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Introduction to Cyclophyllidea Beneden in Braun, 1900

(Order)

Scott L. Gardner

Phylum Platyhelminthes

Class Cestoda

Subclass Eucestoda

Order Cyclophyllidea

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Chapter 17

Introduction to Cyclophyllidea Beneden in Braun, 1900 (Order)

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Introduction

Cestodes in the order Cyclophyllidea are the most-commonly encountered cestodes in amphibians, reptiles, birds, and mammals. Interestingly, they are mostly absent from fishes, with just a single species known from bony, or teleost, fishes, such as the elephant fish in Africa. In terms of diversity of species, the Cyclophyllidea is the largest order of all the cestodes with more species in this group than all other orders combined. As with most cestodes, almost all cyclophyllidean cestodes use an intermediate host as a necessary first step in their life cycle. In some species, the intermediate stages serve as an amplification stage in which a single egg of a cestode that is eaten by an intermediate host may proliferate into millions of potential larvae that will each grow into an adult cestode if the correct species of definitive host eats the infected intermediate host. This is common in the family Taeniidae. The characters of this group of animals are what most people relate to when they think of cestodes.

A character that serves to place a cestode firmly in the cyclophyllidean group is the presence of a **scolex**, or anterior holdfast, that usually has 4 simple, rounded suckers, arranged symmetrically, usually with 2 arranged dorsally and 2 arranged ventrally. There is usually a **rostellum** on the apical part of the scolex and, if the rostellum is present, it may or may not be supplied with **hooks**. The state of having hooks, in cestode parlance, is termed armed. There may be a neck, or not.

The strobila, or the repeating segments that make up the cestode, may be variable, but it usually has distinct **metamerism**, meaning repeating duplicated segments or **proglottids**. Most have segments or proglottids that are hermaphroditic, meaning that they have both male and female gonads in one

segment. Some species may have a **strobila** that is all male and another separate strobila that is all female, this phenotype is called gonochoristic, but these species are relatively rare and occur in just a few species of shorebirds. The **genital pores** are usually found on the lateral surface of the segment, but in species of Mesocestoididae, the genital pore is ventral and centrally located in the segment.

The second main character that places a given species of cestode in the order Cyclophyllidea is the single, compact **vitelline gland** that is usually situated posterior to the ovary in the segment. Depending on the species, the uterus can be variable and can be a simple tube, a reticulated mass, or a paruterine organ. There is no uterine pore in individuals within the Cyclophyllidea.

List of Families

Mostly following Schmidt (1986), families of Cyclophyllidea include: **Mesocestoididae** Perrier 1897, **Diococcestidae** Southwell 1930, **Progynotaeniidae** Fuhrmann 1936, **Taeniidae** Ludwig 1886, **Amabiliidae** Ransom 1909, **Acoleidae** Fuhrmann 1906, **Davaineidae** Fuhrmann 1907, **Hymenolepididae** Perrier 1897, **Catenotaeniidae** Spasskii 1950, **Dilepididae** Railliet et Henry 1909, **Anoplocephalidae** Cholodkovsky 1902, **Nematotaeniidae** Lühe 1910, **Dipylidiidae** Stiles 1896, **Paruterinidae** Fuhrmann 1907, and **Metadilepididae** Spasskii 1959. The most recent summary of the families of cestodes in the Cyclophyllidea by Mariaux and colleagues (2017) also includes the **Gryporhynchidae** Spasskii & Spasskaya, 1973.

Due to its potential for zoonotic infections, species in the family Taeniidae Ludwig 1886 are the most commonly studied and species from 2 genera from this family are discussed in some detail in the following sections, including both *Taenia* and *Echinococcus*.

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