

clown trigger excrete tremendous quantities of waste and may pollute their tank if the filtration system isn't adequate. One word of warning: triggerfishes are inquisitive. They will bite airlines and heaters. Do not use a glass inside heater in a tank containing large triggers or parrotfishes. Instead, use an outside or bottom heater and be sure to protect any wires leading into the tank.

Seahorses and pipefishes are "advanced" fishes because they are slow swimming and require large amounts of live foods. Since live adult brine shrimp, the food of most seahorses and pipe fishes (not including the dwarf and giant seahorses), is a known vector (carrier) of *Oodinium* and other diseases, (most of which the seahorses are immune to) I would not want them in a tank with other fishes even if they could compete with swifter-swimming animals for food.

Pipefishes (genera *Syngnathus* and *Dunckerocampus*) are close relatives of the seahorses and also brood eggs in the male's abdominal pouch. Unlike the seahorse, pipefishes are masters of escape and will flee through the tiniest opening. Siphon tubes, tank cover openings, etc. should be closely

protected against this.

When the ribbon eel, *Rhinomuraena* sp., first became available to aquarists they were told that this beautiful, long, slender fish was a plankton feeder. A look at the small mouth lent credence to this theory. Unfortunately a lot of ribbon eels starved to death before it was realized that they fed on small fishes. The ribbon eel feeds at night and should be fed several small guppies or similar small fishes (mollies, *Poecilia* sp., will survive indefinitely in salt water) just before turning the tank lights off. Do not keep ribbon eels with small fishes unless you intend them as food for the eel.

Some of the smaller sharks make interesting pets for the advanced hobbyist who insists on something "different". While most sharks are pelagic in nature and require a considerable amount of swimming room, the South African zebra shark, *Haploleparus edwardsi*, is a bottom-dwelling fish which is fairly sluggish and feeds on crustaceans. In captivity it should be kept alone in a fairly large tank and fed scallop, raw shrimp in the shell, and chopped clams. Be sure to have a high capacity filter for this and other large fishes. □

March 1976

Two new cichlids of the Mbuna group from Malawi with a discussion of several bicuspid-toothed *Labidochromis* sp.

by DON S. JOHNSON

WHILE RESEARCHING MY NEW BOOK on the Mbuna of Lake Malawi several species were found to be new to science. Nine of these new Mbuna are described in scientific papers which will be published elsewhere and two are described here for the first time. All of these fishes are pictured in natural color for the first time in *Mbuna — the colorful rock-dwelling cichlids of Lake Malawi*, Pisces Publishing Corporation, Inc.

Melanochromis mellitus sp. n. Honeyed Mbuna

Fig. 1. Holotype: Female collected by Peter Davies et al off Mumbo Island, Lake Malawi, Malawi. Deposited in the American Museum of Natural History, New York.

Diagnosis: *Melanochromis mellitus* differs from all other known *Melanochromis* sp. in coloration. It differs from *Melanochromis brevis* in jaw length, dorsal spines and rays and in the maxillary not reaching vertical from the eye as it does in *M. brevis*. *Melanochromis mellitus* differs from *M. vermivorus* in having a greater lower jaw length.

Description: Color in life as shown in Fig. 1. Color in alcohol dark brown-gray, head bluish. Traces of yellow on dorsal, anal and caudal in-



Photograph by Don S. Johnson

Fig. 1. *Melanochromis mellitus*, the living holotype.

terradians. Dark blue on anal and ventral fins. Standard length 79.5cm (Note: preserved specimen's mouth open and very difficult to obtain standard length accurately under these conditions). Head length (see note) 3.3, maximum depth 3.38, dorsal base length 1.7, least depth of caudal peduncle 8.3, all in standard length. Length of upper jaw 3.69, length of lower jaw 3.2, orbit diameter 3.69, interorbital width 3.4, all in head length. Six rows of scales on cheeks. Gill rakers on entire first arch 12, finger-like, spotted. Maxillary does not reach vertical from eye. Scales: ctenoid. Dorsal: XVIII, 8. Anal: III, 7. Scales in lateral series: 32. Teeth in upper jaw: left side nine conical teeth, eight bicuspid. Right side 12 conical teeth, the rest bicuspid. Two posterior rows tricuspid. Teeth in lower jaw: anterior row bicuspid, posterior two rows tricuspid. Bicuspid teeth in both jaws are uneven and appear almost conical with small cusp near base.

