

NEW CICHLIDS FROM LAKE MALAWI

By Warren Burgess and Dr. Herbert R. Axelrod

Photos by Dr. Herbert R. Axelrod

In May, 1973, Dr. Herbert R. Axelrod traveled to Lake Malawi in Africa for the purpose of photographing the varied and interesting fish fauna of that lake. He brought back with him a small collection of fishes, among which were seven new species of cichlids. In anticipation of the forthcoming book *African Cichlids of Lakes Malawi and Tanganyika* by Dr. Axelrod, these new species are briefly diagnosed below to validate the names. A more thorough description will be presented in a scientific journal at a later date. Holotypes of all new species have been deposited in the National Museum of Natural History, Smithsonian Institution, Washington, D. C.

Thanks are due to Dr. David H. Eccles, Senior Fishery Research Officer of Malawi, who recognized the species as new. Dr. Eccles is describing additional species of cichlids from the collection.

TREMATOCRANUS PETERDAVIESI new species

Fig. 1

Two specimens trawled in 43 fathoms off Monkey Bay, Lake Malawi, Malawi, May, 1973. Coll.: Dr. Herbert R. Axelrod, *et al.*

Holotype.—125 mm standard length. Dorsal fin XIV,11; anal fin III,9.

Paratype.—123 mm standard length. Dorsal fin XV,10; anal fin III,9.

Diagnosis.—Dorsal fin XIV-XV,10-11; anal fin III,9; pectoral fin with 13-14 rays; scales in lateral series 31-32; pored scales in lateral line 26+14 in holotype, 23+13 in paratype; transverse series from origin of dorsal fin 6-7+1+11; 17-18 slender gill rakers on lower limb of first arch.

Body depth contained 2.5 times, head length 2.9-3.0, depth of caudal peduncle 8.8, pectoral fin length 2.6, pelvic fin length 2.6-3.3, longest ray of dorsal fin 2.4, all in standard length. Eye diameter contained 4.0 times, snout length 2.4-2.7, interorbital width 4.4, length of upper jaw 3.0-3.3, all in head length.

Interorbital space flat; snout length greater than eye diameter; gill rakers slender but strong. Fins, except caudal, elongated; pectorals reaching to near last rays of dorsal fin, pelvics to soft rays of anal fin; dorsal and anal fins with several rays (usually third to sixth) drawn into filaments.

Branchiostegal membranes blackish; chest sooty; snout dusky; dark bars continuous around belly; color otherwise as in Figure 1 (holotype).

Continued on Page 87



Henny Davies.



Peter Davies.

Continued from Page 14

Trematocranus peterdaviesi differs from all other species now included in the genus by the higher number of gill rakers on the lower limb of the first arch. *Trematocranus microstoma* Trewavas, *T. auditor* Trewavas, and *T. brevisrostris* Trewavas all have 12 or fewer such gill rakers while *T. peterdaviesi* has 17-18.

Named for Peter Davies, fish exporter of Lake Malawi, for his help in securing many of the fishes of the lake for photography and study.



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DIPLLOTAXODON ECCLESI new species

Fig. 2

A single specimen trawled, in 43 fathoms off Monkey Bay, Lake Malawi, Malawi, May, 1973. Coll.: Dr. Herbert R. Axelrod, *et al.*

Holotype.—145.7 mm standard length. Dorsal fin XV,12; anal fin III,11.

Diagnosis.—Dorsal fin XV,12; anal fin III,11; pectoral fin with 13 rays; scales in lateral series 32 or 33; pored scales in lateral line 32 to 33+15 (one side) to 18 (opposite side).

