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## *Ptenidium pusillum* (Gyllenhal, 1808) from egg to pupa (Coleoptera: Ptiliidae)

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### Abstract

Eggs, larvae and pupae of *Ptenidium pusillum* obtained by rearing adults are described. Larval chaetotaxy is treated in detail. Two larval instars are identified, differing in minor chaetotaxic characters, pigmentation and measurements. The lack of urogomphi, confirmed in *Ptenidium*, is discussed in the context of current systematics of Ptiliidae. Serial chaetotaxic homology and between-instar homology are discussed. Observations related to biology of *P. pusillum* and associations with phoretic mites and nematodes are given.

**Key words:** Coleoptera, Staphylinoidea, Ptiliidae, *Ptenidium*, egg, larva, pupa, chaetotaxy, Palearctic

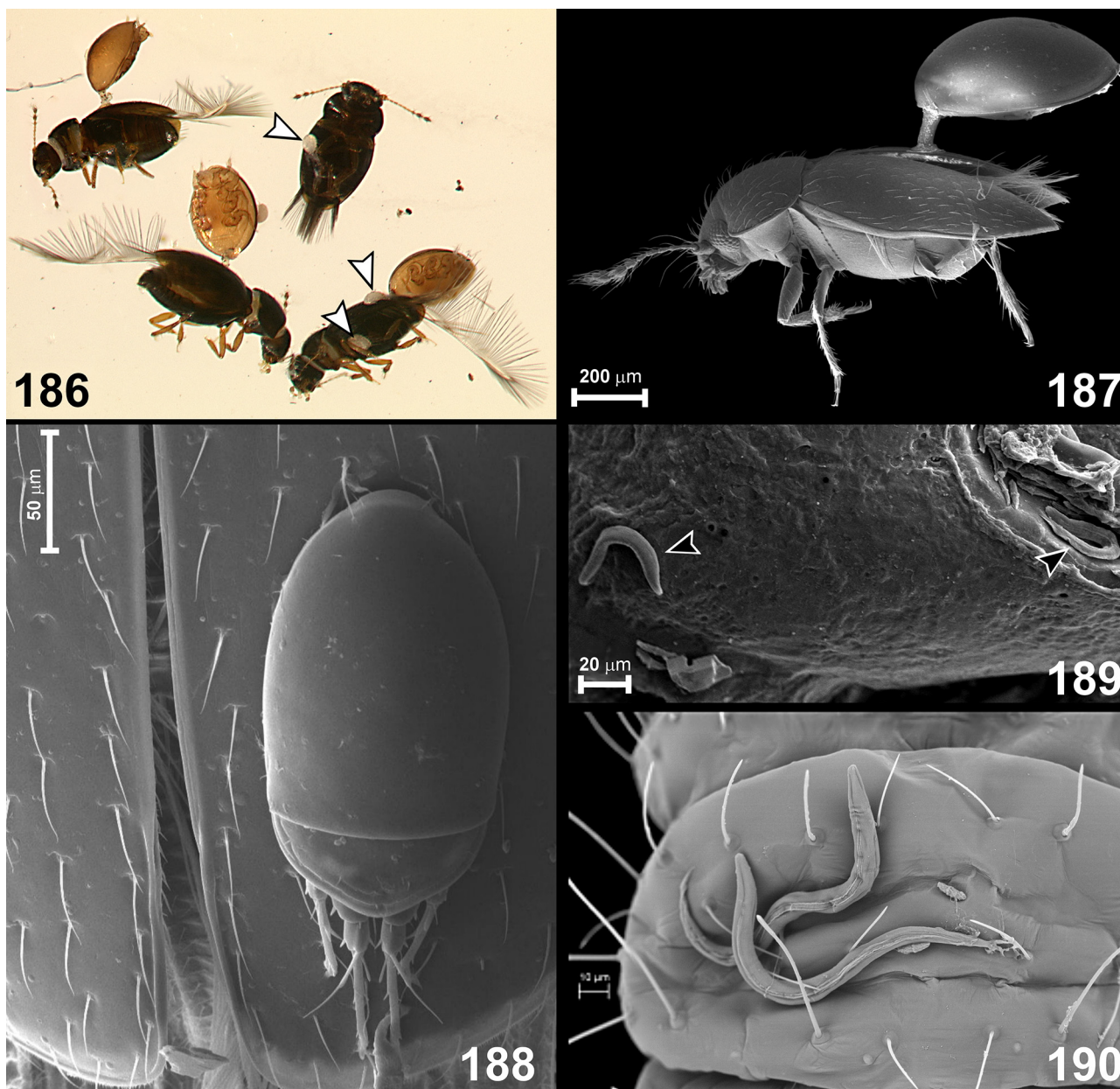
### Introduction

Immature stages of Ptiliidae are poorly studied (a phrase so often used in larval descriptions of nearly all beetle families). Although it seems not very difficult to rear these minute beetles, as demonstrated by Hinton (1941), De Coninck & Coessens (1981), and first of all, by De Marzo (1996, 2000a, 2012), this family is apparently not very popular among coleopterists. So far, at least some morphological structures of larvae were illustrated for 16 genera:

- subfamily Acrotrichinae, tribe Acrotrichini: *Acrotrichis* Motschulsky, 1848 and *Actinopteryx* Matthews, 1872 (Perris 1846; Hinton 1941; Paulian 1941; Dybas 1976; De Coninck & Coessens 1981; Costa *et al.* 1988; De Marzo 2000a, b);
- subfamily Acrotrichinae, tribe Nephaniini: *Nephanes* Thomson, 1859 (Dybas 1976);
- subfamily Cephaloplectinae: *Limulodes* Matthews, 1866 (Dybas 1976);
