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Taxonomical notes on Platygastriidae (Hymenoptera, Platygastroidea)

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Abstract

20 new species of Platygastriidae are described, viz. *Amblyaspis caramba* (Honduras), *A. ecuadoriensis* (Ecuador), *A. glistrupi* (Honduras), *A. thoracica* (Malaysia), *A. whitmani* (South Africa), *Fidiobia danielssoni* (South Africa), *Inostemma productum* (Malaysia), *Piestopleura nigra* (Honduras), *Platygaster dentata* (Honduras), *P. denticulata* (Greece), *P. dilata* (Honduras), *P. macgowni* (USA), *Synopeas bifurcatus* (Malaysia), *S. carinifrons* (Honduras), *S. nigroides* (Ecuador), *S. obesus* (Malaysia), *S. royi* (South Africa), *S. solidus* (Malaysia), *Trichacis denudata* (South Africa), and *T. laticornis* (Honduras). An emendation of the description of *Platygaster danica* BUHL, 1999 is given, and *Sacespalus japonicus* YAMAGISHI, 1982 is commented upon. The work is illustrated by 27 text-figures.

Zusammenfassung

20 neue Arten von Platygastriidae werden beschrieben: *Amblyaspis caramba* (Honduras), *A. ecuadoriensis* (Ecuador), *A. glistrupi* (Honduras), *A. thoracica* (Malaysia), *A. whitmani* (Südafrika), *Fidiobia danielssoni* (Südafrika), *Inostemma productum* (Malaysia), *Piestopleura nigra* (Honduras), *Platygaster dentata* (Honduras), *P. denticulata* (Griechenland), *P. dilata* (Honduras), *P. macgowni* (USA), *Synopeas bifurcatus* (Malaysia), *S. carinifrons* (Honduras), *S. nigroides* (Ecuador), *S. obesus* (Malaysia), *S. royi* (Südafrika), *S. solidus* (Malaysia), *Trichacis denudata* (Südafrika), and *T. laticornis* (Honduras). Eine ergänzende Beschreibung von *Platygaster danica* BUHL, 1999 wird gegeben, und *Sacespalus japonicus* YAMAGISHI, 1982 wird kommentiert. Die Arbeit ist mit 27 Abbildungen versehen.

Introduction

All the new species described below are preserved in the Museum of Zoology, Lund University (Sweden). They were part of a loan of platygastriids by courtesy of curator Roy DANIELSSON whom I thank for the loan of the material.

Amblyaspis caramba spec. nov. (fig. 1)

Material examined: Holotype ♀: Honduras, Cortes, Parque Nacional Cusuco, 5 km N Buenos Aires (15°29'N, 88°13'W) 15.I.1996 (R. CAVE). Malaise trap in oak/pine cloud forest. Paratypes (6♀, 1♂): 3♀ same data as holotype; 2♀ Honduras, Olancho, Catacamas, ENA (15°50'N, 85°51'W) 8.III.1996 (R. CAVE), Malaise trap in lowland gallery forest; 1♀ 1♂ Honduras, Fco. Morazan, San Antonio de Oriente, Uyuca 6.III.1997 (C. HANSSON).

Description. ♀: Length 1.5-1.7 mm. Colour black, sometimes metasoma anteriorly partly brownish; antennae dark brownish to brownish black (A1 sometimes dark reddish basally); mandibles dark reddish; legs light yellowish brown, anterior and mid coxae vary to dark reddish, hind coxae almost black, thickened part of hind femora and of hind tibiae somewhat darkened.

Head from above 2.3-2.4 x as wide as long, as wide as thorax. Occiput distinctly reticulate-coriaceous and with transverse striations (except in one specimen), with a sharp carina; vertex and frons finely reticulate, more or less wrinkled around antennal insertions. OOL:POL:LOL = 5:5:2. Head from in front wider than high (9:8). A1 as long as height of head, 4.0 x as long as wide. A2 fully 0.25 x as long as A1, 2.7 x as long as wide and 1.4 x as long as A3 which is 1.4-1.8 x as long as wide. A4 0.8 x to almost as long as A3, slightly wider than this and 1.1-1.3 x as long as wide. A8 about as long as wide; A9 0.8 x as long as A10.

Mesosoma 1.5 x as long as wide, very slightly higher than wide. Sides of pronotum with weak reticulation except posteriorly and in lower 0.4. Mesoscutum finely reticulate, with sparse long hairs, without trace of notauli, hind margin broadly and distinctly curved. Mesopleura smooth. Scutellum (fig. 1) at level of mesoscutum, fully as long as wide, with somewhat raised sculpture, densely covered by yellowish hairs, posteriorly forming a short tooth in lateral view. Metapleura covered by moderately dense long white pilosity. Propodeal carinae close together, parallel, rather low and straight, semitransparent.

Fore wing hardly as long as body, 2.5 x as long as wide, with yellowish tint, densely hairy; marginal cilia 0.12 the width of wing. Hind wing 7.1 x as long as wide; marginal cilia fully 0.4 the width of wing.

Metasoma about as long as head and mesosoma combined, about as wide as thorax. T1 wider than long (about 8:7), smooth medially, with two fine carinae, rather densely pubescent laterally. T2 with two roundish basal foveae with pubescence, rest smooth. T3-T6 short, combined 0.4 x as long as T2, covered with very fine punctures, with sparse hairs.

♂: Length 1.3 mm. A3 0.6 as long as A2, 1.3 x as long as wide. A4 1.5 x as long as A3, 1.2 x as wide as A3. A5 almost 0.8 x as long as A4, hardly as wide as this. A8-A9 each almost 1.4 x as long as wide. Flagellar pubescence hardly half the width of segments.

Otherwise very similar to female.

Variability: The occipital sculpture and the length of basal flagellar segments varies markedly in this species, but it was not possible to find characters to separate the specimens in distinct species.

A. caramba differs from the other Neotropical species of the genus e.g. by its rather large size, dark antennae and lack of notauli, cf. KIEFFER (1926).

Amblyaspis ecuadoriensis spec. nov. (fig. 2)

Material examined: Holotype ♀: Ecuador, Napo, Papallacta 3700 m 25.II.1983 (L. HUGGERT).

Description. ♀: Length 1.9 mm. Colour blackish; antennae, mandibles and legs dark brown.

Head from above 2.2 x as wide as long, hardly as wide as thorax. Occiput reticulate-coriaceous, with a sharp carina; vertex and frons finely reticulate. OOL:POL:LOL = 9:10:4. Head from in front 1.2 x as wide as high. Antenna (fig. 2).

Mesosoma 1.4 x as long as wide, hardly higher than wide. Sides of pronotum finely reticulate except along hind margin. Mesoscutum finely reticulate-coriaceous, almost bare, with two parallel rows of sparse hairs, notauli absent; hind margin distinctly convex medially, with numerous long hairs covering scuto-scutellar grooves. Mesopleura smooth. Scutellum reticulate-coriaceous, covered by dense yellowish-brown hairs, in lateral view without tooth posteriorly. Metapleura with yellowish-brown pilosity; with only a few setae in upper half in anterior 0.4. Propodeal carinae low, straight, parallel, close together; area in between smooth and shiny.

Fore wing slightly longer than body, 2.8 x as long as wide, with dense hairs and brownish tint; marginal cilia 0.12 width of wing. Hind wing 5.9 x as long as wide; marginal cilia hardly 0.4 width of wing.

Metasoma hardly as long as head and mesosoma combined, very slightly narrower than thorax. T1 longer than wide (10:7), smooth medially and with two longitudinal keels close together, laterally with dense whitish pubescence. T2 longer than wide (43:37), with short and hairy basal foveae, rest smooth. T3-T6 combined hardly 0.4 x as long as T2, with very faint microsculpture, each tergite with a transverse row of superficially implanted fine hairs.

♂: Unknown.

A. ecuadoriensis differs from the other Neotropical species of the genus in the same way as *A. caramba* spec. nov., cf. above, but *ecuadoriensis* is even larger and darker. It differs also from *caramba* e.g. in scutellum not forming a tooth.

Amblyaspis glistrupi spec. nov.

Material examined: Holotype ♀: Honduras, Cortez, Parque Nacional Cusuco, 5 km N Buenos Aires (15°29'N, 88°13'W) 15.IX.1995 (R. CAVE). Malaise trap in oak/pine cloud forest.

Description. ♀: Length 1.4 mm. Colour black; mandibles, antennae, coxae, thickened parts of hind femora and tibiae, and last segment of all tarsi brown; basal half of scape

and rest of legs yellowish brown.

Head from above 1.8 x as wide as long, hardly as wide as thorax (14:15). Head shiny, finely reticulate, occiput transversely so, without carina. OOL 1.8 x as long as LOL. A1 shorter than width of head (6:7); A2 0.25 x as long as A1, twice as long as wide, 1.3 x as long as A3 which is 1.5 x as long as wide; A4 shorter than A3 (5:6), hardly longer than wide; A8 as wide as A4, as wide as long; A9-A10 hard to separate, combined 2.5 x as long as A8, very slightly wider than this.

Mesosoma as high as wide, 1.4 x as long as wide. Sides of pronotum faintly reticulate in upper half, smooth in lower half. Mesoscutum finely reticulate and sparsely hairy; notauli distinct except in anterior 0.3; hind margin straight but mid lobe prolonged, reaching base of scutellum in a narrow point. Mesopleura smooth. Scutellar foveae broad and hairy. Scutellum moderately hairy, slightly transverse. Metapleura and sides of propodeum sparsely hairy over most of surface; propodeal carinae parallel, well separated, in lateral view low, dark, almost straight.

