Contributions to the diversity of Platygastrinae (Hymenoptera: Platygastridae) – Part 2

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Abstract. The following 14 species are described as new: *Platygaster magnussoni* sp. nov. (Sweden), *P. mantoides* sp. nov. (Latvia), *P. obesicornis* sp. nov. (Togo), *P. schwarzwaldensis* sp. nov. (Germany), *P. selonica* sp. nov. (Latvia), *P. subborealis* sp. nov. (Sweden), *Synopeas alvarense* sp. nov. (Sweden), *S. angustum* sp. nov. (Togo), *S. anjanae* sp. nov. (Chile), *S. brevipubescens* sp. nov. (Togo), *S. konvickai* sp. nov. (Togo), *S. paludani* sp. nov. (Thailand), *S. talamasi* sp. nov. (Togo), and *Trichacis verwiebeae* sp. nov. (Mexico). The work is illustrated by 30 text-figures.

INTRODUCTION

Platygastrinae is a subfamily of tiny wasps, predominantly egg-larval or egg-pupal parasitoids of gall midges (Diptera, Cecidomyiidae), less frequently developing in adult Hemiptera and eggs of Coleoptera. Several species are important in the biological control. Platygastrids are taxonomically challenging insects, and even the European fauna is poorly studied, as demonstrated by new species being frequently described from areas where other insect orders and families are traditionally well-studied. In tropical parts of the world an even smaller part of the diversity has been described, though the number of species does not seem much higher than at more northern latitudes. In fact, it seems probable that many species have a very wide, even cosmopolitan distribution over several biogeographical regions, the species being thus also examined on the global basis, not from isolated countries or regions. During my examination of platygastrids from many parts of the world, acquired through various sources, a number of new species have appeared. They are described below.

MATERIAL AND METHODS

The specimens were mounted on card points on pins, and measurements were taken with a Leitz Wetzlar microscope along the longest and widest dimensions of the relevant body parts.

Terminology: Standard abbreviations used are A1-A10 = antennal segments 1-10, OOL = distance between lateral ocellus and eye, LOL = distance between lateral and anterior ocelli, POL = distance between lateral ocelli, and T1-T6 = tergites 1-6.

The material is deposited in the Swedish Museum of Natural History, Stockholm (SMNH), in the Museum of Zoology, Lund University, Sweden (MZLU) or in the Zoological Museum, University of Copenhagen, Denmark (ZMUC).

TAXONOMY

Platygaster magnussoni sp. nov.

(Figs. 1-2)

Material examined. Holotype ♀: Sweden, Sm., Torsås kommun, Påboda (N625636, E151637), Malaise trap in garden, 1.-16.viii.2008, Swedish Malaise Trap Project leg. (SMNH). Paratype: 1 ♂ same data as holotype (SMNH).

Diagnosis. Head twice as wide as long, occiput finely and densely striated; female preapical antennal segments at most 1.5 times as wide as A4, A9 about 1.2 times as long as wide; notauli indicated in posterior 0.75; scutellum weakly convex, smooth; fore wing hardly 2.2 times as long as wide; female metasoma hardly as long as rest; T2 striated to 0.4, medially to 0.3; apical tergites with rather strong punctures, 10 on T4, 6 on each of T5.

Description. ♀. Body length 1.0 mm. Black; antennae and legs dark brown; A1-A3, fore tibiae, base of mid and hind tibiae, and segments 1-4 of all tarsi lighter brown.

Head from above about twice as wide as long, 1.2 times as wide as mesosoma; occiput finely and slightly unevenly half-circularly striated all over; vertex finely reticulate-coriaceous, transversely so between ocelli; frons all over finely fan-like striated out from a midline. OOL:POL:LOL = 2.5:5.0:2.0. Eyes with a few inconspicuous hairs. Head in frontal view 1.25 times as wide as high. Antenna (Fig. 1) with A1 shorter than height of head, longer than distance between inner orbits (13:12). Length:width A1-A10 = 13.0:2.2; 3.5:1.6; 1.3:1.0; 2.5:1.9; 2.5:1.4; 2.5:2.0; 3.0:2.7; 3.0:2.7; 3.0:2.6; 4.2:2.2. Flagellar pubescence short.

Mesosoma 1.5 times as long as wide, 1.15 times as high as wide. Sides of pronotum smooth, with a small patch of reticulation near upper anterior corner, in lower half with faint traces of longitudinal microsculpture. Mesoscutum finely reticulate-coriaceous along margins and on anterior half, on posterior half of mid lobe with weak longitudinal wrinkles; notauli weak but indicated except in anterior 0.25 of their courses; mid lobe moderately wide posteriorly, slightly and bluntly prolonged to base of scutellum; scuto-scutellar grooves each with 6-7 fine hairs. Mesopleuron smooth.

Scutellum (Fig. 2) sparsely hairy, smooth, weakly convex, very slightly above level of mesoscutum. Metapleuron with pilosity all over. Propodeal carinae slightly diverging; area between them smooth, about as long as its apical width.

Fore wing 2.15 times as long as wide, as long as 0.8 entire body, surpassing tip of metasoma by a distance equal to combined length of T3-T6, clear, with fine and dense microtrichia; marginal cilia 0.1 width of wing. Hind wing 5.5 times as long as wide, with two hamuli; marginal cilia almost 0.4 width of wing.Metasoma 0.95 as long as rest of body, 1.9 times as long as wide, as wide as mesosoma. Length:width T1-T6 = 4.0:7.8; 17.0:15.5; 1.8:14.5; 1.4:12.0; 1.4:10.5; 3.0:6.5. T1 with numerous longitudinal carinae. T2 striated in basal foveae to 0.4 length of tergite, medially to 0.3, smooth except for microsculpture along narrow hind margin. T3-T5 each with a row of rather strong punctures, finer on T6: 8 on T3, 10 on T4, 6 on each of T5-T6. Apical tergites with traces of microsculpture, strongest on T6.

♂. Body length 0.95 mm. Length:width A1-A10 = 10.5:2.2; 3.0:1.8; 1.4:1.7; 3.0:2.2; 2.6:1.9; 2.6:1.9; 2.8:1.9; 2.8:1.8; 2.8:1.8; 5.0:1.8. A4 distinctly widened near apex. Flagellar pubescence about 0.6 width of segments. Metasoma about 0.8 times as long as rest of body.

Differential diagnosis. Fore wing characteristically broad, hardly 2.2 times as long as wide, as in *P. latiptera* Buhl, 2010, but that species has head 2.5 times as wide as long, antennae less slender and scutellum more convex than *P. magnussoni*. Also *P. jutlandica* Buhl, 2006 has wings broad, but occiput rather strongly transversely striated, A4 less than half as wide as A9, and T5 with 12 punctures. *P. magnussoni* differs from *P. ungeri* Buhl, 1999 in having broad wings and in having striae antero-medially on T2. *P. punctiventris* Buhl, 2006 has slightly less slender antennae, more convex scutellum, more elongate wings, and more punctures on apical tergites than *P. magnussoni*.

Etymology. Named in honour of the collector, Pelle Magnusson at the Swedish Malaise Trap Project.

Distribution. Southeast Sweden.

Platygaster mantoides sp. nov.

(Figs. 3-4)

Material examined. Holotype ♀: Latvia, Sarmas 10 km N of Iecava, 27.viii.2010, P.N. Buhl leg. (ZMUC).

Diagnosis. Head 2.2 times as wide as long, occiput finely and densely striated, OOL about 0.8 LOL, frons in lower two-thirds finely fan-like striated; female A9 as wide as long; notauli visible in posterior one-third; scutellum smooth, slightly higher than mesoscutum; female metasoma shorter than rest; T2 distinctly striated to 0.6, medially to 0.3.

Description. ♀. Body length 1.05 mm. Black; antennae, mandibles, tegulae, coxae and legs dark brown; basal third of A1, most of A2-A3, mandibles distally, trochanters, base and apex of fore tibiae, basal 0.6 of mid and hind tibiae, and segments 1-4 of all tarsi light brownish.

Head from above 2.2 times as wide as long, fully 1.1 times as wide as mesosoma; occiput rounded, finely and densely half-circularly striated all over; vertex laterally reticulate-coriaceous, between ocelli with faint transverse sculpture; frons in upper third almost smooth, below finely fan-like striated out from a midline. OOL:POL:LOL = 2.5:6.5:3.0. Eyes virtually bare. Head in frontal view 1.3 times as wide as high. Antenna (Fig. 3) with A1 shorter than height of head (13:16), hardly noticeable longer than distance between inner orbits. Length:width A1-A10 = 13.0:2.5; 3.5:1.5; 1.0:1.0; 2.0:1.1; 1.7:1.2; 2.2:2.0; 2.8:2.5; 2.8:2.8; 2.7:2.7; 4.1:2.2. Flagellar pubescence short.