Etymology: From the Latin (*mellitus* = honeyed).

Remarks: *Melanochromis mellitus* is apparently rather rare as it is seldom collected.



Photograph by Don S. Johnson

Fig. 2. *Pseudotropheus purpuratus*. Bottom fish is living holotype (male).

***Pseudotropheus purpuratus* sp. n.**

Fig. 2. Holotype: Mature male collected by Peter Davies et al off Chisumulu Island, Lake Malawi, Malawi. Deposited in the American Museum of Natural History, New York.

Diagnosis: *Pseudotropheus purpuratus* has been sold in the aquarium trade as *Melanochromis brevis*. It differs from *M. brevis* in size, dentition and coloration. *Pseudotropheus purpuratus* slightly resembles the purple and yellow/orange color form of the Likoma Island race of *Petrotilapia tridentiger* but lacks *P. tridentiger's* protrubant lips. In coloring *Pseudotropheus purpuratus* also slightly resembles another *Pseudotropheus* sp. which is being described elsewhere (Johnson 1976b) but differs greatly in bodily proportions.

Description: Color in life as shown in Fig. 2. Color in alcohol: dark blue-grey with brownish patch on cheek and on ventral surface before ventral fins. Fin edges clear with dark interradiial markings. Dark spines and rays. Whitish gold spot between sixth and seventh rays of anal fin. Standard length 100mm. Head length 3.2, maximum depth 2.89, dorsal base length 1.6, least depth of caudal peduncle 7.4, base length of anal fin 5, all in standard length. Orbit diameter 4.1, snout length 2.38, upper

jaw length 3.1, lower jaw length 3.4, all in head length. Scales in lateral series: 31. Scales in vertical series: 9. Dorsal: XVII, 8. Anal: III, 8. Pectoral: 14. Gill rakers on entire first arch: 13, lightly spotted. Teeth: upper jaw at least four rows. Anterior row bicuspid in a close even band. Posterior teeth tricuspid in uneven rows. Lower jaw at least four rows. Anterior row bicuspid in crowded even band. Posterior teeth tricuspid in uneven rows.

Etymology: From the Latin (*purpuratus* = wearing the purple) in allusion to the male's most conspicuous coloring.

Remarks: Thanks to African Fish Imports, Palisades Park, NJ, I had originally received a pair of these handsome fish. Unfortunately the female suffered sufficient damage to make her useless as a scientific specimen. The photograph shows the pair and their sexual dimorphism is readily apparent. The male of this pair is the holotype. Like other *Pseudotropheus sp.*, *P. purpuratus* is a maternal mouthbrooder. Broods in aquariums are small, averaging 12-14 fry. Males become particularly aggressive towards all other fishes while courting.

The original description of the type for the genus *Labidochromis*, *L. vellicans* (Trewavas 1935), relied heavily on the dentition to identify species within the genus. *Labidochromis sp.* were chiefly identified by their conical, unicuspid, forward-projecting teeth. Recently a number of fishes which are unmistakably *Labidochromis sp.* have been described which have a varying number of bicuspid teeth. These bicuspid teeth range from a few (*L. textilis*) to many (*L. margaritae* and *L. joan-johnsonae*). It seems that there is a need for further easily recognized characteristics to denote the genus. One of the most apparent is the distinctive head profile which all *Labidochromis sp.* share. (See Fig. 3). *Labidochromis sp.* all have a straight or convex snout. All *Pseudotropheus sp.*, for example, have a decurved snout. Thus far this



Fig. 3. A comparison between snout shapes of *Pseudotropheus sp.* (left) and *Labidochromis sp.* At far right a bicuspid tooth from *Labidochromis margaritae*.

