

Haplochromis linni, a New Species of Cichlid From Lake Malawi

by Warren E. Burgess and Dr. Herbert R. Axelrod.

Haplochromis linni, New Species

Holotype: An immature specimen 114.5 mm standard length (USNM #213483) collected in Lake Malawi by Trevor and Peter Davies, October, 1974.

Diagnosis: *Haplochromis linni* is easily distinguishable from all other spotted species of *Haplochromis* by the odd shape of the snout. Its color pattern of spotted pectoral fins and freckled body, the upper jaw with less than 50 teeth in outer row, and the lower jaw less than one-half length of the head are shared only with *H. polystigma*, but the snout shape is extremely different from that species.

Description.—As only a single specimen is available for study, the absolute measurement is given along with the proportion of head length (HL), standard length (SL), etc. as indicated. Depth 37.3 mm (32.3% of SL); head length 44.0 mm (38.5% of SL); snout 18.8 mm (43.5% of HL); eye 9.2 mm (48.9% of snout length, 20.8% of HL); interorbital width 9.7 mm (22.7% of HL); lower jaw length 12.9 mm (29.4% of HL); upper jaw 13.6 mm (31.3% of HL); postorbital length 17.0 mm (38.5% of HL); preorbital length 10.6 mm (23.8% of HL); predorsal length 47.8 mm (41.7% of SL); pectoral fin length 26.4 mm (60.0% of HL, 23.3% of SL); pelvic fin length 26.8 mm (23.3% of SL); length of caudal peduncle 15.5 mm (13.5% of SL); depth of caudal peduncle 13.1 mm (11.5% of SL).

Head.—Snout prolonged, longer than broad, dorsal profile of head interrupted by prominent ascending processes of the premaxillae, which are 16.7 mm in length (38.5% of HL) and measure 8.9 mm from center of hump to edge of eye. Ventral profile of head almost straight. Mouth nearly horizontal, lips not thick; posterior tip of maxillary separated from vertical through anterior edge of eye by about $\frac{1}{2}$ of eye diameter. Jaws subequal, lower jaw slightly shorter and weaker, longer than broad. None of the cephalic laterosensory canals or pores noticeably enlarged.

Fins.—Dorsal fin XVI, 10 (last ray divided to base); anal fin III, 9; pectoral fin 13 (all elements counted except short splint at upper base). No fin rays noticeably extended. Caudal fin edge not complete so that it cannot be determined whether it is rounded, truncate or notched. Dorsal and anal fins not scaled at base.

Scales.—Lateral line scales 23 + 15 (plus 2 or 3 smaller pored scales on caudal fin base) on left side, 23 + 13 (plus 2 on caudal base) on right side; three scales from 10th dorsal fin spine base to lateral line, one pored scale on lateral line, and 10 scales from lateral line to origin of first anal fin spine (3/1/10).

Teeth.—Outer row of teeth in each jaw bicuspid, cusp nearest symphysis usually larger; teeth nearer symphysis with cusps unequal, one much larger than the other, the discrepancy in size diminishing with distance away from the symphysis. There are about 46-50 such teeth in the outer row of the upper jaw. About two or three irregular inner rows of teeth are present in the upper jaw, the middle ones of the first inner row unicuspid to weakly tricuspid. There are two rows of tricuspid teeth in the lower jaw behind the outer row of bicuspid teeth. The lower pharyngeal teeth are compressed, with a large posterior cusp and an anterior shoulder midway along the edge. The teeth of the last row are distinctly larger than the rest.

Gill Rakers.—Gill rakers on outer arch 4 + 1 + 11, all relatively stout.

Internal Anatomy.—Major dissection of this fish was not made. The specimen was found to be immature, and no obvious macroscopic gonads were present. Peritoneum light-colored.