Mesosoma 1.4 times as long as wide, 1.1 times as high as wide. Sides of pronotum finely longitudinally reticulate-coriaceous, smooth along wide upper and hind margins. Mesoscutum with a few hairs along margins and imaginary notaulic courses; mid lobe weakly reticulate-coriaceous, lateral lobes smooth except along outer and anterior margins; notauli indicated in about posterior third of their courses; mid lobe posteriorly wide, very slightly prolonged to base of scutellum; scuto-scutellar grooves of moderate size, each with about five fine hairs. Mesopleuron smooth. Scutellum (Fig. 4) evenly rounded, smooth, sparsely hairy, slightly above level of mesoscutum. Metapleuron with adpressed pilosity all over. Propodeal carinae short, parallel; area between them smooth, almost twice as wide as long.

Fore wing 2.4 times as long as wide, surpassing tip of metasoma by a distance equal to combined length of T3-T6, clear, with fine and moderately dense microtrichia; marginal cilia 0.1 width of wing. Hind wing 6.1 times as long as wide, with two hamuli; marginal cilia one-third the width of wing.

Metasoma 0.85 as long as rest of body, 1.9 times as long as wide, hardly 0.9 times as wide as mesosoma. Length:width T1-T6 = 4.5:8.0; 16.0:15.5; 1.5:14.5; 1.8:13.0; 2.0:10.8; 3.0:6.0. T1 with numerous longitudinal carinae. T2 in basal foveae distinctly striated to 0.6 length of tergite, medially to 0.3 of length, otherwise smooth. T3-T6 smooth, each with 6-8 moderately strong punctures with hairs.

Differential diagnosis. The similar *P. manto* Walker, 1835 has OOL > LOL, smooth frons, basal flagellar segments wider, propodeal carinae diverging, and T2 striated to one-third.

The new species is also rather similar to *P. magnussoni* sp. nov., but that species has also OOL > LOL, more slender antennae, longer notauli, and less elongate wings, cf. also above.

Etymology. The name refers to the general similarity to *P. manto*.

Distribution. Central Latvia.

Platygaster obesicornis sp. nov.

(Figs. 5-6)

Material examined. Holotype ♀: Togo, Région des Plateaux, Akloa, at creek Domi coming from the Cascades d'Akloa (7°30'46" N, 0°36'36" E), 280 m, plantation (cocoa, avocado), 22.iv.2008, M. v. Tschirnhaus leg. (ZMUC).

Diagnosis. Head with hyperoccipital carina, transversely striated behind, striae becoming vertical laterally; no female flagellar segment except the apical one more than 1.2 as long as wide, A7-A8 transverse, A9 hardly longer than wide; notauli incomplete; scutellum low and smooth; wings with dense microtrichia; female metasoma 0.9 as long as rest; T2 weakly striated to 0.5, medially to half of that.

Description. ♀. Body length 1.0 mm. Blackish; fore legs, basal half of mid and hind tibiae, and segments 1-4 of all tarsi yellowish brown; antennae, mandibles, tegulae and rest of legs medium brown.

Head from above 2.1 times as wide as long, nearly 1.4 times (22:16) as wide as mesosoma; occiput distinctly striated, postero-medially smooth, striae laterally vertical/longitudinal; hyperoccipital carina distinct but low; vertex with a few short transverse striae postero-medially, otherwise finely reticulate-coriaceous (not transversely so); frons in about upper 0.4 faintly reticulate, with a weak longitudinal line below anterior ocellus, frons below obliquely, finely reticulate-striate. OOL:POL:LOL = 3.0:6.0:2.5. Head in frontal view almost 1.5 times (22:15) as wide as high. Antenna (Fig. 5) with A1 0.85 as long as height of head, 0.9 as long as distance between inner orbits. Length:width A1-A10 = 12.5:2.7; 3.1:1.9; 1.1:1.5; 2.1:2.0; 2.0:1.7; 2.3:2.3; 2.4:3.0; 2.6:3.0; 2.8:2.7; 4.5:2.7.

Mesosoma about 1.4 times (23:16) as long as wide, 1.2 times as high as wide. Sides of pronotum smooth, with scattered hairs in upper third and along hind margin. Mesoscutum smooth, with few hairs, most of them along inner side of (imaginary) notaulic courses and along outer margin of lateral lobes; notauli weak, incomplete, fading out anteriorly; mid lobe slightly and somewhat bluntly prolonged over extreme base of scutellum; scuto-scutellar grooves moderately wide, each with 4-5 long hairs. Mesopleuron smooth. Scutellum (Fig. 6) at level of mesoscutum, evenly convex, smooth, weakly leathery towards sides, with sparse hairs. Metapleuron with pilosity all over. Propodeal carinae short, slightly diverging; area between them distinctly transverse.

Fore wing 2.4 times as long as wide, 0.8 times as long as entire body, surpassing tip of metasoma by a distance equal to length of T4-T6, almost clear, with dense and moderately fine microtrichia; marginal cilia 0.06 width of wing. Hind wing 5.0 times as long as wide, with two hamuli; marginal cilia 0.25 width of wing.

Metasoma 0.9 times as long as rest of body, 1.9 times as long as wide, narrower than mesosoma (15:16). Length:width T1-T6 = 4.5:7.0; 15.0:15.0; 2.0:14.5; 2.0:12.5; 1.8:10.0; 2.2:6.0. T1 with numerous fine longitudinal carinae. T2 weakly striated in basal foveae to half of

length, faint striation between foveae hardly half as long, rest smooth; T3-T6 almost smooth. T3-T5 each with a transverse row of hairs in deep punctures: 8 on T3, 12 on each of T4 and T5. T6 with 10 hairs.

Differential diagnosis. The identification runs to *P. terco* Sundholm, 1970 in Buhl's (2011a) key, but that species has OOL less than half as long as LOL, more slender antennae, and less striated T2. *P. obesicornis* is similar to *P. hedegaardi* Buhl, 2021, but with lower scutellum, dense microtrichia on fore wings and shorter metasoma. *P. obesicornis* differs from *P. liga* Buhl, 2014 e.g. in having hyperoccipital carina and wider A4, and from *P. nigeriana* Buhl, 2004 e.g. in having head relatively wider, more regularly sculptured behind, and in having notauli.

Etymology. The name refers to the characteristically thick antennae.

Distribution. South Togo.

***Platygaster schwarzwaldensis* sp. nov.**

(Figs. 7-8)

Material examined. Holotype ♀: Germany, Baden-Württemberg, Schwarzwald Belchen (8112SE), 1255 m, 28.v.-12.xi.2003, Malaise trap, D. Doczkal leg. (ZMUC). Paratype: 1 ♀ same data as holotype (ZMUC).

Diagnosis. A medium sized species with only three transverse carinae on occiput; female antenna with three preapical segments each hardly more than 1.1 time as long as wide; notauli missing in anterior 0.4; scutellum distinctly convex, mostly smooth; area between propodeal carinae with only two small crenulae anteriorly; female metasoma about as long as rest; T2 striated to 0.5, medially to 0.2; body appendages preponderantly lightly coloured.

Description. ♀. Body length 1.5-1.7 mm. Black; A1-A5, mandibles, tegulae, coxae and legs medium to light reddish brown, A2-A5, tibiae and tarsi lightest. A6-A10 and last segment of tarsi dark brown.

Head from above 1.85 times as wide as long, 1.1 times as wide as mesosoma, finely pustulated, behind ocellar area rounded, with three transverse carinae, on frons with a smooth longitudinal midline and fan-like elements indicated. OOL:POL:LOL = 4.5:8.0:3.0. Eyes with a few inconspicuous hairs. Head in frontal view 1.2 times as wide as high. Antenna (Fig. 7) with A1 0.9 times as long as height of head, 1.15 times as long as distance between inner orbits. Length:width A1-A10 = 19.5:3.0; 5.1:2.1; 2.0:1.9; 3.0:2.0; 3.2:2.0; 3.0:2.6; 3.4:3.0; 3.4:3.0; 3.4:3.0; 5.0:2.9. Flagellar pubescence short.

Mesosoma 1.5 times as long as wide, 1.1 times as high as wide. Sides of pronotum finely reticulate (not longitudinally so), smooth along narrow upper and hind margins, with slightly more than 20 hairs in upper half and along hind margin. Mesoscutum with sparse, scattered hairs (bare on most of mid lobe), almost evenly finely reticulate-coriaceous; admedian lines weakly indicated in anterior 0.4; notauli fine but distinct, missing in anterior 0.4 of their courses; mid lobe rather narrow behind but not finely pointed, very slightly prolonged to base of scutellum; scuto-scutellar grooves of moderate size, each covered by about seven fine hairs. Mesopleuron smooth. Scutellum (Fig. 8) above level of mesoscutum, evenly convex, rather densely haired, smooth but somewhat roughened (hair-sockets slightly raised) in anterior half towards sides. Metapleuron with pilosity all over. Propodeal carinae short, slightly diverging; area between them smooth, in anterior part with two small crenulae.

