



# World genera of aquatic Platygasteridae (Hymenoptera: Platygastroidea).

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## Introduction

Most wasps are terrestrial only, but some **egg parasitoids** enter the water, swimming with their legs and wings, in search of their hosts. We refer to these as "aquatic".

a.qua.tic

▪ of or relating to water

These minute wasps share a number of morphological features that, presumably, are associated with entering through the surface film, moving through the water, and breathing while submerged.

General morphological features:

- body surface smooth & shining, with little or no microsculpture;
- elongate, bristlelike, erect body setae, particularly on head & mesosoma;
- apical antennomeres of the female are coalesced or fused into a compact club;
- fore wings often attenuate & scalloped along the anal margin.

A number of genera, by virtue of their morphology, are inferred to fall into this ecological guild.

These include:

- *Acolomorpha* Dodd
- *Tanaodytes* Masner
- *Thoron* Haliday
- *Pseudanteris* Fouts
- *Tiphodytes* Bradley
- *Thoronidea* Masner
- *Thoronella* Masner
- *Telenomus* Haliday (some)

Association of species with aquatic habits is typically based on their morphology, as the biology of only a few species has been determined.

## Aquatic or Not?

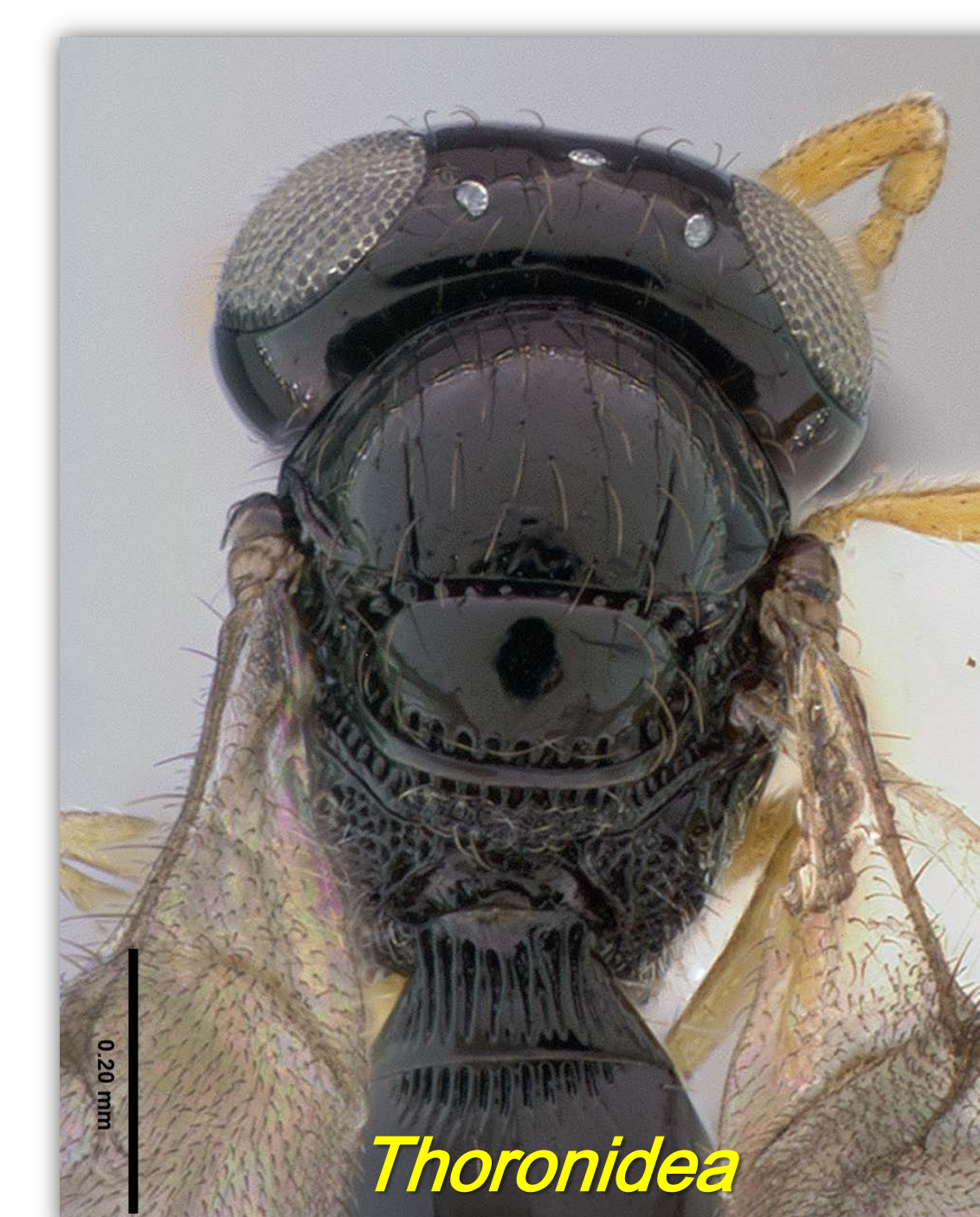
*Tiphodytes* swim underwater to locate and parasitize the eggs of water striders. Similarly, at least one species of *Thoronella* has been shown to parasitize the submerged eggs of some dragonflies (Odonata: Aeshnidae).