Fore wing 0.9 x as long as whole body, 2.8 x as long as wide, brownish except basally; marginal cilia 0.15 the width of wing. Hind wing 6.6 x as long as wide; marginal cilia hardly 0.6 the width of wing.

Metasoma 2.5 x as long as wide, almost 1.3 x as long as head and mesosoma combined, narrower than thorax (13:15). T1 slightly longer than wide (11:10), with two longitudinal converging keels, area between keels smooth, lateral areas with rugosity. T2 basally with two sharp foveae each 0.75 x as long as T1, foveae with a few hairs, area between foveae with a few wrinkles, rest of tergite smooth. T3-T6 combined 0.7 x as long as T2, gradually stronger punctured towards apex of metasoma (T3 finely, T6 strongly punctured) and with scattered hairs. T6 shorter than its basal width (5:7).

♂: Unknown.

Named after Mr. Mogens GLISTRUP (Copenhagen) on his 75th birthday. Of the four known Neotropical species of the genus, *A. glistrupi* seems to be most similar to the Chilean *A. drypetis* (WALKER, 1839), but this species has antennae widened towards apex, legs darker coloured and metasoma wider than in *glistrupi*, cf. KIEFFER (1926).

Amblyaspis thoracica spec. nov.

Material examined: Holotype ♀: Malaysia, Borneo, Sabah, Sipitang, Mendolong 13.V. 1988 (S. ADEBRATT).

Description. Female: Length 1.3 mm. Colour brownish black, head almost black; antennae and legs yellowish brown.

Head from above 1.7 x as wide as long, 1.1 x as wide as thorax, finely reticulate-coriceous, without occipital carina. Lateral ocelli separated from eye by their diameter; OOL:POL:LOL=3:8:4. Head from in front wider than high (13:11). A1 shorter than height of head (10:11); A2 0.3 x as long as A1, 2.4 x as long as wide; A3 fully as wide as A2, hardly two-thirds as long as this, 1.5 x as long as wide; A3-A4 equal; A5-A6 about equal, each hardly shorter than A4 but 0.7 x as wide as this; A7 1.8 x as wide as A6, 1.1 x as long as wide; A8 1.1 x as wide as A7, as long as wide; A8-A10 of equal width and length.

Mesosoma 1.6 x as long as wide; 1.1 x as high as wide. Sides of pronotum reticulate-

coriaceous except along hind margin. Mesoscutum sculptured as head, with sparse hairs, notauli complete and deep; mid lobe distinctly prolonged, covering base of scutellum. Mesopleura smooth, with 4-5 distinct striae below tegulae. Scutellum at level of mesoscutum, as long as wide, densely covered with whitish hairs, not prolonged posteriorly. Metapleura smooth, with scattered sparse hairs, densely pubescent along hind margin. Propodeal carinae low, dark, slightly diverging; area in between smooth.

Fore wing hardly shorter than body (42:45), 3.0 x as long as wide, almost clear but densely hairy; marginal cilia 0.16 width of wing. Hind wing 7.5 x as long as wide; marginal cilia almost two-thirds the width of wing.

Metasoma longer than head and mesosoma combined (29:25), hardly as wide as thorax. T1 as long as wide, smooth medially, with two indistinct longitudinal carinae, laterally with short dense pubescence. T2 smooth, with pubescent basal foveae, fully 1.5 x as long as wide. T3-T6 combined about two-fifths as long as T2, with fine microsculpture and a few hairs.

♂: Unknown.

The only other Oriental *Amblyaspis*-species with notauli, *A. dalhousianus* (MUKERJEE, 1978) from the Northwest Himalaya has ocellocular space 1.45 x ocellar diameter, cf. MANI & SHARMA (1982).

***Amblyaspis whitmani* spec. nov.**

Material examined: Holotype ♂: Republic of South Africa, Cape Province, Tsitsikama, Forest Park, Stormsrivier (33°58'S 23°54'E) 14-16.X.1994 (R. DANIELSSON).

Description. ♂: Length 0.9 mm. Colour blackish; mandibles, A1-A2 and legs dirty yellow; A3-A10 brown.

Head from above 2.0 x as wide as long, 1.1 x as wide as thorax. Occiput finely transversely striated, with a distinct carina; vertex with some transverse wrinkles and reticulation; frons almost smooth in upper half, transversely reticulate-coriaceous in lower half. Lateral ocelli separated from eye by about twice their diameter; OOL:POL:LOL = 4:11:5. Head from in front 1.3 x as wide as high. A1 0.9 x as long as height of head, about 5.8 x as long as wide. A2 about one-third as long as A1, fully 2.3 x as long as wide, as long as A3-A4 combined. A3 about 0.4 x as long as A2, slightly longer than wide. A4 about 1.4 x as long as A3 and 1.4 x as long as wide, as wide as A2. A5 hardly 0.9 x as long as A4, flagellum slightly widened towards apex, A8-A9 each as long as wide; A10 twice as long as A9.

Mesosoma 1.6 x as long as wide, slightly higher than wide (17:15). Sides of pronotum reticulate-coriaceous with hairs in upper half, smooth below and along hind margin. Mesoscutum finely reticulate-coriaceous, rather densely and uniformly hairy, without notauli; hind margin straight. Mesopleura smooth. Scutellum slightly transverse, sculptured and hairy almost like mesoscutum, at level of this, posteriorly almost smooth and bare, without tooth. Metapleura with pilosity all over. Propodeal carinae short, widely separated, strongly transverse area in between smooth and shiny.

Fore wing with brownish tint, 1.2 x as long as body, 2.6 x as long as wide; marginal cilia almost 0.2 width of wing. Hind wing with marginal cilia about equal to width of wing.

Metasoma slightly shorter than mesosoma, 0.9 x as wide as this. T1 twice as wide as long, crenulated, with a few hairs. T2 without foveae but pubescent at base. T3-T7 combined hardly one-third as long as T2, smooth, with a few superficially implanted hairs.

♀: Unknown.

Named after singer Ottis Dewey "Slim" WHITMAN, USA. Differs from the only other Afrotropical species of the genus, *A. nanus* SUNDHOLM, 1970, e.g. in having A2 longer in relation to A3-A4, in having longer marginal cilia on wings, and in having T1 differently structured, cf. also SUNDHOLM (1970).

***Fidiobia danielssoni* spec. nov.**

Material examined: Holotype ♀: Republic of South Africa, Cape Province, Koom-planskloof, 10 km S Citrusdal, 200-270 m (32°40'S 19°01'E) 4-8.X.1994, Malaise trap (R. DANIELSSON).

Description. ♀: Length 0.8 mm. Colour blackish, antennae and legs dark brown; base of A1 and both ends of all tibiae light brown, segments 1-4 of all tarsi yellowish.

Head from above 2.0 x as wide as long, slightly wider than thorax, smoothly rounded, finely reticulate-coriaceous, with a few fine punctures on frons. Lateral ocelli separated from eye by their diameter. A1 about 0.6 x as long as height of head. A2 about 0.4 x as long as A1, 3.1 x as long as A3. A3-A6 of about equal length, A3-A4 each about as long as wide, A5-A6 transverse. A7-A9 forming club which is hardly 0.9 x as long as A1; A7 1.25 x as long as A8, as long as A9; A7 as long as wide; A8 slightly transverse.

Mesosoma as long as wide; almost 1.4 x as wide as high. Sides of pronotum reticulate-coriaceous. Mesoscutum uniformly reticulate-coriaceous, in posterior half with parallel, smooth and rather wide notauli. Mesopleura smooth, with faint longitudinal sculpture in upper half. Scutellum almost smooth, with faint traces of reticulation, flat, twice as wide as long. Metapleura with long whitish pilosity except on medial part of anterior 0.4.

Fore wing distinctly overreaching tip of metasoma, hardly 0.9 x as long as body, 2.7 x as long as wide, clear, subcostal vein one-seventh as long as wing; marginal cilia absent. Hind wing 5.0 x as long as wide; marginal cilia 0.2 width of wing.

Metasoma longer than head and mesosoma combined (17:15), as wide as thorax, fully 1.5 x as long as wide. T1 crenulated in anterior half, smooth in posterior half, 2.7 x as wide as long. T2 1.1 x as wide as long, smooth except for faint traces of striation lateral of basal foveae, hind margin almost straight. T3-T6 combined 0.4 x as long as T2, finely reticulate, with some superficially implanted hairs.

♂: Unknown.

Named after the collector. Differs from the only other African species of the genus, *F. benjamini* (NIXON, 1969), e.g. in sculpture of mesoscutum, shape of notauli, and in colour of antennae and legs, cf. NIXON (1969).

***Inostemma productum* spec. nov.**

Material examined: Holotype ♀: Malaysia, Borneo, Sabah, Sipitang, Mendolong 10.III.1989 (S. ADEBRATT).

Description. ♀: Length 1.0 mm. Colour black, antennae and legs hardly lighter except

apical half of fore tibiae which are light brownish; all tarsi brownish.

Head from above 1.6 x as wide as long, as wide as thorax, almost evenly reticulate. Vertex slightly convex. Lateral ocelli separated from eye by their diameter. Head from in front 1.2 x as wide as high. A1 shorter than height of head (8:9). A2 0.25 x as long as A1, hardly twice as long as wide. A3 0.8 x as long as A2, about 1.5 x as long as wide. A4 very slightly shorter than A3, as wide as this. Club about 1.8 x as wide as A3; A8 about as long as wide; A9 slightly transverse; A10 1.3 x as long as A9.