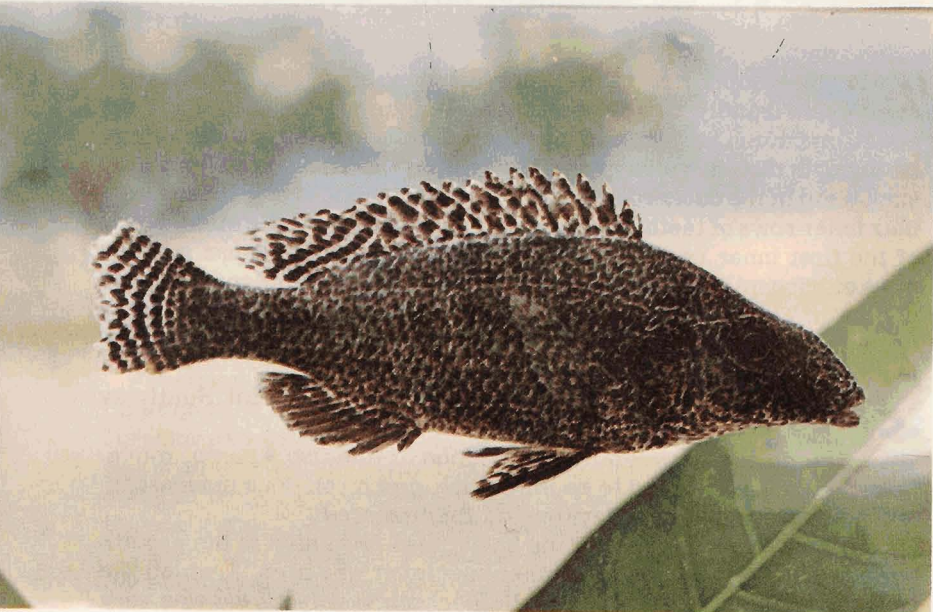
Coloration.—The color of the holotype is presented in the accompanying photos. A photo of another specimen was seen in which the characteristic blotchy pattern of *Haplochromis polystigma* was very evident. The brownish spotting (freckling) was present. This fish was alive and apparently frightened, which may account for the different pattern.

Ecology.—*Haplochromis linni* seems to be widespread throughout the littoral areas of the lake, mingling with the species it may mimic, *Haplochromis polystigma*. In discussions with Peter and Trevor Davies, prominent exporters of Malawian fishes, one of the authors (HRA) was advised that *H. linni* is only collected when *H. polystigma* is trapped and netted, and that about 100 *polystigma* are caught for each *linni*. HRA observed two individuals in an area between Monkey Bay and Cape McClear in shallow water about 3-4 meters deep while diving. They were easily recognizable by their pattern of behavior. When the schooling, browsing bottom dwellers observed the diver (at a distance of about two meters) they moved away. The *H. polystigma* moved laterally or into deeper water away from the rocky embankment, while the *H. linni* moved rapidly into the rocks, disappearing from view into large crevices.

One specimen was observed poking into the crevices of rocks where the fry of most mbuna (rock inhabiting cichlids) are to be found.

