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Mesocoelium Odhner, 1901 (Digenea: Mesocoelidae) revisited; a revision of the family and re-evaluation of species composition in the genus

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Abstract

The family Mesocoelidae Dollfus, 1929 is revised supporting the recognition of *Pintneria* Poche, 1907 where the testes are tandem and *Mesocoelium* Odhner, 1910 where the testes are oblique to nearly side by side. Nine basic body types are defined within *Mesocoelium* of which four contain only a single species the: zhejiangensis body type represented by *Mesocoelium zhejiangensis* Xida & Puzhu, 1986; pesteri body type represented by *Mesocoelium pesteri* Saoud, 1964; brieni body type represented by *Mesocoelium brieni* Vercammen-Grandjean, 1960; and carli body type represented by *Mesocoelium carli* André, 1915. Keys to species are proposed for the remaining five body types the: lanceatum; mesembrinum; monas; sociale; and leiperi body types. The characteristics used to separate the nine body types and those used in the five proposed keys to species are discussed. *Mesocoelium zhejiangensis*, *Mesocoelium cameroonensis* Saoud, 1964, *Mesocoelium meggitti* Bhalerao, 1927, *Mesocoelium monodi* Dollfus, 1929 and *Mesocoelium americanum* Harwood, 1932 are redescribed and *Mesocoelium neohylae* **n. sp.** is described. We consider *Mesocoelium leptobotiae* Pu-qin, 1981 to be synonymous with *Mesocoelium burdwanenesis* Mukherjee, 1968; *Mesocoelium magniovum* Wang, Sun, Zhao, Zhang & Wang, 1985, *Mesocoelium micreatum* Park, 1939, *Mesocoelium minutum* Hua, 1986 and *Mesocoelium tritoni* Matskási, 1990 to be synonymous with *Mesocoelium brevicaecum* Ochi, 1929; *Mesocoelium elongatum* Goto & Ozaki, 1929, *Mesocoelium ovatum* Goto & Ozaki, 1930 and *Mesocoelium pearsei* Goto & Ozaki, 1930 to be synonymous with *Mesocoelium lanceatum* Goto & Ozaki, 1929; *Mesocoelium marrsi* Fernando, 1933 to be synonymous with *Mesocoelium burti* Fernando, 1933; *Mesocoelium travassosi* Pereira & Cuocolo, 1940 to be synonymous with *M. meggitti*; *Mesocoelium asymmetrovitellarius* Kumari & Verma, 1992 to be synonymous with *Mesocoelium melanostictii* Rao, 1989; and *Mesocoelium varunae* Baugh, 1957 and *Mesocoelium dolichenteron* Richard, 1965 to be synonymous with *Mesocoelium sociale* (Lühe, 1901).

Key words: Descriptions, keys, Mesocoelidae, *Mesocoelium*, *Mesocoelium neohylae* **n. sp.**, *Pintneria*, redescriptions, revision, synonymies

Introduction

Lühe (1901) described *Distomum sociale* Lühe, 1901 from the Asian black spined or Southeast Asian toad, *Duttaphrynus melanostictus* (Schneider) (syn. *Bufo melanostictus* Schneider), originally collected from Burma (now the Union of Myanmar). Braun (1901) considered this species to be *Dicrocoelium sociale* (Lühe, 1901) (Dicrocoeliidae Looss, 1899); however, Odhner (1910) established *Mesocoelium* Odhner, 1910 in Dicrocoeliidae (Dicrocoeliinae Looss, 1899) to accommodate *Mesocoelium sociale* (Lühe, 1901) Odhner, 1910 as the type species for the genus. Since its inception, *Mesocoelium* has had an unsettled taxonomic history. Johnston (1912) transferred *Mesocoelium* to Brachycoeliinae Looss, 1899 (Dicrocoeliidae). Cort (1919) transferred Brachycoeliinae to Lepodermatidae Odhner, 1910. Based primarily on the posttesticular placement of the ovary in *Mesocoelium*, Travassos (1919) transferred the genus back to Dicrocoeliidae. Dollfus (1929) erected Mesocoeliinae Dollfus, 1929 (Dicrocoeliidae) largely because species of *Mesocoelium* were generally intestinal parasites of amphibians and reptiles rather than being primarily gall bladder parasites of birds and mammals, but later Dollfus (1933) elevated Mesocoeliinae to Mesocoeliidae Dollfus, 1929 to accommodate species of *Mesocoelium*. Although some authors (e.g. Skrjabin & Morozov 1959; Odening 1971) have accepted the assignment of *Mesocoelium* to Mesocoeliidae by Dollfus (1933), Yamaguti (1971) assigned this genus to Mesocoeliinae within Brachycoeliidae Looss, 1899. Most recently, Pojmańska (2008) followed Dollfus (1933) by recognizing Mesocoeliidae and assigning *Mesocoelium* (where the testes are symmetrical to slightly diagonal) and *Pintneria* Poche, 1907 (where the testes are presumed to be tandem) as the only two genera in the family.

Yamaguti (1971) listed 49 species of *Mesocoelium* (27 species described from amphibians, 22 from reptiles and one from fishes [Table 1]); however, *Mesocoelium sulcatum* Rudolphi, 1809 listed by Yamaguti (1971) from the Surinam toad, *Pipa americana* (Linnaeus) from Brazil had previously been reassigned to *Postharmostomum* Witenberg, 1923 (Brachylaimidae Joyeux & Foley, 1930), as *Postharmostomum sulcatum* (Rudolphi, 1809) by Travassos (1928) based on the more anterior placement of the ovary next to the anterior testis in this species. Three species (*Mesocoelium microon* Nicoll, 1914; *Mesocoelium monas* [Rudolphi, 1819], *Mesocoelium monodi* Dollfus, 1929) were listed under both amphibians and reptiles, and it should be noted that although *Mesocoelium burdwanensis* Mukherjee, 1968 (given as *M. burdwanense* by Yamaguti 1971), *M. monas* and *M. monodi* were listed as amphibian parasites by Yamaguti (1971), these species were originally described from reptiles: *M. burdwanensis* from the oriental garden or changeable lizard, *Calotes versicolor* Duadin, from eastern Bengal (Mukherjee 1968);