Fore wing 2.7 times as long as wide, about 0.8 times as long as entire body, surpassing tip of metasoma by a distance equal to length of T5 and T6 plus half of T4, clear, with dense and rather long microtrichia; marginal cilia 0.09 width of wing. Hind wing 5.4 times as long as wide, with two hamuli; marginal cilia 0.25 width of wing.

Metasoma hardly longer than rest of body (52:50), 1.75 times as long as wide, 2.2 times as wide as high, 1.3 times as wide as mesosoma (in paratype only 1.15 times as wide as mesosoma). Length: width T1-T6 = 7.0:14.5; 27.0:30.0; 4.5:29.0; 4.2:24.0; 5.3:19.0; 6.5:11.0. T1 with six longitudinal carinae on a slightly raised central area, on each side of this with three slightly weaker longitudinal carinae. T2 with a few hairs in the two basal foveae, these weakly striated to half length of tergite, between them with some weak striae to about 0.2 length of tergite, rest of tergite smooth. T3-T6 almost smooth (T4-T5 with faint traces of reticulation, T6 reticulate at extreme base), with shallow punctures, forming a transverse row on each of T3-T5: 8 on T3, 10 on T4, 12 on T5, 10 on T6.

Differential diagnosis. Similar to *P. abia* Walker, 1835 and *P. lysicles* Walker, 1835, but with more transverse head sculpture and incomplete notauli. *P. abia* also has only A1-A4 lighter than rest of antennae, propodeal carinae long, T1 about 1.5 times as wide as long, and T2 with only some short striae antero-medially. *P. lysicles* also has carinae between propodeal carinae forming a turned M. Cf. Vlug (1985).

Etymology. Named after the type locality.

Distribution. Southwest Germany.

Platygaster selonica sp. nov.

(Figs. 9-11)

Material examined. Holotype ♀: Latvia, Jekabpils, 1 km S of Brodi, 12.v.-23.vi.2007, Malaise trap, P.N. Buhl leg. (ZMUC).

Diagnosis. Occiput in posterior half longitudinally striated; frons transversely striated, strongly so in lower half; female A9 about 1.1 times as long as wide; notauli complete; female metasoma 1.5 times as long as rest, moderately constricted behind T2; T1 with two strong carinae; T2 striated to 0.85, medially to 0.5; T3 smooth and with very few hairs, T4-T5 with weak sculpture, T5-T6 elongate.

Description. ♀. Body length 2.1 mm. Black, antennae dark brown, A2-A3 slightly lighter; mandibles, tegulae and legs including coxae dark brown; fore femora towards apex, entire fore tibiae, base of mid and hind tibiae, and segments 1-4 of all tarsi light brown.

Head from above 1.85 times as wide as long, 1.2 times as wide as mesosoma; occiput rounded, in posterior half longitudinally striated, with a few weak transverse striae in front of this; anterior part of occiput pustulated with some short transverse carinae medially; vertex pustulated; frons in upper half pustulated and with weak transverse striation out from a fine longitudinal midline, in lower half strongly transversely striated over entire width. OOL:POL:LOL = 4.0:8.0:3.5. Eyes bare. Head in frontal view 1.3 times as wide as high. Antenna (Fig. 9) with A1 0.7 as long as height of head, shorter than distance between inner orbits (15:17). Length:width A1-A10 = 15.0:3.0; 4.0:2.2; 1.8:2.0; 3.2:3.0; 3.2:2.6; 3.8:3.0; 3.8:3.0; 3.5:3.0; 3.7:3.3; 5.5:3.1. Flagellar pubescence short.

Mesosoma 1.55 times as long as wide, 1.15 times as high as wide. Sides of pronotum strongly longitudinally striated mixed with pustules. Mesoscutum with very few hairs, pustulated, lateral lobes on outer half with smooth oblique striation; anterior admedian lines smooth, reaching 0.4 length of disc; notauli complete and deep, posteriorly meeting in a fine point nearly touching base of scutellum; scuto-scutellar grooves each with only three inconspicuous hairs. Mesopleuron with distinct longitudinal striation in about upper third, smooth below. Scutellum (Fig. 10) at level of mesoscutum, finely dull pustulated, almost bare, slightly unevenly convex. Metapleuron with pilosity all over. Propodeal carinae parallel; area between them almost smooth, about as long as wide.

Fore wing 2.7 times as long as wide, reaching base of T6, clear, with fine and dense microtrichia; marginal cilia 0.06 width of wing. Hind wing 5.25 times as long as wide, with two hamuli; marginal cilia one-sixth the width of wing.

Metasoma (Fig. 11) 1.5 times as long as rest of body, 3.6 times as long as wide, about 0.9 as wide as mesosoma. Length:width T1-T6 = 6.5:12.0; 27.0:21.0; 8.0:19.0; 11.0:13.5; 12.0:9.0; 10.5:7.0. T1 with two strong longitudinal carinae, area between them in anterior half with three weak longitudinal carinae, in posterior half slightly elevated and smooth. T2 striated in basal foveae to 0.85 length of tergite, medially distinctly striated to about half of length, but very finely so as long as laterally, hind margin nearly smooth. T3 and T6 virtually smooth, T4 with very faint microsculpture in about posterior half, T5 with weak longitudinal rugosity in slightly more than posterior half. T3 with very few hairs, about 10 on T4, 18 on each of T5-T6. Apical tergites convex, T5 at midlength 1.3 times as wide as high. Sternite 2 without a hump anteriorly.

Differential diagnosis. Approaching *P. rugosiceps* Buhl, 1994 (not recorded from Latvia) in the head sculpture, but with shorter transverse striation behind eyes and stronger longitudinal striation along hind part of occiput. *P. rugosiceps* also has head and mesosoma of equal width, antenna with A4 and apical segments relatively less widened, and propodeal carinae diverging. T1 of *P. rugosiceps* is entirely crenulated, with short and dense hairs along sides, T2 striated between basal foveae to fully 0.6 of length, as long as in basal foveae, T3 has a transverse row of rather deep punctures, and metasoma is more constricted behind (e.g. T5 apically less than one-third as wide as T2 in *P. rugosiceps*, more than one-third in *P. selonica*).

Etymology. Named after the region, Selonia (Latvian: Sēlija), with the type locality.

Distribution. Southeast Latvia.

***Platygaster subborealis* sp. nov.**

(Figs. 12-14)

Material examined. Holotype ♀: Sweden, AC, Sorsele kommun, Ammarnäs, Vindelfjällens naturreservat, Tjulträsklaspen (65°58.007 N, 16°03.630 E), alpine birch wood, 15.-26.vii.2004, Swedish Malaise Trap Project leg. (SMNH). Paratype: 1 ♀: Sweden, Sö, Haninge kommun, Tyresta, Urskogsslingan (59°10.554 N, 18°14.855" E), Norway spruce wood with blueberry, 21.vii.-4.viii.2003, Swedish Malaise Trap Project leg. (SMNH).

Diagnosis. A large species (about 2 mm) with head uniformly sculptured except for wrinkles medially on occiput and above antennae; female A3 hardly longer than wide and less than half as long as A4 which is 1.8 times as long as wide, A8-A9 each 1.3 times as long as wide; sides of pronotum in lower half with punctures and weak wrinkling; notauli complete; mesopleuron striated medially in upper half; scutellum sculptured and distinctly convex; hind wing with three

hamuli; female metasoma 1.2-1.3 as long as rest; T2 striated in and between basal foveae to 0.8; T6 only 1.3 times as wide as long.

Description. ♀. Body length 2.0-2.1 mm. Black, coxae hardly lighter; antennae, mandibles, tegulae and legs dark brown; apical half of fore femora, entire fore tibiae, and segments 1-4 of fore tarsi light brown; apical third of mid and hind tibiae, and segments 1-4 of hind tarsi dark reddish brown.

Head from above 1.6 times as wide as long, as wide as mesosoma, almost uniformly reticulate-coriaceous (with small, not transverse meshes), with fine transverse wrinkles medially on occiput and just above antennal insertions; occiput broadly rounded. OOL about one and a third times as long as diameter of lateral ocellus; OOL:POL:LOL = 3.8:9.5:4.5. Eyes bare. Head in frontal view slightly wider than high (27:24). Antenna (Fig. 12) with A1 shorter than height of head (22:24), 1.2 times as long as distance between inner orbits. Length:width A1-A10 = 22.0:4.0; 5.7:2.3; 2.2:2.0; 5.0:2.8; 4.0:2.7; 3.8:2.8; 4.0:3.2; 4.0:3.1; 4.0:3.1; 5.0:2.8. Flagellar pubescence short.