COPPER IS 'NO PROBLEM' IN SALT WATER AQUARIUMS WITH BREEDMORE COPPER STOPPER.

Developed by Breedmore Research Laboratories, Breedmore Copper Stopper effectively removes harmful copper ions by chelation. Does not precipitate copper salts. Non Toxic to fresh and salt water fish.

BREEDMORE
The People that Understand
salt water chemistry.

A product of:
The Breedmore Corp. Shohola, P.A. 18458
(717)685-7400



Photograph by Don S. Johnson

Labidochromis margaritae, the mother-of-pearl cichlid. The male on left is the living holotype, described in a scientific paper elsewhere.

AMNH 35778
 distinctive straight or convex profile seems confined to the species of *Labidochromis* and until proven otherwise it would seem to be a helpful characteristic in classifying members of this genus. Based on dentition alone, it would seem possible that some workers might wind up classifying a bicuspid-toothed *Labidochromis* sp. as a *Melanochromis* sp. assuming they ignored the basic color pattern peculiar to the species of *Melanochromis* (horizontal stripes). It is rather obvious at this point that the presence or absence of conical vs. bicuspid teeth does not make a *Melanochromis* sp. or a *Labidochromis* sp. A combination of readily identifiable characteristics should serve to help refer species to the proper genus. Otherwise all bicuspid-toothed *Labidochromis* sp. must be referred to the genus *Pseudotropheus*.

Two of the three presently known *Labidochromis* sp. with bicuspid teeth come from Lake Malawi's Likoma Island, home to the majority of species within this genus. These are *Labidochromis joanjohnsonae* Johnson 1974 (Fig. 4) and its look-alike *L. textilis* Oliver 1975 (Fig. 5). The other bicuspid *Labidochromis* sp., *L. margaritae*, the mother-of-pearl cichlid, comes from near Tumbi. This newly described Mbuna (Johnson 1976 in press) is pictured in natural color for the first time.



Photographs by Don S. Johnson

Fig. 4. *Labidochromis joanjohnsonae*, a bicuspid-toothed *Labidochromis* sp. from Likoma Island which is presently being redescribed. This is the living holotype (female) now deposited in the American Museum of Natural History, NY.

Fig. 5. *Labidochromis textilis* also comes from Likoma Island and also has several bicuspid teeth though not as many as *L. joanjohnsonae*. Both of these may be designated as *Pseudotropheus* sp. eventually.



References

- Johnson, D.S. (1974) New cichlids from Lake Malawi. *Today's Aquarist* Vol. 1, No. 1.
- (1976a) A new *Labidochromis* (Pisces, Cichlidae) from Lake Malawi with a redescription of *Labidochromis joanjohnsonae*. (In press).
- (1976b) Eight new cichlid fishes (Pisces, Cichlidae) from Lake Malawi. (In press).
- (1976c) *Mbuna — the colorful rock-dwelling cichlid fishes of Lake Malawi*. Pisces Publishing Corporation, Inc., Norwalk, CT
- Oliver, M. K. (1975) *Labidochromis textilis*, a new cichlid fish from Lake Malawi. *Proc. Bio. Soc. Wash.* 88(29).
- Trewavas, E. (1935) A synopsis of the cichlid fishes of Lake Nyasa. *Ann. Mag. Nat. Hist.* (10) XVI.

Acknowledgements

I am most grateful for comments, criticisms and use of laboratory space to the following individuals and institutions: Dr. C. Lavett Smith of the American Museum of Natural History, Dr. A. Dean Stock of the University of Texas, Jack Freiberg, John Lombardo of African Fish Imports, Palisades Park, NJ.

Classified

Classified advertising in TODAY'S AQUARIST is limited to aquarists, breeders, aquarium societies and pet shops. Minimum rate is \$10 for up to five lines insertion. Deadline is the 15th of the month preceding publication. Published March, June, September, November.

For information concerning the formation of a national club devoted entirely to the exchange of aquarium magazine back issues, send a self-addressed stamped envelope to: Aquarium Magazine Exchange, P.O. Box 84, Yonkers, NY 10703.

