

Description of *Pseudotropheus estherae* sp. nov., The Well-known Red Zebra Cichlid from Lake Malawi

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Photos by the author



Above: *Pseudotropheus estherae*, female, at Minos Reef. **Below:** *P. estherae* at Chilucha Reef. The many egg spots in the anal fin suggest this specimen might be a male, but the sex could not be confirmed.



Introduction

The small rock-dwelling cichlids of Lake Malawi are collectively known as mbuna and, until recently, were neglected by African fishermen. Currently the mbuna are classified among ten different genera in which more than 70 species have been scientifically described. More than double that number of mbuna species are still without a scientific name, most of them to be grouped in the genus *Pseudotropheus*.

The genus *Pseudotropheus* includes a large number of species (more than 30) that can be divided into several groups or complexes (Ribbink, et al., 1983). One such complex is the *P. zebra* complex. Ribbink and coauthors grouped all mbuna that resemble *P. zebra* in this complex. "These fishes have terminal mouths which they press against the rocks during feeding to collect loose Aufwuchs...." The main charac-

teristics of the fishes in this complex are that they feed at an angle of 90 degrees with the substrate and that they comb rather than pick the algae from the rocks. The lips are well-developed, and the teeth in the jaws are set in several rows, the outer of which consists of bicuspid, closely set teeth. The teeth of the inner row are tricuspid and very mobile.

Pseudotropheus zebra was described in 1899 by Boulenger and presently is a well-established cichlid in the ornamental fish trade. It is a polymorphic cichlid in which the normal coloration consists of dark blue bars on a light blue body—the so-called BB morph. The other common morph is colored with black or dark blue blotches on a pinkish, yellowish, or orange body. Such morphs are called OB (orange-blotched). Some specimens have very little or no dark blotches at all; they are of the O morph (O for orange). It is doubtful whether there is any important genetic difference between the OB and O morphs; from one brood you may get both morphs. The OB and O morphs are found mainly in females, but males may have similar characteristics as well.

Polymorphism in mbuna occurs in more than ten species. Some of them are *Genyochromis mento*, *Labeotropheus fuelleborni*, *L. trewavasae*, *Pseudotropheus zebra*, *P. callainos*, *P. tropheops*, and *P. fainzilberi*. The “red zebra,” the subject of this formal description, also is polymorphic: the “normal” color of the female is brown-beige, but completely orange-red and red-



P. estherae, female, at Minos Reef. This specimen shows the OB (orange-blotched) pattern.

blotched individuals are even more common in the populations known. Blue females are rare. It was the orange-red color of the O morphs that made this species so popular among aquarists. As far as I know, none of the brown-beige or OB morph females has been exported until recently.

The suggestion that the “red zebra” may be a geographic variant of *P. zebra* can be dismissed by the fact that both species are found sympatrically. Additionally, another undescribed zebra-like mbuna with blue males has been found sympatrically with the “red zebra,” but this species differs in having blue females plus subtle pattern differences. The status and occurrence of this other species will be discussed by the author in the near future.

The measurements were made in accordance with Barel, et al. (1977), except for the depth of the preorbital bone, which is taken as the length of a line from the cen-

ter of its orbital edge, practically bisecting the bone (Trewavas, 1935; Eccles & Trewavas, 1989: 20, fig. 3).

Pseudotropheus estherae
Konings, sp. nov.
Red Zebra

Diagnosis and Comparison

A small species of the genus *Pseudotropheus* with a light blue coloration in the males and brown-beige or orange-red females. There are no broad vertical bars visible on the body, which distinguishes this species from most other members of the genus. It resembles *P. callainos* Stauffer & Hert, 1992, in coloration and morphology. Males of *P. estherae* are distinguished by having yellow, ocellated spots in the trailing part of the dorsal fin. This feature is not found in any other described *Pseudotropheus* except for some rare OB morph male individuals of *P. zebra*; the



Above: A blue-colored female *P. estherae* at Minos Reef. **Below:** *P. zebra* is found sympatrically with *P. estherae*. This female *P. zebra* was photographed at Minos Reef.

latter specimens never exhibit an overall light blue coloration as found in male *P. estherae*. Both male and female *P. estherae* dif-

fer from *P. callainos* by the fact that the jaws do not completely close the gape; teeth are always visible in *P. estherae*, which also

has much thicker lips than does *P. callainos*.

Preserved specimens can be distinguished from *P. callainos* by comparison of the body shape. The latter species is laterally somewhat more compressed than is *P. estherae*. Such a distinction is best assessed by the ratio caudal peduncle length/interorbital width. In *P. estherae* this ratio ranges between 1.2 and 1.3, while the ratio in *P. callainos* varies between 1.5 and 1.6.

