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Three new species of *Platygaster* LATREILLE, 1809, from Denmark (Hymenoptera, Platygasteridae)

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Abstract

Three new species of the genus *Platygaster*, viz. *P. planus* sp. nov. (♀), *P. hybrida* sp. nov. (♀ and ♂), and *P. abrupta* sp. nov. (♀ and ♂), from Denmark are described. The work is illustrated by 10 text-figures.

Zusammenfassung

Drei neue Arten, *Platygaster planus* sp. nov. (♀), *P. hybrida* sp. nov. (♀ und ♂) und *P. abrupta* sp. nov. (♀ und ♂), werden aus Dänemark beschrieben. Die Arbeit ist mit 10 Abbildungen versehen.

Introduction

During my examination of about 3.000 specimens belonging to the large genus *Platygaster* s.l. from Denmark only 1-3 specimens of each of the new species described below appeared. Thus, all must be considered as very rare species. None of them are known to have close relatives in the Palearctic region, but two of them, *P. planus* and *P. abrupta*, are probably closely related to Nearctic species.

Platyaster planus sp. nov. (figs. 1-4)

♀: Head from above (fig. 1) twice as wide as long, as wide as thorax, evenly rounded behind eyes; vertex and occiput with about four strong transverse carinae behind posterior ocelli; vertex coriaceous, median area with ocelli slightly protuberant; occiput coriaceous and weakly transversely striated; temples hardly longer than an eye; OOL : POL : LOL = 5 : 17 : 7. Head in lateral view (fig.2) about 1.5 times as high as long. Head from front about 1.3 times as wide as high with malar space hardly one-third the length of an eye; frons somewhat shiny, coriaceous and weakly punctate, transversely striated in lower half, with a longitudinal depression from anterior ocellus towards antennal insertions, depression triangularly widened in lower half. Head with short and sparse golden hairs in its upper half, on genae and around mouthparts with longer hairs. Antenna (fig.3) rather long and thin; scape as long as the four following segments combined; pedicel a little more than twice as long as wide, as long as 2nd flagellar segment which is hardly more than twice as long as wide; 1st flagellar segment hardly more than half as long as 2nd; 3rd and 4th each a little longer than 2nd and about 2.5 times as long as wide; 5th a little shorter and thicker than 4th and a little wider than 6th which is as wide as but a little longer than 7th, 5-7. each only slightly more than twice as long as wide; apical segment almost three times as long as wide. Whole flagellum almost cylindrical and with very short pubescence, flagellar segments 3-8 each with at most a few longer hairs apically.

Thorax a little wider than high (10 : 9); pronotum coriaceous, smoother towards sides, in lower half only with scattered hairs; mesoscutum reticulated-coriaceous, notauli complete and strongly converging, mid lobe on downcurved anterior one-fifth with two smooth, slightly diverging admedian lines; median plate of mesoscutum reaching base of scutellum; mesoscutum evenly covered with sparse golden hairs; mesopleurae bare, smooth and shiny, with rather deep median furrow. Scutellum (fig.2) hardly convex, at level of mesoscutum and in lateral view apparently forming an even continuation of this; scutellum in dorsal view margined at all sides, separated from mesoscutum by a scutellar fovea in the form of two narrow triangles at each side of median plate of mesoscutum, each triangle covered with four long hairs protruding backwards from hind margin of lateral lobes of mesoscutum; scutellum a little wider than long, narrowed in straight lines in proximal three-fifths, almost pentagonal, postero-laterally with a weak impression; scutellar disc reticulated and sparsely punctate, almost smooth posteriorly and with short and sparse hairs, longer and denser hairy at margins. Metapleurae and sides of propodeum shagreened with long and rather sparse white pilosity; dorsal areas of propodeum shagreened and almost bare; propodeal keels parallel, short and wide apart, area in between smooth and shiny.

Legs with no peculiarities. Fore wing clear, about 2.5 times as long as wide and reaching base of fifth tergite; marginal cilia very short. Hind wing clear, about 4.7 times as long as wide and reaching apex of third tergite, with two frenal hooks; marginal cilia only about one-seventh the width of wing.