Mesosoma hardly 1.4 x as long as wide, as high as wide. Sides of pronotum reticulate, becoming smoother below. Mesoscutum reticulate, posteriorly longitudinally so, with complete notauli which are widened behind, here separated only by a narrowly pointed and slightly prolonged mid lobe. Mesopleura reticulate in lower third, rest smooth except for some wrinkles below tegulae. Scutellum reticulate-coriaceous, at level of mesoscutum. Metapleura evenly covered by fine pubescence.

Fore wing clear, only slightly overreaching tip of metasoma, three-fourths as long as body, 2.4 x as long as wide; marginal cilia short. Hind wing 6.2 x as long as wide; marginal cilia 0.4 width of wing.

Metasoma very slightly longer than head and mesosoma combined (21:20), hardly 0.9 x as wide as thorax, and 2.2 x as long as wide. T1 striated, fully 1.5 x as wide as long, without a horn, just smooth and slightly protuberant medially. T2 hardly longer than wide (20:19), with indistinct striation laterally to about 0.3 of length. T3-T6 combined 0.8 x as long as T2; T3-T5 smooth, each with a transverse row of superficially implanted hairs; T6 with fine sculpture and scattered hairs, 1.3 x as wide as long.

♂: Unknown.

Most similar to *I. seoulis* (KO, 1965) which, however, is larger and brighter colored than *I. productum*, and *I. seoulis* has A3 fully twice as long as wide, and A8-A9 longer than wide, cf. YOSHIDA & HIRASHIMA (1979). Differs from other Oriental *Inostemma*-species without a distinct horn on T1 (*I. shencottahense* MUKERJEE, 1981, *I. oculare* AUSTIN, 1984, and *I. apsyllae* AUSTIN, 1984) in having a smooth protuberance on this tergite; for further differences cf. MUKERJEE (1981) and AUSTIN (1984).

Piestopleura nigra spec. nov. (fig. 3)

Material examined: Holotype ♂: Honduras, Olancho, Parque Nac. La Muralla, 15 km. N La Unión (15°07'N, 86°45'W) II.1995 (R. CAVE). Malaise trap in high elevation rain forest.

Description. ♂: Length 1.4 mm. Color black; A1 in basal half, all trochanters and tibiae except distal half of hind tibiae, and segments 1-4 of all tarsi reddish brown.

Head from above 2.1 x as wide as long, 1.4 x as wide as thorax; posterior ocelli separated from eye margin by half their diameter. Occiput medially transversely coriaceous, laterally smooth, rather sharply angled behind ocelli; vertex and frons reticulate, somewhat shiny. Head from in front 1.3 x as wide as high. A1 reticulate, 0.6 x as long as width of head, 4.5 x as long as wide; A2 0.25 x as long as A1 and 1.5 x as long as A3 which is as wide as long; A4 3.0 x as long as A3, 3.5 x as long as wide; A9 2.7 x as long as wide; flagellar pubescence slightly longer than width of segments.

Mesosoma 2.2 x as long as wide and almost 1.6 x as high as wide. Sides of pronotum

smooth, densely longitudinally striated in anterior third. Mesoscutum faintly coriaceous and bare, notauli indicated in posterior third. Mesopleura smooth. Scutellum (fig. 3) dull, overreaching anterior third of propodeum. Metapleura smooth and bare, with pilosity along hind margin; propodeum with pilosity.

Fore wing fully 0.8 as long as body, 2.4 x as long as wide, faintly infuscated; marginal cilia fully 0.1 the width of wing. Hind wing 7.1 x as long as wide; marginal cilia fully 0.5 the width of wing.

Metasoma slightly longer than mesosoma (13:12) and as wide as this. T1 1.5 x as long as wide, longitudinally rugose and with two carinae in anterior half, with a few hairs. T2 with narrow basal foveae about two-thirds as long as T1; T2-T7 smooth, with very few hairs, each tergite with broad reticulate hind margins.

♀: Unknown.

The only other *Piestopleura* described from the New World, *P. platygaster* (FOUTS, 1925) (only female known) has smoother mesoscutum and brighter coloured antennae and legs than *nigra*, differently shaped scutellum, and thorax only about 1.33 x as high as wide, cf. FOUTS (1925).

Platygaster danica BUHL, 1999 (figs. 4-7)

This species was mentioned in the key by BUHL (1999: 33) without notification that it was new to science as it was supposed by the author that it would be described in another paper in 1999 which, however, was not published. Below, therefore, a more complete description than in the key is given.

Material examined: Holotype ♀: Denmark, NEZ, Rudehegn, 26.V.1881 (R. W. SCHLICK). Reared from a light brown cecidomyiid puparium measuring 2.7 x 0.9 mm. Platygastroid and puparium glued on same pinned card rectangle. Paratypes (3 ♀): NEZ, Jægersborg Dyrehave, 1 ♀ 3.VII.1881 (R.W. SCHLICK); same locality, 1 ♀ 6.VI.1886 (R.W. SCHLICK); Denmark, F, Langeland, Bukkeskov, 1 ♀ 10.VI.1881 (R.W. SCHLICK). Paratypes mounted on pinned card rectangles. All types deposited in the Zoological Museum, Copenhagen.

Description. ♀: Length 1.6-1.7 mm. Colour black; antennae, mandibles, tegulae and legs brown; femora apically, most of fore tibiae, base of middle and hind tibiae and segments 1-4 of all tarsi yellowish.

Head from above (fig. 4) 1.75 x as wide as long, 1.1 x as wide as thorax; occiput transversely reticulate-coriaceous, moderately transversely striated medially; vertex and frons reticulate, frons smooth medially, with a few transverse wrinkles above antennal insertions; OOL:POL:LOL = 9:25:12. Head from in front 1.25 x as wide as high; malar space fully two-fifths the height of an eye. Antenna (fig. 5) with A2 slightly shorter than A3-A4 combined; A4-A6 each almost 2, A7-A9 each about 1.5 x as long as wide; flagellar pubescence sparse, equal to about one-quarter the width of segments.

Mesosoma almost 1.6 x as long as wide and almost 1.2 x as high as wide. Sides of pronotum reticulate and rather densely hairy except along hind margin. Mesoscutum with sparse hairs, reticulate, smoother along hind margin, with smooth admedian lines in anterior 0.4; notauli complete; mid lobe prolonged, ending in a fine point not reaching scutellum; scuto-scutellar grooves wide and deep, with a few long hairs. Mesopleura

longitudinally striated in upper third, rest almost smooth. Scutellum (fig. 6) at level of mesoscutum, reticulate, moderately hairy laterally, margins high. Metapleura and sides of propodeum with white pilosity all over. Propodeal carinae parallel, wide apart, area in between smooth and shiny, with two points in anterior half.

Fore wing almost clear, densely hairy, slightly shorter than whole body (32:35), almost 2.7 x as long as wide; marginal cilia distinctly less than 0.1 the width of wing. Hind wing with two frenal hooks, 5.6 x as long as wide; marginal cilia fully 0.2 the width of wing.

Metasoma (fig. 7) as long as head and mesosoma combined, wider than thorax (9:8), and 1.8 x as wide as high. T1 crenulated, two longitudinal keels slightly stronger, tergite with some hairs laterally. T2 striated in and between basal foveae to half of length, rest of tergite as well as the following tergites almost smooth; T3-T4 each with a medially interrupted row of rather deeply implanted hairs, T5 with a complete transverse row of such hairs, T6 with unevenly distributed such hairs.

♂: Unknown.

Variability: In two of the paratypes the transverse striations on occiput almost disappear, occiput being rather evenly transversely reticulate medially. In one paratype metasoma is slightly shorter, in another slightly longer than head and mesosoma combined. In one of the paratypes the striae of T2 continue as very fine sculpture almost to posterior margin of tergite.

A very distinct species on account of rather long flagellar segments, strong notauli, and low and sculptured scutellum. Runs to *P. ennius* WALKER, 1835 in VLUG's (1985) key, but *ennius* differs from *danica* e.g. in having a more transverse and differently sculptured head, incomplete notauli, smooth scutellum and T2 less striated. Of the species described by THOMSON (1859) *P. danica* is most similar to *P. chloropus* THOMSON, 1859, but this species differs from *danica* e.g. in having shorter A4-A5, mesoscutum smoother, incomplete notauli, mesopleura without striae, and more convex scutellum (lectotype seen), cf. description of *chloropus* in BUHL (1995).

Platygaster dentata spec. nov. (fig. 8)

Material examined: Holotype ♀: Honduras, Cortez, Parque Nacional Cusuco, 5 km N Buenos Aires (15°29'N, 88°13'W) 8.III.1997 (C. HANSSON).

Description. ♀: Length 1.2 mm. Colour black; antennae and legs with brownish tint, both ends of tibiae and entire tarsi dark reddish brown.

