



## ***Geophagus crocatus*, a new species of geophagine cichlid from the Berbice River, Guyana, South America (Teleostei: Cichlidae)**

FRANCES E. HAUSER<sup>1</sup> & HERNÁN LÓPEZ-FERNÁNDEZ<sup>1,2</sup>

<sup>1</sup>Department of Ecology and Evolutionary Biology, University of Toronto, 25 Willcocks Street, Toronto, Ontario M5S 3B2, Canada.

E-mail: frances.hauser@mail.utoronto.ca

<sup>2</sup>Department of Natural History, Royal Ontario Museum, 100 Queen's Park, Toronto, Ontario M5S 2C6, Canada.

E-mail: hernanl@rom.on.ca

### **Abstract**

We describe a new *Geophagus* from the Berbice River of Guyana, bringing the total number of described species in the genus to 19, and of Guianese species to six. *Geophagus crocatus*, new species, is distinguished from all species of *Geophagus* outside of the *G. surinamensis* group by the presence of an incomplete suborbital stripe (vs. complete), and the presence of six lateral bars, with bars 2 and 3 slightly sloping toward each other and fusing dorsally at the base of the dorsal fin. *Geophagus crocatus* is the only *Geophagus* species known from the Berbice River, and it is present above and below the Itabru Falls.

**Key words:** taxonomy, Freshwater, Guiana Shield

### **Introduction**

The South American cichlid genus *Geophagus* Heckel consists of medium to large geophagine cichlids widely distributed throughout the Amazon and Orinoco basins, in the Guianas, and in parts of northeastern Brazil. Phylogenetic analyses of geophagine cichlids based on morphology (Kullander 1998), DNA sequences (López-Fernández et al. 2005b, 2010), and both types of data combined (López-Fernández et al. 2005a) have corroborated the monophyly of the genus. Currently, *Geophagus* includes 18 species. In the Guianas, five species of *Geophagus* have been reported, including *Geophagus surinamensis* Bloch, *Geophagus brokopondo* Kullander & Nijssen, *Geophagus brachybranchus* Kullander & Nijssen, *Geophagus camopiensis* Pellegrin, and *Geophagus harreri* Gosse (Kullander & Nijssen 1989). These species are part of the *Geophagus surinamensis* complex (López-Fernández and Taphorn 2004), characterized by deep bodies and heads, a mid-lateral spot, and either an absent suborbital stripe (e.g. *G. surinamensis*) or a preopercular black mark (e.g. *G. brachybranchus*). *Geophagus* species outside the *G. surinamensis* complex have a complete suborbital stripe (López-Fernández and Taphorn 2004). Recent field work in Guyana by the Royal Ontario Museum and the University of Guyana has revealed several new species of *Geophagus*. In this paper we describe a new species of *Geophagus* from the Berbice River in eastern Guyana.

### **Material and methods**

All measurements were taken using digital calipers to the nearest 0.1 mm. Counts of fin rays, scales, and gill rakers were made under a dissecting microscope. Counts and measurement procedures follow those described in Kullander (1986) and Kullander and Nijssen (1989). Scales in a horizontal row were counted on the row immediately above the one containing the lower lateral line (E1); rows above E1 (epaxial scales) are numbered E2 and higher, and rows below E1 are numbered H1 (hypaxial scales) and higher (Kullander et al. 1992; Kullander

The finding of a distinct species of *Geophagus* in the Berbice drainage suggests a complex history of diversification of the genus in the Atlantic-flowing Guianese drainages. Although it has been suggested that the Surinamese species *G. brachybranchus* could reach the Essequibo basin (Kullander & Nijssen 1989), the presence of *G. crocatus* in the Berbice implies that *G. brachybranchus* may be restricted to the Corantijn and Nickerie basins from where it was originally described. Ongoing work on the Essequibo basin and its tributaries also indicates that *G. crocatus* is not present outside of the Berbice (López-Fernández and Taphorn, unpubl. manuscript, and see Fig. 5, this paper).

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