Gaster (figs. 2 and 4) twice as long as mesosoma and narrower than this (about 8.5 : 10), flattened dorsally. First tergite strongly transverse, upturned and smooth anteriorly, the rest with three rather weak longitudinal carinae and some finer striae in between and along sides; tergite covered with sparse long hairs, denser hairy laterally. Second tergite

about 1.6 times as long as wide, with shallow basal foveae, striated over whole width except at sides to about 0.3 length of tergite, behind foveae some very faint striae continue to about 0.4 length of tergite, rest of tergite smooth and shiny; tergite bare except some very fine hairs on posterior half. Tergites 3-6 combined as long as tergite 2, smooth and shiny and with fine scattered hairs; tergites 3-4 narrowed in straight lines, about as long as wide at base; tergite 5 almost square: hind margins of tergites 4 and 5 slightly upturned; hind margin of tergite 5 brownish transparent. Tergite 6 somewhat telescoped. First sternite densely hairy; second sternite at vertical area beneath petiolus with a dense and most conspicuous tuft of pubescence, sternite almost appearing humped at base; rest of sternite as the following sternites covered with fine scattered hairs; hind margins of sternites 4 and 5 slightly downturned.

Colour black; fore femora apically and fore tibiae at both ends light brown; antennal toruli, mandibles, middle and hind tibiae proximally and all tarsi dark reddish.

Length: 2.5 mm.

♂ unknown.

Material examined: Holotype ♀, Denmark, North East Zealand, Boserup Skov, 21.V.1993. P.N. BUHL leg. Deposited in the collection of the Zoological Museum in Copenhagen. Unique.

Swept in the lower vegetation in a mixed wood.

Platygaster planus is most similar to the North American *P. shastensis* FOUTS, 1924, but this species differs from *planus* in a number of aspects, more particularly in having antennal segment four about 4 times as long as wide, antennal segments six to nine about 3 times as long as wide, mesoscutum more polished than *planus*, scutellum polished except on sides, median striae at base of second tergite only half as long as striae in foveae, and second tergite distinctly wider than thorax across tegulae. Second tergite in *shastensis* 0.6 times as wide at apex as long, in *planus* 0.5 times. The only decisive characters separating *shastensis* from *planus* are the much more oblong flagellar segment 2, the more oblonge flagellar segments 3-7, and the much greater width of gaster. The two aberrant species *P. planus* and *P. shastensis* are so similar in thoracic structure that they probably form a natural group with no known close relatives (the crucial character for a natural subdivision of *Platygaster* s.l. is hypothesized to be the structure of scutellum; L. MASNER, pers. comm.). According to FOUTS (1924) *P. shastensis* was reared from the cones of *Abies shastensis*, so probably *shastensis* and *planus* are both associated with Cecidomyiidae living in spruce cones.

Platygaster hybrida sp. nov. (figs. 5-7)

♀: Head from above 1.8 times as broad as long; frons almost smooth in the middle, finely coriaceous and punctate towards sides and faintly transversely striated above antennal sockets; vertex and occiput shagreened, without striae. Malar space about one-fourth the length of an eye; temples hardly as long as an eye; OOL : POL : LOL = 2 : 7 : 3. Head with short and sparse hairs on frons and eyes and a row of short hairs along inner orbits; vertex, occiput, genae and around mouthparts with longer and denser hairs. Antenna (fig. 5) with pedicel twice, 1st flagellar segment slightly more than twice and 2nd flagellar segment about three times as long as wide; preapical segment clearly transverse; flagellum

without conspicuous sensorial organs, pubescence very short with a few longer hairs.

Thorax (fig. 6) as broad as head, very convex, slightly higher than broad (10 : 9). Pronotum uniformly shagreened, in upper half with long and rather dense hairs; mesoscutum sculptured as pronotum, evenly haired, without trace of notauli; the straight posterior margin of mesoscutum laterally with dense white hairs covering scuto-scutellar grooves; mesopleurae bare, with fine longitudinal striations in upper half, rest almost smooth. Scutellum (fig. 6) hardly convex, at level of mesoscutum, slightly transverse, not margined at sides, smooth except for sparse granulate sculpture, with rather dense long hairs especially laterally, posteriorly in the middle with two short teeth, one of them under the other; vertical posterior area of scutellum with dense white hairs. Propodeal carinae low, parallel and wide apart, area in between smooth and bare; sides of propodeum and metapleurae shagreened and hairy except for anterior median part of metapleurae which is smooth and bare.

Legs with no peculiarities. Fore wing just reaching apex of gaster, clear, about 2.6 times as long as wide; marginal cilia very short. Hind wing with two frenal hooks, 4.0 times as long as wide; marginal cilia about one-fifth the width of wing.

Gaster (fig. 6) a little longer than head and thorax combined, slightly narrower than thorax, 2.6 times as long as wide and 1.2 times as wide as high. Relative length of tergites: T1 2.0, T2 11.0, T3 - T5 each 1.5, T6 3.5; T1 about three times as wide as long, medially with about seven weak longitudinal keels and bare, laterally with long and sparse hairs; junction of T1 and T2 bare; T2 without basal foveae, striated to hardly one-fifth over whole width, medially a little longer, rest of tergite smooth except for some very faint reticulate sculpture at hind margin; T3 - T5 strongly transverse, each with a strip of strong reticulate sculpture basally, for the rest smooth; T6 triangular, slightly shorter than basal width, uniformly shagreened. T2 - T6 almost evenly covered with rather long and sparse hairs. Ovipositor sheaths somewhat extruded. First sternite with long and dense hairs; 2nd sternite without striae at base, rest of this sternite and the following sternites sculptured and haired as the correspondent tergites.