Livebearers, The bi-monthly publication of the American Livebearer Association. \$5.00 dues for one calendar year. Send to: American Livebearer Association, 2305 Broadmoor Ave., Ames, IA 50010.

African Cichlid Exchange — Interested in joining an exclusive club for hobbyists keeping African cichlids? If so, write Gil Adin, 18 Manor Pl., Kingston, NY 12401.

African cichlids, reptiles, birds, pet supplies. Always over 200 kinds of freshwater and marine fishes. Only shop in Connecticut rated "Excellent". Tropical Fish Emporium, Gateway Shopping Center, Rt. 7, Wilton, CT 06897 (203) 762-2969



There IS a Difference!

Breedmore Activated Carbon is so pure— Washing is Unnecessary

QUESTIONS AND ANSWERS MOST FREQUENTLY ASKED ABOUT BREEDMORE CARBONS

- Q. Why does Breedmore pack their carbons with a high moisture content?**
A. For your protection. A high moisture content reduces the adsorption from the air and lowers friction caused by shipping. We do not, of course include all this moisture in the weight designation on the label.
- Q. Why 4 carbons?**
A. Breedmore has picked the four most suitable carbons from its complete line of over 190 different sizes and styles of carbons available to schools, laboratories, research institutions, water purification plants etc. Each carbon has different characteristics such as surface area, particle size and water flow characteristics.
- Q. Why should you not wash carbon?**
A. Washing carbons in chlorinated water will cause the carbons to remove the chlorine from the tap water and partially reduce the amount that the carbon can remove from the water. Breedmore carbons are so pure washing is unnecessary.
- Q. Why package carbons in clear containers with screw caps?**
A. For many reasons. When carbon is removed the container can be resealed eliminating adsorption from the air. Carbons exposed to the air may be worthless in a short time due to adsorption. Breedmore cares what happens after the sale has been made. Another reason is that you, and your customer can see that the container is full [not half full] and not partially filled with dust and dirt. We hide nothing. Glass packaging means no wax contaminants.
- Q. Isn't glass or Bottle packaging expensive?**
A. It costs Breedmore about 3 cents more per jar than it would be to package in a cheaper container like a milk carton or a poly bag. Isn't it worth 3 cents to protect \$2.00 worth of carbon from adsorbing gasses and smoke from the air once the package has been opened? Breedmore also supplies bottles and jars for school and laboratory use which adds to our tremendous volume and reduces the cost of this type of packaging. If it cost Breedmore 15 cents more we would still package this way as we care what happens to our products. Even our bulk carbons in 100 pound drums are packaged in a resealable container.
- Q. Who packages Breedmore Carbons?**
A. Breedmore processes and packages its carbons under one roof with constant quality control with no middle men adding to the cost. This is why you get more for your purchasing dollar.
- Q. Where does Breedmore get its raw material?**
A. From the world. Breedmore pelletized carbons come from Europe and are finish processed here in the United States.
- Q. What are Breedmore Carbons made from?**
A. Breedmore carbons are made from pure wood and/or pure vegetable carbon. Coal, Coke, Pulp mill residue, nutshell and seaweed are not used in their manufacture.
- Q. Why Wood Carbon?**
A. Wood carbon is generally superior for water purification in multiple pass applications. Carbons made from other bases are generally more suited for Air Purification or industrial dry cleaning applications. [Breedmore makes them also but would not supply them for water purification where heavy metal content could be a significant factor.]
- Q. Why are Breedmore Carbons so light?**
A. Their high porosity [like a sponge] and the absence of heavy metal salts makes them very light but they will not float.
- Q. What is the ash content of Breedmore Carbons?**
A. 1.4% to 4.5% depending on grade. Ash consists mainly of silica, not heavy metal salts.

THE BREEDMORE CORPORATION

PLANT #3
Shohola, Pa. 18458

PHONE 717-685-7400

RESEARCH LABORATORIES
Greely, Pennsylvania 18425