Chapter 24 Order Hymenoptera

With the exception of the spider-hunting wasp, *Anolius depressipes* Banks (Family Pompilidae, Section Aculeata), almost all members of aquatic hymenopterans are in the suborder Apocrita, Section Parasitica. They are parasitoids of aquatic insects. Adults are free living and enter the water to lay eggs on or in aquatic hosts. In most instances, Hymenoptera that parasitize aquatic insects do not show any external morphological adaptations in either the adult or larval stages, as compared with those parasitizing terrestial hosts. The larvae of internal parasites are already modified to live in a liquid environment (host hemolymph), and no special morphological modifications seem to have evolved in the wasps that dive beneath the water surface to reach their host insects. Larvae of Agriotypidae are the only external parasites of hosts that live under water. They have a special morphological adaptation: the last larval instar forms a ribbon-like respiratory filament that remains functional through the pupal stage (Fig. 1b-c). A key to families of aquatic wasps and detailed information about larvae of North America are available in Hagen (1996: cited in Merritt & Cummins, 1996).

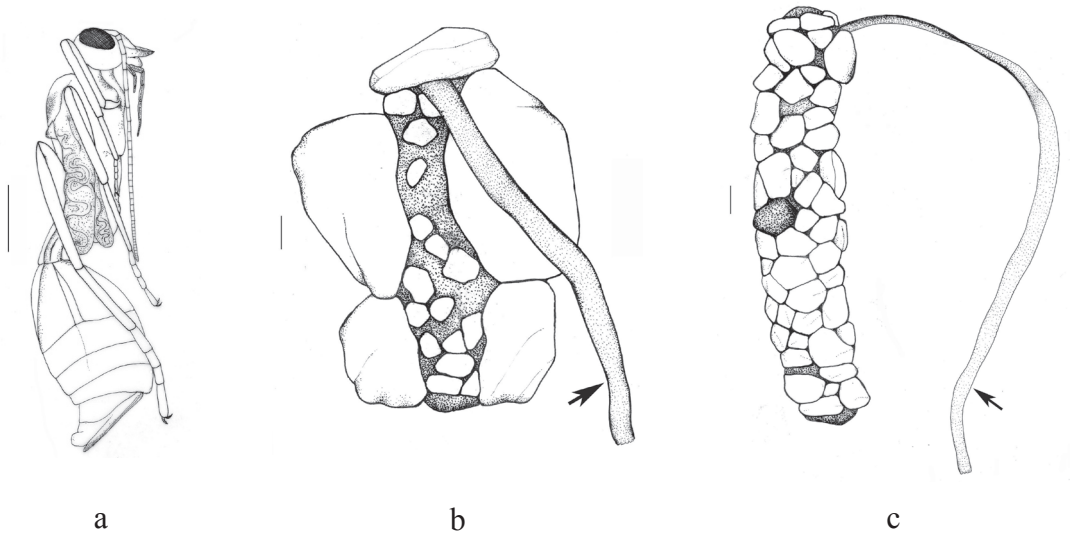

Fig. 1 Pupa of Agriotypidae, that has been removed from the pupal case of a goerid caddisfly (a) and ribbon-like respiratory filament (b,c) produced by the parasitoid.
Scale = 1 mm.