

***Phaenocarpa unguosetosa* spec. nov. from Finland and  
*Elasmosoma depressum* spec. nov. from Estonia (Hymenoptera:  
Braconidae: Alysiinae: Alysiini, Euphorinae: Neoneurini)**

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Achterberg, C. van & M. Koponen. *Phaenocarpa unguosetosa* spec. nov. from Finland and *Elasmosoma depressum* spec. nov. from Estonia (Hymenoptera: Braconidae: Alysiinae: Alysiini, Euphorinae: Neoneurini).

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Two new species of Braconidae belonging to the genera *Phaenocarpa* Foerster, 1862 (Braconidae: Alysiinae: Alysiini) and *Elasmosoma* Ruthe, 1858 (Euphorinae: Neoneurini) are reported from Finland and Estonia, respectively, and described as *P. unguosetosa* spec. nov. and *E. depressum* spec. nov. A key to the European species of the genus *Elasmosoma* Ruthe and to the species of the subgenus *Discphaenocarpa* Belokobylskij, 1998, is added.

### Introduction

The genus *Phaenocarpa* Foerster, 1862 (Braconidae: Alysiinae: Alysiini) is a cosmopolitan genus commonly encountered in the Holarctic region with a moderate number of species; from Europe (excluding the Caucasus) 64 species are recognized as valid at the moment. The genus is characterized by having the third antennal segment usually distinctly shorter than the fourth segment (if of about equal length or only slightly longer, then vein M+CU of the hind wing is distinctly shorter than vein 1-M); vein 3-SR of the fore wing longer than vein 2-SR; veins CU1b of the fore wing and cu-a of the hind wing present; vein CU1b of the fore wing longer than vein 3-CU1; the hind wing without vein r; the mandible with 3 teeth; the dorsope present; the second metasomal tergite smooth and the apex of the ovipositor sheath with or without a spine. Belokobylskij (1998) recognised several subgenera among the East Palaearctic species; one of these is the subgenus *Discphaenocarpa* Belokobylskij, 1998. The junior author discovered in Finland a new species belonging to this small subgenus. Members of the subgenus have the tarsal claws distinctly widened medially (but without an angulate lobe) and densely setose (and medially swollen in females: fig. 4) and with the apical tooth indistinct or minute. The tarsal claws of males are more slender and with a distinct apical tooth, but still wider and more setose than in other groups (figs 13, 14). The pulvillus of females is strongly swollen, and the precoxal sulcus wide medially. The new species is described and illustrated below and a key to the members of the subgenus is added.

The biology of the subgenus *Discphaenocarpa* is unknown but other species of the

genus are koinobiont endoparasitoids of cyclorhaphous Diptera larvae belonging to the family Anthomyiidae, Tephritidae, Drosophilidae, Lonchaeidae, Chloropidae, Opomyzidae, Sciomyzidae and Muscidae, and they emerge as adults from the host puparium.

The genus *Elasmosoma* Ruthe, 1858, belongs to the former subfamily Neoneurinae Bengtsson, 1918 (Hymenoptera: Braconidae), which is now included as a tribe in the subfamily Euphorinae because of the results of DNA-analysis (Belshaw et al., 2000). In Europe the tribe Neoneurini contains two Holarctic genera: *Elasmosoma* and *Neoneurus* Haliday, 1838. The junior author collected a series of specimens in Estonia of an obviously undescribed species of the genus *Elasmosoma* which is described below. It has the hypopygium of the ♀ very differently shaped compared to the type species of the genus (figs 16, 17 versus figs 18, 19). The genus *Elasmosoma* can be separated from other Neoneurini by having no closed cells in the hind wing (fig. 22), the antenna of the ♀ short and with 13 (of ♂ 14) segments, vein cu-a of the fore wing strongly reclivous, vein M+CU1 of the fore wing unsclerotized and only pigmented (van Achterberg & Argaman, 1993). Members of the genus *Elasmosoma* are endoparasitoids of adult ants, as far as the scanty biological information allows a conclusion (Shaw & Huddleston, 1991).