Mesosoma 1.55 times as long as wide, 1.1 times as high as wide. Sides of pronotum dull in about upper half, finely reticulate-coriaceous as head, below shiny, with weak longitudinal wrinkles and about 15 raised hair-sockets. Mesoscutum with only a few hairs along margins and notauli, finely reticulate-coriaceous as head, with two smooth admedian lines in slightly more than anterior third; notauli deep and complete, almost meeting in a rather fine point not reaching base of scutellum; scuto-scutellar grooves rather wide, each with only about five fine hairs. Mesopleuron with distinct longitudinal striation on mid part of upper half, rest smooth. Scutellum (Fig. 13) sculptured almost as mesoscutum, moderately hairy, distinctly convex. Metapleuron with long, adpressed whitish pilosity all over. Propodeal carinae dark, parallel; area between them slightly longer than wide, smooth and shiny.

Fore wing 0.9 times as long as body, surpassing tip of metasoma by a distance equal to combined length of T4-T6, 2.8 times as long as wide, faintly infuscated, with dense and rather long microtrichia; marginal cilia 0.08 width of wing. Hind wing 5.6 times as long as wide, with three hamuli; marginal cilia 0.25 width of wing.

Metasoma (Fig. 14) 1.2-1.3 times as long as rest of body, 2.4 times as long as wide, slightly wider than mesosoma (28:27). Length:width T1-T6 = 8.0:13.0; 34.0:28.0; 5.0:27.0; 6.0:23.0; 6.5:17.0; 8.0:10.5. T1 with numerous uniform longitudinal carinae. T2 striated in and between basal foveae to about 0.8 length of tergite, striae fade out posteriorly, hind one-sixth of tergite only with faint reticulation. Apical tergites also faintly reticulate, strongest on T6. T3-T5 with hairs in shallow punctures: two on each side of T3, a total of 12 in a transverse row on T4; T5-T6 each with about 16 more scattered hairs, punctures deeper on T6.

Differential diagnosis. The similar *P. viklundi* Buhl, 2009 has frons partly striated, preapical antennal segments 1.8-1.9 times as long as wide, four hamuli on each hind wing, and metasoma shorter than in *P. subborealis*. *P. otanes* Walker, 1835 has head more uniformly sculptured, sides of pronotum striated in lower half, and metasoma shorter than in *P. subborealis*. *P. subborealis* runs to "*Polygnotus*" *quadrifarius* Kieffer, 1916 in Kieffer's (1926) key, but *P. quadrifarius* has A3-A4 more slender, hind wing with four hamuli, and T6 much wider than long. *Polygnotus striolatus* (Nees ab Esenbeck, 1834) sensu Kieffer has apical tergite pointed as in *Platygaster subborealis*, but head striated above antennal insertions, mesopleuron smooth, and T2 striated to only half of length. *P. vulgaris* Buhl, 1998 has head more unevenly sculptured, mesosoma not

higher than wide, mid lobe blunt posteriorly, mesopleuron striated in upper half along hind margin, scutellum less convex, and metasoma when extruded longer than in *P. subborealis*.

Etymology. The name refers to the rather northern type locality for this species.

Distribution. Central to North Sweden.

***Synopeas alvarense* sp. nov.**

(Figs. 15-16)

Material examined. Holotype ♀: Sweden, Öland, Karums Alvar (56°46'28.1'' N, 16°37'30.6'' E), 3.vii.2014, C. Hansson leg. (MZLU).

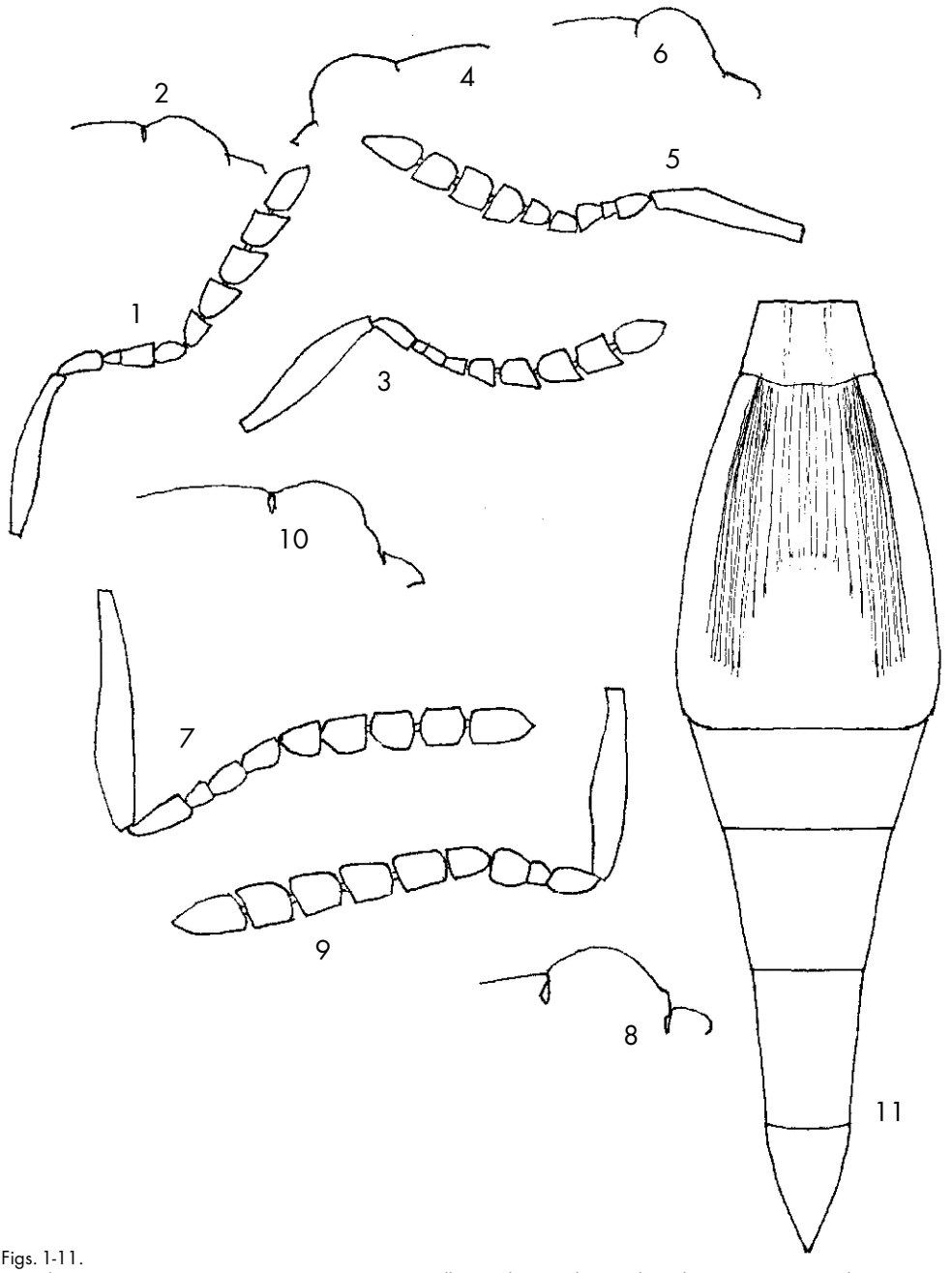
Diagnosis. A small species with head 1.6 times as wide as long, hyperoccipital carina present; female A9 1.5 times as wide as long; notauli absent; mesopleuron smooth; scutellum with a thin spine, half as long as propodeum; marginal cilia of fore wing very short; female metasoma 0.9 as long as rest, 1.5 times as wide as high; femora dark, tibiae lighter.

Description. ♀. Body length 0.9 mm. Black, tegulae hardly lighter; A1-A6 light reddish brown, apical half of A1 slightly darkened, A7-A10 dark brown; mandibles, coxae and all femora dark reddish brown, rest of legs light brownish except last segment of tarsi, and mid and hind tibiae slightly darkened towards apex. Head from above 1.6 times as wide as long, 1.1 times as wide as mesosoma, finely reticulate-coriaceous, slightly transversely so on occiput, just above antennal insertions finely transversely striated. Hyperoccipital carina weak but complete. OOL:POL:LOL = 1.0:7.0:3.5. Head in frontal view 1.15 times as wide as high. Antenna (Fig. 15) with A1 shorter than height (11:13) of head, 1.15 times as long as distance between inner orbits. Length:width A1-A10 = 11.0:2.0; 3.0:1.6; 1.3:1.0; 1.7:1.0; 1.2:1.1; 1.0:1.0; 2.0:2.0; 1.8:2.3; 1.7:2.5; 2.7:2.0. Flagellar pubescence short but distinct.

