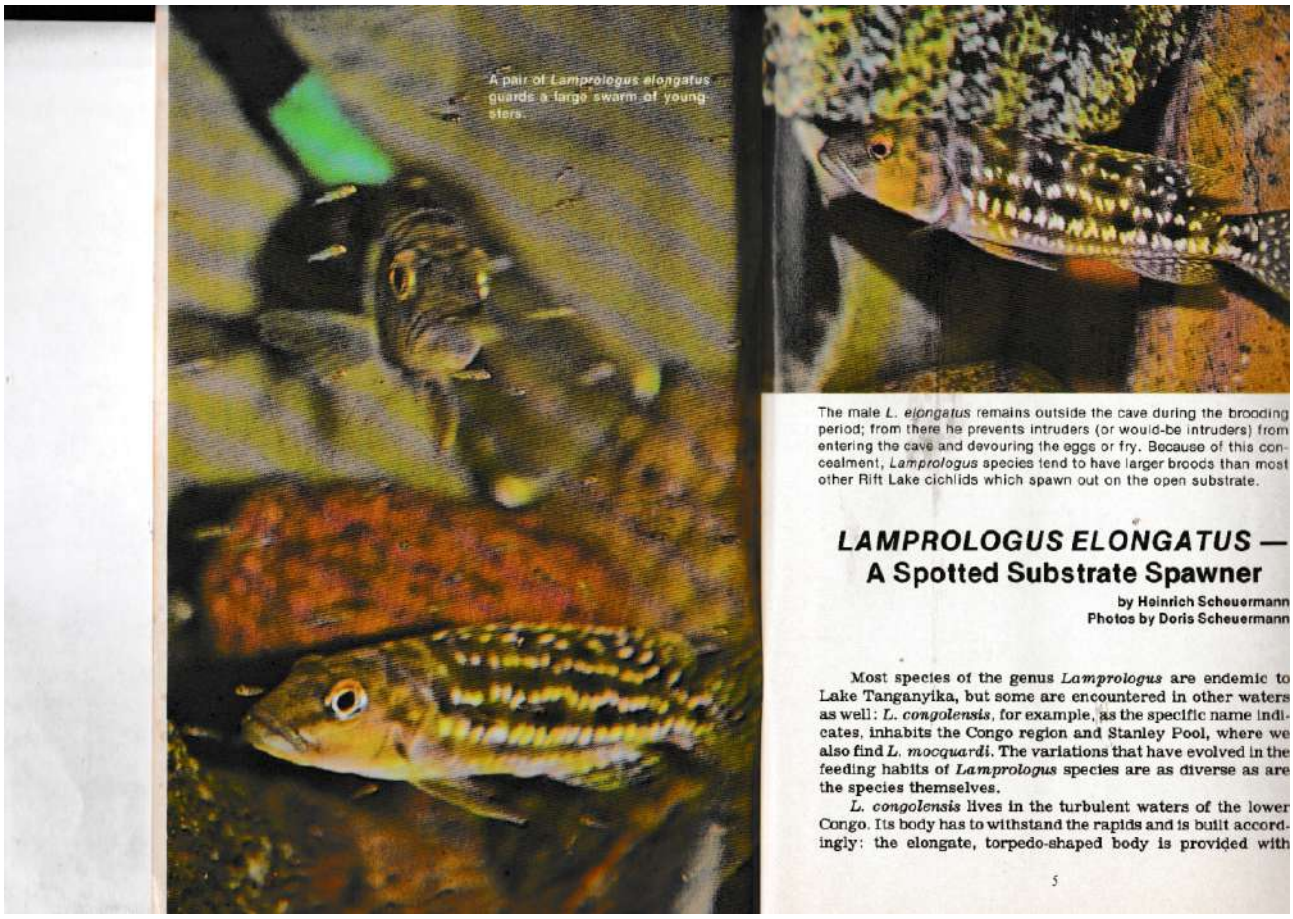


A pair of *Lamprologus elongatus* guards a large swarm of young-sters.

The male *L. elongatus* remains outside the cave during the brooding period; from there he prevents intruders (or would-be intruders) from entering the cave and devouring the eggs or fry. Because of this concealment, *Lamprologus* species tend to have larger broods than most other Rift Lake cichlids which spawn out on the open substrate.

LAMPROLOGUS ELONGATUS — A Spotted Substrate Spawner

by Heinrich Scheuermann
Photos by Doris Scheuermann

Most species of the genus *Lamprologus* are endemic to Lake Tanganyika, but some are encountered in other waters as well: *L. congolensis*, for example, as the specific name indicates, inhabits the Congo region and Stanley Pool, where we also find *L. mocquardi*. The variations that have evolved in the feeding habits of *Lamprologus* species are as diverse as are the species themselves.

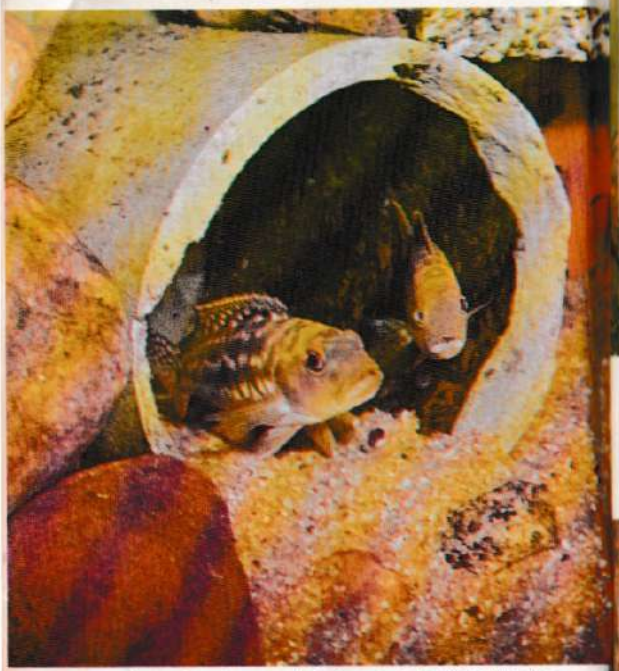
L. congolensis lives in the turbulent waters of the lower Congo. Its body has to withstand the rapids and is built accordingly: the elongate, torpedo-shaped body is provided with

powerful pectoral fins by which the animal supports itself on the bottom substrate, and the muscular caudal fin serves as a propeller. *L. congolensis* has the broad, deep jaw gape typical of many predators. Older males carry a fat deposit on the forehead—much like the humpheaded cichlid, *Steatocranus casuarius*. *L. werneri*, also from the Congo, is even more slender and elongated that its cousin, *L. congolensis*.

With respect to its shape, *L. compressiceps* is one of the oddest not only of the genus but also of the whole cichlid family. This high-backed fish shows extreme compression which appears accentuated when it erects its broad dorsal fin. The "Princess of Burundi," *L. brichardi* (formerly *L. savoryi elongatus*), with its lyretail bears a greater resemblance to the flag perches from the tropical seas (*Anthias*) than to its closest relatives. *L. furcifer* also deviates from the basic type in that its large eyes suggest a native of deeper water layers. (This information is derived from W. Staeck's book *Cichliden*. According to other sources, this species is a cave-dweller which can also be found in more shallow regions near the shore.)

The newcomer, *L. tretocephalus*, resembles young *Cyphotilapia frontosa* in shape and color. Externally the two species can be distinguished only by the color of their opercula: in *L. tretocephalus* the opercula show a shiny black color while in *C. frontosa* they look whitish.

The torpedo-shaped build and the powerful deep-gaped jaws, with their partially protruding teeth, suggest that *L. elongatus* is a fierce predator. Unusual for a predator are the checkered markings which earned it the name Tanganyika chessboard cichlid. The basic color of this cichlid is ochre, shading into a deep brown. Five rows of white spots that merge into bands extend along the flanks; the third and fourth row of spots are particularly prominent. The intermediate spaces from the first to the fourth band are filled up by irregularly arranged black spots. The ochre-colored margin of the dorsal fin is underlined by a white pin-stripe. Between the rays of the dorsal and anal fin there are white speckles; the pectoral fins have a yellowish sheen. The forehead shows dark net-like markings which are particularly obvious when the fish is excited. The rest of the head to as far back as the opercula is unmarked and ochre to golden-brown in color. The mouth is terminal, and the upper lip is greenish, as is the line



Lamprologus elongatus spawns in dark caves and crevices. Here the female deposits her eggs on the wall of a flowerpot while the male (lower fish) awaits the signal to broadcast his milt over the eggs.

A pair of *L. elongatus* tending their young. Contrary to the majority of the Rift Lake cichlids, the male (upper fish) shares in the brooding duties.

The female *L. elongatus* tenaciously guards the eggs, which are usually deposited in well concealed caves or crevices. Except during the actual spawning, the female rarely allows the male into the cave itself.

extending from the lip to the eye. Like many other cichlids, *L. elongatus* is used as a food-fish and regarded as a source of protein by the natives. In the aquarium, however, this predator never attains such a size.

Hungry *L. elongatus* are well adapted to feeding on minced meat or dried food. But aquarists wanting to observe the natural feeding behavior of *Lamprologus elongatus* need to provide live food-fishes of "convenient" size (a prey that is too big is merely killed, not devoured). When the predator has discovered his prey he aims, then suddenly lunges toward it. Small prey is swallowed in one gulp, bigger prey take longer and are turned in such a way that they disappear head first into the gullet of the predator.

Due to inhibitory mechanisms, the well armed mouth, a lethal weapon, is rendered harmless in fights between members of the species. My own *L. elongatus* regularly squabble with each other, but severe injuries have never resulted. Ritualized fights, apparently designed to intimidate but not to injure, usually begin with one of the opponents lowering the floor of the mouth, erecting the dorsal fin, and splaying the tail like a fan. The body is rocked to and fro, and the "duel" ends with the fish suddenly darting in the direction of the opponent's flank. Injuries never resulted, presumably because the attacked fish somehow signalled its inferiority to the aggressor. I often observed the aggressor at the flank of the opponent, where it stood for several seconds with its mouth wide open, attempting to push the other fish away but never biting it. Animals defeated in such fights lose their markings and show only their basic color, i.e., brown and ochre.