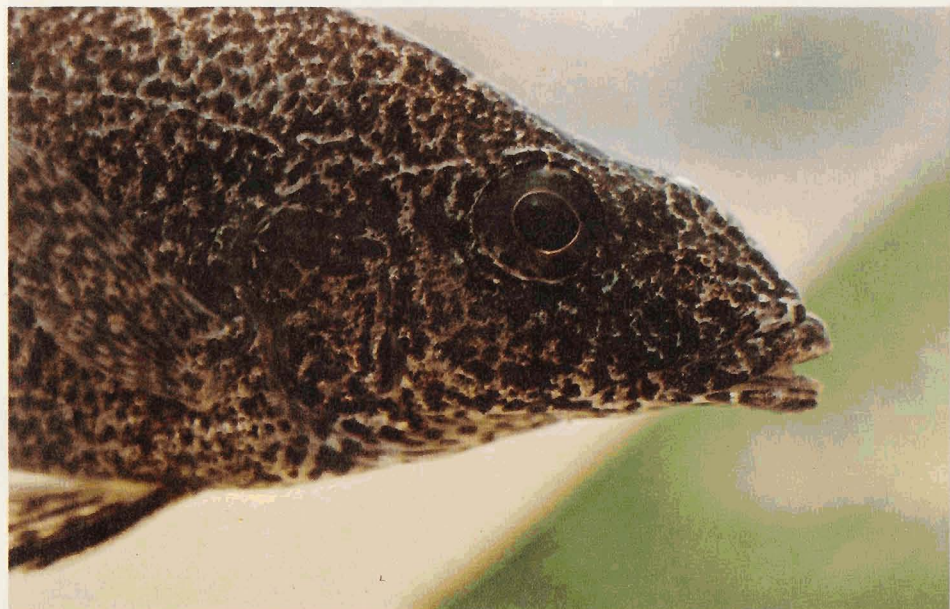
In the aquarium trade this species is sometimes called the elephant-nose cichlid.

Comparisons.—The color pattern of *H. linni* is very similar to that of *H. polystigma*. In fact, they may easily be confused in the field because of this resemblance. Both have large blotches on a light colored background as well as brownish spots over the head and body. The pelvic, pectoral and anal fins are usually spotted although the outer rays of the holotype of *H. linni* are dark brown. The dorsal and



Haplochromis linni Burgess and Axelrod. Holotype. Collected by Trevor Davies at Lake Malawi. Photo by Dr. Herbert R. Axelrod.

Haplochromis linni Burgess and Axelrod (above) and *Haplochromis polystigma* Regan showing the differences in snout shape and fin pattern. *Haplochromis linni* can also exhibit a blotchy pattern as seen in the *H. polystigma*. Photo by Dr. Herbert R. Axelrod.



Haplochromis linni Burgess and Axelrod, showing the shape of the produced snout. Photo by Dr. Herbert R. Axelrod.

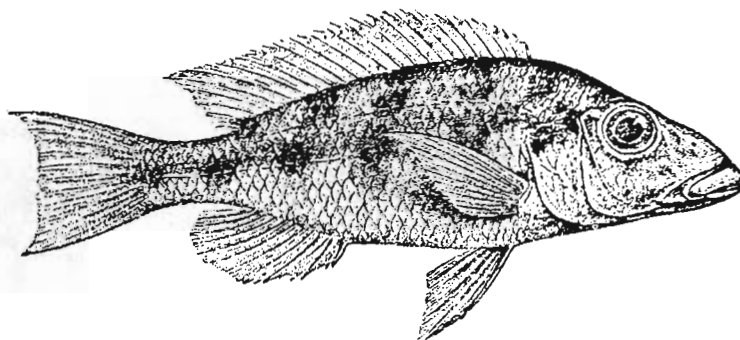
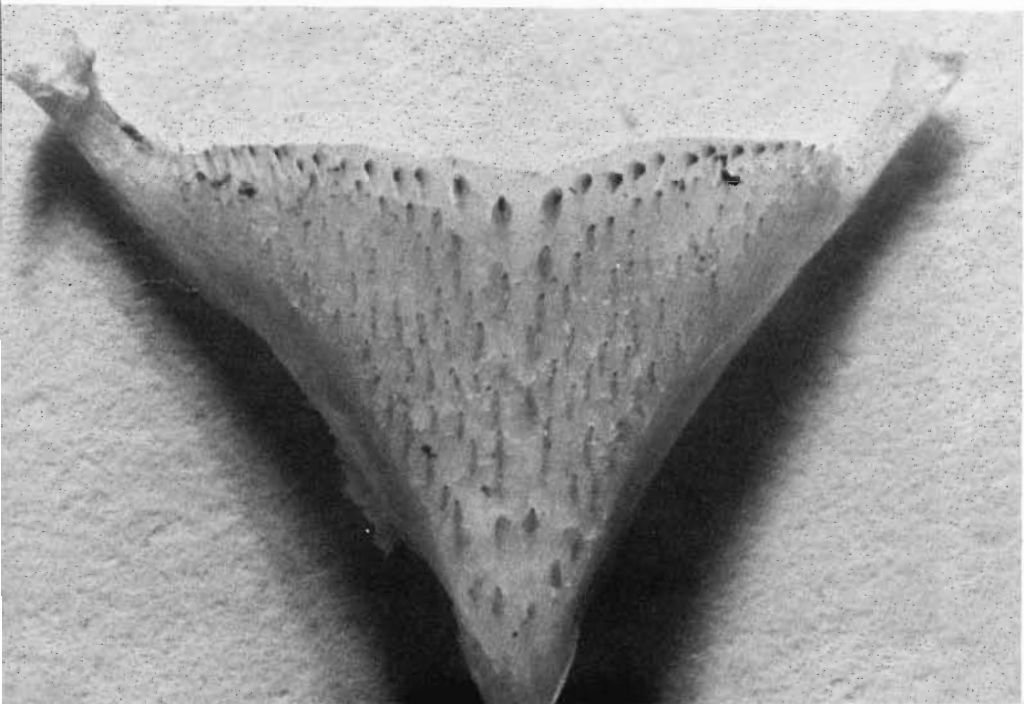
Haplochromis rostratus (Boulenger). Juvenile, 43.3 mm standard length. The characteristic prolongation of the snout is not so evident in young specimens but the distinctive color pattern is present. Photo by Dr. Herbert R. Axelrod.