For recognition of the subfamilies Alysiinae and Neoneurinae, see van Achterberg, 1990, 1993, 1997, and for terminology used in this paper, see van Achterberg (1988). DABH stands for Department of Applied Biology, University of Helsinki, Helsinki; RMNH stands for the Nationaal Natuurhistorisch Museum (formerly Rijksmuseum van Natuurlijke Historie), Leiden; VVPC stands for Veli Vikberg's private collection, Turenki, Finland and ZMUH stands for Zoological Museum, University of Helsinki, Finland.

## Descriptions

### Subfamily Alysiinae Stephens, 1829

#### Genus *Phaenocarpa* Foerster, 1862

#### Subgenus *Discphaenocarpa* Belokobylskij, 1998

Type species (by original designation): *Phaenocarpa angustiptera* Papp, 1968.

### Key to species of the subgenus *Discphaenocarpa* Belokobylskij

1. Temples distinctly striate ventrally; length of ovipositor sheath 0.6-0.7 times length of hind tibia; mesopleuron largely coarsely sculptured; antenna of ♀ with 25-27 segments; face laterally extensively and finely striate; wing membrane distinctly infusate; fore wing slender; North & Central Europe, East Palaearctic .....  
..... *P. angustiptera* Papp, 1968
- Temples smooth ventrally; length of ovipositor sheath 0.4 times length of hind tibia; mesopleuron largely smooth except for precoxal sulcus; antenna of ♀ with 29-33 segments; face laterally sparsely and irregularly striate; wing membrane weakly infusate; fore wing moderately wide (fig. 1) ..... 2
2. Lower third of temples densely setose; hind leg pale reddish-brown; antennal segments of ♀ about 33; antenna largely pale reddish-brown and apically dark

- brown; apical tooth of tarsal claws of ♀ obsolescent (fig. 90-24 in Belokobylskij, 1998); East Palaearctic ..... *P. omolonica* Belokobylskij, 1998
- Lower third of temples sparsely setose; hind leg somewhat darkened brown, with coxa dark brown; antennal segments of ♀ about 29; antenna largely dark brown and basal four segments more or less brown; apical tooth of tarsal claws of ♀ distinct but minute (fig. 4); North Europe ..... *P. unguoetosa* spec. nov.

*Phaenocarpa unguoetosa* spec. nov.  
(figs 1-15)

