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Platyhelminthes: The Flatworms with an Emphasis on Marine Turbellaria

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The phylum Platyhelminthes is made up of the free-living and parasitic flatworms. All free-living flatworms as well as some symbionts of invertebrates are in the class Turbellaria (Strathmann, 1987). Members of the other three classes (e.g., Monogitenea, Trematoda, and Cestoda) are parasitic and not reviewed here. For further information on these classes of flatworms, see references cited in Strathmann (1987).

Turbellarians are hermaphroditic. All fertilization is internal, with cross-mutual fertilization common (Brusca, 1975). Most species produce relatively few zygotes that are either brooded or encapsulated and go through direct development (Brusca and Brusca, 1990). In direct development, the gastrula flattens its oral surface against the substrate and matures. Direct development leads to crawl-away juveniles.

In the class Turbellaria, only some species in the order Polycladida (all species in the suborder Cotylea and some species in the suborder Acotylea; Table 1) produce larvae with indirect development (Hyman, 1951). In these species a free-swimming eight-lobed Müller's larva is formed (Fig. 1). The lobes are ciliated and provide propulsion. These larvae are pelagic for several days before they settle to the bottom with their oral surface downward and metamorphose into juvenile flatworms (Brusca and Brusca, 1990). Some parasitic polyclades (some species in the genus *Stylochus*) produce a free-swimming four-lobed larvae known as a Götte's larvae.

References

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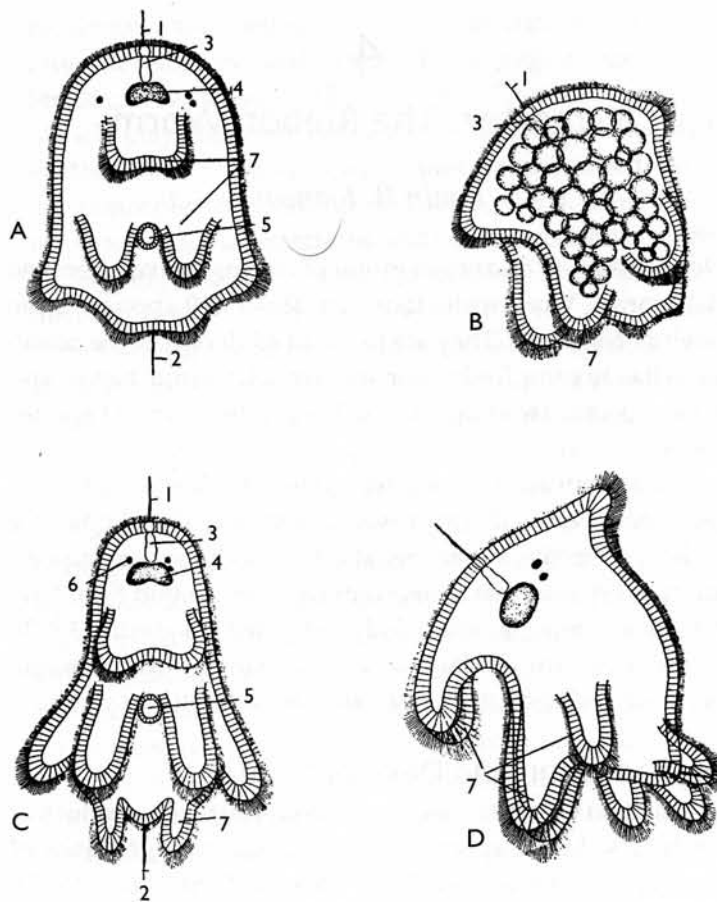


Fig. 1. Müller's larvae. (A, B) Front and side view of larvae with developing lobes. (C, D) Advanced Müller's larvae from the front and the side. 1, apical sensory tuft; 4, caudal tuft; 5, frontal gland; 6, brain; 7, mouth; 8, eyes; 9, ciliated lobes. (from Hyman, 1951, Fig. 67)

Table 1. Species in the order Polycladida from the Pacific Northwest (from Kozloff, 1996)

Suborder Acotylea

Kaburakia excelsa
Stylochus atentaculatus
Stylochus tripartitus

Family Leptoplanidae

Freemania litoricola
Leptoplana vesiculata
Notoplana atomata
Notoplana celeris
Notoplana inquieta
Notoplana inquilina
Notoplana longastyletta
Notoplana natans
Notoplana rupicola
Notoplana sanguinea
Notoplana sanjuania
Phylloplana viridis
Stylochoplana chloranota

Family Callioplanidae

Pseudostylochus burchami
Pseudostylochus ostreophagus

Family Cestoplanidae

Cestoplana sp.

Suborder Cotylea

Family Pseudocerotidae

Pseudoceros canadensis

Family Euryleptidae

Stylostomum album
Eurylepta aurantiaca
Eurylepta leoparda
Stylostomum sanjuania