Four *L. elongatus* individuals lived in my tank for six months without showing any signs of pairing off. Then, suddenly, without previous courtship or display, the smallest animal remained beside the strongest and was not driven away. That was all that could be seen of "pairing off." Much later these two fish spawned. The female attached the eggs to two vertical stone walls in a narrow crevice. However my joy was of short duration, because the pair devoured the entire clutch. To get the predators to spawn again, I changed the interior of the tank, filling up empty spaces by building large and small caves, providing broad and narrow stone clefts. To reripen the pair I fed them live guppies. The male, measuring 12 cm in length, surprised me by swallowing two fully grown guppy fe-

The female *L. elongatus* often shelters her young in the swollen chin pouch. Although the species is a substrate spawner (as opposed to what are normally known as maternal mouth-brooders), the female does spend considerable time brooding the young in her buccal cavity.

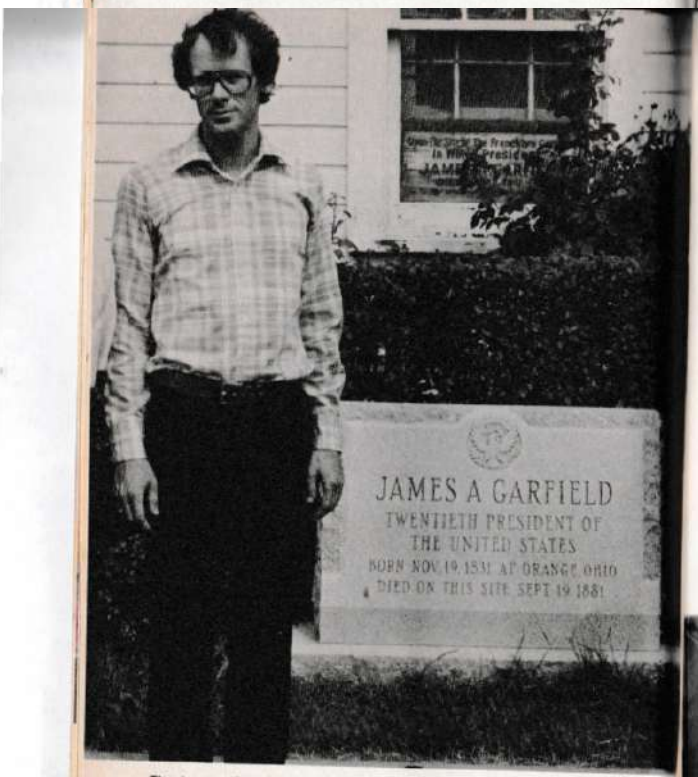
Fertile eggs of *L. elongatus*. Their whitish color may be an adaptation to the cave-dwelling mode of these fish, making the eggs more visible to the tending female.

males without difficulty and a day later stuffed itself again with four half-grown guppies. The female, which was about three to four centimeters smaller, was not able to keep up with her mate.

This nutritious diet eventually brought the desired result: nearly three months later the pair spawned again. However, this time they did everything a little differently. The eggs were stuck to the roof of the cave, which the fish had thoroughly polished beforehand, and were not devoured. Because I was not present, I was unable to watch the actual spawning act. I do know, however, that the two predators spawned from afternoon to early evening. The clutch amounted to roughly 500 eggs which were snow-white, almost giving the impression of being fungused. I left the eggs with their parents and the interior of the tank exactly as it was. The tank had a capacity of 160 liters. The decor consisted simply of stones and bog resin wood; plants were absent, but the tank was well filtered. The *Lamprologus elongatus* pair shared the tank with two catfish and three other cichlids. The tank contained ordinary tap water with a hardness of about 15 German degrees and a neutral pH (7). A combined heater and thermostat ensured a constant water temperature of 27° C.

Under these conditions, virtually all of the eggs hatched after 19 hours, but for reasons unknown to me, two-thirds of the wrigglers suddenly became distended and burst. All of the remaining fry possessed an astonishingly large yolk-sac upon which the survivors lived for about another week before becoming free-swimming. On the first day of free-swimming, the

Continued on page 88



The home of Maurice and Carolyn Meyer is situated on the same property as the historical site of the death of James A. Garfield, twentieth President of the United States, who was assassinated by an unbalanced office-seeker, Charles Guiteau.

September, 1976

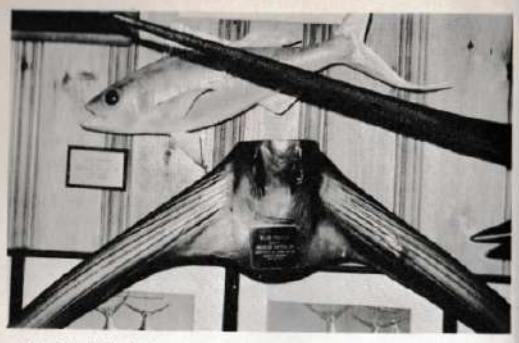
Meet the Hobbyists: Maurice and Carolyn Meyer

by Marshall E. Ostrow
photos by Dr. Herbert R. Axelrod

What more appropriate setting could one find for aquariums of boldly garish marine tropical fishes than in the living room of a quaint old home furnished and decorated throughout in marine and nautical decor and situated right on the New Jersey shoreline? This property was the site of the death of James A. Garfield, twentieth president of the United States. Maurice and Carolyn Meyer are almost as proud of the history of their lovely Elberon, New Jersey homesite as they are of their breathtakingly beautiful collection of marine tropicals.

A perusal of their trophy room told us that the Meyers' piscine interests go far beyond that of maintaining live fishes. Maurice and Carolyn are avid sport fishing buffs. Their expertise can be confirmed by examining their many photos, trophies, and preserved catches. Of particular interest was a 13' 7" 680-pound blue marlin caught by Maurice in the Bahamas which won him first prize in a *Field and Stream* fishing

Admiring Maurice's *Field and Stream* trophy, won for his catch of a 680-pound blue marlin, are (left to right): Marshall Ostrow and Dr. Mark Dulin of TFH, Carolyn Meyer, Maurice Meyer, and Murray Wiener.

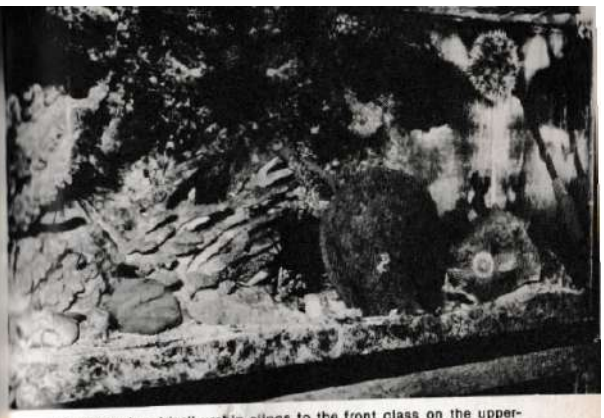


The tail of Maurice's prize-winning blue marlin.

competition. Not to be outdone by her husband, Carolyn holds the women's world record for an 818-pound bluefin tuna which is mounted on one of the walls of their trophy room. We were further impressed by the photos of a 1200-pound black marlin which Carolyn caught off the coast of Peru. On the same trip and within 30 minutes of Carolyn's prize catch, Maurice latched onto another black marlin which weighed in at over 1100 pounds.

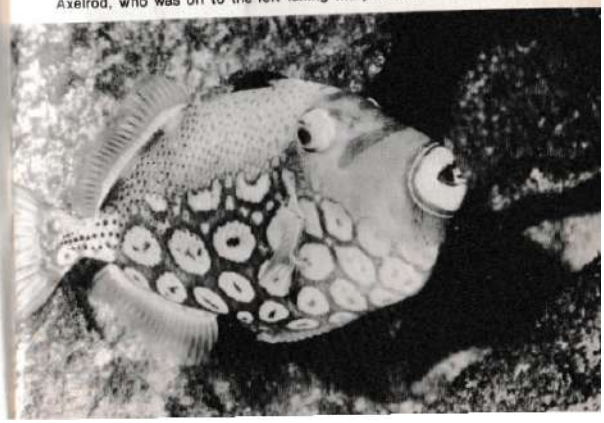
Many other smaller catches were placed around the trophy room. Due to their bright colors and unusual forms, these smaller fishes were not at all dwarfed by the Meyers' leviathan prize catches. Maurice takes an academic interest in some of these unusual fishes by researching their identification himself or by submitting them to museums for identification by museum taxonomists. One such fish, which caused Maurice and a professional taxonomist much consternation in identifying, was a large-eyed *Pristipomoides aquilonaris* which Maurice caught at 1500 feet in the Bahamas.

The Meyers have been deeply involved in the aquarium hobby for more years than Maurice was willing to admit. About six years ago their interests migrated toward keeping



The "hypochondriac" urchin clings to the front glass on the upper-right corner of the Meyers' invertebrate tank.

The Meyers' clown triggerfish, *Balistoides niger*, cautiously eyes Dr. Axelrod, who was off to the left taking the picture.



A curious French angelfish, *Pomacanthus paru*, obligingly poses for Dr. Axelrod.

marine fishes. In that relatively brief time they have developed a collection of fishes that would make any marine hobbyist green with envy. Although a queen angelfish, a French angelfish, a squirrelfish, and a blue-headed wrasse in themselves are not so unusual, the Meyers' specimens are very striking in their unusually active and robust appearance. This in itself provides testimony to the expertise of these two hobbyists, for there are few collections in public aquariums which can match the Meyers' fish for beauty. Maurice caught these fish himself on one of his trips to the Bahamas. They were all quite small when he brought them home, but in the few years of "good living" at the Meyer home, some of them have grown to over 10 inches in length.