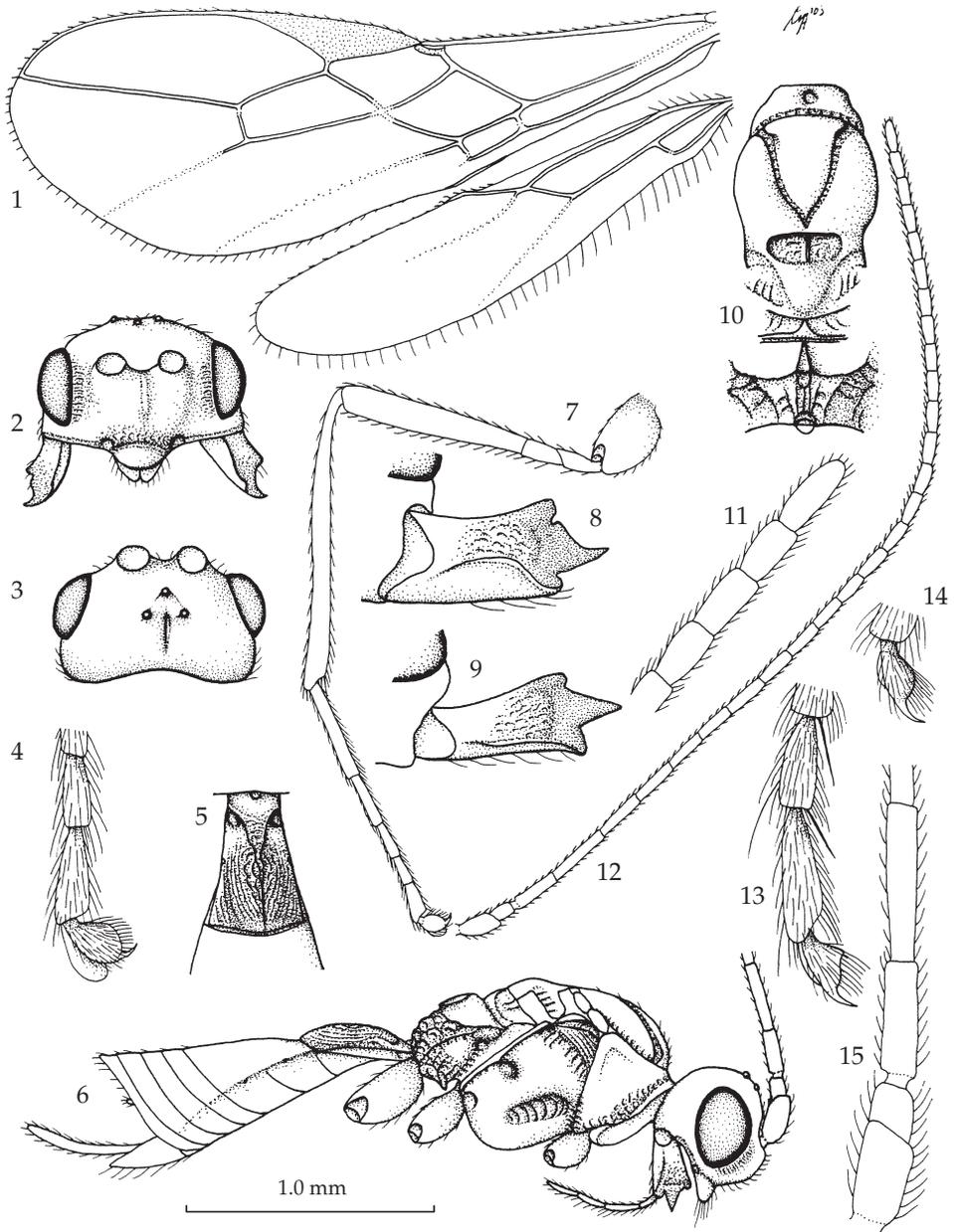
Material.— Holotype, ♀ (DABH), “Finland: Sa, Kangasniemi, 6875: 487, 16.ix.1995, M. Koponen”. Paratypes: 7 ♀♀ + 12 ♂♂ (DABH, RMNH, VVPC, ZMUH), 1 ♂, topotypic, same date; 1 ♀ + 1 ♂, “Finland: N., Nurmijärvi, 6711: 377, 24.vii.1992 (♀) or 6710-381, 4.vi.1995 (♂), M. Koponen”; 1 ♀, “Suomi: U., Helsinki, 6680: 389, 22.vii.1975, M. Koponen”; 1 ♂, “Suomi: U., Nurmijärvi, 6708: 380, 12.vi.1986, M. Koponen”; 1 ♀, “Finland: Al: Lemland, Nätö, 668:10, 17.vi.1985, H. Silfverberg”; 1 ♀, “Finland: N: Sipoo, 6687:407, 3.vi.1982, M. Koponen”; 1 ♂, “Finland: St: Huittinen, 6799:266, 30.v.1993, M. Koponen”; 2 ♀♀ + 1 ♂, “Finland: Ta: Hattula, Parola, 677:35, V. Vikberg”; 1 ♂, “Finland: Sa: Mikkelä, 6839:506, 27.ix.1996, M. Koponen”; 1 ♂, “Finland: S: Ristiina, 6826:501, 6.viii.1978, M. Koponen”; 1 ♂, Finland: Om: Haapavesi, 7120:421, 13.vii.1995, M. Koponen”; 3 ♂♂, “Finland: Om: Lappajärvi, 7020:331, 31.vii.1995, M. Koponen”; 1 ♂, “Finland: Om: Vimpeli, 7006:347, 5.vii.1985, M. Koponen”; 1 ♀, “Finland: Ok: Ristijärvi, 7164:549, 3.vii.1991, M. Koponen”.