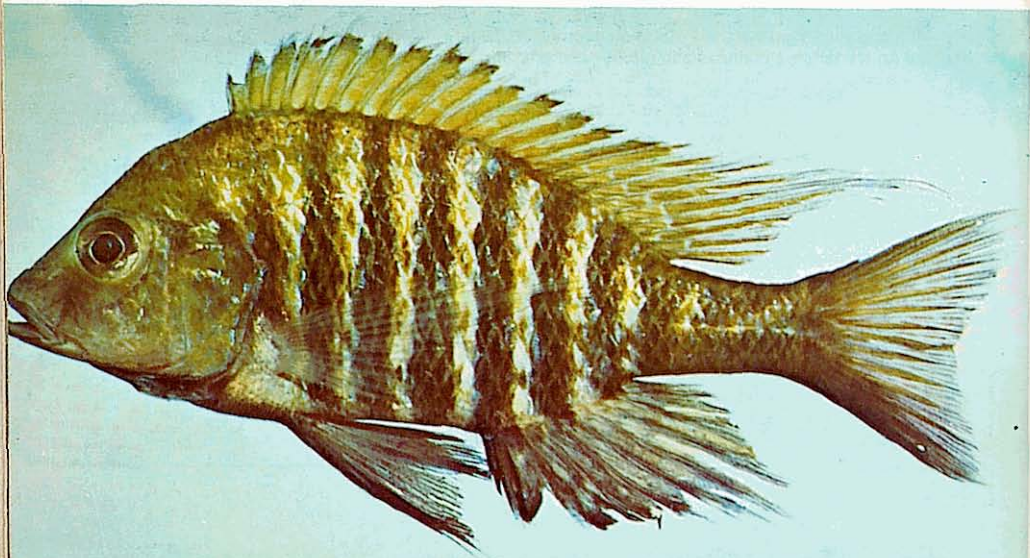
Body depth contained 3.3 times, head length 2.7, depth of caudal peduncle 9.0, predorsal length 2.6, pectoral fin length 3.5, pelvic fin length 4.3, all in standard length. Eye diameter contained 3.5 times, snout length 3.1, interorbital width 5.2, length of upper jaw 3.3, all in head length.

Upper portion of lateral line continuous from upper corner of operculum to base of caudal fin, lower portion extending only from about level of middle dorsal fin rays to base of caudal fin. Lower jaw projecting; eye large.

Color as shown in figure 2 (holotype).

Diplotaxodon ecclesi is distinguishable from *D. argenteus* Trewavas, the only other described species, by the lesser number of scales in a lateral series, 32-33 for *ecclesi* and 34-36 for *argenteus*, and color pattern. *Diplotaxodon argenteus* is described as being silvery (Trewavas,

Fig. 1. *Trematocranus peterdaviesi*. New species, holotype. Photo by Dr. Herbert R. Axelrod.



USNM
210696



Fig. 2. *Diplotaxodon ecclesi*. New species, holotype. Photo by Dr. Herbert R. Axelrod.

1935; Fryer and Iles, 1972), but *D. ecclesi* is bronzey with black pelvic fins and a white edge to the dorsal fin.

Named for Dr. David H. Eccles, whose work is helping to clarify the taxonomic confusion prevailing in the Lake Malawi cichlids.

LETHRINOPS POLLI new species

Fig. 3

u50/M
210695 A single specimen trawled in 43 fathoms off Monkey Bay, Lake Malawi, Malawi. May, 1973. Coll.: Dr. Herbert R. Axelrod, *et al.*

— *Holotype*.—98.6 mm standard length. Dorsal fin XV,10; anal fin III,9.

Diagnosis.—Dorsal fin XV,10; anal fin III,9; pectoral fin rays 13 or 14 (13 counted on one side, 14 on the other); scales in lateral series 30; pored scales in lateral line 23+13; transverse scale series 6+1+9 or 10; gill rakers on lower limb of first arch 9.

Body depth contained 2.9 times, head length 2.9, predorsal length 2.9, depth of caudal peduncle 7.8, pectoral fin length 2.4, pelvic fin length 2.6, all in standard length. Eye diameter contained 3.4 times, snout length 2.4, interorbital width 4.9, length of upper jaw 3.7, all in head length.

Third to sixth rays of dorsal fin elongate, not reaching trip of caudal fin, fourth and fifth rays of anal fin elongate.

Color as shown in Fig. 3 (holotype).

Lethrinops polli is similar to *L. christyi* Trewavas but differs from that species in eye size (*polli* 3.4, *christyi* 3.9), predorsal length (*polli* 2.9, *christyi* 2.5), scale count (*polli* 30, *christyi* 32); lateral line pores

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(*polli* 23+13, *christyi* 24+15), and dorsal spine count (*polli* XV, *christyi* XIV). Actual counts and measurements were made on a specimen of *L. christyi* (identified by Eccles) included in the collection.

Named for Dr. Max Poll in honor of his researches on African Fishes.

LETHRINOPS GOSSEI new species

Figs. 4a & 4b

Two specimens trawled in 43 fathoms off Monkey Bay, Lake Malawi, Malawi.

Holotype.—144 mm standard length. Dorsal fin XVI.10; anal fin III.9. Male?