Head from above 2.1 x as wide as long, slightly wider than thorax (14:13); occiput distinctly transversely reticulate-striate; vertex reticulate and with a few striae between ocelli; frons with faint reticulation laterally, almost smooth medially, with distinct wrinkles above antennae. Lateral ocelli separated from eye by slightly more than their diameter; OOL:POL:LOL = 3:10:4. Head from in front 1.3 x as wide as high. A1 shorter than height of head (10:11). A2 0.3 as long as A1, 2.5 x as long as wide. A3 one-third as long as A2, as long as wide. A4 1.5 x as long as A3, slightly wider than this and very slightly longer than wide. A5 at its longest slightly longer than A4. A6 slightly transverse, A7 1.5 x as wide as long. A8-A9 each slightly transverse, about twice as wide as A4. A10 1.9 x as long as A9.

Mesosoma 1.4 x as long as wide, slightly higher than wide (14:13). Sides of pronotum

distinctly reticulate except along margins. Mesoscutum reticulate-coriaceous, with few hairs; notauli shallow but nearly complete, converging but not meeting posteriorly; mid lobe not prolonged; hind margin almost bare; scuto-scutellar grooves triangular, moderately wide and deep. Mesopleura smooth. Scutellum (fig. 8) at level of mesoscutum, with finer sculpture than this and with few hairs, posteriorly with a fine tooth. Meta-pleura with rather sparse pilosity all over. Propodeal carinae short, parallel, widely separated; area in between smooth and shiny.

Fore wing 0.8 x as long as body, 2.4 x as long as wide, clear, only with (rather sparse) hairs in apical 0.4; marginal cilia very short. Hind wing 5.3 x as long as wide; marginal cilia one-third the width of wing.

Metasoma rather pointed, 2.2 x as long as wide, hardly shorter than head and mesosoma combined (24:25), narrower than thorax (11:13). T1 1.4 x as wide as long, evenly crenulated, with very few hairs. T2 without foveae, laterally superficially striated in anterior two-thirds, medially with very short wrinkles. T3-T6 combined three-fourths the length of T2, smooth, T3 with a medially interrupted transverse row of deeply implanted hairs, T4-T5 each with a complete such row; T6 shorter than its basal width (7:8), with superficially implanted hairs.

♂: Unknown.

Runs to *P. filicaudis* (FOUTS, 1925) in MACGOWN's unpublished key to North American *Platygaster*, but *filicaudis* (only male known) has much thicker head than *dentata*, it has scutellum differently shaped and sculptured, and it is more than 2 mm long, cf. FOUTS (1925).

Platygaster denticulata spec. nov. (figs. 9-11)

Material examined: Holotype ♀: Greece, Epirus, Párga 45 km NW Préveza 9-23.VI. 1997 (R. DANIELSSON). Paratypes: 2♀ ♀ 2♂♂ same data.

Description. ♀: Length 1.2-1.4 mm. Colour black; antennae, mandibles and legs reddish yellow, most of flagellum and last segment of tarsi brown.

Head from above 1.75 x as wide as long, 1.25 x as wide as thorax. Occiput rounded, finely transversely striate-reticulate; vertex finely reticulate; frons with faint traces of transverse reticulation and below with a few very fine transverse striae, smooth medially. Lateral ocelli separated from eye by 1.25 x their diameter; OOL:POL:LOL = 4:9:4. Head from in front 1.25 x as wide as high. Antenna (fig. 9) with A1 shorter than height of head (5:6).

Mesosoma 1.5 x as long as wide, higher than wide (13:12). Sides of pronotum smooth, finely reticulate anteriorly. Mesoscutum with very few hairs, finely reticulate-coriaceous, smooth in posterior 0.3; notauli indicated in at most posterior 0.3; mid lobe not prolonged. Mesopleura smooth. Scutellum (fig. 10) smooth except laterally, with rather sparse hairs, posteriorly with a fine tooth. Metapleura with pilosity all over. Propodeal carinae parallel; area in between about as long as wide, smooth and shiny.

Fore wing hardly 0.9 x as long as body, almost clear, 2.6 x as long as wide; marginal cilia at most 0.1 width of wing. Hind wing 5.8 x as long as wide; marginal cilia one-third the width of wing.

Metasoma 0.9 x as long as head and mesosoma combined, as wide as thorax, fully 1.8

x as long as wide. T1 1.7 x as wide as long, finely crenulated medially, with broad and smooth anterior and posterior margins. T2 weakly striated in basal foveae to hardly 0.5 of tergite, medially only to slightly more than 0.2. T3-T6 combined less than half as long as T2 (4:9), smooth, with several moderately deeply implanted hairs.

♂: Length 1.1-1.2 mm. Antenna (fig. 11).

In structure of body and antennae most similar to *P. szelenyii* HUGGERT, 1975 (= *P. crassus* SZELÉNYI, 1958 preocc.), but this species has scutellum without tooth, cf. SZELÉNYI (1958) for further differences.

***Platygaster dilata* spec. nov. (figs. 12-15)**

Material examined: Holotype ♀: Honduras, Francisco Morazan, Parque Nacional La Tigra (14°15'N, 87°05'W) 9.IV.1996 (R. CAVE). Malaise trap in oak/pine cloud forest. Paratypes: (3 ♀, 1 ♂) 2 ♀ 1 ♂ same data as holotype; 1 ♀ same data but 29.III.1995.

Description. ♀: 1.6-1.7 mm. Colour black, antennae and legs dark brown; fore femora apically, most of fore tibiae, and segments 1-4 of fore and mid tarsi light brownish.

Head from above 2.1 x as wide as long, 1.1 x as wide as thorax. Occiput rounded, strongly transversely striated; vertex finely reticulate-coriaceous, with some striae between and around ocelli; frons smooth except for transverse wrinkles just above antennae and a few punctures along eyes. Lateral ocelli separated from eye by hardly 1.5 x their diameter; OOL:POL:LOL = 5:14:6. Head from in front 1.3 x as wide as high. Antenna (fig. 12) with A1 shorter than height of head (15:16).

Mesosoma fully 1.4 x as long as wide, very slightly higher than wide. Sides of pronotum with fine longitudinal reticulation all over. Mesoscutum sparsely hairy, finely reticulate-coriaceous; mid lobe smooth posteriorly, rather broad and prolonged to base of scutellum; notauli weak, fading out in anterior half; hind margin with distinct long hairs above triangular scuto-scutellar grooves. Mesopleura smooth. Scutellum (fig. 13) evenly convex, distinctly above mesoscutum, smooth medially, finely reticulate laterally, sparsely hairy. Metapleura with pilosity all over. Propodeal carinae parallel, area in between slightly transverse, smooth and shiny.

Fore wing fully 0.8 x as long as body, 2.1 x as long as wide, almost clear, bare in basal half, rest moderately hairy; marginal cilia very short. Hind wing 4.5 x as long as wide; marginal cilia hardly one-fifth the width of wing.

Metasoma (fig. 14) about 0.9 x as long as long as head and mesosoma combined, hardly as wide as thorax. T1 evenly crenulated. T2 striated to 0.5 in basal foveae, medially only to 0.2. T3-T6 almost smooth, each with a transverse row of deeply implanted hairs.

♂: Length 1.7 mm. Antenna (fig. 15).

Runs to *P. juniperina* MACGOWN, 1979 in MACGOWN's unpublished key to *Platygaster* of the United States, but *juniperina* has antennal structure different from *dilata*, cf. MACGOWN (1979). *P. dilata* is also rather similar to *tumida* (ASHMEAD, 1893), but this species also has antennal structure different from *P. dilata*, cf. FOUTS (1924).

***Platygaster macgowni* spec. nov. (fig. 16)**

Material examined: Holotype ♀: USA, OR, Lake Co., Quarts Mt., 1600 m 14.VI.1984

(R. DANIELSSON). Paratype: 1 ♀ same data.

Description. ♀: Length 3.0-3.1 mm. Colour blackish; antennae and legs dark brown; mandibles, ends of tibiae and most of tarsi slightly lighter.

Head from above 1.7 x as wide as long, very slightly wider than thorax; occiput dull, reticulate-coriaceous, with traces of transverse sculpture medially; vertex reticulate-coriaceous; frons shiny, with weak reticulation, medially in upper half almost smooth, in lower half with transverse striations. Lateral ocelli separated from eye by twice their diameter; OOL:POL:LOL = 6:12:5. Head from in front 1.1 x as wide as high. A1 0.9 x as long as height of head. A2 0.25 x as long as A1, twice as long as wide. A3 about one-third as long as A2, as long as wide. A4 1.7 x as long as A3, 1.25 x as long as wide, hardly narrower than A2. A5-A6 each as long as A4 but slightly wider. A7-A9 each about 1.1 x as wide as long. A10 twice as long as A9.

Mesosoma 1.5 x as long as wide, very slightly higher than wide. Sides of pronotum reticulate-coriaceous in anterior and upper 0.5. Mesoscutum feebly convex, reticulate-coriaceous, smoother posteriorly, with very few hairs; notauli complete, almost meeting posteriorly, mid lobe hardly prolonged; hind margin bare; scuto-scutellar grooves deep, narrow-triangular. Mesopleura smooth. Scutellum at level of mesoscutum, sculptured as this, with few hairs. Metapleura with rather sparse pilosity all over. Propodeal carinae short, parallel, widely separated; area in between smooth and shiny.

Fore wing 3.2 x as long as wide, covering base of T5, with yellowish tint; marginal cilia very short. Hind wing 6.8 x as long as wide; marginal cilia hardly 0.25 the width of wing.

