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Redescription of Four Species of Lagenophryid Peritrichs (Ciliophora) from Australia and New Guinea, With Descriptions of Two New Species

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ABSTRACT. Four insufficiently described species of ectosymbiotic peritrich ciliates in the family Lagenophryidae that occur on crustacean hosts in Australia and New Guinea are redescribed. These include two species of *Operculigera* from phreatoicid isopods, one species of *Setonophrys* from a phreatoicid isopod, and one species of *Lagenophrys* from a palaemonid shrimp. Two undescribed species of *Operculigera*, also found on phreatoicid isopods, are described for the first time. Australian species of *Operculigera* appear to be restricted to phreatoicid hosts. This is unusual because a diverse array of other lagenophryids occur on parastacid crayfish in Australia. Furthermore, species of *Operculigera* are conspicuous symbionts of parastacids and various freshwater crabs in Chile and Madagascar. In addition to this peculiarity of distribution, the Australian species of *Operculigera* appear to comprise a morphologically distinct group within the genus.

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All but one of the species of peritrich ciliates in the family Lagenophryidae Bütschli, 1889 are specialized ectocommensals of crustaceans. Lagenophryids do not have the familiar bell-, barrel-, or trumpet-shaped, radially symmetrical bodies typical of other peritrichs. Instead, they are grossly flattened and laterally distorted, with a discoid, bilaterally symmetrical shape that fits closely against the host's surface. Unlike most peritrichs, they do not secrete a cylindrical stalk for attachment but, instead, cement themselves to the host's exoskeleton with the rim of their protective lorica.

Lagenophryid loricae are usually hemispheroidal, with the flat side adherent to the host; some species, however, have a narrower, pyriform to ovoid lorica that is adapted for clinging to setae. Lagenophryids protrude only the central, epistomial disk of the peristome (expanded oral area) from the lorica aperture during feeding. Other loricate peritrichs (e.g., all vaginicolids) project the entire oral end of the body through the lorica aperture when feeding. The aperture of a lagenophryid lorica is a complex structure that shuts tightly when the epistomial disk is retracted. Part of the peristomial margin is attached around the base of the lorica aperture in lagenophryids and closes it forcefully, using an enlarged version of the contractile, myonemal sphincter that closes the peristomial lip over the retracted epistomial disk in other peritrichs. Lagenophryids are like other peritrichs in being suspension feeders that capture particulate food such as bacteria and phytoplankton. They may associate with crustaceans because these hosts generate

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