*Thoron* parasitizes the eggs of water scorpions of the genus *Nepa* (Heteroptera: Nepidae). These bugs oviposit in the substrate along the edge of the water, so their parasitoids may be better described as semi-aquatic.

Two genera are sometimes associated with water, but are **not truly aquatic**.

- *Telenomus* Haliday:
  - ✓ *tabanivorus* group – parasitize eggs of horse flies and Lepidopteran stem borers.
- *Trimorus* Förster:
  - ✓ Several species found along shorelines. This genus is known only to parasitize the eggs of ground beetles (Coleoptera: Carabidae).



## Collection



Aquatic and semi-aquatic platygasteroids are easily collected through the use of **yellow pan traps** set along the margins of water bodies.

The efficiency of this collecting method is demonstrated by the fact that specimens are typically captured within 15 minutes of deployment.

Unlike most insects, however, submergence does not lead to the death of the aquatic wasps. They can remain active for hours, swimming through the water and struggling to climb the sides of the trap.

Many specimens are often found stranded on the lips of the pan traps, apparently after pulling themselves up out of the main part of the bowl. They seem unable, however, to shed water from their body and escape.



## Systematics

**Synonymies.** Several names represent multiple descriptions of the genus *Acolomorpha* Dodd, 1914:

- *Microthoron* Masner
- *Narendraniola* Rajmohana
- *Paleothoron* Mineo, O'Connor & Ashe
- *Nimiothoron* Mineo, O'Connor & Ashe.



**New Genera.** We have discovered three taxa for which we believe new genera are warranted. Two from southeast Asia in which the association with the aquatic guild is supported both by morphology and collecting data. A third genus is found worldwide and its aquatic nature is more tentatively inferred.

**Methodologies.** The phylogeny of Platygastroidea was investigated using morphological data and 4 molecular markers: 18S and 28S rDNA, the mitochondrial gene CO1, and the F2 copy of the nuclear protein coding gene EF1- $\alpha$ . Over 200 in-group taxa were examined (maximum 5 species/genus. Data explored using maximum likelihood (RAxML) and Bayesian techniques (MrBayes, BayesPhylogenies). A range of coding and partitioning schemes were also explored (see Taekul *et al.* 2013).

**Literature Cited.** Taekul, C., A.A. Valerio, A.D. Austin, H. Klompen and N.F. Johnson. 2013. *Molecular phylogeny of telenomine egg parasitoids (Hymenoptera: Platygastroidea s.l.: Telenominae): evolution of host shifts and implications for classification.* *Systematic Entomology* DOI:10.1111/syen.12032



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