



# Article

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## **A reevaluation of specimens of *Mesocoelium monas* (Platyhelminthes: Digenea: Mesocoeliidae) from the Natural History Museum, UK and the United States National Parasite Collection, USA**

DANA M. CALHOUN & NORMAN O. DRONEN

Laboratory of Parasitology, Department of Wildlife and Fisheries Sciences, Texas A&M University, 2258 TAMU, College Station, TX 77843-2258, USA. E-mail: daincalhoun@yahoo.com, n-dronen@tamu.edu

### **Abstract**

A total of 67 specimens from the National History Museum, London, UK and from the United States National Parasite Collection, Beltsville, USA, which had previously been identified as *Mesocoelium monas* Rudolphi, 1819 from a variety of definitive hosts (amphibians, reptiles and a fish), were reevaluated using available literature and the keys to nine body types of species developed by Dronen *et al.* (2012). Fifteen specimens were of insufficient quality to be placed into a body type. In the remaining 52, only four body types (mesembrinum, monas, lanceatum, and pesteri) were encountered. None of the 52 specimens conformed to either the original description of *M. monas* by Rudolphi in 1819 or the subsequent re-description by Freitas in 1958. Although some authors have proposed sweeping synonymies of species in the genus reducing the number of species to as few as four in a study by Nasir & Diaz in 1971, the results of the present study suggest that there are likely numerous species worldwide. The usefulness of some characters in separating species of *Mesocoelium* is discussed.

**Key words:** Body types, digeneans, endohelminths, *Mesocoelium monas*, museum specimens, reevaluation, taxonomy

### **Introduction**

The differentiation of species within *Mesocoelium* Odhner, 1910 is rife with challenges. Yamaguti (1971) listed 49 species of *Mesocoelium* from amphibians, reptiles and a fish. A comprehensive list of those species can be found in Dronen *et al.* 2012. In 1963 Freitas recognized seven species (*Mesocoelium brevicaecum* Ochi, 1929; *Mesocoelium crossophorum* Pérez Veiguera, 1942; *Mesocoelium danforthi* Hoffman, 1935; *Mesocoelium geomydae* Ozaki, 1936; *Mesocoelium megaloon* Johnston, 1912; *Mesocoelium monas* Rudolphi, 1819; and *Mesocoelium sibynomorphi* Ruiz & Leão, 1943 with *M. monas* replacing *Mesocoelium sociale* Lühe, 1901 as the type-species for the genus) based on the presence or absence of tegumental spines, the ratio of the width of the oral sucker to the width of the ventral sucker, egg length and width, and the posterior extent of the uterus. Nasir & Diaz (1971) further reduced the number of species in the genus to four (*M. brevicaecum*, *M. geomydae*, *M. megaloon*, and *M. monas*) using largely sucker ratios and egg sizes. Goldberg *et al.* (2005) stated that they suspected that *Mesocoelium* is represented by a single species, *M. monas*.

There has been a tendency for authors of surveys to identify any specimens of *Mesocoelium* found in amphibians or reptiles as *M. monas* worldwide (e. g. Ubelaker 1966—Sumatra; Meader *et al.* 1969—Gabon, Africa; Nasir & Diaz 1971—Venezuela; Goldberg *et al.* 1995—Bermuda; Goldberg *et al.* 1998—Hispaniola; Linzey *et al.* 1998—Bermuda; Guillen-Hernández *et al.* 2000—Mexico; Bursey *et al.* 2001—Peru; Criscione & Font 2001—Louisiana, USA; Goldberg *et al.* 2005—Philippines). A comprehensive listing of reports of specimens identified as *M. monas* from amphibians and reptiles has been published by Bursey *et al.* 2007 and Goldberg & Bursey 2008), with updates provided by Goldberg *et al.* (2009). Pojmańska (2008) recognized *M. sociale* as a valid species, reestablishing it as the type species in the genus. Although this author did not address the question of the number of valid species in *Mesocoelium*, she did point out that there were at least two major body types present in the genus: those with moderately long ceca (represented by *M. sociale*) and those with short ceca (represented by