Upper jaw of *Haplochromis linni* showing the bicuspid front row of teeth and one or two of the tricuspid teeth of the inner rows. Photo by Dr. Herbert R. Axelrod.

The lower pharyngeal bones of *Haplochromis linni*. Photo by Dr. Herbert R. Axelrod.



Drawing of adult *Haplochromis rostrata* (Boulenger) from Boulenger, 1915 (vol. 3, p. 256, fig. 172). The prominent snout is clearly visible.

caudal fins are spotted in both species but tend to be coalesced into bands in the soft portion of the dorsal fin and in the caudal fin in *H. linni*. The meristics of *H. polystigma* and *H. linni* are almost identical in the specimens available. The snout-related proportions are quite different (as expected) due to the snout shape of the new species. Little of the internal anatomy could be examined with only the single specimen available, but it could be seen that the peritoneum was light colored in comparison with the dark brown or blackish peritoneum of *H. polystigma*. A slight difference in the outer row teeth was noted, those of *H. polystigma* being more slender and the inferior cusp closer to the larger cusp than in those of *H. linni*.

One other species from Lake Malawi with a somewhat produced snout, *H. rostratus*, approaches *H. linni* in form, but it differs in color pattern, number of teeth in upper jaw (54-70), gill rakers on lower limb of first arch (16-21), and pored scales in the lower section of the lateral line (19-21).

The outer row of teeth in the lower jaw is not incurved posteriorly as in the genus *Lethrinops*, which has weak jaws and a horizontal mouth according to Jackson (1961). *Haplochromis linni* does not agree with any of the species of either *Lethrinops* or *Haplochromis* described in Jackson (1961) or Trewavas (1935).

Etymology.—Named in honor of Mr. D. Wayne Linn, Chief Fisheries Officer, Malawi, whose assistance to HRA made the field trip (October, 1974) to Lake Malawi possible.

References Cited

- Jackson, P.B.N. 1961. Check list of the fishes of Nyasaland. The National Museums of Southern Rhodesia, Occasional Papers, vol. 3, no. 25B, pp. 535-621.
- Trewavas, E. 1935. A synopsis of the cichlid fishes of Lake Nyasa. Annals and Magazine of Natural History, series 10, vol. 14, pp. 65-118.