Some of the more unusual fish in this remarkable collection were purchased as juveniles from the Meyers' good friend Murray Wiener, a local tropical fish shop manager. These fish have received the same tender loving care as the Meyers' wild-caught specimens and also have grown into large, heal-

thy, robust specimens. Among the Meyers' favorites are their gaily colored clown triggerfish, *Balistoides niger*, and their 6-inch clown sweetlips, *Plectorhynchus chaetodonoides*, both of which seemed quite eager to take prawns almost out of Carolyn's hand.

Included in this fine collection are a number of interesting invertebrates such as a hermit crab which Maurice regularly provides with new and bigger shells, feather duster worms, a beautiful carpet anemone, and an urchin which Maurice claims is a hypochondriac, because not too long ago it spent two weeks clutching and carrying around the aquarium thermometer.

When we asked Maurice how he was able to keep his aquariums so healthy looking and his fish so robust and active he said that the secret is to keep their care simple. He provides regular partial water changes, maintains good circulation with fairly strong filtration, sorts the fishes out as they grow so that they do not become overcrowded, feeds them well, and provides them with plenty of shelters. He regularly monitors chemical conditions so that he can head off trouble before it begins. With this relatively simple and consistent maintenance routine Maurice and Carolyn find they have little else to do in keeping their fishes healthy. Since this simple maintenance program takes so little time, Maurice has found another interesting pastime in raising tropical orchids.

The Meyers' friend Murray confided to us that although he gave the Meyers their initial start and instruction, they have made so much progress that he now occasionally asks *them* for advice on marine fish maintenance.

Murray Wiener examines a sponge that Carolyn pulled up on a hook from 1500 feet of water in the Bahamas. From left to right are Maurice, Carolyn, Murray, and the author.

Maurice Meyer carefully removes some floating debris from his invertebrate tank.

MEET THE FISH DOCTOR

Dr. Mark P. Dulin, a veterinarian with a post-graduate specialty in fish health, recently joined the staff here of *Tropical Fish Hobbyist* as fish pathologist. Mark was born (1947) and raised in Coffeyville, Kansas. After receiving his B.S. and D.V.M. degrees from Kansas State University, he moved to Idaho, where he took two years of specialty training under Dr. George W. Klontz (the first American veterinarian to specialize in fish health). Dr. Dulin was awarded an M.S. degree in fish health from the University of Idaho. There are currently only about a dozen American veterinarians who have made fish medicine their full time specialty area, and Mark is one of their newest colleagues.

Dr. Dulin finds the New Jersey coast quite different from his former mountainous stomping grounds, but he has adapted well in changing hobbies from backpacking, flyfishing, and skiing to scuba diving, photography, and travel. Of course he is also an avid saltwater aquarist. He recently completed his first book, *Diseases of Marine Aquarium Fishes*, to serve the needs of the AVERAGE saltwater aquarist, who is often misinformed and confused about how to maintain health and diagnose disease in the marine aquarium.

Dr. Dulin will begin a monthly fish health column in *Tropical Fish Hobbyist*. He plans to emphasize preventive medicine as well as the diagnosis and treatment of the common fish diseases. The first column will appear in the next issue.

We here at *Tropical Fish Hobbyist* are proud to have him as a member of our staff; we feel his much-needed column will assist our readers in enjoying their hobby that much more.

INCOME TAX EFFECTS OF SELLING SURPLUS TROPICAL FISH

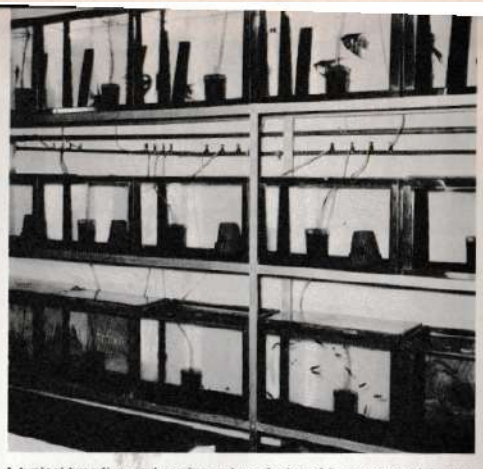
by Gerald E. Schiraldi

All serious breeders of tropical fish eventually face the problem of surplus fish disposal. For those who cull by destroying the fish, the problem ends quickly. For others, myself included, the problem encompasses the marketing and distribution of the surplus fish. We sell to fellow fish lovers, the local pet store, and when we have larger quantities we sell to the local wholesaler. Sometimes we end up selling the fish for minimal amounts or even giving them away for goodwill.

The Internal Revenue Service, in its Code Section 183, entitled, "Activities Not Engaged In For Profit," defines rather sharply the rules to be followed in recognizing hobby sales and income. If you are breeding and selling fish as a hobby, for the personal satisfaction only, you then are obligated to pay income tax on the profits and are limited as to your deduction of expenses. As a hobbyist you can deduct expenses only to the extent of income received. Losses from the fish breeding can not be offset as a business loss against your wage and other income.

For those selling tropical fish as a part-time business, it is important that you quickly establish that you are engaged in the activity to make a profit and that personal satisfaction is secondary. The IRS, in Section 183, presumes that your activity is profit seeking if there is a profit from the activity in any two or more years in a period of five consecutive years. As a profit seeking activity your business losses in the formative years are fully deductible as business losses and may be used to offset wage or other income in the same period.

Sometimes the activity, even though originally profit seeking, never really shows a profit, and as a result the breeder has to now prove he really is in business if he wants to use the losses as an offset against other income. The dominant factor in proving that you are engaged in a profit making venture is your *primary intention*. If your primary intention is to



A typical breeding and rearing set-up designed to accommodate several readily marketable species. Equipment that produces income on which taxes are paid can usually be written off as a business expense for a semi-commercial operation. Photo by Dr. Herbert R. Axelrod.

make a profit then the activity is a trade or business and not a hobby. The fact that the activity was conducted previously as a hobby does not preclude a finding that it has become a trade or business, although prior hobby status does increase the taxpayer's problem of proving that he now is in business.

If your fish hatchery involves a large capital outlay, which is much larger than that of the average hobbyist, and your investment is subject to financial risk, and requires time to properly mature (i.e., guppy breeding) the existence of several years of continuous losses does not necessarily mean that the activity is not a business—although many years of losses above and beyond the normal startup period would tend to hurt your position and cause your activity to be called a hobby.

Your other income is a factor in your status as a fish-business and will work against you if the income is substantial. If

you spend 40 hours a week on a job and receive wages adequate to live, and you then in turn only spend five hours a week on the fish business, the fish business will be viewed as a hobby. The courts have repeatedly noted that the tax incentives (i.e., charging fish business losses against wage income) are much greater for an individual who has a great deal of income from other sources.

If your primary intention is profit and not pleasure it should be clear by now that you must establish beyond a doubt that you are really in a business and not in a hobby. Using a business checking account for the deposit of the fish sales receipts and for the fish related disbursements will help your cause. Avoid using your personal account if you can. That is what a hobbyist would do. Stationery and business cards are attributes of a business and announce to the world and to the IRS that you are in a profit seeking business. Advertising in tropical fish magazines and newsletters all help to show that you are in business and should also help sales. Listing your telephone in the fish hatchery name also helps and is already being done by many people.

When you sell to a local pet store try to deposit the cash in a checking account instead of trading the cash immediately for fish and other supplies at the store. Trading leaves no audit trail for the IRS. Write checks for supplies if you must buy supplies the same day.

A set of books and a diary to record your activities is easy to establish and is used to record all of your financial transactions. Use them, not your memory, to prepare the annual tax return. Remember when you show a profit that you must pay all federal, state and city income taxes.

HERMANN MEINKEN
1896-1976

Hermann Meinken, one of the greatest names in aquarium science and the study of aquarium fishes, died on June 22, 1976 in Bremen, West Germany. Dr. Meinken had been in rapidly failing health for several months, but he continued to work as a systematist for the West German Federation of Aquarium Societies almost until the end.

Hermann Meinken was born on December 10, 1896 in Bremen, and he lived there all his life. For years he was a high school teacher of biology and an amateur ichthyologist and aquarist. He successfully bridged the gap between enthusiastic amateurs and trained professionals, achieving professional standards in his meticulous work. Meinken was a prolific worker, illustrating his many papers with his own drawings and water-color paintings. He often worked under the handi-

cap of inadequate material, having to base his descriptions on too few specimens, or those in a poor state of preservation.

The great life work of Hermann Meinken was his participation with Maximilian Holly and Arthur Rachow in the authorship of *Die Aquarienfische in Wort and Bilt* ("The Aquarium Fishes in Word and Picture"), a gigantic serial publication stretching over several decades. Meinken wrote up the cyprinids, cyprinodonts, and the cichlids, among others. The whole work is ambitious and of high quality. In 1973 he was granted the degree of Doctor of Sciences from the University of Bremen, with the entire body of his ichthyological work serving in lieu of a thesis, an unusual honor. (A biographical sketch of Hermann Meinken may be found in the *Tropical Fish Hobbyist* for March, 1968.)

Shortly after World War II, as a young graduate at Stanford working on my Ph.D. thesis, which was a revision of the genus *Rasbora*, I wrote to Meinken for information he had published on *Rasbora* species. He replied at once in great length and detail. Wishing to repay his kindness, I asked my then major professor, Dr. George S. Myers, what might be proper to do; he suggested CARE packages, since conditions in heavily-bombed postwar Bremen would be grim. Meinken's gratitude was all the more touching as I knew him to be a proud man; he more than repaid me, before and since, with valued advice and true friendship lasting nearly thirty years.

Meinken is survived by his wife, Gertrude, and his sons Kryno and Gerold. Mrs. Meinken, a teacher of English, served us good German sausage and cheese as we talked shop about fishes some nine years ago, the only time I was able to visit them. The twinkle in his eye, his warmth and enthusiasm, are still fresh in my mind today.

