

Helminths of Freshwater Fishes from the Metztitlán Canyon Reserve of the Biosphere, Hidalgo, Mexico

SCOTT MONKS,^{1,3} VÍCTOR RAFAEL ZÁRATE-RAMÍREZ,² AND GRISELDA PULIDO-FLORES¹

¹ Universidad Autónoma del Estado de Hidalgo, Centro de Investigaciones Biológicas, Ciudad Universitaria, Apdo. Postal 1-69, Pachuca, CP 42001, Hidalgo, Mexico (e-mail: smonks@uaeh.edu.mx; gpulido@uaeh.edu.mx) and

² El Colegio de la Frontera Sur-Unidad Chetumal, Avenida Centario Km. 5.5, CP 77001, Chetumal, Quintana Roo, México

ABSTRACT: The occurrence of 6 species of helminth parasites (*Clinostomum complanatum*, Diplostomidae gen. sp., *Posthodiplostomum minimum*, *Bothriocephalus acheilognathi*, *Glossocercus* sp., *Contracaecum* sp.) is reported from 7 species of freshwater fishes (*Chirostoma jordani*, *Astyanax mexicanus*, *Herichthys labridens*, *Oreochromis niloticus niloticus*, *Abramis brama*, *Cyprinus carpio carpio*, and *Poeciliopsis gracilis*) in Metztitlán Lake (Laguna de Metztitlán), Reserva de la Biosfera Barranca de Metztitlán, Hidalgo, Mexico. Fish were collected between July 2002 and June 2003. The helminth fauna of *H. labridens*, an endangered species of Cichlidae, is described for the first time. Migratory birds of the families Ardeidae and Phalacrocoracidae appear to play an important role in the helminth species composition of fishes from Metztitlán Lake. All helminth species represent new records for this federally protected area of Hidalgo.

KEY WORDS: Digenea, Cestoda, Nematoda, Poeciliidae, Cyprinidae, Cichlidae, Characidae, Atherinidae, *Clinostomum complanatum*, *Posthodiplostomum minimum*, *Bothriocephalus acheilognathi*, *Glossocercus*, *Contracaecum*, *Chirostoma jordani*, *Astyanax mexicanus*, *Herichthys labridens*, *Oreochromis niloticus niloticus*, *Abramis brama*, *Cyprinus carpio carpio*, *Poeciliopsis gracilis*, zoonosis, Hidalgo, Mexico.

The Biosphere Reserve projects combine conservation with human development in a context of sustainable development and scientific investigation. The “Metztitlán Canyon” (Barranca de Metztitlán) Reserve of the Biosphere, in the northern part of the centrally located state of Hidalgo, Mexico, has a high level of endemism in plants and animals (SEMARNAP, 1999) because of its geomorphologic origin. No extensive survey of fish parasites has been conducted in Hidalgo.

Metztitlán Lake (Laguna de Metztitlán; “Lugar de la Luna”) is located in the northwest end of an enclosed basin or endorreic and has a surface area of 3,230 km². The lake was formed naturally when a prehistoric rockslide closed off the exit for the outflow of Metztitlán River, which today still feeds the lake. The local fishery has an ancient history, and the catch of native species of fishes has had a large economic and nutritional impact on indigenous people. Water level in the lake fluctuates greatly depending on the season and rainfall within the watershed, and the lake has been known to completely dry up at least twice in recent times. In the past, native species from rivers and streams that feed the lake have repopulated the lake after its return. In the past decade, the Mexican government began extensive introductions of exotic Cichlidae,

“tilapia,” and Cyprinidae “carpas” (Ibáñez-Aguirre et al., 2002) before efforts were successful in getting the area recognized as a reserve. The full consequences of these introductions of exotic species on the survival of native fauna are not known, although it is expected that the cointroduced helminths will have negative effects (Osorio-Sarabia et al., 1986; Salgado-Maldonado et al., 1986). Also, Metztitlán Lake is visited by migratory birds (mainly Ardeidae and Phalacrocoracidae), and the potential is high for the spread of introduced helminths, mainly digeneans and nematodes, to other Mexican localities (Lamothe-Argumedo and Pérez-Ponce de León, 1986; Ramos-Ramos, 1995). This article represents the first report of helminth parasites of freshwater fish from this protected area of Hidalgo, Mexico, many of which are new reports for fishes from the Pánuco River Basin.

MATERIALS AND METHODS

This study focused on fish from Metztitlán Lake (located between 98°23'00" and 98°57'08"W and between 20°14'15" and 20°45'26" N), municipio of Metztitlán, Hidalgo, Mexico. Monthly collections were made from July 2002 to June 2003, and 366 fishes were obtained, mostly with the help of a local fisherman. All species of fish that are known to inhabit the lake were collected. The majority of fish were transported live to the laboratory in containers of lake water, but when the number of fish was large, some fish were kept in plastic bags and chilled on ice; fish were examined within 4–8 hr of capture. Fish were identified using the study of

³ Corresponding author.