

With many thanks  
and  
ANNOTATIONES ~~but complete~~  
ZOOLOGICAE *M. V. L.*  
et  
BOTANICAE

149

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# ANNOTATIONES ZOOLOGICAE et BOTANICAE

Slovenské národné múzeum — Príroovedný ústav

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No. 149

## EUROPEAN AND NORTH AMERICAN SPECIES OF THE GENUS STEGANA (DIPTERA, DROSOPHILIDAE)

Petr Lašťovka and Jan Máca

**Summary.** European and North American species of the genus *Stegana* Meigen are revised. *S. (Steganina) coleoptrata* species-group is defined and a survey of its Holarctic members is given. *S. baechlii*, *S. similis* (Europe), *S. dentifera* and *S. wheeleri* (North America), spp. n., are described. Other species are redescribed and new diagnostic characters, mainly of the terminalia, are given. *S. hypoleuca* Meigen (= *S. stroblii* Mik, syn. n.), *S. nigrithorax* Strobl (= *S. excavata* Okada, syn. n.) and *S. mehadiae* Duda are re-established as valid species. *S. longifibula* Takada, previously known only from Japan, is recorded from Europe. Lectotypes of *S. hypoleuca* Meigen and *S. nigra* Meigen are designated. A short review of biology, an outline of the taxonomic relationships and a key to the European and North American species are given.

A number of names were used for the European species of *Stegana* Meigen until the end of the 19th century, viz. *S. furta* (L.), *S. coleoptrata* (Scop.), *S. curvipennis* (Fall.), *S. hypoleuca* Meig., *S. nigra* Meig., *S. annulata* Hal., *S. stroblii* Mik; in addition, one "variety", *S. coleoptrata* var. *nigrithorax* Strobl, was known at that time. Subsequently, both *S. curvipennis* and *S. nigra* were established as synonyms of *S. furta* (Duda, 1934; Basden, 1961). The remaining nominal species were considered conspecific with *S. coleoptrata* by Duda (1934), including *S. mehadiae* Duda, 1924, originally described as "var. n. oder sp. n.". Some of the recent authors (Basden, 1961; Papp, 1973; Bächli, in press) reestablished specific rank of some of the Duda's "varieties" of *S. coleoptrata*, but satisfactory interpretation was still wanting. Of the North American species, *S. vittata* Coq. and *S. antigua* Wheeler were described, in addition to the Holarctic *S. coleoptrata*. Whereas the systematics of the European and North American fauna had little progressed since Duda's time, there was a great deal of taxonomic work by Japanese authors (Takada, 1968; Okada, 1971, 1978; Nishiharu, 1979), with respect to East-Palaearctic species of the genus.

The purposes of the present paper are to give a revision of European and

North American species, based mostly on the study of the type specimens. New taxonomic criteria (especially of the terminalia) are used, emphasis being laid on a standard position of all observed and measured characters. It has been stated that most of the previously described species are valid; four species are described as new and one species previously known from Japan is recognized in Europe. The *S. (Steganina) coleoptrata* group, comprising most members of the "group 1" of Okada (1971), in addition to all newly described species, is established and a survey of its Holarctic members is given.

Morphological terminology is mostly based on that of Okada (1956, 1971). Anterior width of frons is measured between eye-margins above lunula, posterior width is defined as distance of *vti* bristles. Length of frons is determined as distance from lunula to the ridge of vertex. Ratio of posterior to anterior width of frons is termed width ratio; ratio of the length to anterior width is termed length/width ratio. Width of genae is measured at buccal angle (angle between genae and occiput), i. e. at the level of strong buccal bristle. Number of the rays of arista is given by arista formula (Wheeler & Takada, 1960). Primary prescutellars are present in one pair, in the same position as the prescutellar bristles of other *Steganinae*; the elongated acrostichal bristles, making a transverse line in front of scutellum, are termed secondary prescutellars. The term periandrium is used in the sense of Griffiths (1972), its paired furcoid process is the anterior process; we are not sure if this process is homologous with the remnants of 8th tergite (see Takada, 1963).