Metasoma (fig. 16) 2.1-2.2 x as long as head and mesosoma combined, hardly as wide as thorax (16:17), at its widest twice as wide as high. T1 1.6 x as wide as long, smooth, with a transverse stripe of crenulation and two longer weak carinae. T2 finely striated in basal foveae to about three-fourths. T3 only slightly shorter than T2 (7:8), hardly shorter than its own basal width (14:15), only slightly tapering. T4 1.5 x as long as T3, 1.8 x as long as wide. T5 with parallel sides, fully 2.2 x as long as wide, slightly shorter than T4. T6 0.6 x as long as T5, 1.6 x as long as wide. T3-T4 smooth, T5 finely longitudinally striated laterally, T6 finely striated all over. T3-T6 rather flat, T5 fully 3.5 x as wide as high. Sternite 2 not prolonged anteriorly, but with a slight hump.

♂: Unknown.

Named after the American hymenopterist M.W. MACGOWN. Runs to *P. piniphila* MACGOWN, 1979 in MACGOWN's unpublished key to North American *Platygaster*, but this species differs from *macgowni* e.g. in having antennae more slender and T3-T6 more narrow, differently sculptured, cf. MACGOWN (1979).

Sacespalus japonicus YAMAGISHI, 1982 (fig. 17)

Material examined (3♀♀): 1 ♀ Malaysia, Borneo, Sabah, Sipitang, Mendolong 16.IV. 1988 (S. ADEBRATT); 2♀♀ same data but 1.V.1988 and 3.V.1988. Hitherto known only from Japan, cf. YAMAGISHI (1982). One of the specimens has T3-T6 telescoped in T2 so that the apical tergites appear short (fig. 17). It should be investigated if the two species described with "short" metasoma (*rugosiceps* KIEFFER, 1917 and *indicus* MANI, 1975) in fact also just have their long apical tergites telescoped.

Synopeas bifurcatus spec. nov. (fig. 18)

Material examined: Holotype ♀: Malaysia, Borneo, Sabah, Sipitang, Mendolong 8.III. 1989 (S. ADEBRATT).

Description. ♀: Length 0.9 mm. Colour black; antennae and legs reddish brown; most of fore legs, trochanters and base of middle and hind femora, apex of mid tibiae, and segments 1-4 of all tarsi light brownish; A7-A10 and last segment of tarsi dark brown.

Head from above 1.7 x as wide as long, wider than thorax (12:11), with occipital carina indicated as a sharp edge. Lateral ocelli separated from eye by slightly less than their diameter, with a distinct excavation between ocellus and eye. OOL:POL:LOL = 1:9:4. Head from in front 1.15 x as wide as high. A1 shorter than height of head (18:21). A2 one-third as long as A1, almost 3 x as long as wide and fully 3 x as long as A3 which is about as long as wide. A3-A4 combined 0.75 x as long as A2; A4 about 1.5 x as long as wide and hardly 1.5 x as long as A3. A8-A9 each fully twice as wide as long, A10 twice as long as A9, as long as wide.

Mesosoma hardly 1.5 x as long as wide, higher than wide (12:11). Sides of pronotum reticulate-coriaceous, smooth in lower 0.4 and along hind margin. Mesoscutum almost bare, uniformly reticulate-coriaceous, notauli complete and deep; mid lobe posteriorly rather broad, prolonged but not swollen; scuto-scutellar grooves wide, covered by hairs. Mesopleura smooth, with distinct wrinkles in upper 0.3. Scutellum (fig. 18) without tooth, with dense and short light hairs except on a longitudinal medial keel. Metapleura and sides of propodeum covered with long and dense, white pilosity; propodeal carinae low, dark, rounded, close together.

Fore wing 0.85 x as long as body, 2.4 x as long as wide, clear, with sparse hairs, hardly with marginal cilia. Hind wing 6.0 x as long as wide; marginal cilia 0.4 width of wing.

Metasoma hardly longer than mesosoma and slightly narrower than this, 1.25 x as wide as high. T1 and base of T2 with dense pubescence; T2 smooth except for faint sculpture along hind margin; T3-T6 combined one-third as long as T1-T2 combined, with a few hairs; T3-T5 with at most faint microsculpture; T6 strongly transverse, with fine reticulation.

♂: Unknown.

A very distinct Oriental *Synopeas*-species on account of the combination of the two characters: Complete notauli, and lack of scutellar spine.

Synopeas carinifrons spec. nov. (fig. 19)

Material examined: Holotype ♀: Honduras, Fco. Morazan, San Antonio de Oriente, Yuuca 6.III.1997 (C. HANSSON). Paratypes (4♀ 7♂♂): 3♀ 4♂♂ same data as holotype; 2♂♂ Honduras, Cortes, Parque Nacional Cusuco, 5 km N Buenos Aires (15°29'N, 88°13'W) 8.III.1997 (C. HANSSON), 1♀ same locality but 30.VIII.1995 (R. CAVE), Malaise trap in oak/pine cloud forest; 1♂ Honduras, Atlantida, Lancetilla, Tela (15°43'N, 87°27'W) 30.IV.1995 (R. CAVE), Malaise trap in lowland rainforest.

Description. ♀: Length 0.9-1.0 mm. Colour black; A1 and legs reddish; coxae, thickened parts of middle and hind femora and tibiae and last segment of all tarsi darkened; A2-A6 dark reddish brown, A7-A10 dark brown.

Head from above 1.7 x as wide as long, wider than thorax (12:11), coarsely reticulate; occiput with a fine but complete carina; vertex with some longitudinal carinae between ocelli; frons with numerous transverse carinae. Lateral ocelli separated from eyes by half their diameter; OOL:POL:LOL = 1:10:4. Head from in front 1.2 x as wide as high. A1 0.9 x as long as height of head. A2 one-third as long as A1, 3.0 x as long as wide. A3 fully 0.4 x as long as A2, 1.6 x as long as wide. A4 1.3 x as long as A3 and slightly wider than this. A5 about as long as A4, slightly triangular. A7-A9 each about 1.1 x as wide as long. A10 1.25 x as long as A9; club about 2.75 x as wide as A3.

Mesosoma 1.7 x as long as wide, 1.1 x as high as wide. Sides of pronotum with reticulation and numerous raised hair-implantations in upper half, smooth in lower half. Mesoscutum reticulate-coriaceous, rather densely and evenly hairy and with numerous raised hair-implantations, without notauli, hind margin prolonged medially, with dense hairs laterally. Mesopleura smooth. Scutellum (fig. 19) densely hairy, at level of mesoscutum, sculptured as this; spine thin and straight, 0.7 x as long as anterior part, not reaching hind margin of propodeum. Metapleura smooth and bare in anterior half, rest with white pubescence. Propodeal carinae low, fused and straight.

Fore wing as long as body, 2.8 x as long as wide, almost clear but densely hairy; marginal cilia 0.15 width of wing. Hind wing 6.0 x as long as wide; marginal cilia 0.5 width of wing.

Metasoma 0.8 x as long as head and mesosoma combined, 0.8 x as wide as thorax, and 1.3 x as wide as high. T1-T2 smooth, junction between them with white pilosity. T3-T6 short, about one-third as long as T1-T2 combined, with fine microsculpture along margins and a few hairs.

♂: Length 0.9-1.1 mm. A3 one-third as long as A2, hardly elongate. A4 fully twice as long as A3, twice as long as wide, about as long as A2. A7-A9 each 1.4-2.5 x as long as wide. Flagellar pubescence 0.7 the width of segments. Metasoma shorter than mesosoma (8:9).

Variability: The larger males have antennal segments distinctly more elongate than the smaller; also the length of scutellar spine varies somewhat.

S. carinifrons differs from the few other *Synopeas*-species with carinated frons: *S. aciculatum* (FOOTS, 1924) and *S. frontalis* BUHL, 1998 have different antennal measurements, and *S. carinator* (FOOTS, 1925) and *S. pennsylvanicum* (FOOTS, 1924) have differently shaped mesosoma, cf. FOOTS (1924, 1925), and BUHL (1998).

Synopeas nigroides spec. nov. (figs. 20-22)

Material examined: Holotype ♀: Ecuador, Napo, Quito-Baeza road, 4100 m III.1983 (L. HUGGERT). Paratype: 1 ♂ Ecuador, Pichin, Nono-Tandayapa road, 1900 m 27.II.1983 (L. HUGGERT).

Description. ♀: Length 2.5 mm. Colour black; both ends of fore tibiae, middle and hind tibiae basally and all tarsi basally dark reddish.

Head from above 1.8 x as wide as long, slightly narrower than thorax (18:19), dull, evenly reticulate-coriaceous, without occipital carina. Lateral ocelli separated from eye by 1.3 x their diameter; OOL:POL:LOL = 4:15:6. Head from in front wider than high (9:8). Antenna with A1 as long as height of head, 5.3 x as long as wide. A2 0.26 x as long as

A1, 2.8 x as long as wide. A3 about 0.5 x as long as A2, hardly twice as long as wide. A4 2.0 x as long as A3, hardly 4.0 x as long as wide. A5 0.75 x as long as A4, slightly wider than this. A8-A9 each very slightly transverse, almost 3 times as wide as A3. A10 1.7 x as long as A9.

Mesosoma 1.7 x as long as wide, 1.2 x as high as wide. Sides of pronotum finely reticulate-coriaceous in upper half. Mesoscutum dull, reticulate-coriaceous, with a few inconspicuous hairs, notauli deep and almost complete; mid lobe posteriorly rather broad, slightly prolonged; hind margin without hairs covering the triangular scuto-scutellar grooves. Mesopleura smooth. Scutellum (fig. 20) shiny and almost smooth, almost bare medially, moderately hairy laterally, at level of mesoscutum, with a strong spine reaching about middle of propodeum. Metapleura with pilosity in posterior half. Propodeal carinae low, straight and fused.