Colour black; mandibles, extreme ends of scape, apical end of pedicel, trochanters on fore legs, middle femora and tibiae and hind tibiae dark reddish; fore femora and tibiae and all tarsi except last segment yellowish brown.

Length: 2.2 mm.

♂: Antenna (fig. 7) longer than in ♀; pedicel slightly longer than wide, as long as 1st flagellar segment which is 1.5 times as long as wide; 2nd flagellar segment triangularly widened; flagellar segments 4-7 2.5-3 times as long as wide. Flagellum cylindrical with hairs as long as the width of segments. Gaster as long as head and thorax combined, more rounded at apex than in ♀, T6-T7 strongly transverse. Rest of characters essentially as in ♀. Length: 1.9 mm.

Material examined: Holotype ♀, Denmark, East Jutland, Mols, Langsø, 8.VIII.1993. P.N. BUHL leg. Deposited in the collection of the Zoological Museum in Copenhagen. Paratypes: 1 ♀, same locality and date as holotype; 1 ♂, Denmark, North East Zealand, Tisvilde Hegn, 2.VIII.1993. Both P.N. BUHL leg. and both deposited in the collection of the Zoological Museum in Copenhagen.

The holotype and the ♀ paratype were swept in the woodland along the lake of Langsø in the northernmost part of the peninsula of Mols. The ♂ paratype was swept in a wood

consisting mostly of conifers.

Platygaster hybrida is a most aberrant species in which characters from the genera *Platygaster* and *Synopeas* are mixed. In KIEFFER's (1926) key it runs to *Prosynopeas* from which it differs in having scape apically sinuate. In structure of gaster it much resembles a typical *Synopeas* s.str., but it differs from the members of this taxon in lacking the dense hairs on junction of T1 and T2. Probably its closest relatives are the *Platygaster* species of the "cochleata group" sensu VLUG (1984). *Platygaster hybrida* differs widely from all these species in the shape of antennal segments of both ♂ and ♀, cf. VLUG (1984).

Platygaster abrupta sp. nov. (figs. 8-10)

♀: Head from above 1.9 times as broad as long; frons strongly transversely striated, smooth beneath anterior ocellus; vertex transversely reticulate; occiput strongly transversely striated. Malar space about two-fifths the length of an eye; temples as long as an eye; OOL : POL : LOL = 7 : 23 : 9. Head with very short and sparse hairs, only around mouthparts with longer hairs. Antenna (fig. 8) with scape slightly shorter than width of head (16 : 17); pedicel more than three times, 1st flagellar segment hardly two times, 2nd flagellar segment slightly more than two times and 3rd flagellar segment about two times as long as wide; the five segments forming club each tooth-like dilated in inner apical part, outer apical part rounded off, three preapical segments only very slightly longer than apically wide, apical segment twice as long as wide.

Thorax (fig. 9) as wide as head, slightly higher than broad (17 : 16). Pronotum finely and evenly shagreened, with long and sparse hairs; midlobe of mesoscutum shagreened, lateral lobes almost smooth, notauli indicated in posterior two-thirds, disc of mesoscutum with long and rather dense hairs, at the slightly bowed posterior margin with even denser hairs covering the deep scuto-scutellar grooves; mesopleurae completely smooth and bare. Scutellum (fig. 9) strongly convex, high above level of mesoscutum, in dorsal view almost triangular, with lateral margins lying below level of mesoscutum and with somewhat granular reticulate sculpture, thickly hairy especially at sides; posterior margin of scutellum almost vertical. Propodeal keels rather low and well separated, area in between smooth and bare, each keel in dorsal view broad and widened towards apex, here about as wide as distance between keels; sides of propodeum and metapleurae shagreened and with long and dense, whitish hairs.

Legs rather slender. Wings slightly longer than body (29 : 28), almost clear, about 2.2 times as long as wide; marginal cilia short, hardly one-tenth width of wing. Hind wing with two frenal hooks, 4.9 times as long as wide; marginal cilia less than one-fourth the width of wing.