Each time aquarists see such names as *Rasbora meinkeni*, *Rasbora hengeli* (Meinken), or *Aphyosemion filamentosum* (Meinken), they will be reminded of one of the grand old men of their hobby, and I of a dear colleague and friend.

Auf Wiedersehen, Hermann.

Martin R. Brittan
Professor of Biological Sciences
California State University, Sacramento

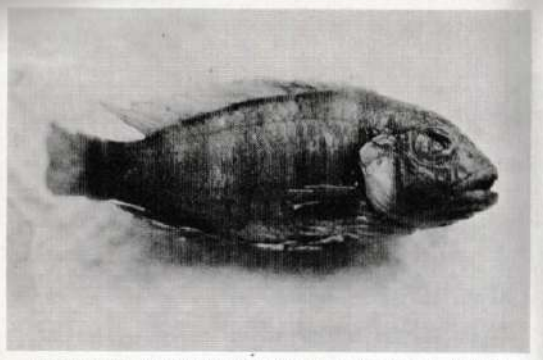
Pseudotropheus lanisticola Burgess. Holotype showing characteristic color pattern.

STUDIES ON THE FAMILY CICHLIDAE:

6. A New Shell-dwelling Cichlid from Lake Malawi and Its Inquiline Catfish

by Warren E. Burgess
Photos by the author

During my stay with Peter and Henny Davies at Cape Maclear on Lake Malawi, I expressed a desire to collect what appeared to be *Pseudotropheus livingstonii*, a species reported to live in empty snail shells. While scuba diving I had seen an area just off the Davies residence where *Lanistes* shells with fishes inside were to be found. The water, surprisingly, was not particularly deep, being less than 20 feet in most cases. As I approached the shells the fish were outside but quite close. When I came very close the fish eventually went into the shells, all but hidden from view. I picked up some shells but found that most of the fish abandoned them and swam away rather than remain in the shelter of the shell.



The holotype of *Pseudotropheus livingstonii* (Boulenger). BM(NH) #63.11.12.22.

Peter Davies arranged for me to trawl for these fishes one afternoon off Cape Maclear with James Pindani. The net (see accompanying photos) was dragged behind the boat for 15 to 20 minutes at a time at depths between 20 and 50 feet. Of the eight to ten trawl hauls made, some produced nothing, one or two brought up a few species of *Haplochromis* (including one large *H. atritaeniatus*), and still others caught a number of *Lanistes* shells which—in at least two of the trawls—housed quite a few of these small fish. The fish remained in the shell (even when shaken vigorously) until they were forced out by breaking the shell, leaving no hiding place. Bringing the fish up from these depths also caused them some distress, and it took them several minutes to recover. In 2½ hours, 56 such *Pseudotropheus* and one *P. elegans* were captured.

Having seen the type specimens of *Pseudotropheus livingstonii* at the British Museum (Natural History) in London and comparing it with the new specimens, I discovered that they were two different species. (Both of these species are in the aquarium trade and both are called *P. livingstonii* although recognized as "different".) The small cichlid inhabiting the *Lanistes* shell was not *P. livingstonii* but a new species.

Pseudotropheus lanisticola, new species

Holotype.- USNM 216266, male, 54.1 mm SL, collected by Warren E. Burgess, James Pindani, *et. al.* Trawled off Cape Maclear, Lake Malawi, Malawi in 20-50 feet of water on February 12, 1976.

Paratypes.- USNM 216267, 3 spec. (2 males, 1 female), 45.3-51.5 mm SL, same data as holotype. Four additional paratypes have been divided between the British Museum (Natural History) and the American Museum of Natural History, all with the same data as the holotype.

Type Locality.- Off Cape Maclear, Lake Malawi, Malawi.

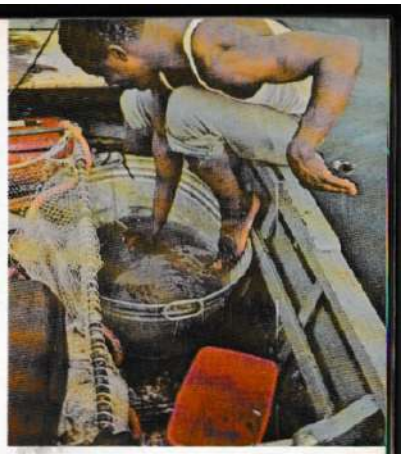
Diagnosis.- *Pseudotropheus lanisticola* differs from all other species of *Pseudotropheus* by color pattern. It most closely resembles *P. livingstonii*, which is the only other known species which has the characteristic caudal fin pattern of orange-yellow lines, broken and interconnected in places, which run from the base of the caudal fin to its posterior edge. The broad bright yellow distal band of the anal fin (which stops short of the posterior end of the fin) is lacking in *P. livingstonii* and occurs in combination with the distinctive caudal pattern in no other described *Pseudotropheus*. The teeth in the outer row of each jaw of *P. lanisticola* are typically (subequal) bicuspid, whereas those of *P. livingstonii* are unequally (mitt-shaped) bicuspid.

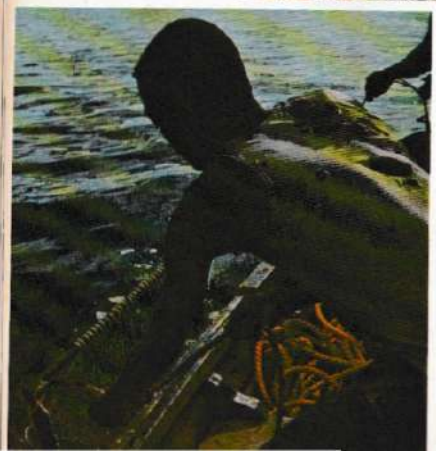
Description.- Proportional measurements (data for holotype in italic type): Depth *2.6*, 2.4-2.7 (37.0-41.6%) in SL; head *3.0*, 2.9-3.1 (32.3-34.5%) in SL; eye *2.9*, 2.9-3.3 (30.3-34.5%) in head length; snout length *3.4*, 3.0-3.4 (29.4-33.3%) in head length; interorbital width *3.7*, 3.7-4.2 (23.8-27.0%) in head length; upper jaw length *3.2*, 2.8-3.3 (30.3-35.7%) in head length; lower jaw length *3.8*, 3.0-3.8 (26.3-33.3%) in head length; length of preorbital bone *6.7*, 5.5-7.9 (12.7-18.2%) in head length; depth of caudal peduncle *6.7*, 6.5-7.0 (14.3-15.4%) in SL; predorsal length *2.9*, 2.8-3.0 (33.3-35.7%) in SL; pectoral fin length *3.1*, 3.1-3.6 (27.8-32.3%) in SL; pelvic fin spine length *6.4*, 5.6-6.8 (14.7-17.9%) in SL; and pelvic fin length *2.5*, 2.2-3.5 (28.6-45.5%) in SL.

Fins: Dorsal fin XVII-XVIII,8-9; anal fin III (one with IV), 7-8; pectoral fin 14 (all elements counted except short splinter at upper edge); caudal fin truncate.

James Pindani prepares the net for the next trawl. Cape Maclear is in the background.

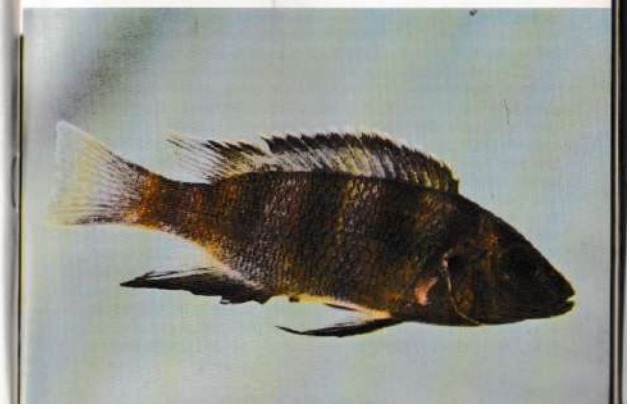
With the content of the trawl in the basin, James checks the shells for fishes. The inhabited shells are cracked open on the metal trawl frame and the fishes are placed in the plastic pail nearby. The belly-up fish is suffering from a temporary case of swim-bladder discomfort but will recover.





The trawl is dropped over the side of the boat and enough line is let out to ensure that the trawl will be dragged on the bottom.

Another fish collected in the same way as the *P. lanisticola* was this *P. elegans* juvenile.



Scales: Lateral line scales 22-25 + 6-10 (plus 1-3 pored scales that may extend onto the caudal fin); scales in a longitudinal line from the upper edge of the opercle to the base of the caudal fin 29-30; 7-9 + 1 + 9-11 scales in a transverse series from base of first dorsal fin spine to base of first anal fin spine; caudal fin scaled only at base, dorsal and anal fins not scaled.

Gill rakers: 12-14 (usually 12) total on first gill arch.

Teeth: Teeth of jaws in curved rows; outer row distinctly bicuspid, the cusps subequal, that closer to the symphysis larger; in upper outer row, teeth becoming smaller posteriorly and ending in about 6 (5-7) unicuspid teeth which increase

exceeding 60mm in standard length. All specimens were easily sexed including a 36.4mm SL female which contained developing eggs. The other small species of *Pseudotropheus*, *P. minutus*, is so different it need not be discussed here further. The only species of *Pseudotropheus* which approaches *P. lanisticola* in color pattern is *P. livingstonii* (Boulenger) which is a larger fish (large adults exceed 80mm SL) with a shallower body (2.7-3.0 in SL versus 2.4-2.7 for *P. lanisticola*) and caudal peduncle (7.4-8.0 versus 6.5-7.0) and differently shaped teeth (subequally bicuspid in *P. lanisticola* but mitt-shaped—

An individual *P. lanisticola* about to enter an empty shell in the photo tank.

I rolled the shell over and the fish all but disappeared into the shell.

I had to break the shell open to remove the fish. While photographing the *P. lanisticola* I noticed the shell had a second inhabitant, this small catfish.

Leptoglanis sp., possibly *L. rotundiceps* (the spotted catlet), about 19 mm standard length.