Holotype, ♀, length of body 2.6 mm, of fore wing 2.8 mm.

Head.— Antenna 1.4 times length of fore wing (figs 1, 12), with 29 segments, length of third segment 0.89 times fourth segment and slightly wider (fig. 15), length of third, fourth and penultimate segments 4.2, 5.3 and 2.0 times their width, respectively; apex of scapus oblique and pedicellus medium-sized (fig. 15); length of maxillary palp 0.9 times height of head; OOL:diameter of posterior ocellus:POL = 11:2:6; frons glabrous (except for a few setae laterally) and smooth; length of eye in dorsal view 1.6 times temple (fig. 3); temples subparallel-sided behind eyes (fig. 3); face smooth medially, laterally and ventrally superficially rugulose; anterior tentorial pits medium-sized (fig. 2); median groove of vertex deep (fig. 3); length of malar space 0.2 times basal width of mandible; mandible slender, subparallel-sided, its medial length 1.8 times maximum width, second tooth distinctly longer than both other teeth, with minute incision between first and second tooth, third tooth with carina (figs 8, 9); head 1.3 times as wide as mesoscutum (figs 2, 10).

Mesosoma.— Length of mesosoma 1.5 times its height; side of pronotum largely smooth, but ventrally rugose (fig. 6); precoxal sulcus distinct, but absent posteriorly, wide and crenulate (fig. 6); metapleuron smooth dorsally and rugose ventrally; notauli completely impressed, moderately narrow and finely crenulate, anteriorly with weakly developed shoulders (fig. 10); medio-posterior depression of mesoscutum absent; mesoscutum largely glabrous and smooth; scutellar sulcus wide and deep, rugulose and with one carina (fig. 10); scutellum moderately convex; metanotum without median carina and not protruding dorsally (fig. 6); surface of propodeum smooth anteriorly, except for a narrow and protruding medio-anterior triangle (figs 6, 10), its median carina absent, posteriorly reticulate-rugose and without distinct areola (fig. 10).

Wings.— Fore wing: wing moderately wide (fig. 1); 1-SR slender; r:3-SR:SR1 =



Figs 1-15, *Phaenocarpa angulosetosa* spec. nov., ♀, holotype, but 13 and 14 of ♂ paratype from Finland, Nurmijärvi. 1, wings; 2, head, frontal aspect; 3, head, dorsal aspect; 4, 13, outer hind claw; 5, first metasomal tergite, dorsal aspect; 6, habitus, lateral aspect; 7, hind leg; 8, mandible, maximum view on first (= dorsal) tooth; 9, mandible, maximum view on third (= ventral) tooth; 10, mesosoma, dorsal aspect; 11, apex of antenna; 12, antenna; 14, inner hind claw; 15, four basal antennal segments. 1, 6, 7, 12: 1.0 × (= scale-line); 2, 3, 5, 10: 1.2 ×; 4, 8, 9, 11, 13-15: 2.5 ×.

2:19:45; r slender and issuing submedially from pterostigma (fig. 1); pterostigma elongate triangular (fig. 1); SR1 straight and ending close to apex of wing (fig. 1); 1-CU1:2-CU1 = 3:23; 2-SR:3-SR:r-m = 13:19:7; basal half of M+CU1 unsclerotized; first subdiscal cell medium-sized, its length about 3 times its height (fig. 1); CU1a at level of 2-CU1; m-cu just antefurcal and slightly converging to 1-M posteriorly. Hind wing: M+CU1:1-M = 13:19; m-cu absent (fig. 1).