Paratype.—121 mm standard length. Dorsal fin XV.11; anal fin III.9. Female?

Diagnosis.—Dorsal fin XV-XVI.10-11; anal fin III.9; pectoral fin rays 14 (holotype) or 15 (paratype); scales in lateral series 32; pored lateral line scales 24-25+15-16; scales in transverse series 6+1+11; gill rakers on lower limb of first arch 18 or 19.

Body depth contained 2.3 times, head length 2.6, predorsal length 2.3-2.4, depth of caudal peduncle 7.9-8.0, pectoral fin length 2.3-2.4, pelvic fin length 2.8, all in standard length. Eye diameter contained 4.0 times, snout length 2.2, interorbital width 4.8, length of upper jaw 2.9, all in head length.

Dorsal fin of presumed male with several rays greatly extended, reaching as far as tip of caudal fin; third ray longest. Fins of presumed female shorter.

Color as shown in Figures 4a and 4b.

*Lethrinops gosse*i is similar to both *L. christyi* and *L. polli* new species, but differs from them in the following characteristics. *L. gosse*i has 18-19 gill rakers on lower anterior arch, compared to 9 for the two other species. It has a larger head (2.6 in standard length compared to 2.9 for both *L. christyi* and *L. polli* n. sp.), and longer upper jaw

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length (2.9 in head length compared to 3.7 for the other two species). The eye diameter is similar to that of *L. christyi* (3.9 in head length) but differs from that of *L. polli* n. sp. (3.4). Similarly, the predorsal length of *gossei* and *christyi* is greater (2.4 and 2.5 in standard length, respectively) than that of *polli* (2.9). The three species appear to diverge also in body length, with *L. gossei* having the deepest body (2.3 in standard length), *L. christyi* intermediate (2.6) and *L. polli* the shallowest (2.9).

Named for Dr. J. Gosse for his valuable scientific contributions on African Fishes.

HAPLOCHROMIS HENNYDAVIESAE new species

Fig. 5

One specimen trawled in 43 fathoms off Monkey Bay, Lake Malawi, Malawi, May, 1973. Coll.: Dr. Herbert R. Axelrod, *et al.*

Holotype.—65.7 mm standard length. Dorsal fin XVI,11; anal fin III,8.

Diagnosis.—Dorsal fin XVI,11; anal fin III,8; pectoral fin rays 13; scales in lateral series 29-30; pored scales in lateral line 21+15 (one side), 25+12 (opposite side); gill rakers on lower limb of first arch 11-12.

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Fig. 3. *Lethrinops polli*. New species, holotype. Photo by Dr. Herbert R. Axelrod.

Body depth contained 2.7 times, head length 2.6, predorsal length 2.6, depth of caudal peduncle 9.0, pectoral fin length 2.7 pelvic fin length 3.5, all in standard length. Eye diameter contained 2.7 times, snout length 3.0, interorbital width 4.5, length of upper jaw 3.1, all in head length.

Caudal peduncle 1.7 times as long as deep; snout length less than eye diameter.

Haplochromis hennydaviesae is related to the barred species of *Haplochromis* such as *H. longimanus* Trewavas and *H. johnstonii* (Günther). It differs from both these species by other features of the color pattern. In *H. hennydaviesae* the dorsal fin has an orange edge with a submarginal white band, the base being grayish to brownish with orange spots. The outermost rays of the caudal fin are blackish. In the other two species the edge of the dorsal fin is white, the rest similar to the base color of *H. hennydaviesae*, and the caudal edges are not black. No?
XIV dorsal fin spines of *H. hennydaviesae* help to distinguish it from many other species of *Haplochromis* in which the normal dorsal fin spine count is XV or more. pp. 91

Named for Henny Davies, wife of Peter Davies. This husband and wife team has made many new aquarium fishes available from Lake Malawi.