Gaster (fig. 9) about as long as head and thorax combined and as wide as thorax, about twice as long as wide and twice as wide as high. Relative length of tergites: T1 2.5, T2 9.0, T3 - T5 each 0.7, T6 1.0. T1 almost twice as wide as long, strongly crenulated and bare; T2 with some very faint striae in basal foveae, striations reaching half the length of tergite, for the rest smooth, whole tergite bare; T3 - T5 smooth, each with a row of deeply implanted hairs, rows interrupted medially; T6 almost smooth and with some hairs; T3 - T6 all strongly transverse. First sternite and base of second sternite with long and dense, whitish hairs, rest of sternites haired and sculptured as the correspondent tergites.

Colour black; mandibles and lateral margins on ventral surface of gaster dark reddish; antennal segments 1-5 and all legs except coxae beautifully orange.

Length: 1.6 mm.

♂: Head from above 2.0 times as broad as long. Antenna (fig. 10) with 2nd flagellar segment thickened and the four preapical segments more than twice as long as wide. Flagellum almost cylindrical with hairs as long as width of segments. Notauli indicated in only posterior half of mesoscutum. Scutellum slightly less convex than in ♀. Length of gaster in relation to head and thorax as in ♀, but apical tergites shorter than in ♀; T7 bare and very short. Antennal segments 1-3 dark reddish, rest of antenna black; lateral margins on ventral surface of gaster hardly reddish. Rest of characters essentially as in ♀. Length: 1.5 mm.

Material examined: Holotype ♀, Denmark, North East Zealand, Jagerspris Nordskov, 13.IX.1992. P.N. BUHL leg. Deposited in the collection of the Zoological Museum in Copenhagen. Paratypes: 1 ♂, Denmark, North East Zealand, Jonstrup Vang, 27.VIII.1993. P.N. BUHL leg. Deposited in the collection of the Zoological Museum in Copenhagen.

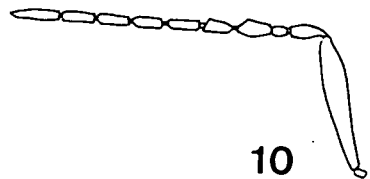
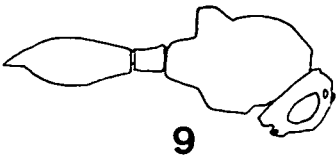
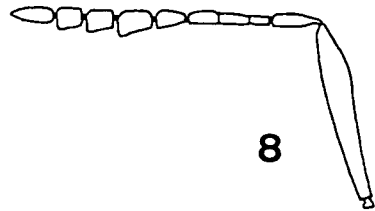
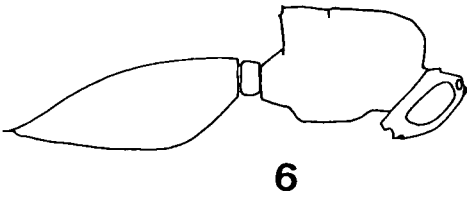
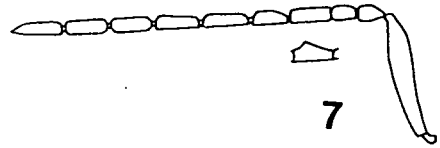
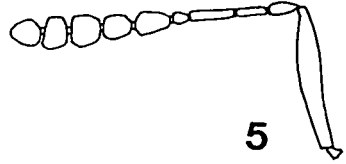
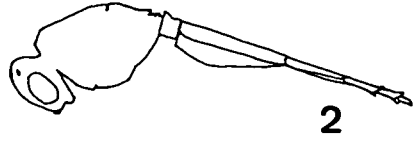
Both types swept in rather humid, preponderantly deciduous woods.

The name *abrupta* refers to the abruptly ending scutellum which together with the slender basal antennal segments (♀) and the colour makes this a most distinct species. Perhaps the closest relative to *Platygaster abrupta* is the North American *P. rufipes* (ASHMEAD, 1893), cf. FOUTS (1924). In contrast to *P. abrupta*, the ♀ of *P. rufipes* (♂ unknown) has "pedicel about twice as long as wide, it and the three following joints subequal in width; third joint two-thirds the length of the second, as long as the fourth; fifth spherical; sixth as wide at the apex as long, slightly narrowed proximally, as wide as the fifth" (FOUTS 1924).

Figs. 1-4 *Platygaster planus* sp. nov. ♀: - 1) head in dorsal view; 2) body in lateral view; 3) antenna; 4) gaster in dorsal view.

Figs. 5-7 *Platygaster hybrida* sp. nov.: - 5) ♀ antenna; 6) ♀ body in lateral view; 7) ♂ antenna (4th segment also in lateral view).

Figs. 8-10 *Platygaster abrupta* sp. nov.: - 8) ♀ antenna; 9) ♀ body in lateral view; 10) ♂ antenna.



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