Fore wing reaching apex of metasoma, 3.2 x as long as wide, rather dark brown, with dense short hairs; marginal cilia hardly present. Hind wing 5.1 x as long as wide; marginal cilia hardly 0.25 width of wing.

Metasoma (fig. 21) 1.4 x as long as head and mesosoma combined, narrower than thorax (16:19), fully 1.2 x as wide as high. T1 and junction of T1-T2 with two large tufts of golden pubescence. T2 smooth. T3-T6 with fine longitudinal rugosity.

♂: Length 2.1 mm. Black; trochanters, base of all femora, entire fore tibiae, most of middle tibiae, basal half of hind tibiae, and base of all tarsi rather bright reddish. Lateral ocelli separated from eye by their diameter. A2 2.7 x as long as wide. A3 fully 0.6 x as long as A2, 2.5 x as long as wide. A4 slightly widened, 2.0 x as long as A3, 4.0 x as long as wide. A5 fully 0.5 x as long as A4. A7-A9 each about 2.0 x as long as wide. Flagellar pubescence short. Mesoscutum smoother than in female; scutellar spine longer and sharper (fig. 22). Fore wing slightly longer than body (2.2 mm). Metasoma 0.8 x as long as head and mesosoma combined.

Among Neotropical species most similar to *S. athenaeus* (WALKER, 1839) (type lost), *S. insularis* (ASHMEAD, 1894) and *S. macrurus* (ASHMEAD, 1895), but these species (females) have brightly colored A1 and legs, and clear or almost clear wings, cf. KIEFFER (1926).

Synopeas obesus spec. nov. (fig. 23)

Material examined: Holotype ♀: Malaysia, Borneo, Sabah, Sipitang, Mendolong 14.III. 1989 (S. ADEBRATT).

Description. ♀: Length 1.15 mm. Colour black; A1-A6 and legs reddish yellow; A7-A10, coxae, thickened parts of hind femora and of hind tibiae, and last segment of all tarsi dark brown.

Head from above 1.9 x as wide as long, very slightly wider than thorax, evenly reticulate-coriaceous, with a complete occipital carina. Lateral ocelli separated from eye by about half their diameter; OOL:POL:LOL = 1:10:5. Head from in front 1.1 x as wide as high. A1 0.8 x as long as height of head, 5.5 x as long as wide. A2 hardly 0.3 x as long as A1, almost 3.0 x as long as wide. A3 slightly more than 0.5 x as long as A2, about 1.5 x as long as wide. A4 1.25 x as long as A3, about twice as long as wide. A5 0.9 x as long as A4. A8-A9 each almost 1.4 x as wide as long. A10 1.7 x as long as A9. Antennal club

about 3 x as wide as A3.

Mesosoma hardly 1.4 x as long as wide, as high as wide. Sides of pronotum reticulate-coriaceous in upper half, smooth below and posteriorly. Mesoscutum reticulate-coriaceous, with rather sparse hairs, without notauli but mid lobe slightly raised posteriorly and triangularly prolonged, reaching base of scutellum in a fine point; scuto-scutellar grooves broad, covered with hairs. Mesopleura smooth. Scutellum (fig. 23) almost smooth, moderately hairy, with a short tooth, hardly with a lamella below. Metapleura with long white dense pilosity except along anterior margin. Propodeal carinae rather low, not semitransparent.

Fore wing hardly 0.9 x as long as body, 2.3 x as long as wide, clear, with sparse hairs; marginal cilia absent. Hind wing 5.0 x as long as wide; marginal cilia hardly 0.3 width of wing.

Metasoma as long as mesosoma, narrower than this (14:15), 1.4 x as wide as high. T1 with some longitudinal keels. Junction of T1-T2 with dense pilosity which is hardly interrupted medially. T2 smooth. T3-T6 combined about half as long as T2, smooth and with very few hairs, only the strongly transverse T6 with some rugosity.

♂: Unknown.

Among Oriental species of the genus *S. obesus* seems to be most similar to *S. balabacensis* BUHL, 1997, but this species has A5 shorter in relation to A4 than in *obesus*, and it has metasoma longer than head and mesosoma combined, cf. BUHL (1997) for further characters.

Synopeas royi spec. nov. (fig. 24)

Material examined: Holotype ♀: Republic of South Africa, Cape Province, De Hoop Nature Reserve, 0-200 m (34°27'S, 20°25'E) 10-13.X.1994 (R. DANIELSSON).

Description. ♀: Length 1.5 mm. Colour black; antennae, mandibles and legs reddish brown; A7-A10, coxae, trochanters, thickened parts of femora and of tibiae, and last segment of tarsi darkened.

Head dull, from above fully 1.9 x as wide as long, hardly wider than thorax, finely reticulate-coriaceous, with a weak occipital carina, above antennae with transverse wrinkles. Lateral ocelli separated from eye by hardly their diameter. Head from in front 1.1 x as wide as high. A1 0.8 x as long as height of head. A2 hardly 0.3 x as long as A1, 2.5 x as long as wide. A3 hardly 0.5 x as long as A2, 1.6 x as long as wide. A4 1.25 x as long as A3, 2.0 x as long as wide. A5 about 0.6 x as long as A4, as long as wide, slightly longer than A6. Club 2.5 x as wide as A3; A7 as long as wide; A8-A9 each 1.1 x as wide as long; A10 almost 1.5 x as long as A9.

Mesosoma fully 1.4 x as long as wide; higher than wide (15:14). Sides of pronotum finely reticulate-coriaceous, smooth along hind margin. Mesosoma dull, sparsely and uniformly hairy, uniformly reticulate-coriaceous, without notauli; mid lobe prolonged to base of scutellum; wide scuto-scutellar grooves with long hairs. Mesopleura smooth. Scutellum (fig. 24) at level of mesoscutum, without trace of tooth or keel, smooth and bare except along hairy margins. Metapleura smooth and bare in anterior 0.5, rest with whitish pilosity. Propodeal carinae moderately high, curved, hardly semitransparent.

Fore wing just reaching tip of metasoma, 2.5 x as long as wide, clear, with fine and

dense hairs; marginal cilia absent. Hind wing 5.3 x as long as wide; marginal cilia 0.25 width of wing.

Metasoma 1.3 x as long as head and mesosoma combined, very slightly wider than thorax, 1.4 x as wide as high, smooth. T1 and base of T2 thickly pubescent, T3-T6 combined half as long as T1-T2, with some superficially implanted hairs; T6 pointed, as long as wide.

♂: Unknown.

Named after the collector. Of the South African *Synopeas* described by SUNDHOLM (1970) most similar to *S. bicolor* SUNDHOLM, 1970, but this species has metasoma distinctly shorter than in *S. royi* and e.g. marginal cilia of wings longer.

Synopeas solidus spec. nov. (fig. 25)

Material examined: Holotype ♀: Malaysia, Borneo, Sabah, Sipitang, Mendolong 10.III. 1989 (S. ADEBRATT).

Description. ♀: Length 1.2 mm. Colour black; legs dark brown, tarsi entirely and both ends of tibiae lighter brown.

Head from above 1.8 x as long as wide, as wide as thorax, distinctly and almost uniformly reticulate-coriaceous. Head behind ocelli sharply angled, but hardly with a carina. Posterior ocelli separated from eye by their diameter; OOL:POL:LOL = 1:5:2. Head from in front wider than high (7:6). A1 shorter than height of head (11:12). A2 0.3 x as long as A1, 2.7 x as long as wide. A3 0.5 x as long as A2, about 1.5 x as long as wide. A4 1.4 x as long as A3, fully 2 x as long as wide. A5 about as long as A3. A7 as long as wide. A8 1.25 x as wide as long, A9 slightly smaller, about 1.25 x as wide as long. A10 1.7 x as long as A9.

Mesosoma 1.6 x as long as wide, 1.2 x as high as wide. Pronotum distinctly reticulate in upper anterior corner, rest smooth. Mesoscutum distinctly reticulate-coriaceous, rather sparsely hairy; notauli nearly complete, mid lobe posteriorly slightly prolonged, narrow but not sharply pointed, laterally with some long hairs partly covering the distinct scuto-scutellar grooves. Mesopleura smooth. Scutellum (fig. 25) at level of mesoscutum, sculptured as this, with some hairs; spine strong, slightly downcurved, reaching base of T2. Metapleura with long whitish setae all over. Propodeal carinae short, fused and low.

Fore wing 0.9 x as long as body, 2.5 x as long as wide, almost clear; marginal cilia 0.1 width of wing. Hind wing 6.3 x as long as wide; marginal cilia 0.5 width of wing.

Metasoma hardly as long as mesosoma (22:23) but slightly wider as this (15:14), 1.4 x as wide as high. T1 with some crenulation, laterally with large tufts of pubescence. T2 smooth, with scattered hairs except medially. T3-T6 combined hardly 0.5 x as long as T1-T2 combined, with fine reticulation.

♂: Unknown.

Runs to *S. indicus* MANI, 1975 in MUKERJEE's (1981) key to Indian species of *Synopeas*, but *indicus* is brighter coloured than *solidus*, it has ocellular space twice the ocellar diameter and metasoma sac-like basally, cf. MANI & SHARMA (1982).