The following abbreviations are used to designate the deposition of material: DMS — District Museum Tábor, Natural History Department, Soběslav; EMH — East Bohemian Museum, Natural History Department, Hradec Králové; FIP — Research Institute of Food Industry, Praha; IPE — Institut für Pflanzenforschung, Abteilung Taxonomie der Insekten, Berlin — Eberswalde; MMB — Moravian Museum, Entomology Department, Brno; MNB — Museum of Natural History, Budapest; NMA — Naturhistorisches Museum, Admont; NMP — National Museum, Department of Entomology, Praha; NMW — Naturhistorisches Museum, Abteilung Insekten, Wien; SMB — Slovakian National Museum, Bratislava; UMW — U. S. National Museum, Entomology Department, Washington; UTA — University of Texas, Department of Zoology, Austin; ZIL — Zoological Institute, Department of Systematics, Lund; ZIW — Zoological Institute of the Polish Academy of Science, Warszawa; ZMC — Zoological Museum, Entomology Department, Copenhagen; ZMH — Zoological Museum of the University, Helsinki; ZMZ — Zoologisches Museum der Universität, Zürich-Irchel.

#### Genus *Stegana* Meigen

*Stegana* Meigen, 1830: 79.

Type-species: *Stegana nigra* Meigen, 1830: 79 (design. by Zetterstedt, 1847: 2577) = *furta* (L.).

*Protostegana* Hendel, 1920: 53.

Type-species: *Drosophila curvipennis* Fallén, 1823: 4 (by original design.) = *furta* (L.).

Subcosta bent caudad and fused with *R*, apically. *R<sub>4+5</sub>* and *M<sub>1+2</sub>* con-

vergent distally. Further characters were found in all of the Holarctic species examined but may not be common for the whole genus: Wings darkened, curved down in resting position. Mid tibia with a group of bristles basally on the dorsal side. First abdominal tergite well developed, bristled. Pleural membrane of abdomen with oblique wrinkles, abdominal spiracles more or less reduced. Abdominal sternites large, with many bristles, 6th abdominal sternite of male absent. Hypandrium with a lamellar anterior lobe. Ejaculatory apodeme mostly with two impaired patches. Anterior parameres more or less reduced. Posterior parameres fused to unpaired formation. Female 7th tergite apically and 8th tergite basally pale and weakly sclerotized in medial line. Spermatheca bulbous, with a tailed appendage.

Information on the morphology of preimaginal stages is sporadic. Hennig (1952) and Morge (1956) described the 3rd instar larva and the puparium of *S. (?) coleoptrata* (Scop.). The previously unknown egg of *S. mehadiae* Duda is described in the present paper.

Life histories of *Stegana* species are poorly known, as well. An African species was bred from flowers (Burugia & Olembo, 1975). Adults of the European species can be found sitting on the trunks of diseased or dead old trees; they escape briskly by flying when disturbed. Some species seem to be associated with particular species of trees, perhaps through the larval stage. Larvae of *S. furtiva* were found in dead branches of a birch previously attacked by a beetle, *Agrilus betuleti* Ratzb. (see Baer, 1914). Puparia and/or larvae of *S. coleoptrata* (which may be, in fact, considered as any of the related species) were collected under bark of poplar (Perris, 1877), pine (Séguy, 1934), birch and plum (Morge, 1956). Adults of *S. (?) coleoptrata* were collected on oak (Perris, 1877). Of the material from South Bohemia listed in the present paper, adults of *S. mehadiae* were regularly collected on beech trunks with fruit-bodies of *Fomes fomentarius* (L. ex Fr.) Kickx, while specimens of *S. hypoleuca* were found on oaks. Fermenting baits attract *Stegana* species only exceptionally (Bächli, 1972, etc.); suction trap seems to be more effective (Schmid, 1968). Males are less frequent than females, at least in collections on trunks; this is most conspicuous in *S. mehadiae* and *S. hypoleuca*. Parasites of *Stegana* species were recorded by Morge (1956) and Máca (in press).

For the division to subgenera, papers of Wheeler (1960) and Okada (1978) are of special importance. The presently revised two subgenera can be distinguished as follows:

— Subgenus *Stegana* s. str.: Longer eye-axis vertical, frons and face making obtuse angle in profile. Face without distinct colour pattern. Palpi blackish brown to black. Mesonotum (without scutellum) less than 1.5 times longer than wide. Clasper contiguous to periandrium (with exception of *S. taba* Okada). Posterior paramere rod-like, several times bent. Spermatheca nearly globular.

— Subgenus *Steganina* Wheeler: Longer axis of eye nearly horizontal, frons and face making a rectangle in profile. Face mostly with a dark horizontal strip below. Palpi mostly yellow. Mesonotum more than 1.5 times longer than wide (at least in the species examined). Clasper separated from periandrium. Posterior paramere lamelliform, flat. Spermatheca beet-shaped.