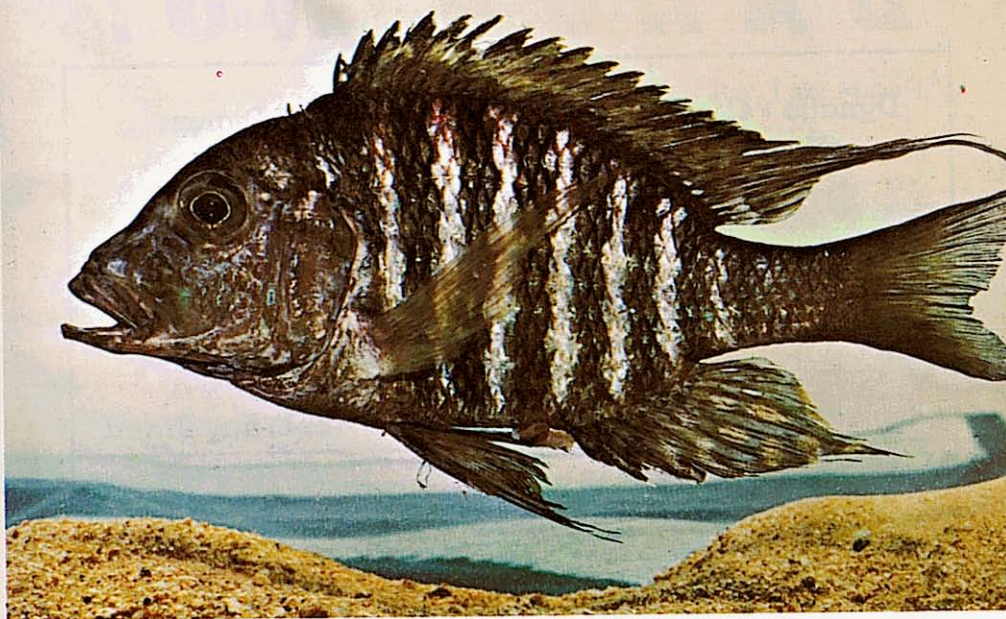


Fig. 4a. *Lethrinops gossei*. New species, holotype. Photo by Dr. Herbert R. Axelrod.

Fig. 4b. *Lethrinops gossei*, female. New species, paratype. Photo by Dr. Herbert R. Axelrod.



HAPLOCHROMIS STONEMANI new species

Fig. 6

One specimen trawled in 43 fathoms off Monkey Bay, Lake Malawi, Malawi. May 1973. Coll.: Dr. Herbert R. Axelrod.

Holotype.—48.1 mm standard length. Dorsal fin XV,10; anal fin III, 8.

Diagnosis.—Dorsal fin XV,10; anal fin III,8; pectoral fin rays 12; scales in lateral series 31; pored scales in lateral line 24+12; scales in transverse series 5+1+10; gill rakers on lower limb of first arch 11.

Body depth contained 3.2 times, head length 3.0, predorsal length 2.8, caudal peduncle depth 9.3, pectoral fin length 2.8, pelvic fin length 3.8, all in standard length. Eye diameter contained 2.5 times, snout length 3.3 interorbital width 4.4, length of upper jaw 3.6, all in head length.

The pelvic fins blackish; anal fin mostly dark but with lighter spots; chest area sooty gray.

Haplochromis stonemani is another barred species that appears similar to *H. johnstonii* (Günther). The meristics are virtually the same although the scales in a lateral series number 31 in *H. stonemani* and 32-33 in *H. johnstonii*, and the pored scales in the lateral lines 24+12 in *H. stonemani* and 20-26+14-16 in *H. johnstonii*. *H. stonemani* differs from *H. hennydaviesae* new species by color pattern, and several aspects of the proportional measurements (body depth, head length, etc.) and meristics (dorsal fin, pored scales in lateral line, etc.).

Named for Mr. J. Stoneman, Chief Fisheries Officer, Malawi for his help in making the expedition a success.

HAPLOCHROMIS ANAPHYRMUS new species

Fig. 7

A single specimen trawled in 9 fathoms three miles southeast of Monkey Bay, Lake Malawi, Malawi. May, 1973. Coll.: Dr. Herbert R. Axelrod, *et al.*

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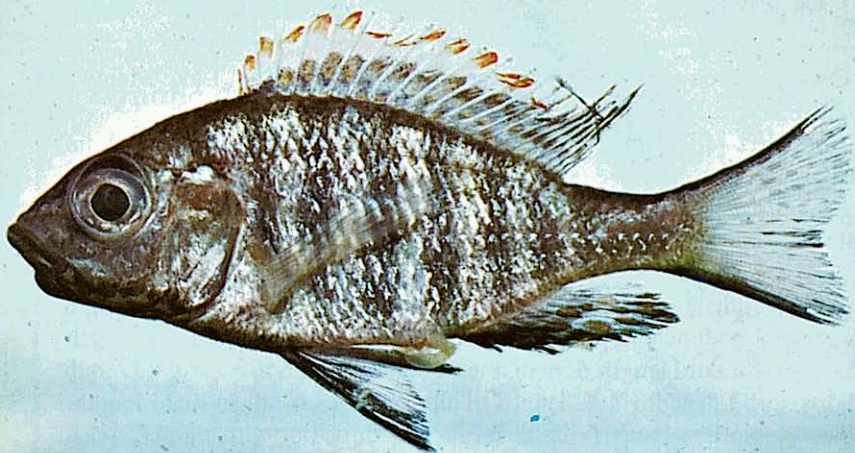