Trichacis denudata spec. nov. (fig. 26)

Material examined: Holotype ♂: Republic of South Africa, Cape Province, Tsitsikama, Forest Park, Stormsriver (33°58'S, 23°54'E) 14-16.X.1994 (R. DANIELSSON).

Description. ♂: Length 1.5 mm. Colour black, A1 and legs reddish yellow; mandibles, A2-A10, all tarsi, most of mid tibiae, hind coxae and thickened parts of hind femorae and of hind tibiae brown.

Head from above 1.9 x as wide as long, slightly wider than thorax (17:16). Occiput almost smooth, with carina indicated; vertex behind with transverse wrinkles medially, laterally and between ocelli with reticulation; frons smooth. Lateral ocelli separated from eye by about 1.5 x their diameter. Head from in front 1.2 x as wide as high. A1 0.8 x as long as height of head. A2 one-third as long as A1, 2.7 x as long as wide. A3 half as long as A2, one and a third times as long as wide. A4 1.25 x as long as wide, 1.25 x as long as A3, one and a third times as wide as this. A5 equal to A3, A6 slightly longer and wider. A7-A10 as wide as A4, A7 1.2 x as long as wide, A9 fully one and a third times as long as wide, A10 1.5 x as long as A9.

Mesosoma 1.5 x as long as wide; higher than wide (9:8). Sides of pronotum smooth except anteriorly but much hairy. Mesoscutum smooth, finely reticulate anteriorly, moderately hairy, notauli complete; mid lobe slightly prolonged and pointed posteriorly. Mesopleura smooth. Scutellum (fig. 26) smooth, moderately hairy, at level of mesoscutum, without cluster of hairs. Metapleura with whitish pilosity all over. Propodeal carinae low, parallel, area in between slightly elongate and with traces of rugosity.

Fore wing hardly shorter than body (57:60), 2.4 x as long as wide, with brownish tint; marginal cilia hardly 0.1 width of wing. Hind wing 6.2 x as long as wide; marginal cilia hardly 0.4 width of wing.

Metasoma hardly shorter than head and mesosoma combined, as wide as thorax. T1 twice as wide as long, crenulated. T2 smooth except for very short wrinkles medially between basal foveae. T3-T7 smooth, combined hardly 0.4 x as long as T2, with a few superficially implanted hairs.

♂: Unknown.

The name refers to the lack of the tuft of hairs on scutellum which is normally present in *Trichacis*. This is the first species of the genus described from Africa.

Trichacis laticornis spec. nov. (fig. 27)

Material examined: Holotype ♀: Honduras, Cortés, Parque Nacional Cusuco, 5 km N Buenos Aires (15°29'N, 88°13'W) 15.VIII.1995 (R. CAVE). Malaise trap in oak/pine cloud forest. Paratype: 1 ♀ same data as holotype.

Description. ♀: Length 1.8-1.9 mm. Colour black; antennae and legs brownish yellow; flagellum, hind coxae, most of hind femora and distal half of hind tibiae dark brown; mandibles reddish brown.

Head from above 2.1 x as wide as long, 1.1 x as wide as thorax. Occiput medially smooth, with a row of scale-like hair-implantations behind sharp carina, laterally vertically striated-coriaceous. Vertex smooth, with a few short wrinkles and faint reticulation around ocelli, laterally reticulate-coriaceous. Frons smooth, hardly with wrinkles above

antennae. OOL 1.1 x as long as LOL. Temples unarmed. A1 0.6 x as long as width of head, 4.3 x as long as wide. A2 hardly twice as long as wide, 1.5 x as long as A3 which is 1.2 x as long as wide. A4 as long as A3, 1.1 x as long as wide. A7 1.3 x as wide as long; A8 and A9 each 1.2 x as wide as A7, 1.3 x as wide as long; A9 half as long as A10. Sensilla inconspicuous.

Mesoscutum smooth except anteriorly; anterior parallel lines inconspicuous; notauli fading out in anterior fourth. Mesopleurae smooth. Scutellum (fig. 27) at same level as mesoscutum, with dense whitish tuft; scutellum in lateral view slightly excavated behind.

Fore wing slightly brownish, with a distinct dark spot at end of imaginary subcostal vein and with some more transparent areas basally, 0.8 x as long as body (slightly over-reaching tip of metasoma), 2.4 x as long as wide; marginal cilia less than 0.1 the width of wing.

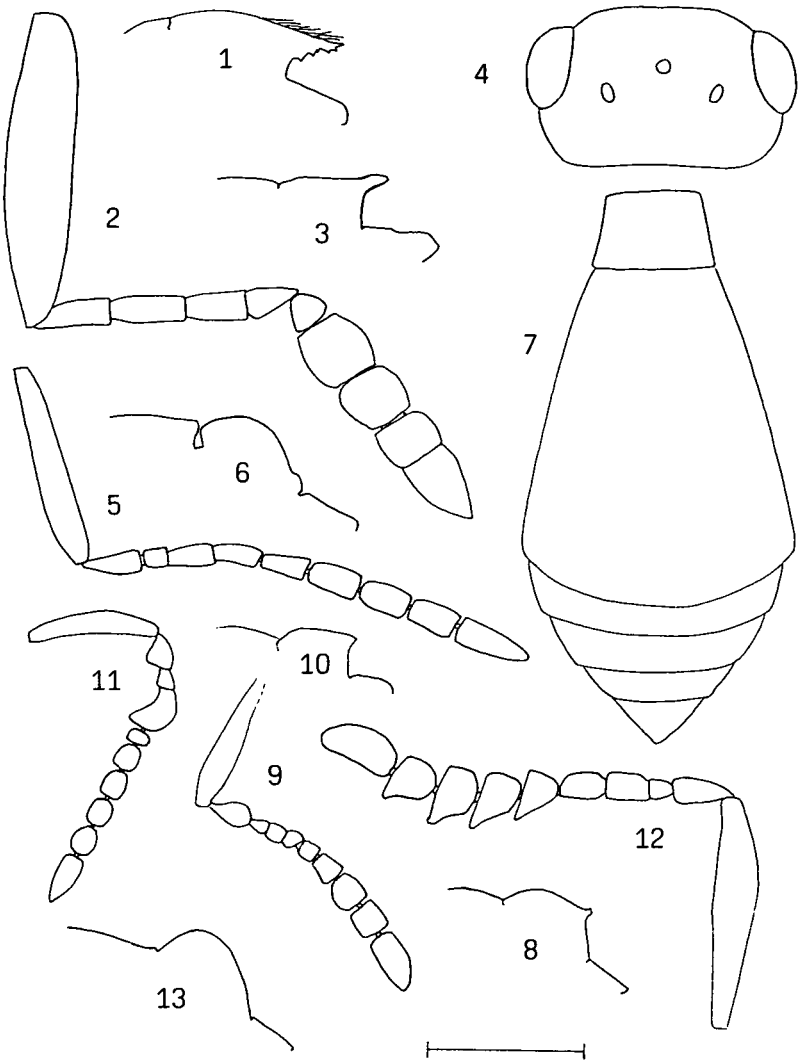
Metasoma longer than head and mesosoma combined (8:7), 2.1 x as long as wide, as wide as thorax. T1 hardly as long as wide (7:8), entirely crenulated. T2 without striae anteriorly, posteriorly almost smooth. T3-T6 combined two-thirds as long as T2, with distinct and dense punctation and numerous scattered long hairs. T6 half as long as width at base.

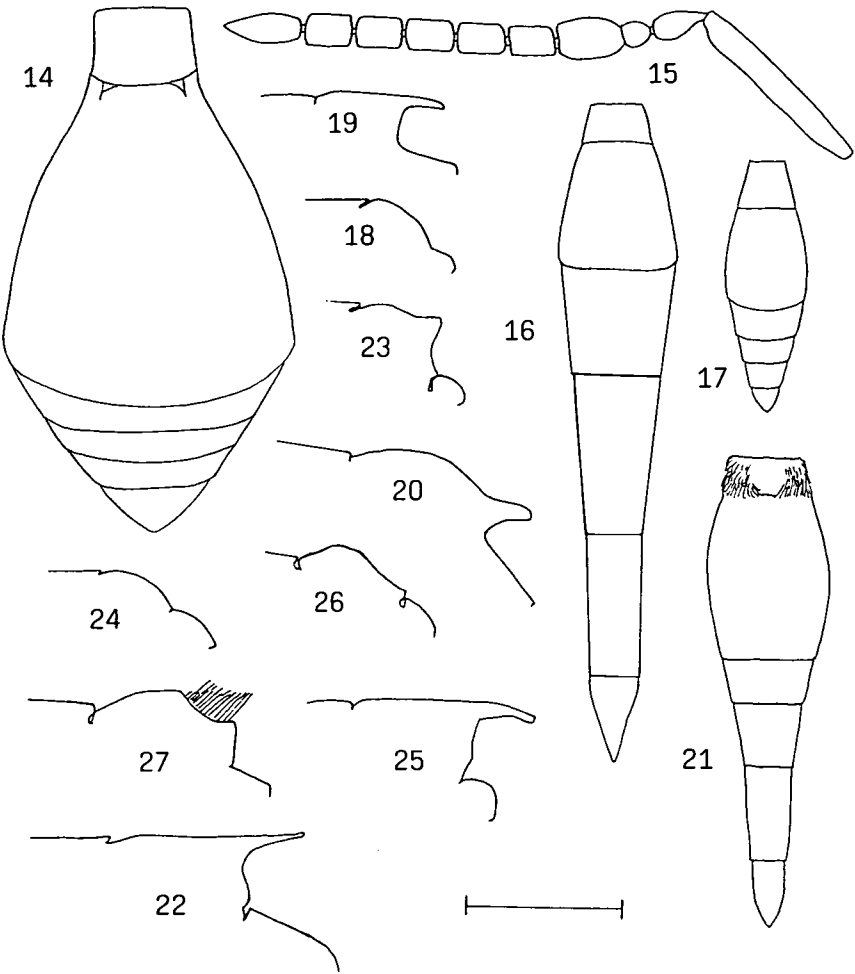
♂: Unknown.