Legs.— Hind coxa smooth; tarsal claws robust, semicircularly widened and densely setose (fig. 4), with a small apical tooth; length of femur, tibia and basitarsus of hind leg 6.1, 11.8, and 7.0 times their width, respectively; hind femur largely smooth; hind tarsal segments without specialized setae; length of hind tibial spurs 0.10 and 0.05 times hind basitarsus.

Metasoma.— Length of first tergite 1.4 times its apical width, its surface rather coarsely rugose medio-dorsally, and remainder sublongitudinally and rather finely striate (fig. 5), its dorsal carinae nearly complete, posterior half united in an irregular median carina, and tergite gradually widened behind spiracles (fig. 5); dorsope large and rather deep; second tergite smooth; ovipositor upcurved (fig. 6); length of ovipositor sheath 0.14 times fore wing and 0.6 times hind tibia, moderately setose and without an apical spine (fig. 5); hypopygium medium-sized and apically rather acute (fig. 6).

Colour.— Black; tegulum pale yellowish; palpi, four basal segments of antenna, mandible, fore and middle legs (but telotarsis dark brown) more or less dark brown; hind leg large infuscate; humeral plate and remainder of antenna dark brown; wing membrane subhyaline; veins (except dark brown 1-SR, 1-M, C+SC+R, parastigma and pterostigma) pale brownish.

Variation.— Length of fore wing 2.4-3.3 mm, and of body 2.4-3.1 mm; antenna of ♀ with 29 (3) segments, of ♂ with 30 (1), 31 (1) or 33 (1) segments; length of first tergite 1.4-1.6 times its apical width; length of ovipositor sheath 0.14-0.17 times fore wing; median carina of first tergite may be strongly keel-like developed and remainder of tergite largely smooth; hind leg may be similarly brownish as fore and middle legs; precoxal sulcus may be wider than in holotype. Males have normal (but somewhat widened) tarsal claws (figs 13, 14), with inner tarsal claw triangularly protruding (fig. 13); venation of male is similar to venation of female.

Distribution.— Finland.

**Subfamily Euphorinae Foerster, 1862**  
**Tribe Neoneurini Bengtsson, 1918**  
**Genus *Elasmosoma* Ruthe, 1858**

**Key to European species of the genus *Elasmosoma* Ruthe**

- 1. Hind tibia with a spur truncate apically (figs 24, 25); scapus shorter than pedicellus and third antennal segment shorter than fourth segment; veins cu-a, SR1 and 1-R1 of fore wing absent or largely so; antenna of ♀ with 12 segments; OOL about half as long as POL, ocelli close to eyes; fore tarsus distinctly longer than middle tarsus; associated with *Cataglyphus* species; South Europe, North Africa .....  
..... [*Kollasmosoma platamonense* (Huddleston, 1976)]
- Hind tibial spur acute apically (fig. 23); scapus longer than pedicellus and third

- antennal segment longer than fourth segment; veins cu-a, SR1 and 1-R1 of fore wing at least partly present; antenna of ♀ with 13 segments; OOL about equal to POL, ocelli distinctly removed from eyes; fore tarsus distinctly shorter than middle tarsus; associated with *Formica* spp.; Palaearctic except North Africa ..... 2
2. Hypopygium of ♀ shallowly emarginate, wider than long and medio-basally nearly flat (fig. 19); hypopygium of ♀ widely truncate apically (fig. 18); Europe .....  
..... *E. luxemburgense* Wasmann, 1909
- Hypopygium of ♀ deeply emarginate, longer than wide, depressed or folded medio-basally (figs 17, 21); hypopygium of ♀ acute (fig. 16) or branched (fig. 20) apically ..... 3
3. Hypopygium of ♀ in lateral view distinctly narrowed apically (fig. 20) and emargination moderately setose (figs 20, 21), its branches curved and more or less crossing each other (fig. 21), medio-basally folded; hind tarsus pale yellowish; Europe (including Balkans), East Palaearctic ..... *E. berolinense* Ruthe, 1858
- Hypopygium of ♀ in lateral view gradually narrowed apically (fig. 16), emargination densely and long setose (figs 16, 17), its branches straight and remaining far removed from each other (fig. 17), medio-basally distinctly depressed (fig. 17); hind tarsus dark brown; North Europe ..... *E. depressum* spec. nov.