### 1. Subgenus *Stegana* s. str.

The two species revised may be distinguished as follows:

- Arista 5—6/3—4. Mesonotum dark, unicolorous. ♂: Hypandrium at least five times longer than wide (Fig. 1). ♀: Egg-guide with apical margin deeply and narrowly notched medially (Fig. 8). Palaearctic . *S. furtula* (L.)
- Arista 8—9/5—7. Mesonotum yellow, with five longitudinal dark stripes (lateral ones in the notopleural line). ♂: Hypandrium less than twice longer than wide (Fig. 11). ♀: Egg-guide with a shallow obtuse incision on apical margin (Fig. 21). Nearctic. . . . . *S. vittata* (C o q.)

#### *Stegana (Stegana) furtula* (L.) (Figs. 1—10)

*Musca furtula* L., 1766: 991.

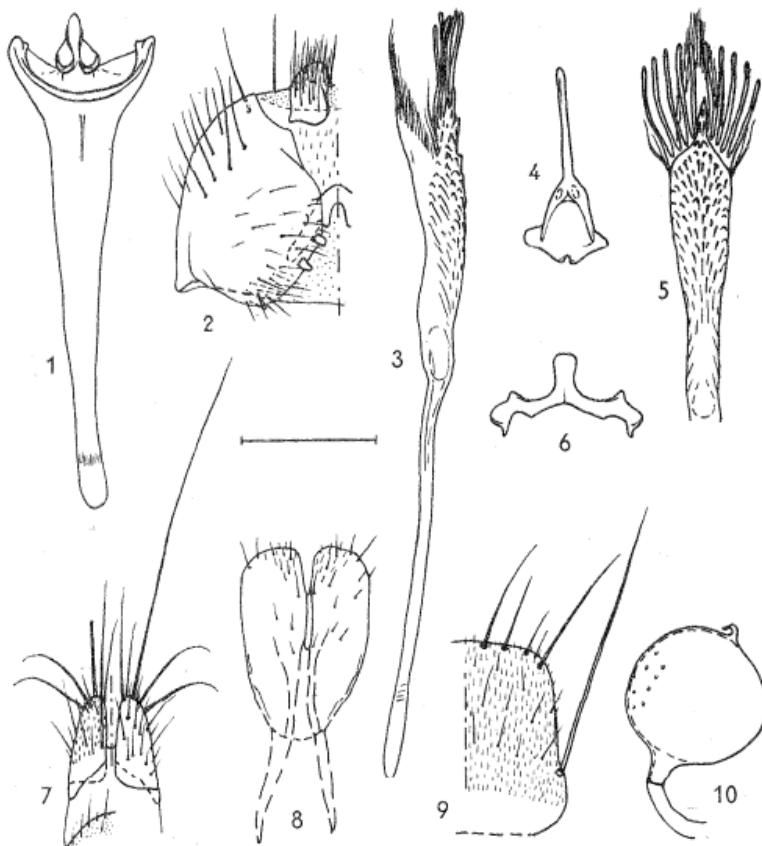
*Drosophila curvipennis* Fallén, 1823: 4

*Stegana nigra* Meigen, 1830: 79.

The redescription of external characters by D u d a (1934) is relatively detailed; some other characters, mainly those of terminalia, are presented below.

Palpi wide, brownish-black, with about 8 marginal and numerous discal setae. 10 — 12 irregular rows of acrostichal bristles. Primary prescutellars not quite twice as long as secondary ones. Subnotopleural stripe and sternopleura dark. Wings strongly darkened anteriorly, paler posteriorly, veins darkened. C-i 1.9 — 2.2, Ac-i 5.0 — 7.5, 4v-i 1.9 — 2.2; C<sub>3</sub> fringe 0.7 — 0.9. Mid and hind tibia with indistinct preapical bristles. Length ratio of metatarsus to other tarsal segments altogether: 1st: 0.75; 2nd: 0.75 — 0.8; 3rd: 0.85. Plcural membrane of abdomen dark, abdominal spiracles lacking.