Differs from the hitherto only described Neotropical *Trichacis*, *T. meridionalis* (BRUES, 1910) in antennal structure, cf. KIEFFER (1926). Of the Nearctic species mentioned by MASNER (1983) *laticornis* seems to be most similar to *T. cornicola* (ASHMEAD, 1893), but this species has occiput medially striated, metasoma broader, T2 striated basally, T3-T6 with only inconspicuous punctures, distinct sensilla on A8-A10 and clear wings. *T. laticornis* runs to *T. virginensis* ASHMEAD, 1893 in MASNER's key, but *virginensis* differs much from *laticornis*, e.g. in having T1 more than twice as wide as long and T6 very sharply pointed.

Figures 1-27 (p. 36-37)

1: *Amblyaspis caramba* spec. nov. ♀, scutellum; 2: *A. ecuadoriensis* spec. nov. ♀, antenna; 3: *Piestopleura nigra* spec. nov. ♀, scutellum; 4-7: *Platygaster danica* BUHL, 1999 ♀, head from above (4), antenna (5), scutellum (6), metasoma (7); 8: *P. dentata* spec. nov. ♀, scutellum; 9-11: *P. denticulata* spec. nov., antenna ♀ (9), scutellum ♀ (10), antenna ♂ (11); 12-15: *P. dilata* spec. nov., antenna ♀ (12), scutellum ♀ (13), metasoma ♀ (14), antenna ♂ (15); 16: *P. macgowni* spec. nov. ♀, metasoma; 17: *Sacaspalus japonicus* YAMAGISHI, 1982 ♀, metasoma; 18: *Synopeas bifurcatus* spec. nov. ♀, scutellum; 19: *S. carinifrons* spec. nov. ♀, scutellum; 20-22: *S. nigroides* spec. nov., scutellum ♀ (20), metasoma ♀ (21), scutellum ♂ (22); 23: *S. obesus* spec. nov. ♀, scutellum; 24: *S. royi* spec. nov. ♀, scutellum; 25: *S. solidus* spec. nov. ♀, scutellum; 26: *Trichacis denudata* spec. nov. ♂, scutellum; 27: *T. laticornis* spec. nov. ♀, scutellum. Scale bar = 0.25 mm except for figs. 16, 17 and 21 for which it is 0.50 mm.





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Literaturbesprechung

AVISE, J.C. 2000: Phylogeography. The History and Formation of Species. - Harvard University Press, Cambridge/ Massachusetts. 447 S.

Phylogeographie ist eine Forschungsrichtung, die sich mit Prinzipien und Prozessen zur geographischen Verbreitung von Abstammungslinien auseinandersetzt. Ihre historischen Wurzeln sind eng mit empirischen Studien über tierische mitochondriale DNA verflochten. Der Begriff "Phylogeography" wurde vom Autor selbst vor 13 Jahren eingeführt. Phylogeographie liegt an einer kritischen Kreuzung zwischen mehreren anderweitig ausgekoppelten Disziplinen innerhalb der Mikro- und Makroevolution von Organismen. Insbesondere wird eine empirische und konzeptionelle Brücke zwischen den Zweigen Populationsgenetik und phylogenetischer Biologie hergestellt.

In drei "großen" Kapitel liefert der Autor eine auf hohem Niveau stehende, moderne und brandaktuelle Übersicht über die junge Forschungsrichtung: "History and Conceptual Background", "Empirical Interspecific Phylogeography" und "Genealogical concordance toward speciation and beyond". Die so oft in diesen Fachgebieten notwendige "mathematische Dimension" hält sich dabei in Grenzen, läßt sich aber zum Verständnis vieler Theorien nicht vermeiden. Für den biologischen Systematiker dürften u.a. die Punkte "Intraspecific pattern in other animals" (in Abgrenzung zur Human-Analyse) und "Speciation processes and extended genealogy" von besonderem Interesse sein, wobei bei letzterem Punkt vor allem auch der Disput zwischen biologischem und phylogenetischem Artkonzept eingehend diskutiert wird.

Eine wertvolle Quelle für Studierende und "Profis" auf dem Gebiet der Populationsgenetik, die aber auch für alle anderen Biologen von Interesse sein sollte.

R. GERSTMEIER

FRENZ, L. 2000: Riesenkraken und Tigerwölfe. Auf der Spur mysteriöser Tiere. - Rowohlt Berlin Verlag, 249 S., einige s/w-Abb.

Manche halten Kryptozoologen für absolute Spinner, andere jedoch für seriöse Wissenschaftler. Als Vater der Kryptozoologie gilt der Franzose Bernard Heuvelmans, der 1950 den Begriff in die Welt setzte. Seither versuchen er und seine Anhänger, unentdeckte oder ausgestorben geglaubte Tiere wissenschaftlich nachzuweisen. Einen spannend zu lesenden und intensiv recherchierten Überblick über die bisherigen kryptozoologischen Aktivitäten gibt der Autor des vorliegenden Buches. Besonders sympathisch erscheint dem Rezensent die Intention des Autors, sich einerseits über noch so abstrus klingende kryptozoologische Theorien nicht lustig zu machen und andererseits dem Leser die Gratwanderung zwischen seriöser wissenschaftlicher Erkenntnis und versponnener Phantasterei zu verdeutlichen. Die ISC (International Society of Cryptozoology), im Internet unter www.izoo.org/isc/ zu erreichen, geht jedem noch so vagen Hinweis auf neue oder vermeintlich ausgestorbene Tierarten nach, wobei das Hauptaugenmerk offensichtlich auf die Wirbeltiere einschließlich weiterer, vermeintlich unter uns lebender Hominiden gerichtet ist. Ein Paradebeispiel für die fesselnde Schilderung der Jagd nach einer bisher verkannten Spezies ist der Abschnitt über den zentralafrikanischen Zwerg-elefanten *Loxodonta pumilio*. Wichtige Daten zu dieser Art lieferte der Amateurzoologe Ulrich Roeder. "Von 1969 bis 1985 führten ihn 16 Reisen nach Kamerun;.... Auf seinen Exkursionen in den Sumpfwäldern Kameruns hatte er zahlreiche Spuren des kleinen

Rüsseltieres vermessen können,...” Und weiter: “Nestroy (gemeint ist nicht der Theaterautor, sondern der ehemalige deutsche Botschafter in der Republik Kongo - Anm. des Rezensenten) war im Mai 1982 im Norden des Kongo unterwegs, in einem menschenleeren Gebiet,... Auf einer stark versumpften Lichtung im dichten Regenwald gelangen ihm kurz hintereinander aus einer Entfernung von etwa zehn Metern Aufnahmen beider Elefantenformen.” Diese Schilderungen sind ein Paradebeispiel dafür, daß Überlieferungen aus alter Zeit sowie die Aktivitäten und Berichte sogenannter “Amateure” sehr oft zur Entdeckung bzw. Verifizierung kryptischer Arten beigetragen haben. Im vorliegenden Fall wurden die Daten übrigens von Zoologen des Bonner Museum Alexander König wissenschaftlich ausgewertet. Weitere spannend, witzig und dennoch seriös geschriebene Geschichten vom “Biest aus Montezumas Zoo”, dem großen “Stinker vom Amazonas” oder dem “Entdeckerfieber in Indochina” hält der Autor bereit - lesen Sie’s doch einfach selbst!

M. CARL

ABE, T., BIGNELL, D.E. & HIGASHI, M. (eds.) 2000: Termites: Evolution, Sociality, Symbioses, Ecology. - Kluwer Academic Publishers, Dordrecht. 466 S.

Dieses Buch ist der erste Versuch seit 30 Jahren, einen forschungsorientierten Überblick über die Biologie von Termiten zu geben. Ein Schwerpunkt liegt dabei auf den Ergebnissen, die sich von modernen Technologien und zeitnahen Konzepten erzielen lassen, wie z.B. molekulare und morphologische Phylogenie, Sozialtheorie, Proteinreinigung, Verwendung von Mikroelektroden und Isotopenanalyse. Evolutionäre, ethologische und entwicklungsgeschichtliche Verwandtschaft mit Schaben sowie anderen sozialen Insekten werden im Detail betrachtet, nicht weniger als sieben Kapitel behandeln den hochkomplexen und vielleicht unkonventionellen Mutualismus zwischen Termiten und Archaea, Bakterien, Einzellern und Pilzen. Abschließend werden die Umwelteinflüsse von Termiten dargestellt sowie Themen über Populationsökologie, Einflüsse auf Böden und Bodenentwicklung, und die Kontrolle von schädlichen Arten in Gebäuden diskutiert.

Eine auf hohem Niveau geschriebene Zusammenfassung über alle Aspekte der Termitenbiologie, die für eine breite Leserschaft interessant ist.

R. GERSTMEIER

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