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Systematics and Evolution in Polycystididae (Turbellaria, Kalyptorhynchia)

by

Ernest R. Schockaert

Limburgs Universitair Centrum, Universitaire Campus, B-3610 Diepenbeek, Belgium

Abstract

Possible evolutionary trends within Polycystididae have been indicated by Karling (1956) while studying the male genital organs of several turbellarian groups. For the moment his ideas seem the most valuable basis for establishing an intrafamiliar system of Polycystididae, and have hence been applied formally (Schockaert, 1974). However, it can be demonstrated with several examples that the underlying principles prove to be unsatisfactory when one tries to apply Hennig's methodology:

– the subfamily Duplacrorhynchinae Schockaert & Karling, 1970, can be recognized as containing the most plesimorph polycystidids; a synapomorph character that would give us an indication of the monophyly of this taxon is lacking;

– the homology of some glandular elements (all derivatives of the atrial epithelium) is often doubtful;

– gutter- or tube-like cuticular stylets (derived from cirrus spines), clearly representing an apomorph condition, have undoubtedly originated more than once and do not offer a sound basis delimiting monophyletic groups . . .

We are strongly convinced that it will be absolutely necessary to abandon the genital apparatus as the nearly unique basis for taxonomy in polycystidids and other turbellarian groups. All too often we find convergence in the structure of copulatory organs in obviously remote taxa. Moreover, we can have some doubt about the selective meaning of this organ system, even about its role in reproductive isolation, i.e. in the process of speciation. Can we, under these circumstances, pay too much attention to these organs in taxonomy above the species- or genus-level? We do hope that other elements will provide us with a more solid morphological basis, if necessary with the help of the electron microscope.

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