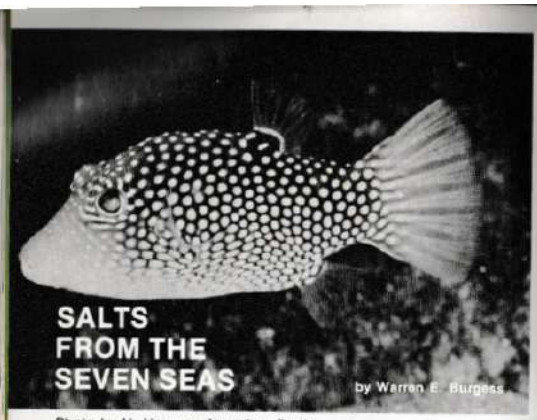
It went in part way and rested; perhaps having the head safely hidden was enough for its security.

Paraglyphidodon melas as an adult loses the bright colors of the juvenile. Photo by Dr. Gerald R. Allen at Palau.

The royal damsel, commonly known as *Abudefduf melanopus* or *Paraglyphidodon melanopus*, has now been recognized by Dr. Conde as being identical with *P. melas* and should be referred to by this name. Photo by Dr. Herbert R. Axelrod.

The young *Paraglyphidodon behni* is also quite colorful and is one of the few damsels with horizontal stripes. Photo by K.H. Choo.

The adult *Paraglyphidodon behni* is quite sombre-colored. Notice the dark streak along the edge of the preopercle. Photo by Dr. Gerald R. Allen.



SALTS FROM THE SEVEN SEAS

by Warren E. Burgess

Photo by H. Hansen, Aquarium Berlin.

I have mentioned before that aquarists are in an excellent position to help scientists with some of their taxonomic problems. One of these taxonomic problems is the association of the proper juvenile stages with their adults. Aquarists are more likely to purchase small individual fishes (juveniles) rather than the older and larger adults so that they may enjoy them for a longer period of time. These aquarists, while raising their fishes, will be able to see the actual changes in coloration and form that the fishes go through. Scientists, provided

Paraglyphidodon melas as an adult loses the bright colors of the juvenile. Photo by Dr. Gerald R. Allen at Palau.

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they have not themselves set up aquaria for such observations, must rely on a series of museum specimens to connect juveniles with their all too often extremely different adult stages. For fishes that undergo slow transformations there are usually a number of intermediates which will help the scientist make the connection between adult and juvenile. For fishes that transform rapidly the job of the scientist is made very difficult indeed. There are still many instances where a fish called by one name—and easily recognized under that name—is only the juvenile of another fish which looks totally different and is called (and readily recognized under) another name. There is no proof available for a scientist who might suspect that these "species" are one and the same, and he must wait until such proof (observation in the field, discovery of intermediates, or aquarium observations) is available to confirm or deny his theory.

Some scientists have a working relationship with importers, dealers, or public aquaria, or they set up their own tanks where they can make observations over a period of time or even conduct some experiments if the need arises. Just recently Dr. B. Conde of the Universite et de la Ville de Nancy was able, through direct observations over a period of time, to solve one of these problems. The Nancy Aquarium received several individuals of typically

Abudefduf melanopus (Bleeker). The amount of dark color on the ventral side is variable. Great Barrier Reef of Australia. Photo by Roger Steene.

The extent of the posterior yellow area varies with age and among different individuals. This one still has quite an extent of yellow. Photo by Dr. Gerald R. Allen at Palau.

colored *Paraglyphidodon melanopus* in October, 1973, which over a period of time were raised to the adult stage. Dr. Conde observed the transformation they underwent, the end result of which was another "species," *Paraglyphidodon melas*. By experimental observation, then, *Paraglyphidodon melanopus* becomes a synonym of *P. melas*, the older name. In comparing the descriptions given by Jerry Allen in his book *Damselfishes of the South Seas*, it can be seen that the counts, measurements, and geographic distribution of the two species are all but identical. Dr. Allen agrees that the two species should now be considered synonomous.

Dr. Allen discovered the adult form of *Paraglyphidodon behni* while making field observations on damselfishes. The juvenile is an aquarium favorite, and the transformation was known to aquarists for quite some time. Had Jerry known of this information earlier, it could have been very useful in his work. I am sure that other observations of the same kind would be helpful in clearing up some of the problems of damselfish taxonomy.

The changes in this particular group should not be unexpected then. At this time I am watching another species of *Paraglyphidodon* (Mr. Vic Bota of Vic's Underwater World has kindly kept this fish alive for me) which came into the aquarium trade recently. The juvenile is very attractive, with a reddish-orange body and bright neon-blue stripe from head to tail. With growth this fish is changing, losing the reddish-orange color and most of the blue stripe, to become a brownish fish with a blue spot at the end of the dorsal fin. So far it is still not attributable to any known species, but it is hoped that the mystery will soon be cleared up. It is quite possible that the adult is known though the juvenile, newly discovered, might have been considered, and even described as, a different species.

So keep an eye on your fishes' changes as they grow; you might be able to make an important scientific discovery.

ABBOTT LABORATORIES CALLS ATTENTION TO FISH FIRST-AID

Abbott Laboratories, manufacturers of Furanace fish medications, is making a new point-of-purchase Fish First-Aid Station mobile available to dealers through their Furanace distributors. The mobile depicts the multiple uses of Furanace in a three-dimensional unit which swings freely under a brightly colored scallop shell announcing the location of a Fish First-Aid Station. The mobile can be effectively used to call attention to the medications section in retail shops.

Also available to distributors are bright orange *Shipped in Furanace* stickers for use on fish bags.

Glen Axelrod poses on the steps of the J.L.B. Smith Institute of Ichthyology at Rhodes University in South Africa. Photo by Dr. Herbert R. Axelrod.

THE J.L.B. SMITH INSTITUTE OF ICHTHYOLOGY
Rhodes University, South Africa

by Dr. Herbert R. Axelrod

The daily mail that passes over my desk is scrutinized by my staff to exclude extraneous material. . . letters requesting free books, autographs, locks of my hair and requests to go on an expedition with me usually get no further than my secretary's desk. But letters which request constructive information about the hobby (which go to our editors who select them for the MAIL CALL column) and letters about educational problems are read and oftentimes answered by me personally.

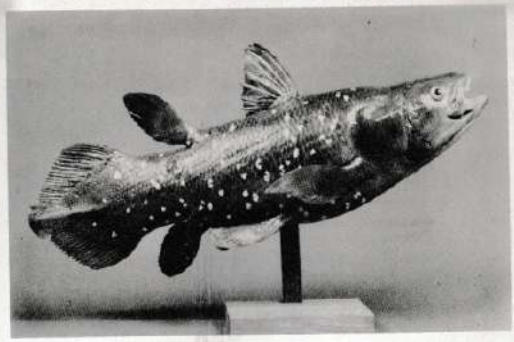
Some years ago I discussed the problem "Where does a high school graduate interested in tropical fishes go for a good university education in systematics (ichthyology)?" with Dr. George Myers, one of the greatest ichthyologists of all time. He really got involved with the answer and wrote a booklet for T.F.H. entitled *"How to Become an Ichthyologist."* The book is now out of print since Dr. Myers retired and could not bring the book up to date.

Last year my brother's son Glen wanted to take a Ph.D. in ichthyology and the decision about which graduate school he should attend fell on my shoulders. After a most careful survey of the schools in the world, I decided upon the *J.L.B. Smith Institute of Ichthyology* at Rhodes University, Grahamstown, South Africa for the following reasons:

1. It has the lowest tuition of any school in the civilized world which is English-speaking and offers a Ph.D. in ichthyology. (The head of the department is an American, by the way!).
2. Its location offers the Indian and Atlantic Oceans plus cichlids, barbs, and other aquarium fishes.
3. Grahamstown has a very low cost of living. A brand new apartment (called a "flat" there), with a kitchenette, maid service every day, including laundry and pressing (but not sheets) runs about $125 per month! Pineapples are a nickel and lobsters tails are found near the sea.
4. It has an outstanding faculty, headed by Dr. R. Winterbottom, who is a leading advocate and expert on studies in fish phylogeny. Peter B.N. Jackson is Senior Research Fellow specializing in freshwater problems. He was previously Project Manager of the Lake Victoria Fisheries for the FAO and spent most of his life working the fishes and fisheries of the Great Lakes of Africa. The Director is the famed Margaret M. Smith who worked with her husband for 30 years and was appointed Director of the Institute to train young ichthyologists.

Dr. J.L.B. Smith, Mrs. Smith's late husband, was born James Leonard Brierley Smith in Graaff-Reinet, Cape Colony, South Africa on September 26, 1897. He died in Grahamstown on January 8, 1968. His love of fishes dated back to when, as a small boy at Knysna, he caught his first small silvery fish (*Diplodus sargus*). From then on angling and fishes became a passion that lasted until the end of his life.

After an outstanding career in chemistry, when by means of bursaries and scholarships, he put himself through Stellenbosch and Cambridge Universities, he returned in 1923 to lecture at Rhodes University College in Grahamstown. He was a brilliant, inspiring and much-loved lecturer and teacher, and an indefatigable research worker. As such he came up against the "Old Guard" who had graduated to Chairs in the College



The coelacanth, *Latimeria chalumnae*, a primitive lobe-finned fish, found in deep water off the east coast of Africa, was first brought to the attention of the scientific world by Dr. J.L.B. Smith.

from being school teachers, and looked askance at scientific research work. The turning point of his life probably came when he refused to spend his own precious time washing up students' apparatus at the end of the year but offered to pay an unskilled person to do his share!

When the Chair of Chemistry fell vacant, he was passed over. The only two members of the Senate who had doctorates, Professor S. Schonland, head of the Botany Department, and Professor J.E. Duerden, head of the Zoology Department, both fought bitterly to have Smith appointed to the Chair, but they were overruled, the excuse being that organic chemistry was a static subject of the past with no future! A physical chemist was appointed. Thus, chemistry's loss proved ultimately to be ichthyology's gain.