*Elasmosoma depressum* spec. nov.  
(figs 16, 17)

Material.— Holotype, ♀ (DABH), "Estonia, Haapsalu r., Vätla, 3.vi.1990, M. Koponen". Paratypes: 1 ♀ + 4 ♂♂ (DABH, RMNH), same data.

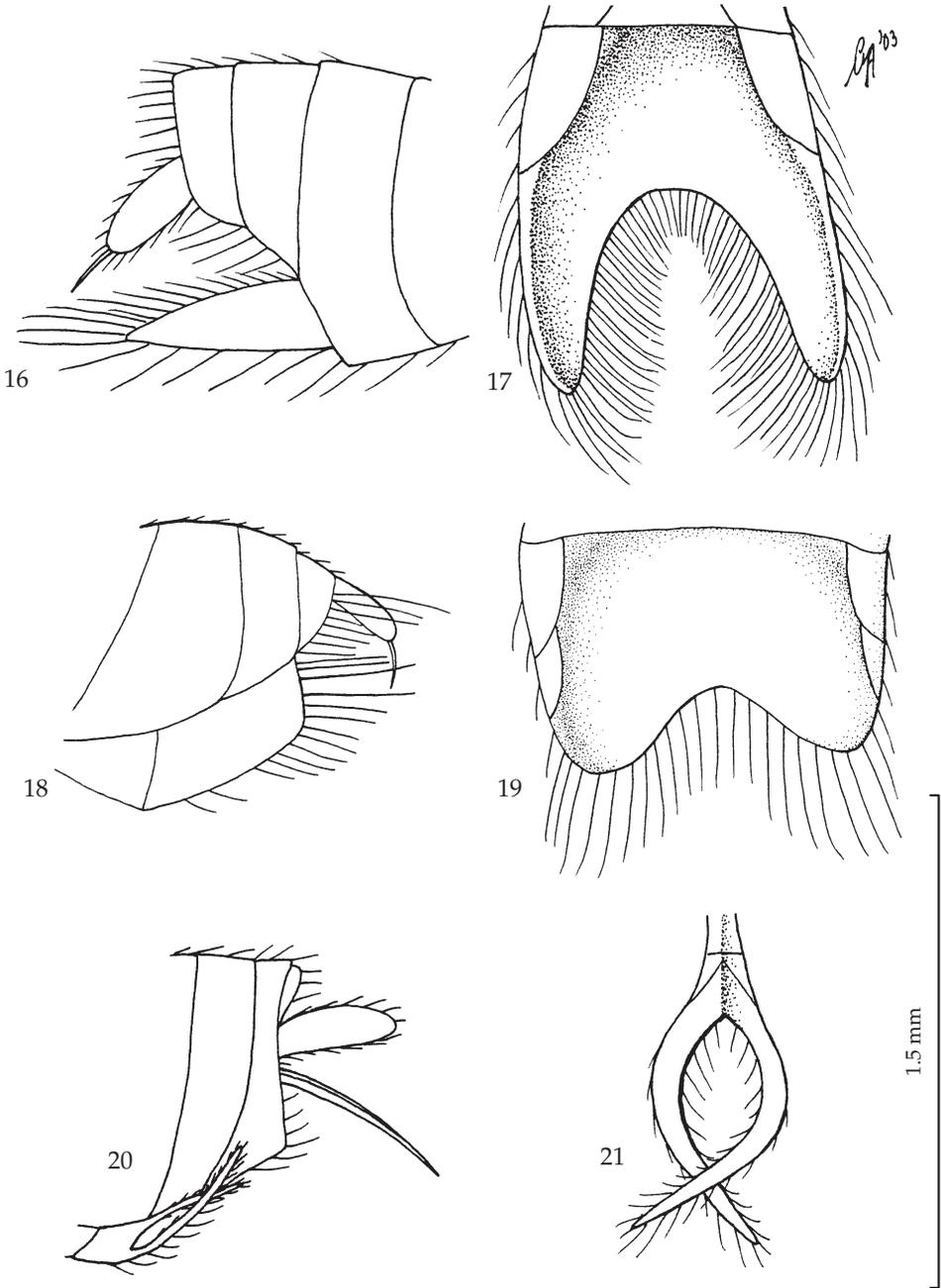
Holotype, ♀, length of body 2.1 mm, of fore wing 1.5 mm.