Mesosoma 1.6 times as long as wide, 1.1 times as high as wide. Sides of pronotum in upper half weakly reticulate and with sparse hairs, in lower half smooth. Mesoscutum sparsely and rather evenly hairy, finely reticulate-coriaceous, smooth postero-medially, without notauli; hind margin medially with a small prolongation to base of scutellum; scuto-scutellar grooves with dense hairs. Mesopleuron smooth. Scutellum (Fig. 16) smooth and bare antero-medially, rest with rather dense hairs; spine thin, dark brown, about half as long as propodeum; scutellum below spine vertical, with a narrow translucent margin. Metapleuron smooth, almost bare in about anterior half, behind with moderately dense white pilosity. Propodeal carinae low, dark brown, fused.

Fore wing 2.5 times as long as wide, 0.9 as long as entire body, surpassing tip of metasoma by a distance equal to about twice combined length of T3-T6, almost clear, with fine and dense microtrichia; marginal cilia 0.02 width of wing (hardly perceptible). Hind wing 5.1 times as long as wide; marginal cilia half as long as width of wing.

Metasoma 0.9 times as long as rest of body, longer than mesosoma (24:21), 1.6 times as long as wide, 1.5 times as wide as high, 1.1 times as wide as mesosoma. T1-T2 combined 1.25 times as long as wide, 3.4 times as long as T3-T6 combined. Pubescence at base of metasoma separated medially, T1 here with a central longitudinal carina, pubescence reaching almost 0.3 length of T1-T2. T2 smooth, T3-T5 with faint traces of reticulation; T6 weakly reticulate all over, 2.7 times as wide as long.



Figs. 1-11.
1-2: *Platygaster magnussoni* sp. nov. ♀, antenna (1), scutellum, with propodeum to the right (2); 3-4: *P. mantoides* sp. nov. ♀, antenna (3), scutellum, with propodeum to the left (4); 5-6: *P. obesicornis* sp. nov. ♀, antenna (5), scutellum, with propodeum to the right (6); 7-8: *P. schwarzwaldensis* sp. nov. ♀, antenna (7), scutellum, with propodeum to the right (8); 9-11: *P. selonica* sp. nov. ♀, antenna (9), scutellum, with propodeum to the right (10), metasoma (11).

Differential diagnosis. The similar *S. breve* Buhl, 1998 has head 1.9 times as wide as long, strong hyperoccipital carina, longer flagellar pubescence, sides of pronotum reticulate except along hind margin, metapleuron only bare along anterior margin, metasoma neither longer nor wider than mesosoma, and legs lighter. The somewhat similar species *S. stigenbergae* Buhl, 2013 has head slightly more transverse than *S. alvarense*, not wider than high in frontal view, with a strong hyperoccipital carina, OOL about half as long as LOL, and female metasoma twice as long as wide, 1.3 times as wide as high. *S. fanoeense* Buhl, 2010 has A1 0.95 as long as height of head, A9 only 1.2 times as wide as long, sides of pronotum distinctly reticulate-coriaceous all over, upper edge of scutellum in lateral view slightly concave, and tooth shorter, mesopleuron with longitudinal rugosity in upper 0.2, metasoma only 0.75 as long as rest of body, and darker legs than *S. alvarense*.

Etymology. Named after the type locality.

Distribution. The island of Öland, Southeast Sweden.

***Synopeas angustum* sp. nov.**

(Figs. 17-18)

Material examined. Holotype ♀: Togo, Région des Plateaux: N of Kessibo-Wawa, at the border to Ghana (N of Badou), at river Wawa (7°42'11" N, 0°35'26" E), 180 m, 24.iv.2008, M. v. Tschirnhaus leg. (ZMUC).

Diagnosis. A very small species with a generally reticulate head, weakly indicated hyperoccipital carina, OOL 0.75 as long as LOL; female A4-A5 of equal length, A9 1.1 times as wide as long; notauli visible in posterior half; scutellum with a small tooth; female metasoma hardly as long as rest, but finely pointed (T6 elongate) and somewhat downcurved apically, about 1.3 times as wide as high.

Description. ♀. Body length 0.65 mm. Dark brown; A1-A6, mandibles and legs including coxae more or less light brown, apical half of hind tibiae darkest.

Head from above 1.65 times as wide as long, 1.25 times as wide as mesosoma, reticulate (not transversely so), meshes smallest on vertex, smoothest on frons; hyperoccipital carina only weakly indicated medially. OOL longer than ocellar diameter. OOL:POL:LOL = 1.5:4.0:2.0. Head in frontal view 1.1 times as wide as high. Antenna with A1 two-thirds as long as height of head, also shorter than distance between inner orbits (7:8). Length:width A1-A10 = 7.0:1.6; 2.5:1.2; 0.8:0.9; 1.2:0.8; 1.2:1.0; 0.9:1.0; 1.2:1.9; 1.7:1.9; 1.7:1.9; 2.5:2.0.

Mesosoma 1.45 times as long as wide, 1.15 times as high as wide. Sides of pronotum smooth, in upper 0.4 with hairs. Mesoscutum almost smooth, with scattered hairs; notauli reaching about half of length; mid lobe reaching scutellum in a fine point; scuto-scutellar grooves with very few hairs. Mesopleuron smooth. Scutellum (Fig. 17) almost smooth, with denser hairs than mesoscutum, behind with a tiny light brown tooth. Metapleuron smooth, with white pilae in four longitudinal rows, only with dense pilae along hind margin. Propodeal carinae short, dark, close together.

Fore wing clear, 2.7 times as long as wide, 0.8 times as long as entire body, with fine and rather sparse microtrichia, slightly surpassing tip of metasoma, without marginal cilia. Hind wing with marginal cilia about half the width of wing.

Metasoma (Fig. 18) 0.95 as long as rest of body, 2.25 times as long as wide, narrower than

mesosoma (about 8:9), one and a third times as wide as high, narrowed in straight lines behind T2. Pubescence at base reaching only 0.2 combined length of T1-T2. Length:width (T1-T2)-T6 = 9.5:8.2; 1.2:7.0; 1.5:6.0; 2.0:4.8; 4.0:3.4. T2-T6 smooth, apical tergites with very few, fine hairs.

Differential diagnosis. Among Afrotropical species, the new species is most similar to *S. gnom* Buhl, 2011, but that species is larger, 0.9 mm, with fan-like sculpture in lower half of frons, relatively shorter A5 and wider A9, has dense microtrichia on fore wings, and wider metasoma. The Oriental *S. acutiventris* Buhl, 1997 and *S. montanum* Buhl, 1997 are larger (0.8-0.9 mm), with a stronger scutellar tooth and metasoma not downcurved towards apex (*acutiventris*) or hardly with tooth and an almost smooth frons (*montanum*). *S. lemkaminense* Buhl, 1997 has transverse sculpture on lower part of head and a shorter OOL, as well as A5 relatively shorter than in *S. angustum*.

Etymology. From Latin, referring to the small body size.

Distribution. South Togo.

Synopeas anjanae sp. nov.

(Figs. 19-20)

Material examined. Holotype ♀: Chile, south part of the country, 41°35.11'S - 41°34.40'S (Lago Chaiquen), 72°34.33W' - 72°33.05W' (Lago Chaiquen), Parque Nacional Alerce Andino, from campsite along Rio Chaicas stream up till Laguna Chaiquenes and Laguna Triangula, 13.-14.i.2006, M. v. Tschirnhaus leg. (ZMUC).

Diagnosis. A small species (hardly 1 mm) with female A4 one and a third times as long as A5, A9 1.25 times as long as wide; notauli almost complete; scutellar spine thin, 0.6 as long as propodeum; female metasoma slightly shorter than rest, 1.6 times as wide as high.

Description. ♀. Body length 0.9 mm. Blackish brown; antennae, mandibles, tegulae and legs medium brown, tibiae and tarsi slightly lighter than femora.

Head from above 2.1 times as wide as long, 1.15 times as wide as mesosoma, finely reticulate-coriaceous, on occiput transversely so, with transverse wrinkling just above antennal insertions; hyperoccipital carina weakly indicated medially. OOL slightly longer than diameter of lateral ocellus; OOL:POL:LOL = 1.5:7.0:3.0. Eyes bare. Head in frontal view 1.15 times as wide as high. Antenna with A1 0.8 times as long as height of head, as long as distance between inner orbits. Length:width A1-A10 = 10.0:1.8; 3.0:1.5; 1.4:0.8; 2.0:0.9; 1.5:1.0; 1.5:1.0; 2.1:1.5; 2.4:2.0; 2.5:2.0; 3.4:1.8. Flagellar pubescence short.