Time he would have spent on administration was given to research in chemistry during official (and some unofficial) hours, and in ichthyology during his spare time.

He published his first short ichthyological paper in the *Records of the Albany Museum* in 1931, illustrating it himself with what he considered reasonable sketches.

H.W. Parker, the herpetologist at the British Museum who

Continued on page 86

MAIL CALL

by Marshall E. Ostrow

If you have an aquarium question that you would like to have answered, send it to MAIL CALL. Letters containing questions of course cannot be acknowledged or answered personally, but each month a number of the most interesting questions and their answers will be published in this column. Address all questions to: MAIL CALL, T.F.H. Publications, Inc., P.O. Box 27, Neptune City, New Jersey 07753. Please do not combine MAIL CALL questions with correspondence about subscriptions or book orders.

Salad Anyone?

Q. I am writing to ask about breeding *Cichlasoma meeki*. I would also like to know what kind of cichlid will not eat plants.

Mike Duncan
Jeffersontown, Kentucky

A. *The firemouth cichlid,* Cichlasoma meeki, *breeds in the conventional manner of most South American cichlids. Complete information on breeding this vividly colored fish can be found in* Breeding Aquarium Fishes, Book I, *T.F.H. No. H-930.*

There are few freshwater fishes about which one can unequivocally say that they do not eat plants. Many cichlids dig a nest in the gravel, and if plants happen to be located on the chosen spot they are dug up. This digging behavior is easily mistaken for feeding behavior, although often cichlids will eat their way into the chosen nesting site.

Hey, Culligan Man!

Q. My water is hard and I use a water softener. Will any harm be done to my fishes if they are kept in this processed water?

Terry McIlvain
Dover, Pennsylvania

A. *No living aquatic organism survives well in completely softened water. Most commercial water softeners are ion exchange systems where calcium ions (the major source of water hardness) are exchanged for sodium ions. Living organisms require varying amounts of calcium to survive and will therefore suffer deficiencies in pure softened water.*

Many fish will benefit by being kept in a mixture of hard and artificially softened water. The proportions would vary, depending on which species you have. Very hard water is detrimental to some species and critically essential to others.

You make no mention of which species you have, so we cannot answer your question very specifically.

The TFH publication Exotic Tropical Fishes *would give you the environmental background on most commonly kept species.*

PITTSBURGH SHOW

The 30th annual show of the Greater Pittsburgh Aquarium Society will be held Sept. 26 to Oct. 10, 1976 at the Buhl Planetarium, Allegheny Center, Pittsburgh, Pa. For more information contact Show Chairman Bob Johnson, 4567 Mapledale Dr., Munhall, Pa. 15120 (tel: 412-462-8028) or Bud Welty, President, 565 Helena Avenue, East McKeesport, Pa. 15035 (tel: 412-823-1857).

Tough Guy

Q. I recently placed a rainbow cichlid in my livebearer tank. It is a sparsely populated 29-gallon tank. So far, my cichlid has not become aggressive. Should I expect him to become more aggressive in the future?

Darren Gold
Denver, Colorado

A. *Yes. The rainbow cichlid,* Herotilapia multispinosa *(see* Exotic Tropical Fishes, *p. F330.06), like nearly all cichlids, is territorial and will tenaciously guard its domain against all intruders, even those that are much larger. This is especially true when the fish is spawning. Livebearers are non-territorial, non-schooling fish that will randomly wander into the rainbow's territory in search of food or a mate.*

When your rainbow is large enough to inflict damage, you may be certain that it will. This particular species, however, does seem to be fairly peaceful if kept with fish its own size.

The banjo catfish, *Bunocephalus bicolor*. Photo by G. Marcuse.

Skinny Dipping

Q. Does the banjo catfish, *Bunocephalus bicolor*, shed its skin? As I watched my banjo cat, it seemed to blow off its old skin by vigorous pumping of its opercula. When the old skin was finally cast off the fish had a more vivid overall color.

1. How frequent are these sheddings?
2. Is there a reason for these sheddings?

Peter Smith
Lancashire, England

A. *We have no knowledge of this or any other fish actually shedding its skin. Unlike invertebrates, fish do not have a chitinous exoskeleton. As a fish grows, its skin grows with it, whereas the invertebrate "skin" does not grow.*

As you probably know, fish are covered by a coating of mucose or body slime which is secreted by specialized cells in the skin. This coating serves as a barrier to parasitic invasion and also provides a sort of lubrication for the fish that reduces friction as it swims through the water.

When a fish is being affected by a chemical or physical irritant, it tends to shed its body slime. This mucose shedding is part of a fish's physiological reaction to almost any kind of stress. Often the mucose coating becomes somewhat cloudy and is then shed off in large sheets as a thin new coating is secreted from beneath. Once the old coating is gone the fish's color returns to normal because the skin pigment is more clearly visible.

We suspect that this is what happened to your banjo catfish. It is paramount that you find the source of the irritant or stress and try to eliminate it. Every time a fish loses its coating it is left defenseless against invasions of bacteria, fungus, or other skin parasites, until it has had enough time to build up a sufficiently thick protective mucose coating.

Switch Hitter

Q. I recently purchased a pair of fish called Gardner's Killy. I was told by the friend who sold them to me that they would spawn in a floating nylon mop which she was kind enough to give me. I placed the pair in a 5-gallon tank, dropped in the mop, and they almost immediately began to spawn in the gravel, totally ignoring the mop. The problem is, how do I collect the eggs from the gravel?

Janice Thompson
Oakland, California

A. *You probably have a pair of* Aphyosemion gardneri *which, like many of the non-annual killies such as* A. bivittatum *and* A. australe, *will spawn either in the plants or on*

Aphyosemion gardneri spawning in vegetation. Photo by Ruda Zukal.

FAAS ELECTS NEW DIRECTORS

The Federation of American Aquarium Societies has announced the names of its 1976-77 Board of Directors. Newly elected Directors are David Ayres (Youngstown Area Tropical Fish Society, OH) and Duane A. Seifert (Dunes Aquarium Society, IN). Two Board members were returned for a second two-year term: Larry Brande (Everglades Aquarium Society, FL) and Ted Chistensen (Saskatoon Aquarium Society, Sask.). The four hold-over Directors are Sylvia Farnum (Minot Fin & Gill Society, ND), John Kuhns (Heart of America Aquarium Society, MO) Pat Mussatto (Edgewood Valley Aquarist Society, IL), and Rich Olcott (Mid-South Aquarium Society, TN).

Aphyosemion gardneri spawning on the gravel bottom. Photo by Ruda Zukal.

the bottom substrate. The best solution to this problem is to spawn them in a bare tank; that way the eggs can be easily seen and siphoned off the bottom. It will also be helpful to use a smaller container such as a small drum bowl which you can purchase at most pet shops. This will help direct the spawners toward the mop. To make egg collecting easier, use a bottom mop (weighed down with a marble or two) and a floating mop. That way the eggs become concealed from the spawners (which, by the way, do eat their eggs) no matter which location they choose for spawning.

Sexing Honey Gouramis

Q. About five months ago I acquired two *Colisa chuna* and would like to know how to sex these fish. So far, both of them are still a whitish color.

I would like to have any information you can provide on breeding them.

David Quaarud
City not given

A. *There is no way of knowing how old your honey gouramis were when you purchased them, but from what you tell us, our guess is that they should be nearing sexual maturity now. Although the male tends to have a more pointed posterior tip on the dorsal fin, this difference is not always easy to detect. Unlike the male* Colisa lalia *(dwarf gouramis), which always retains its beautiful color with some intensification at breeding time, the male honey gourami is almost as drab as the female until it comes into breeding condition. Then the color change is nothing short of spectacular! The male takes on a brilliant golden hue with a sharply contrasting blue-black face and abdomen. The intense blue-black color also covers the anterior portion of the long anal fin.*

AFRICAN CICHLIDS

From Lakes Malawi and Tanganyika for both Hobbyists and Dealers.

The photo below shows one of Lake Malawi's most beautiful fish, a mature male *Aulonocara nyassae* Regan, commonly called the "peacock". This species is bright metallic blue with orange markings and contrasting white trim. Maximum total length: about 7".

Mild tempered, hardy, and active, "Peacocks" begin to breed at about 2", if kept well fed in a clean aquarium. A 4" female recently released 56 fry (⅝" long) after mouthbrooding them for 3 weeks. They immediately ate freshly hatched baby brine shrimp and are now growing fast. 56 fry exceeds the average size spawn of about 35. A limited number of 1¼" juveniles are offered on our current list ($4.00 to $2.00 each) along with many other varieties of African cichlids.

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Interested hobbyists or dealers are encouraged to request our free price list with complete details about shipping including our live delivery warrantee. We will also send a free illustrated brochure containing more information about keeping and breeding African cichlids. For a rapid reply send a large self-addressed envelope; otherwise, allow 3 weeks.

Honey gourami, *Colisa chuna*. The male (upper fish) has taken on its breeding colors. Photo by Ruda Zukal.

The fish can be induced into breeding condition if it is mature enough by elevating the temperature to about 80° F. If, at this temperature, one of your pair does not color up, either you have two females or they are not yet sexually mature.

The fish breeds in almost the same way as the dwarf gourami, Colisa lalia.

Two Cents Plain

Q. I have a chanchito, *Cichlasoma facetum*, with an epithelial benign tumor on the area just posterior to the left pectoral fin. Otherwise, the animal is in good health, eating normally, etc. My questions are these:

1. What can I use as an anesthetic agent that would be safe for this species, besides MS-222® , which I haven't been able to locate?
2. What can I use to stop bleeding from the area of the tumor once it has been removed?
3. Any other advice on fish surgical techniques would be most appreciated.