Preserved OB females of *P. estherae* can be distinguished from OB females of *P. zebra* by the shallower body. The ratio SL/body depth averages 2.8 in *P. estherae* and 2.5 in *P. zebra*.

Description

Depth of body 2.6 to 3.1 and head length 3.0 to 3.3 times in standard length (SL). Snout 2.7 to 3.0, eye diameter 3.1 to 3.4, interorbital width 2.9 to 3.3, lower jaw 2.6 to 3.0, premaxillary pedicel 3.7 to 5.2, and depth of preorbital 4.5 to 5.4 times in head length (HL). Premaxillary pedicel 1.3 to 1.8 times in length of lower jaw.

Mouth positioned terminally, with lower jaw slightly protruding. Teeth closely set in 3 to 4 rows in both upper and lower jaws. Outer row contains bicuspid teeth, the inner rows tricuspid. Lower pharyngeal bone of a non-registered (not of type series) specimen has fine bicuspid teeth. Eleven to 13 gill rakers on the lower part of the anterior arch.

Scales in a longitudinal series 30 or 31.

Dorsal XVI-XVII,9-10. Anal III,8. Length of last dorsal spine

1.9 to 2.5 times in HL. Pectoral 3.6 to 4.1 in SL, 1.1 to 1.4 in HL.

Caudal peduncle 6.8 to 8.3 times in SL, peduncle depth 0.9 to 1.1 in its length.

Type Locality and Type

Material

Holotype: Koninklijk Museum voor Midden Afrika, Tervuren, No. 94-56-P-1. Female, 63.1 mm SL (total length 78.5 mm). Minos Reef, Miluluka, Lake Malawi, Mozambique; collected 13-06-1994 by the author.

Paratypes: Koninklijk Museum voor Midden Afrika, Tervuren, Nos. 94-56-P-2 to -11. Five males, SL: 69.2, 70.5, 72.4, 76.4, and 79.2 mm (total lengths respectively: 85.0, 86.2, 89.7,



Above: Male and female red zebras at Minos Reef. **Right:** A male red zebra at Chilucha Reef.

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96.8, and 97.7 mm). Same collection data as holotype.

Etymology

This species is named in honor of Mrs. Esther Grant (Salima, Malawi), who was instrumental in the renewed opening up of the Mozambique waters for the collection of ornamental fishes.

Distribution

Pseudotropheus estherae occurs on the eastern coast of Lake Malawi, mainly in Mozambique waters. Its most northern locality is at Chilucha Reef, 3 km offshore from Metangula. Approximately 25 km south of this area near the region of Miluluka, several reefs (approximately 7 km offshore) are inhabited by *P. estherae*. The most southern locality is found at the border with Malawi, where a few individuals were observed north of Masinje, Malawi. Females with the deepest orange-red coloration occur at Minos Reef (the type locality), which is part of the Miluluka Reef system. Minos is a shallow reef where the rocks are at a depth of about 7 meters. I was not able to find shallower or deeper parts of the reef within a swimming radius of about 500 meters. Even though the reef was about 7 km offshore, I could not establish whether its shallowness would extend to the shoreline or if a deeper channel existed between the reef and the coast. Another reef I visited, Chilucha Reef near Metangula, is situated in notably deeper water. Its most shallow part was about 5 meters deep, but at least to a depth of 40 meters there were rocks and it seemed that the reef was much deeper than that. *P.*

estherae was not found along the coast at Metangula.

Ecology

Pseudotropheus estherae occurs in a sediment-free rocky habitat, with the highest population density in water less than 10 meters deep. Males are territorial and defend areas about 1 meter in diameter. The orange-red females are very conspicuous, and they seem to represent the major color morph. Brown-beige females were observed as well, but they were outnumbered several times by the O morph females. OB females and brown-beige females were present in approximately the same percentage, which I estimated at about 10% for each of the two colors. About 80% of the females were of the O morph, and this seemed to be the case at both localities visited in Mozambique. Rarely, O morph males were observed that had an entirely light, creamy pink color with prominent ocellated spots in the anal fin. One orange-red individual seen at Chilucha Reef had many spots in the anal fin (see photo). This or similar specimens were not collected for verification, and it could be a male with female coloration. Such males are known to occur in the aquarium hobby, but it is not certain whether these originated from a wild population or were born in captivity.

From captive breeding it became known that fry released from the females's mouths exhibited basically two colors: they were either entirely blue or orange-red. The blue juveniles were males and the orange-red ones

females. Orange and blue juveniles also were observed in the wild. It is not known whether brown-beige females are able to produce orange offspring.

P. estherae combs the algae from the rocks in the manner that is typical for the *P. zebra* complex; i.e., at an angle of 90 degrees with the substrate. It is sympatric with *P. zebra*, and both species have a very similar mouth structure. Schooling females and non-territorial males were not observed, although *P. estherae* is a very common cichlid at both localities visited.

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