- subfamily Ptiliinae, tribe Nanosellini: *Cylindrosella* Barber, 1924, *Mikado* Matthews, 1889, *Nanosella* Motschulsky, 1869, *Throscoptiloides* Hall, 1999 and *Throscoptilium* Barber, 1924 (Paulian 1941; Dybas 1976; Hall 1999; Polilov & Beutel 2009);
- subfamily Ptiliinae, tribe Ptenidiini: *Nossidium* Erichson, 1845 (Böving & Craighead 1931; Dybas 1976; Kilian & Burakowski 2000) and *Ptenidium* Erichson, 1845 (De Marzo 2000a);
- subfamily Ptiliinae, tribe Ptiliini: *Actidium* Matthews, 1868, *Micridium* Motschulsky, 1869 and *Ptiliolium* Flach, 1888 (Dybas 1976; Hall 1999; De Marzo 2000a, b);
- subfamily Ptiliinae, tribe Ptinellini: *Astatopteryx* Perris, 1862, *Pteryx* Matthews, 1872 and *Ptinella* Motschulsky, 1844 (Perris 1862; Paulian 1941; Dybas 1976; De Marzo 1996, 2002; Grebennikov & Beutel 2002; Jałoszyński 2014).

Eggs attracted much less attention: the egg of *Acrotrichis* and *Ptinella* was illustrated by De Coninck & Coessens (1981) and De Marzo (1996), respectively. Pupae are known for nine genera: *Acrotrichis* (Perris 1846; Hinton 1941; De Coninck & Coessens 1981; Costa *et al.* 1988; De Marzo 2012), *Ptinella* (De Marzo 1996), *Actidium* (De Marzo 2012), *Actinopteryx* (De Marzo 2012), *Microptilium* Matthews, 1872 (De Marzo 2012), *Nephanes* (De Marzo 2012), *Pteryx* (De Marzo 2012), *Ptenidium* (De Marzo 2012) and *Ptiliolium* (De Marzo 2012).

The above-mentioned references contain usually data related to only some structural details, and complete



**FIGURES 186–190.** Invertebrates associated with *Ptenidium pusillum*. Phoretic deutonymphs of Acaridae (arrows) and Uropodidae (large and attached by pedicels) (186); phoretic deutonymph of Uropodidae (187); deutonymph of Hististomatidae attached to right elytron (188); nematodes on egg (189) and on pronotum of the first instar larva (190).

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