Mesosoma 1.5 times as long as wide, 1.05 times as high as wide. Sides of pronotum weakly coriaceous antero-medially, otherwise smooth, almost bare. Mesoscutum sparsely and weakly hairy, in anterior 0.4 and along notauli weakly reticulate-coriaceous, otherwise smooth; notauli distinct but not strong, fading out shortly before anterior margin, very slightly converging anteriorly, parallel posteriorly, widely separated; wide mid lobe posteriorly flat, broadly rounded to base of scutellum, lighter along margin; scuto-scutellar grooves small, each with about six inconspicuous hairs. Mesopleuron smooth. Scutellum (Fig. 19) smooth and bare on large mid area, along sides moderately hairy, in lateral view with a thin translucent spine which is 0.4 as long as anterior part of scutellum, 0.6 as long as propodeum, with a narrow vertical translucent lamella below its base. Metapleuron smooth, with sparse pilosity in posterior half. Propodeal

carinae low, widely diverging, anteriorly meeting.

Fore wing (somewhat creased on unique specimen) about 0.9 times as long as entire body, surpassing tip of metasoma by a distance slightly longer than combined length of T3-T6, almost 3 times as long as wide, faintly infuscated, with fine and dense microtrichia; marginal cilia very short. Hind wing with marginal cilia about half the width of wing.

Metasoma (Fig. 20) shorter than rest of body (25:27), 2.3 times as long as wide, 1.6 times as wide as high, 0.9 as wide as mesosoma. Length:width T1-T6 = 2.0:5.0; 14.0:11.0; 1.2:10.5; 1.5:9.5; 2.0:8.5; 4.0:6.5. All tergites smooth. T1 separated from T2, bare dorsally, with dense white pilosity standing out from sides, covering also anterior corners of T2. Apical tergites with few and very inconspicuous hairs.

Differential diagnosis. Runs to *S. panamaense* Buhl, 2002 in Buhl's (2011b) key, but that species has e.g. A9 transverse, longer scutellar spine, and metasoma only 1.1 times as wide as high. In habitus approaching *S. mabeyi* Buhl, 2011, but that species has A9 slightly transverse, lacks notauli and has fused propodeal carinae.

Etymology. Named in honour of Indian hymenopterist Anjana Gangadharan (Zoological Survey of India, Calicut).

Distribution. South Chile.

***Synopeas brevipubescens* sp. nov.**

(Figs. 21-22)

Material examined. Holotype ♀: Togo, Région des Plateaux: Plateau de Danyi, near Atigba (7°09'52" N, 0°41'33" E), 775 m, 14.iv.2008, M. v. Tschirnhaus leg. (ZMUC). Paratypes: 1 ♀, 1 ♂ same data as holotype (ZMUC).

Diagnosis. A very small species without hyperoccipital carina; female A4 about 1.2 times as long as A5, A9 1.5 times as wide as long; notauli visible in posterior half; scutellum with a short tooth, propodeum in profile one third as long as entire scutellum; fore wing hardly with marginal cilia; female metasoma hardly longer than mesosoma, 1.3 times as wide as high.

Description. ♀. Body length approx. 0.5 mm. Blackish, antennae and legs including coxae medium brown; A1-A6, trochanters, fore legs, basal half of mid and hind tibiae, and tarsal segments 1-4 light brown, tegulae dark brown.

Head from above 1.8 times as wide as long, 1.2 times as wide as mesosoma; occiput distinctly and transversely reticulate-coriaceous, vertex and frons more finely pustulated, mixed with weak transverse elements; head angled but without a distinct hyperoccipital carina. OOL very slightly longer than diameter of lateral ocellus; OOL:POL:LOL = 1:6:3. Head in frontal view 1.15 times as wide as high. Antenna with A1 0.85 times as long as height of head, 1.05 times as long as distance between inner orbits. Length:with A1-A10 = 8.0:1.8; 2.5:1.1; 0.9:0.7; 1.1:0.7; 0.9:0.9; 0.9:1.0; 1.0:1.3; 1.3:1.8; 1.3:2.0; 2.6:1.6. Flagellar pubescence very short.

Mesosoma 1.4 times as long as wide, 1.15 as high as wide. Sides of pronotum finely leathery and moderately hairy in slightly less than upper half, below smooth and bare. Mesoscutum finely leathery, sparsely and evenly hairy; notauli faintly indicated in posterior half; hind margin medially with a small, dark, transverse plate covering extreme base of scutellum, at each side with 4-5 long hairs. Mesopleuron smooth. Scutellum (Fig. 21) along middle slightly elevated, smooth

and almost bare, towards sides with denser hairs, posteriorly with a narrow, translucent light brown lamella ending in a tiny tooth in upper posterior corner. Metapleuron smooth and bare in anterior half, with adpressed white pilosity in posterior half. Propodeal carinae fused, rather high, translucent brown.

Fore wing 2.65 times as long as wide, about as long as body, faintly infuscated, with fine and dense microtrichia; marginal cilia hardly noticeable. Hind wing 6.75 times as long as wide; marginal cilia hardly half the width of wing.

Metasoma (Fig. 22) 0.75 times as long as rest of body, hardly 1.05 times as long as mesosoma, about as wide as this, 1.5 times as long as wide, 1.3 times as wide as high. Combined T1-T2 1.2 times as long as wide. T3-T6 combined 0.35 as long as T1-T2 combined. Basal pubescence reaching hardly 0.3 length of combined T1-T2 (3:11). T1 antero-medially smooth and almost bare. T2 smooth. T3-T6 slightly dull; T6 about as long as T3-T5 combined, fully twice as wide as long.

♂. Body length 0.6 mm. A4 widened, 1.33 times as long as wide, fully as wide as A2 and 0.7 as wide as this, antennae otherwise much as in female. Metasoma 0.6 times as long as rest of body, 0.8 as long as mesosoma.

Differential diagnosis. Resembling *S. watsoni* Buhl, 2014, which, however, has distinct hyperoccipital carina, A4-A5 of equal length, notauli absent, pubescence at base of metasoma 0.33 as long as T1-T2. *S. fibigeri* Buhl, 2011 has e.g. head in frontal view 1.25 times as wide as high, a distinct hyperoccipital carina, most antennal segments slightly more elongate than in *S. brevipubescens*, sides of pronotum smooth only in lower 0.3, a more convex scutellum with a stronger tooth, propodeum in profile one fourth as long as entire scutellum, and metapleuron with sparse pilosity in anterior half. *S. sundholmi* Buhl, 2005 is larger than *S. brevipubescens*, with no notauli and a higher scutellum.

Etymology. The name refers to the relatively short pubescent area at base of metasoma.

Distribution. South Togo.

Synopeas konvickai sp. nov.

(Figs. 23-24)

Material examined. Holotype ♀: Togo, Région des Plateaux: N of Kessibo-Wawa, at the border to Ghana (N of Badou), at river Wawa (7°42'11" N, 0°35'26" E), 180 m, 24.iv.2008, M. v. Tschirnhaus leg. (ZMUC).

Diagnosis. A small species with female A5 as long as A3-A4 combined, A9 hardly as long as wide; notauli incomplete; scutellum with a very small tooth, propodeum in profile about one-third as long as entire scutellum; female metasoma about as long as rest.

Description. ♀. Body length 0.75 mm. Blackish brown; A1-A6, mandibles and tibiae except distal half of hind tibiae more or less light brown; rest of antennae and legs as well as tegulae dark brown.

Head from above 1.9 times as wide as long, 1.3 times as wide as mesosoma, finely reticulate-coriaceous (not transversely so), meshes smallest on vertex, frons with a weak medial longitudinal impression; hyperoccipital carina weakly indicated. OOL about equal to diameter of lateral

ocellus; OOL:POL:LOL = 1:6:3. Head in frontal view 1.25 times as wide as high. Antenna (Fig. 23) with A1 0.8 times as long as height of head, hardly noticeable shorter than distance between inner orbits. Length:width A1-A10 = 9.8:1.9; 2.8:1.3; 1.0:1.0; 0.9:1.0; 1.9:1.1; 1.0:1.0; 1.9:1.9; 1.9:2.1; 2.0:2.1; 3.0:2.0. Flagellar pubescence very short.

Mesosoma 1.5 times as long as wide, 1.3 times as high as wide. Sides of pronotum reticulate (not longitudinally so) and hairy in upper half, smooth below, with hairs along entire hind margin. Mesoscutum finely reticulate-coriaceous, evenly and moderately densely hairy; notauli weakly indicated posteriorly, fading out before reaching anterior margin; mid lobe prolonged in a fine point to base of scutellum; scuto-scutellar grooves each with about five long hairs. Mesopleuron smooth. Scutellum (Fig. 24) along middle almost smooth and bare, slightly convex, towards sides densely hairy, posteriorly with a very small, weakly translucent tooth. Metapleuron with long white pilosity except along narrow anterior margin, smooth here. Propodeal carinae low, dark, very close together.

Fore wing 2.5 times as long as wide, slightly surpassing tip of metasoma, clear, with fine and dense microtrichia; marginal cilia absent.