Head.— Head very finely transversely striate, but frons largely granulate and near anterior ocellus with some punctures; antenna finely adpressed setose, 0.5 times as long as fore wing; length of third segment of antenna 1.3 times fourth segment, length of third, fourth and penultimate segments 1.7, 1.3 and 1.0 times their width, respectively; length of maxillar palp 0.1 times height of head; length of eye 2.6 times temple in dorsal view; temples directly narrowed behind eyes; OOL:diameter of ocellus:POL = 6:4:7; length of malar space 0.2 times basal width of mandible.

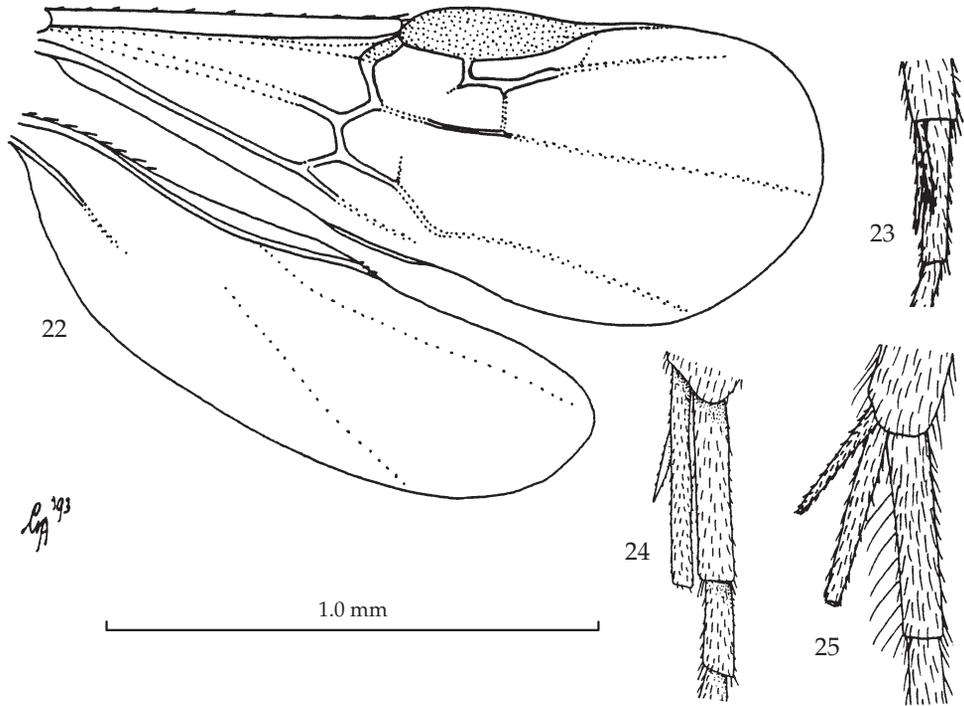
Mesosoma.— Length of mesosoma 1.1 times its height; mesopleuron smooth posteriorly, rugose anteriorly and remainder granulate; pleural sulcus distinctly crenulate; metapleuron granulate; mesosternal sulcus finely crenulate, narrow and rather deep; mesoscutum coriaceous-granulate; scutellum medio-posteriorly steep and finely rugulose; metanotum with median carina, but not protruding dorsally; propodeum finely coriaceous-granulate, rather dull, its median carina and areola absent, slightly depressed dorso-medially, posterior half largely rugose and its spiracle far in front of middle of propodeum, small, round.