B. Folsom Putman
Oceano, California

A. *Without a biopsy, the tumor, whether benign or malignant, should be removed. MS-222® is available through most scientific supply houses, but should be used*

ENDANGERED SPECIES LIST EXPANDS AGAIN

On June 14, 1976 the Department of the Interior's Fish and Wildlife Service enacted a panoramic reform of the Endangered Species List. The revised list became effective July 14, 1976. Although the exact identity of the species involved has not yet been made available, we do know that the list only includes two fish species, both of which are of Asiatic origin and not common to the aquarium hobby.

with caution, as should any drug. The drug is also available under the trade name Finquel® from Ayerst Laboratories, Veterinary Medical Division, 685 Third Ave., N.Y., N.Y. 10017, in 100 gm. bottles for $33.10. A more economical and certainly more easily available anesthetic is fresh room-temperature carbonated water (soda-water).

First prepare the surgical plate by placing a thin layer of filter floss (**not glass wool**) *in a shallow dish. Cover the floss with boiled aquarium water which has been cooled to room temperature. Once the floss is saturated, pour off the excess water* (**do not squeeze out**). *Now prepare the anesthesia in a bowl deep enough to allow the fish to remain upright. Mix one part sterilized room temperature aquarium water with one part soda water. Carefully drop the fish in and quickly cover the bowl to contain the fish. Most fish will be sufficiently sedated in about two minutes, but as a rule of thumb, remove the fish from the solution and place it in the wet surgical dish fifteen seconds after it has stopped moving.* **An overdose will kill the fish, so don't leave it in the solution too long!**

While out of water, the fish must be kept wet. This is done by using a clean medicine dropper to pipette a few drops of sterile aquarium water over the body and gills once a minute.

The best surgical instrument to use is a small-bladed disposable scalpel or a small-bladed modeling tool. Always use a fresh blade when starting the operation.

Tumors on fish as large as the chanchito, *Cichlasoma facetum*, a South American cichlid that can reach 10 inches in the aquarium, are rather easily removed if the fish is properly anesthetized and a very sharp scalpel is used. Photo by G. Marcuse.

Bleeding can usually be stopped by allowing the localized area to dry for a minute. This can be aided with a dry sterile cotton swab. The wound should then be swabbed with Mercurochrome® , being careful not to allow any to run down into the gills.

Once the surgery is complete and the area sterilized with antiseptic, wait about 30 seconds, then drop the fish into a container of sterile aquarium water which is being **very gently** *aerated. A drop or two of a 1% methylene blue solution in this container will help promote quick recovery from shock and will help the fish rapidly regenerate its body slime.*

The fish should be fully conscious and functioning normally in ten to fifteen minutes. It should be left in this "recovery room" for about an hour, then isolated in a comfortably sized, bare, clean aquarium containing sterilized water. It should remain here for a few days, at least until the wound shows visible signs of healing. Recovery will be facilitated by adding one or two drops per gallon of a 1% methylene blue solution. The fish should not be fed for 24 hours before and 24 hours after the operation.

This technique has been used successfully by many hobbyists and by some scientists in lab work. Usually less than 1% of the fish so anesthetized are lost.

Hit the Road, Jack!

Q. Although I have read a number of publications concerning various aspects of the hobby, there is one problem on which I have only been able to find sparse bits of information: What does one do with one's tropical fish when one must relocate

to another city? At present I have about 50 fish in four aquaria. I would rather not take the easy way out and simply give the fish to someone else.

Anthony J. Niesz
Madison, Wisconsin

A. *TFH Publications has a book available which should solve your problem. It is No. M-528,* Your Aquarium/Your Vacation/Your Relocation. *Another good source for this information is your dealer, who each week receives fish from around the world that are professionally packaged for long distance shipment.*

Here are a few simple rules that should be followed when shipping fish:

1. *Do not feed for 24 hours prior to packaging, as you must minimize body waste products in the shipping water.*
2. *Pack fish in plastic bags, not glass jars, being judicious as to how many to a bag and which ones can be together in these small confines without destroying each other.*
3. *Never use more water than is necessary to just cover the fishes' backs. This allows for a greater volume of air or oxygen in the bag.*
4. *If the fish will not be in bags more than 24 hours, air is okay; otherwise, use pure oxygen (inexpensive oxygen canisters are commercially available).*
5. *The bags should be tightly*

RHODES UNIVERSITY
Continued from page 65

was a student with him at Cambridge, wrote and said that he was surprised to see a chemist publishing a paper on fishes. The text was quite good, but the illustrations were terrible! For the next ichthyological paper he produced, Dr. Smith spent many arduous hours over the illustration, which he redrew a number of times. The result (*Myctophum* [*Nasolynchus*] *florentii*) was certainly worth all the trouble. He continued to illustrate his own papers until 1941. From 1943, with the *Early Juvenile Stadia*, his wife began illustrating his publications. Little did she realize where that was to lead her! During the war (1939-45) most of his time had to be given to teaching chemistry, and during this period he published three chemistry textbooks.

In September, 1945 he was invited to produce a book on South African fishes. He had arrived at the parting of the ways! The newly formed South African Council for Scientific and Industrial Research made it possible for him to devote all of his time to ichthyology. He was given a grant of $4000 to be renewed annually. It carried neither pension nor other benefits, and he lost the government pension due him after 25 years of teaching because he refused to state that he was retiring from teaching on medical grounds. But, to the end, the Council for Scientific and Industrial Research, which had taken over the old "Research Grant Board" that had assisted him with his early papers, supported his work in every way.

In 1946 The Department of Ichthyology was founded and built up around his work. From 1946-1949, while busy writing *The Sea Fishes of Southern Africa,* he published seven more ichthyological papers in the *Annals and Magazine of Natural History,* London. His major find was, of course, the first living coelacanthid.

The Institue was created at the end of 1968 to honor the founder of The Department of Ichthyology and to continue his research on fishes. The department was essentially a research unit financed largely by the South African Council for Scientific and Industrial Research and built around the scholarship of J.L.B. Smith. A program leading to the M.Sc. and Ph.D. degrees is now offered. A college degree (in zoology) is required for prospective candidates. Prospective candidates in zoology at Rhodes University may choose an ichthyological bias to the course, which is given jointly with the Department of Zoology and Entomology. It is planned to expand the Institute to include the teaching of marine biology and fisheries biology. The teaching program will expand as the research programs are enlarged in scope and staff. The following is the Board of Management representing Rhodes University:

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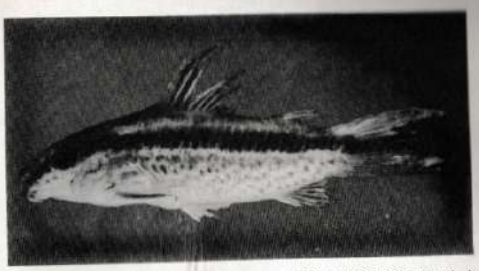
A New Callichthyid Catfish, *Corydoras gracilis*, from Brazil

(PISCES, SILURIFORMES, CALLICHTHYIDAE)

by H. Nijssen & I.J.H. Isbrücker
Institute of Taxonomic Zoology (Zoological Museum),
University of Amsterdam, Holland

The South American callichthyid catfish genus *Corydoras* Lacepede, 1803 comprises about one hundred and twenty described species. Most of these are quite easy to identify, although there are some complex problems involved with several so-called 'nominal species,' which cannot be solved easily with the taxonomic procedures in a museum laboratory, working with preserved specimens only. The authors are working on a review of the entire genus, based on the examination of all existing preserved material present in museums. This review is in its final stage for publication.

Through Dr. Herbert R. Axelrod we recently received a small but interesting collection of *Corydoras* species assembled by Mr. Heiko Bleher of Eschborn, Germany, presumably for the interest of aquarists. Among the material we found three specimens representing a hitherto undescribed species. Unfortunately, exact original locality data are lacking. They were collected from the Rio Madeira within 100 miles of Porto Velho, Brazil. Fortunately, we received another three specimens of the same species from Prof. Dr. Werner Ladiges, retired ichthyologist of the Zoologisches Staatsinstitut und Zoologisches Museum, Hamburg (ZMH). The latter specimens, collected by Mr. Hans Baensch, were accompanied by good locality data: a tributary of Rio Tapajos, 66.5 km west of Itaituba. The six specimens were used for the description of the new species, *Corydoras gracilis*. We are grateful to Dr. Axelrod, Mr. Bleher, Prof. Dr. Ladiges and Mr. Baensch for the opportunity to study the specimens. The photographs of the preserved specimens were made by Mr. L.A. van der Laan, Institute of Taxonomic Zoology (Zoological Museum), University of Amsterdam (ZMA), those of the live specimen by Mr. Heiko Bleher. A paratype of the new species is deposited in the collections of ZMH, of the British Museum (Natural



Corydoras gracilis new species, holotype, ZMA 114.687. Photo by L.A. van der Laan, ZMA.

History), London (BMNH), and of the National Museum of Natural History, Smithsonian Institution, Washington, D.C. (USNM).

Corydoras gracilis, new species

Holotype, ZMA 114.687, sl 23.2 mm, Brazil, Est. Para, tributary of Rio Tapajos, 66.5 km west of Itaituba, 04°15'S, 55°56' W, coll. H. Baensch, IX-1974, - two paratypes, ZMA 114.688, ZMH 5688, sl 21.5 and 21.7 mm, respectively, same data as holotype, - three paratypes, ZMA 114.689, USNM 216074, and BMNH 1976.4.27:143, sl 19.6 to 20.8 mm, Brazil, Rio Madeira drainage, within 100 miles of Porto Velho, Trans-Amazonica Highway, coll. H. Bleher, 1975.

Description.- Measurements are taken to one tenth of a millimeter (cf. Nijssen, 1970: 10-11, fig. 3); proportions are expressed as ratios in standard length (sl) and in head length (hl).