Fig. 5. *Haplochromis hennydaviesae*. New species, holotype. Photo by Dr. Herbert R. Axelrod.

Is this my *H. pinniculus*? Related?

USNM
210699 Holotype.—160 mm standard length. Dorsal fin XVI,12; anal fin III, 9.

Diagnosis.—Dorsal fin XVI,12; anal fin III,9; pectoral fin rays 13; scales in lateral series 33-34; pored scales in lateral line 26+17; transverse series of scales 5+1+10 or 11; gill rakers on lower limb of first arch 8.

Depth of body contained 2.4 times, head length 3.1, predorsal length 2.7, depth of caudal peduncle 7.9, pectoral fin length 3.1, pelvic fin length 3.7, all in standard length. Eye diameter contained 3.8 times, snout length 2.4, interorbital width 3.1, upper jaw length 3.4, all in head length.

Snout length greater than eye diameter, about equal to depth of caudal peduncle. Dark stripe (obscure in photo) extending from predorsal area to base of caudal fin.

Haplochromis anaphyrmus is closely related to *H. sphaerodon* Regan. It differs from that species in dorsal fin rays (12 for *H. anaphyrmus*, 10 for *H. sphaerodon*), scale count (33-34 in *H. anaphyrmus*, 30 for *H. sphaerodon*), pored scales in lateral line (26+17 for *H. anaphyrmus*, 24+13 for *H. sphaerodon*). *H. sphaerodon* also has a shallower body

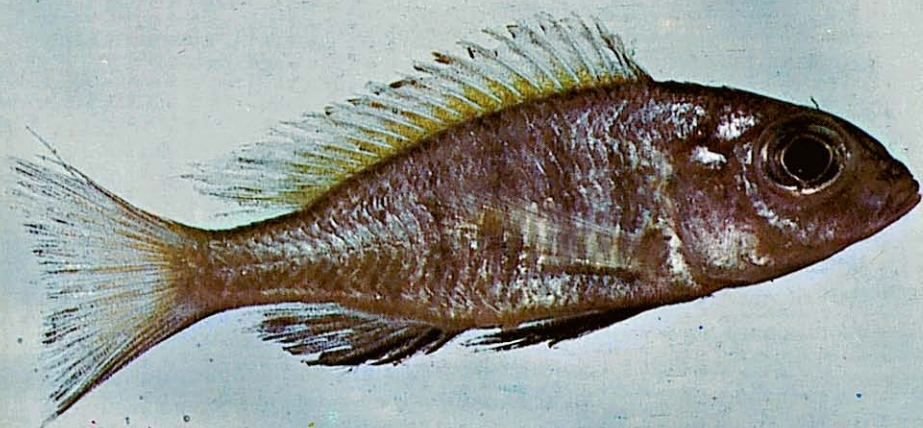


Fig. 6. *Haplochromis stonemani*. New species, holotype. Photo by Dr. Herbert R. Axelrod.

Fig. 7. *Haplochromis anaphyrmus*. New species, holotype. Photo by Dr. Herbert R. Axelrod.



(2.6 in standard length) when compared with *H. anaphyrmus* (2.4 in standard length).

Name *anaphyrmus* from Greek meaning confusion, referring to the status of the species in this genus.



The fishes of Lake Malawi are being exported to many parts of the world including the United States. Many new species are being found, and the taxonomy of the cichlids of that area is still in a great state of flux. The generic distinctions are not stable; the species show a great deal of overlap of characteristics, as one might expect considering the evolutionary background of the Great Lakes of Africa.

These seven new species are illustrated in full color not only as an aid in the identification but also to allow the readers to become aware of the fishes that may be imported from this lake. Further studies on these fishes are under way and additional collections of fishes will be made by Dr. Axelrod in the future.

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