Wings.— Fore wing: venation typical for genus (fig. 22); parastigma medium-sized; 1A largely sclerotized; basal half of wing densely setose, hardly less than distal half of wing. Hind wing: wing membrane setose basally.

Legs.— Hind coxa shiny, largely granulate; all tarsal claws slender, setose, simple; length of femur, tibia and basitarsus of hind leg 2.5, 6.2 and 5.0 times their width,



Figs 16, 17, *Elasmosoma depressum* spec. nov., ♀, holotype; figs 18, 19, *E. luxemburgense* Wasmann, ♀, Netherlands, St. Pietersberg; figs 20, 21, *E. berlinense* Ruthe, ♀, Netherlands, Meijendel. 16, 18, 20, apex of metasoma, lateral aspect; 17, 19, 21, hypopygium, ventral aspect. 16, 17, 20, 21: 1.0 × (= scale-line); 18, 19: 0.8 ×.



Figs 22, 23, *Elasmosoma berlinense* Ruthe, ♀, Netherlands, Meijendel; figs 24, *Kollasmosoma platamonense* (Huddleston), ♀, Israel, Eilat; fig. 25, *K. cubiceps* (Huddleston), ♀, paratype. 22, wings; 23-25, hind tibial spurs. 22, 23: 1.0 × (= scale-line); 24: 1.3 ×; 25: 2.0 ×.

respectively; fore spur as long as fore basitarsus; fore tarsus shorter than middle tarsus; hind spurs acute apically; length of spurs of hind tibia 0.8 and 0.7 times hind basitarsus.

Metasoma.— Length of first tergite 0.9 times its apical width, its surface rather shiny, granulate, in front of spiracles distinctly narrowed and behind spiracles subparallel-sided, without dorso-lateral and dorsal carinae, basally flat, medially rather flat and spiracles slightly protruding, situated near middle of tergite, second and third tergites distinctly granulate; second metasomal suture rather shallow, narrow and smooth; third and fourth tergites largely smooth but medially superficially granulate; setae of metasoma spread, short, fourth and following tergites densely setose; second tergite with sharp lateral crease; hypopygium of ♀ in lateral view hardly narrowed apically and straight ventrally (fig. 16), emargination densely and long setose (figs 16, 17), its branches straight, robust and remain far removed from each other (fig. 17), medio-basally distinctly depressed (fig. 17); length of ovipositor sheath 0.03 times fore wing.

Colour.— Black; antenna (but scapus and pedicellus somewhat paler), tegulum, pterostigma, vein C+SC+R of fore wing, second and third tergites, hind tarsus, and ventrally metasoma dark brown; humeral plate, fore and middle telotarsis, apex of

hind tibia and hypopygium brown; face, clypeus, labrum, palpi, remainder of legs pale yellowish; wing membrane subhyaline.

Variation.— Length of body 2.04-2.2 mm, of fore wing 1.5-1.8 mm, females have 12 antennal segments, but apical segment may be weakly differentiated from penultimate segment. Males have legs (but fore femur and base of fore and middle tibiae yellow), clypeus and labrum largely dark brown; antenna densely and bristly setose, with 14 segments, fourth antennal segment 1.5 times as long as wide; hypopygium of ♂ small, normal and apically truncate.

Distribution.— Estonia.

Notes.— The Japanese *Elasmosoma trichopygidium* Belokobylskij, 2000, has the hypopygium of ♀ with many long setae, the setae being longer than the hypopygium (in *E. depressum* shorter) and in lateral view the hypopygium is hardly longer than wide (in *E. depressum* much longer than wide). The new species does not resemble any of the Nearctic species according to the revision by Huddleston (1976).

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