Metasoma imperceptibly shorter than rest of body (22:23), 0.9 times as wide as mesosoma, 2.1 times as long as wide, 1.25 times as wide as high. Length:width (T1-T2)-T6 = 14.0:10.5; 1.6:9.0; 1.6:7.5; 1.6:6.0; 4.0:4.0. Pubescence at base of metasoma about 0.2 as long as T1-T2. T2 smooth, T3-T5 each with a transverse stripe of rugosity along hind margin; T6 with rugosity except anteriorly and posteriorly.

Differential diagnosis. Similar to *S. capense* Buhl, 2005 in relative long A5, but *S. capense* has A5 1.33 times as long as A3-A4 combined and distinctly wider than these; A6-A7 more similar in size; scutellar tooth stronger, propodeum in profile almost 0.45 as long as entire scutellum, metapleuron bare in anterior half, and metasoma more pointed behind.

Etymology. Named in honour of prominent Czech entomologist Martin Konvička.

Distribution. South Togo.

***Synopeas paludani* sp. nov.**

(Figs. 25-26)

Material examined. Holotype ♂: Thailand, Province Chiang Mai, Doi Ithanon National Park, near ranger station "Yak Mae Cham", near road junction, forest path, 11.iii.2003, M. v. Tschirnhaus leg. (ZMUC).

Diagnosis. A medium sized species with strong hyperoccipital carina, frons with strong transverse carinae all over, A1 without distinct lamella; notauli absent; mesoscutum postero-medially with a large, almost smooth, dark roundish prolongation, high above scutellum which has a strong spine almost reaching end of propodeum.

Description. ♂. Body length 1.5 mm. Black; A3-A10, mandibles, tegulae, coxae and trochanters hardly lighter; A1-A2 and legs medium light reddish-brown; apical half of hind femora and of hind tibiae, and last segment of all tarsi, darkened.

Head from above 2.15 times as wide as long, as wide as mesosoma; occiput finely and uniformly pustulated; hyperoccipital carina strong and complete; vertex with uneven, oblique and transverse carinae on a dull, finely pustulated background; frons with strong transverse carinae all

over on such a background, without cross carinae, except close to inner orbits. OOL as long as shorter diameter of lateral ocellus; OOL:POL:LOL = 1:5:2. Head in frontal view 1.3 times as wide as high. Antenna (Fig. 25) with A1 shorter than height of head (19:20), 1.25 times as long as distance between inner orbits. Length:width A1-A10 = 19.0:4.3; 4.0:2.0; 2.0:1.8; 5.8:2.2; 3.4:1.9; 5.8:1.9; 6.0:2.0; 6.0:2.0; 6.0:2.0; 7.5:1.8. Flagellar pubescence slightly more than half the width of segments.

Mesosoma 1.33 times as long as wide, 1.15 times as high as wide. Sides of pronotum finely dull leathery, in upper 0.4 with numerous raised hair-sockets. Mesoscutum finely dull leathery, densely hairy (hair-sockets not raised), without notauli; postero-medially with a large, almost smooth, dark roundish prolongation, high above scutellum, on each side with numerous long whitish hairs. Mesopleuron smooth except for a small dull area just below tegula. Scutellum (Fig. 26) dorsally with few hairs and almost smooth, laterally densely hairy, posteriorly with a strong, dark spine nearly reaching hind margin of propodeum. Metapleuron smooth in anterior half, here only with pilosity around middle, in posterior half with long and dense white pilosity. Propodeal carinae dark, fused except at posterior end, of moderate height.

Fore wing as long as entire body, 2.3 times as long as wide, almost clear, with fine and dense microtrichia; marginal cilia 0.03 width of wing. Hind wing 4.8 times as long as wide; marginal cilia 0.25 width of wing.

Metasoma 0.9 times as long as rest of body, 2.0 times as long as wide, 1.2 times as wide as high, 0.8 as wide as mesosoma. Combined T1-T2 1.5 times as long as wide, 3.2 times as long as apical tergites. Basal pilosity reaching 0.25 length of T1-T2. T1 with pilosity at each side, smooth between. T2 smooth, narrow hind margin as well as most of T3-T7 finely reticulate-coriaceous; apical tergites each with a transverse row of inconspicuous hairs.

Differential diagnosis. Similar to *S. vietnamianum* Buhl, 2009, but that species (only female known) has frons with a medial longitudinal carina and irregular transverse carinae forming large, uneven transverse cells; A1 with lamella towards apex; sides of pronotum smooth except in anterior half of upper third; hind margin of mesoscutum only very slightly protuberant; anterior part of scutellum not sloping; and tibiae lighter than femora. The Sri Lankan species *S. sheldrakei* Buhl, 2014, and *S. venakumarii* Buhl, 2014 have similar conformation of scutellum as *S. paludani*, but they are smaller and has head without extensive transverse sculpture.

Etymology. Named in honour of the Danish lawyer Rasmus Paludan (Rødkærsbro).

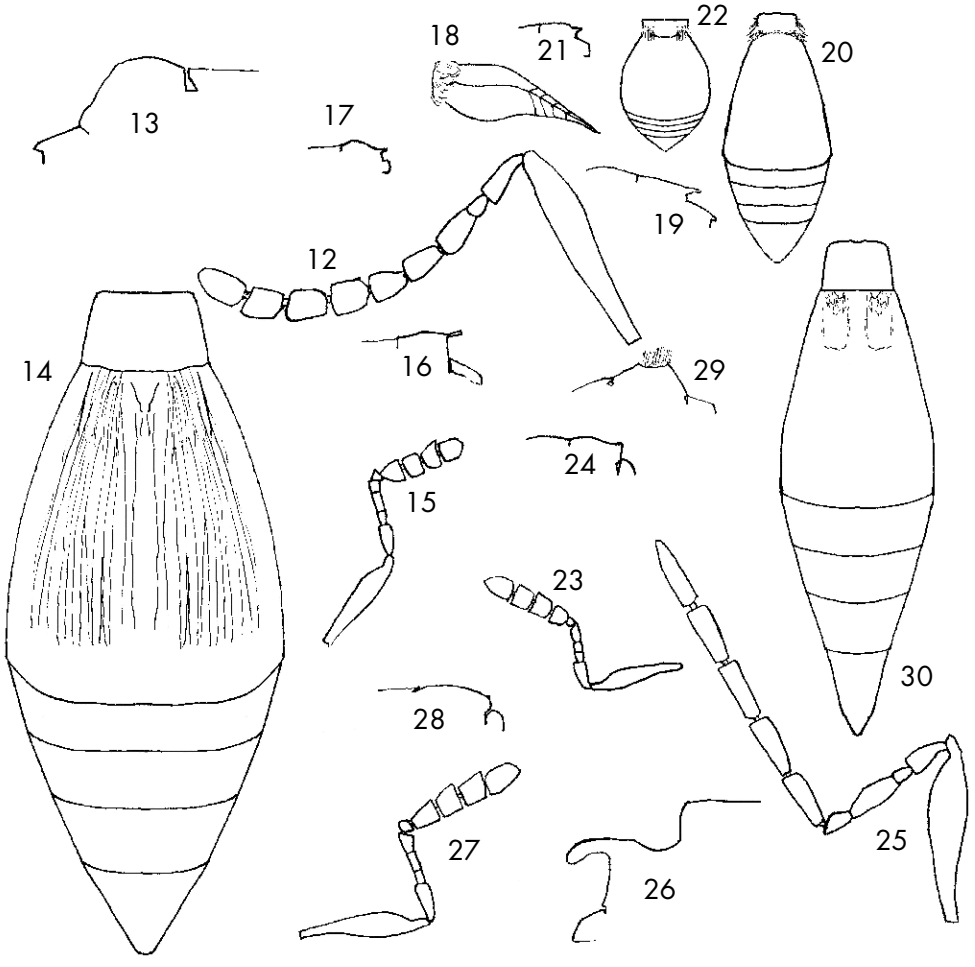
Distribution. Northwest Thailand.

Synopeas talamasi sp. nov.

(Figs. 27-28)

Material examined. Holotype ♀: Togo, Région des Plateaux: main road between Agbanon and Agoté, at creek Tomezuitoe (7°15'53" N, 0°47'51" E), 360 m, 15.iv.2008, M. v. Tschirnhaus (ZMUC). Paratypes: 3 ♀♀ same data as holotype (ZMUC).

Diagnosis. Around 1 mm; hyperoccipital carina present; female A5 as long as A4 and 1.5 times as wide as this; A9 as long as wide; notauli absent; scutellum only with a lamella behind; female metasoma shorter than rest of body, 1.33 times as wide as high.