Holotype: sl 23.2 mm; bd (body depth at origin of dorsal fin spine) 7.0 mm (3.3 in sl); bw (body width at origin of pectoral fin spines) 5.9 mm (3.9 in sl); lds (length dorsal fin spine) 4.6 mm (5.0 in sl); lps (length pectoral fin spine) 6.0 mm (3.9 in sl); hl (head length) 7.3 mm (3.2 in sl); sn (snout length) 3.6 mm (2.0 in hl); lbo (length bony orbit) 2.0 mm (3.7 in hl); wi (least interorbital width) 3.1 mm (2.4 in hl); ca (width cora-

Continued from page 14.

young did not touch food, but on the second day they readily devoured newly hatched brine shrimp. The next day they accepted small nauplii of *Cyclops* and bigger ones a week later.

During the entire incubation period the pair looked after the brood with the utmost care and attention. Throughout, the female stayed close to the eggs and later the larvae, which were lying on the bottom of the cave. The male stood at the other end of the tank and, from there, defended the cave. From the third day after the fry had begun to swim free, there were harmless fights between the parents, from which the female emerged the winner.

A few days later, when I put a few more food-fish into the tank, the male had taken up its defense post again from which it was allowed to return to the cave without being attacked by the female. By this time, the other inhabitants of the tank had

Lamprologus elongatus fry at one week form a loose swarm at the mouth of the cave in which they dwell during times of danger or stress.

This photograph shows a marked size difference between the sexes of *L. elongatus*. (The female is the lower fish.) There are no other easily dectectable signs of sexual dimorphism.

already learned to keep their distance. The brood-care of *Lamprologus elongatus* is chiefly confined to defending of the territory. Unlike the young of other cichlid species, the fry were not taken out by the parents and led to feeding places. The young formed a loose, lively swarm just outside the spawning cave. I did not observe that they reacted to any movements of the parents. When a shadow appeared above them the fry dropped to the bottom as if dead. But since I always supplied food from the top they stopped this behavior a week later and came hurrying to the water surface instead. At night the young *Lamprologus elongatus* retreated into the spawning cave. After switching off the light in the aquarium I left the room lights on for a while longer, during which time the female, with her mouth, collected all the young still outside the "bedroom" and spat them back into the cave.

Because of their attractive color pattern and interesting behavior, *L. elongatus* might well become one of the more popular Rift Lake cichlids.

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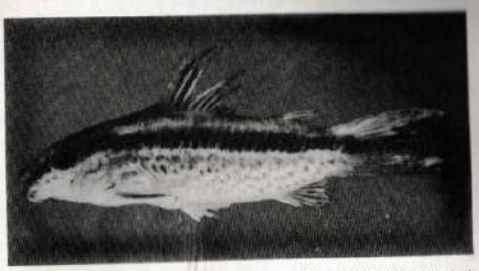

Corydoras gracilis new species, holotype, ZMA 114.687. Photo by L.A. van der Laan, ZMA.

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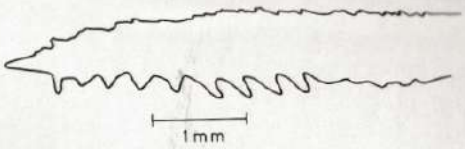
coid area between anteriormost ventrolateral body scutes) 2.9 mm (2.5 in hl); dcp (least depth caudal peduncle) 3.7 mm (2.0 in hl); D (dorsal fin) I,7, last ray split to its base; P1 (pelvic fin) i,5; A (anal fin) i,6; P2 (pectoral fin) I,7-8; C (principal caudal fin rays) 7/7; dbs (dorsolateral body scutes) 24; vbs (ventrolateral body scutes) 22; pas (preadipose scutes) 3. Two pairs of rictal barbels and one pair of mental barbels. Inner edge of pectoral fin spine strongly serrated. Skin of intercoracoid area naked. Fontanel length 2.4 mm.

Data from the paratypes: sl 19.6 to 21.7 mm; bd 3.1 to 3.4 in sl; bw 3.7 to 3.9 in sl; lds 4.3 to 4.7 in sl; lps 3.5 to 3.7 in sl; hl 3.1 to 3.2 in sl; sn 2.1 to 2.4 in hl; lbo 3.2 to 3.5 in hl; wi 2.1 to 2.4 in hl; ca 2.4 to 3.0 in hl; dcp 1.8 to 2.0 in hl; D I,7 in four paratypes, I,8 in one paratype, last ray split to its base; P1 i,5; A ii,5 in one paratype, i,6 in two paratypes, and i,6, last ray split to its base in another two paratypes; P2 I,6-7 in one specimen, I,7 in two specimens, and I,8 in another two specimens; C7/7.

Color in alcohol: Ground color pale tan. A narrow dark brown stripe from base of rictal barbels to margin of eye, continuing beyond eye as a broad, almost straight band over dorsolateral body scutes to base of caudal fin, leaving ventrally a narrow unpigmented area just above junction of dorso- and ventrolateral body scutes and dorsally a broader unpigmented area of about one quarter the height of dorsolateral body scutes. The brown band continues to the tip of the two ventralmost rays of upper caudal fin lobe and to the tip of the dorsalmost ray of lower caudal fin lobe. Dark brown pigment on base of fourth and fifth ray of upper caudal fin lobe connected to lateral band. Caudal fin rays with faint brownish pigment, especially in first two principal rays of both upper and lower lobe. Dorsum of head with some greyish pigment, darkest posterior to interorbital width through anterior part of occipital process. A dark brown patch in upper third of nuchal scute and two subsequent dorsolateral body scutes, reaching base of dorsal fin. Some greyish pigment at the meeting of the dorsolateral body scutes.

Operculum and coracoid with irregular, brownish pigmentation. Ventrolateral body scutes have numerous small, ill-defined brown spots, concentrated near junction of dorso- and ventrolateral body scutes.

Dorsal fin spine with brownish pigmentation. A brown stain in upper half of first two dorsal fin rays and connecting membrane; some pigmentation along base of dorsal fin. Adi-

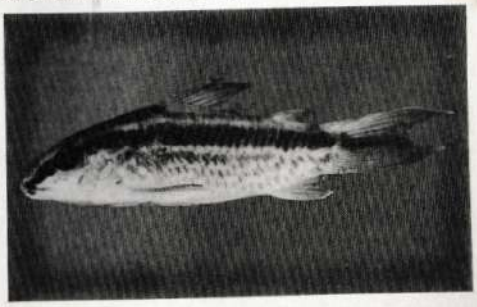


Corydoras gracilis new species, right pectoral fin spine of holotype, sl 23.2 mm.

pose fin spine and dorsal side of adipose fin membrane tan. Spine and rays of pectoral, pelvic, and anal fins tan, the membrane unpigmented. Ventrum of head and body whitish.

Paratypes.- Color in life is shown in accompanying photo by Mr. Bleher. A brightly colored area on the nuchal scute between dorsal spot and longitudinal brown band. The thirteen minute white spots ventral to the longitudinal band visible in Mr. Bleher's photo are apparently reflections from a flash-

Corydoras gracilis new species, a paratype, sl 20.8 mm, collected by Mr. Bleher, ZMA 114.689. Photo by L.A. van der Laan, ZMA.



Corydoras gracilis new species. Living specimen, presumably a paratype. Photo by Heiko Bleher.

bulb: no trace of them could be found in the preserved specimens. The five paratypes have a color pattern very much like that of the holotype and show no variation worthy of mention.

Etymology.- The specific name is derived from the Latin 'gracilis' meaning slender, gracile, alluding to the body shape of this species.

Discussion.- *Corydoras gracilis* is clearly distinguished from all hitherto described *Corydoras* species by its color pattern. It shares a short, rounded snout and a strongly serrated inner edge of the pectoral fin spine with five other *Corydoras* species: *C. elegans* Steindachner, 1877, *C. undulatus* Regan, 1912, *C. latus* Pearson, 1924, *C. guapore* Knaack, 1961, and *C. nanus* Nijssen & Isbrücker, 1967. We examined representatives of these species, including primary type material, and found three morphometric characters that further tend to distinguish them from *C. gracilis*: body depth in sl is 2.2 to 3.1 in *C. elegans, C. undulatus, C. latus, C. guapore,* and *C. nanus* against 3.1 to 3.4 in *C. gracilis*; head length in sl is 3.2 to 3.9 against 3.1 to 3.2; and least interorbital width is 1.5 to 2.2 against 2.1 to 2.4 in *C. gracilis*.

REFERENCES

Knaack, J., 1961: Ein neuer Panzerwels aus Brasilien (*Corydoras guapore*) (Pisces, Teleostei, Callichthyidae).-Sitzber. Gesellsch. naturf. Fr. Berlin (n.s.), 1(1-3), pp. 135-138, figs. 1-2.

Lacepede, B.G.E. de la Ville, 1803: Histoire naturelle des poissons, 5, pp. i-lxviii, 1-803, 21 pls. (P. Plassan, Paris).

Nijssen, H., 1970: Revision of the Surinam catfishes of the genus *Corydoras* Lacepede, 1803 (Pisces, Siluriformes, Callichthyidae).- Beaufortia, 18(230), pp. 1-75, figs. 1-40, tab. 1.

Nijssen, H. & I.J.H. Isbrücker, 1967: Notes on the Guiana species of *Corydoras* Lacepede, 1803, with descriptions of seven new species and designation of a neotype for *Corydoras punctatus* (Bloch, 1794) - (Pisces, Cypriniformes, Callichthyidae).- Zool. Meded., 42(5), pp. 21-50, figs. 1-4, pls. 1-5.

Pearson, N.E., 1924: The fishes of the eastern slope of the Andes. I. The fishes of the Rio Beni basin, Bolivia, collected by the Mulford Expedition.- Indiana Univ. Stud., 11(64), pp. 1-83, incl. pls. 1-12.

Regan, C.T., 1912: A revision of the South American siluroid fishes of the genus *Corydoras*, with a list of the specimens in the British Museum (Natural History).- Ann. Mag. nat. Hist., (8)10, pp. 209-220.

Steindachner, F., 1877: Uber einige neue Fischarten, insbesondere Characinen und Siluroiden aus dem Amazonenstrome. Ichth. Beitrage (V:2).- Sitzber. Akad. Wiss. Wien, 74(1), pp. 73-167, pls. 6-13 (in part).

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