Figs. 12-30.
12-14: *Platygaster subborealis* sp. nov. ♀, antenna (12), scutellum, with propodeum to the left (13), metasoma (14); 15-16: *Synopeas alvarense* sp. nov. ♀, antenna (15), scutellum, with propodeum to the right (16); 17-18: *S. angustum* sp. nov. ♀, scutellum, with propodeum to the right (17), metasoma lateral view (18); 19-20: *S. anjanae* sp. nov. ♀, scutellum, with propodeum to the right (19), metasoma (20); 21-22: *S. brevipubescens* sp. nov. ♀, scutellum, with propodeum to the right (21), metasoma (22); 23-24: *S. konvickai* sp. nov. ♀, antenna (23), scutellum, with propodeum to the right (24); 25-26: *S. paludani* sp. nov. ♂, antenna (25), scutellum, with propodeum to the left (26); 27-28: *S. talamasi* sp. nov. ♀, antenna (27), scutellum, with propodeum to the right (28); 29-30: *Trichacis verwiebeae* sp. nov. ♀, scutellum, with propodeum to the right (29), metasoma (30).

Description. ♀. Body length 0.8-1.0 mm. Black; A1-A6 and legs including coxae light brownish yellow, A7-A10 medium brown, mandibles and tegulae dark brownish.

Head from above 1.85 times as wide as long, 1.2 times as wide as mesosoma, uniformly pustulated, without transverse elements; hyperoccipital carina low but distinct and complete. OOL shorter than ocellar diameter; OOL:POL:LOL = 1.0:6.5:3.0. Head in frontal view hardly more than 1.1 times as wide as high, Antenna (Fig. 27) with A1 0.8 times as long as height of head,

longer than distance between inner orbits (13:11). Length:width A1-A10 = 13.0:2.5; 4.0:1.6; 1.4:1.0; 2.0:1.0; 2.0:1.5; 1.0:1.3; 2.8:2.4; 2.2:2.8; 2.8:2.8; 4.0:2.6. Flagellar pubescence very short.

Mesosoma 1.5 times as long as wide, 1.1 times as high as wide. Sides of pronotum faintly and finely reticulate (not longitudinally so), rather sparsely hairy over most of surface. Mesoscutum sculptured as head, though slightly smoother, evenly and moderately densely hairy, without notauli. Mesopleuron smooth. Scutellum (Fig. 28) at level of mesoscutum, almost flat, medially smooth and almost bare, towards sides more uneven and with denser hairs, posteriorly with a small translucent lamella. Metapleuron with long white pilosity all over. Propodeal carinae short, high, translucent, fused.

Fore wing 2.5 times as long as wide, 0.85 as long as entire body, surpassing tip of metasoma by a distance equal to length of T3-T6, almost clear, with fine and dense microtrichia, without marginal cilia. Hind wing 5.9 times as long as wide; marginal cilia 0.25 width of wing.

Metasoma 0.80-0.85 times as long as rest of body, 1.6 times as long as wide, 1.33 times as wide as high, fully as wide as mesosoma. Length:width (T1-T2)-T6 = 20.0:16.0; 1.3:14.5; 1.5:13.0; 1.5:11.0; 4.8:8.0. Pubescence at base strong, reaching nearly 0.3 length of T1-T2. T2-T5 smooth, with fine microsculpture along narrow hind margins, T6 with somewhat rough reticulate microsculpture all over.

Differential diagnosis. The new species is somewhat similar *S. bicolor* Sundholm, 1970 and *S. scharffi* Buhl, 2011 have A5 smaller (in *S. bicolor* also A8-A9 wider), and scutellum more evenly convex than in *S. talamasi*. *S. ambrense* Buhl, 2015 has A4 fully 1.4 as long as A5. *S. fulvimanus* Buhl, 2004 and *S. kovacsi* Buhl, 2004 have A5 smaller.

Etymology. Named in honour of the prominent hymenopterist Elijah Talamas (Gainesville).

Distribution. South Togo.

Trichacis verwiebeae sp. nov.

(Figs. 29-30)

Material examined. Holotype ♀: Mexico, National Park "Lagunas de Montebello", at border to Guatemala, near Comitan, swept in coniferous forest, at forest trail/car road, 9.iii.2002, Silvia Verwiebe leg. (ZMUC).

Diagnosis. Around 1.5 mm. Occiput reticulate-coriaceous laterally; hyperoccipital carina as wide as ocellar area; temple without projection; female A9 as long as wide; mesoscutum mostly smooth in posterior 0.7; scutellum moderately convex, with a rather small tuft; female metasoma 1.4 as long as rest; T1 1.6 times as long as wide; apical tergites combined slightly longer than T2.

Description. ♀. Body length 1.5 mm. Blackish; antennae, mandibles, tegulae, coxae and legs almost uniformly medium brown, except light brown fore legs.

Head from above 2.1 times as wide as long, 1.15 times as wide as mesosoma; occiput smooth medially behind ocellar area, laterally reticulate-coriaceous; hyperoccipital carina incomplete, as wide as ocellar area, not reaching imaginary line connecting inner eye margin and posterior cephalic margin; vertex smooth except for reticulation postero-laterally and along LOL. OOL:POL:LOL = 3.5:6.5:2.5. Frons smooth. Head in frontal view 1.3 times as wide as high. Antenna with A1 0.85 times as long as height of head, 1.05 times as long as distance between

inner orbits. Length:width A1- A10 = 14.0:2.7; 4.0:1.8; 2.9:1.5; 2.7:1.5; 2.0:1.5; 2.2:1.8; 2.5:2.2; 2.9:3.0; 3.0:3.0; 5.0:3.1.

Mesosoma 1.5 times as long as wide, higher than wide (19:18). Sides of pronotum faintly leathery, rather densely hairy and with three white pubescent patches: one near upper anterior corner, near upper hind corner, and near lower hind corner, respectively. Mesoscutum with few hairs, smooth except for reticulation in anterior 0.3 and along hind part of notauli, these strong but incomplete, absent in anterior reticulation; mid lobe posteriorly wide, medially slightly prolonged to base of scutellum; scuto-scutellar grooves each covered by about five long hairs. Mesopleuron smooth. Scutellum (Fig. 29) smooth, with sparse hairs towards sides and a dense but rather small whitish tuft of hairs. Metapleuron with pilosity all over. Propodeal carinae parallel, area between them about as long as wide.

Fore wing 2.9 times as long as wide, slightly surpassing tip of metasoma (to a distance equal to hardly half the length of T6), slightly infuscated, with fine and dense microtrichia; marginal cilia about 0.2 width of wing. Hind wing 6.4 times as long as wide; marginal cilia 0.4 width of wing.

Metasoma (Fig. 30) 1.4 times as long as rest of body, 3.1 times as long as wide, 0.9 as wide as mesosoma. Length:width T1-T6 = 5.0:8.0; 22.0:16.0; 5.0:15.5; 4.6:13.0; 5.0:9.5; 9.0:7.0. T1 with four longitudinal carinae, smooth between these, pubescent at each side. T2 smooth, with two basal foveae to 0.3 of length which are slightly pubescent basally. T3-T6 with micropunctation, T6 only basally. T3-T6 with hairs in shallow punctures: 6 on T3, 8 on T4, 10 on each of T5-T6.

Differential diagnosis. Runs to *T. depressa* Arias-Penna & Masner, 2012 in Arias-Penna et al. (2012), but *T. depressa* has T1 longer than wide, and it is at least 1.9 mm long. *T. ariaspennae* Buhl, 2011 has hyperoccipital carinae complete, LOL longer than OOL, A7-A9 each wider than long, and T1 only 1.2 as wide as long. In Masner's (1983) key to Nearctic species of *Trichacis*, *T. verwiebeae* runs to *T. celticola* Masner, 1983, but that species has occiput partly striated, and is larger.

Etymology. Named in honour of the collector, M. v. Tschirnhaus' technical assistant Ms. Silvia Verwiebe.

Distribution. South Mexico.

CONCLUSION

The taxonomy of Platygastrinae is generally still roughly 100 years behind that of well-known insect groups. That is, due to lack of collectors, workers and revisions of old descriptions, as well as the paucity of biological information, but also due to few diagnostic characters and large variation of the species themselves (many specimens from widely separate regions are virtually considerably similar). The species concepts developed using traditional methodology are often doubtful, and often only characteristic species (as most of those described above), which clearly differ from those known in the literature, can be described as new with an acceptable level of confidence. In a typical collection of platygastrids, most specimens have to be just stored for species determination "later". With the present amount of resources and students interested in the group, this situation will hardly improve in the foreseeable future. Whereas a lot of work has been done in later decades in related taxonomic groups, the level of alpha taxonomy in Platygastrinae has hardly been developed since Vlug (1983) gave his sombre status and called for a "travelling

curator" for the group. With the development of the Internet, an alternative technological solution is now possible, so it is regrettable that projects in that direction are in a standstill due to lack of funding.

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