Terminalia, male. Periandrium without anterior processes. Clasper semicircular, with two strong teeth. Decasternum heavily sclerotized, V-shaped, with two short paramedial processes. Hypandrium with anterior lobe strongly elongated. Anterior parameres minute. Posterior paramere heavily sclerotized, lateral arms bent, medial process articulating with decasternum. Aedeagus connected to apodeme in obtuse angle, elongated, wrinkled ventrally; apex somewhat widened, with about 30 fine hairs in dorsal part and about 10 elongated rod-like bristles ventrally; apodeme long, slender. Ejaculatory apodeme with acute incision apically.



Figs. 1-10. *S. furta* (Františkovy Lázně); 1-6, ♂: 1 — hypandrium, 2 — periandrium, + clasper ventral; 1 — dorsal view, 3 — aedeagus with apodeme, lateral view, 4 — ejaculatory apodeme, 5 — aedeagus, ventral view, 6 — posterior paramere; 7-10, ♀: 7 — cerci (left — dorsal, right — ventral), 8 — egg-guide, 9 — subanal plate, 10 — spermatheca. The scale line represents 0.15 mm or 0.075 mm (Figs. 7-8).

**Female:** The 8th tergite anterolaterally with two processes longer than width of tergite. Egg-guide with deep and narrow medial notch. Cerci elongated, with long, partly wavy bristles. Subanal plate with long lateral bristle subbasally.

*Types*. *Musca furtiva* L.; **Lectotype**, male, deposited in Zoological Museum, Uppsala; designated by Bächli (in press).

*Drosophila curvipennis* Fallén; **Lectotype**, male, deposited in Museum of Nat. History, Stockholm; designated by Bächli (in press).

*Stegana nigra* Meigen; **Lectotype**, female: Kiel (FRG), coll. Winthem; with determination labels: "pulicaria, det. Wied." (two labels), "nigra", and "*P. curvipennis*, det. Basden" (NMW); here designated. **Paralectotypes**; two females, No. 2452, without data on labels (MNB); female, same labels as in Lectotype, but without one label "pulicaria" and without label "nigra" (NMW).

Material examined: 52 ♂♂, 80 ♀♀.

**Czechoslovakia** (examples of localities: 44 ♂♂, 64 ♀♀): Bohemia: Hradec Králové; Hoděšovice env. Holice; Oseček nr. Velký Osek; Kunice nr. Praha; Týnec nad Labem; Svatovávka env. Františkovy Lázně; Vyšný nr. Český Krumlov. Moravia: Fryštákov; Vyškov; Třešť; Ochoz nr. Brno; Blílovice nad Svitavou; Strachotín nr. Hustopeče; Valtice. Slovakia: Turecký vrch nr. Pezinok; Pila nr. Modra; Velký Krtíš-Koprovnica (DMS, EHM, FIP, MMB, NMP, SMB, coll. Barták, coll. Martinek). **FRG**: **Lectotype** and **paralectotypes** of *S. nigra* Meigen; Harz, without date, Lichtwardt lgt., 1 ♀ (NMP). **Switzerland**: Delémont, VIII. 1874, 1 ♀; Würenlingen, VI. 1973, 1 ♀; both Bächli lgt. (ZMZ). **Austria**: Hofgastein, 23. VII. 1879, 1 ♀; Gelsberg, 17. VII. 1879, 1 ♀; both Milk lgt.; "Austria, Alto Sammlung", 2 ♀♀; Kremsmünster, 30. V. 1923, 1 ♂. 7. VI. 1931, Czerny lgt., 1 ♂ (all NMW); Pernitz, without date, lgt.?, 1 ♂ (NMP). **Italy**: Villabassa (Niederdorf), VI. 18/5, Bergenstamm lgt., 3 ♂, 1 ♀ (NMW). **Roumania**: Mehadia, VI. 1904, Kertész lgt., 1 ♀ (MNB); Cimpulung-Moldovenesc and Pojarita nr. Cimpulung-M., VI. 1974, Ceianu lgt. 2 ♂, 1 ♀ (coll. Ceianu). **Bulgaria**: Popina laka (Pirin Mts., 1400–1600 m), 17. VII. 1971, Lauterer lgt., 1 ♂ (MMB). **USSR**: Azerbijan: Baku, without date, Langhofer lgt., 1 ♀ (MNB). Sibiria or.: Irkutsk, without date, Ahnger lgt., 1 ♀ (ZMH).

**Distribution**: Palaearctic; not found in Japan. Obviously prefers xerothermic places, as grasslands, steppe-forests etc. The only species of *Stegana* collected by sweeping in Czechoslovakia.

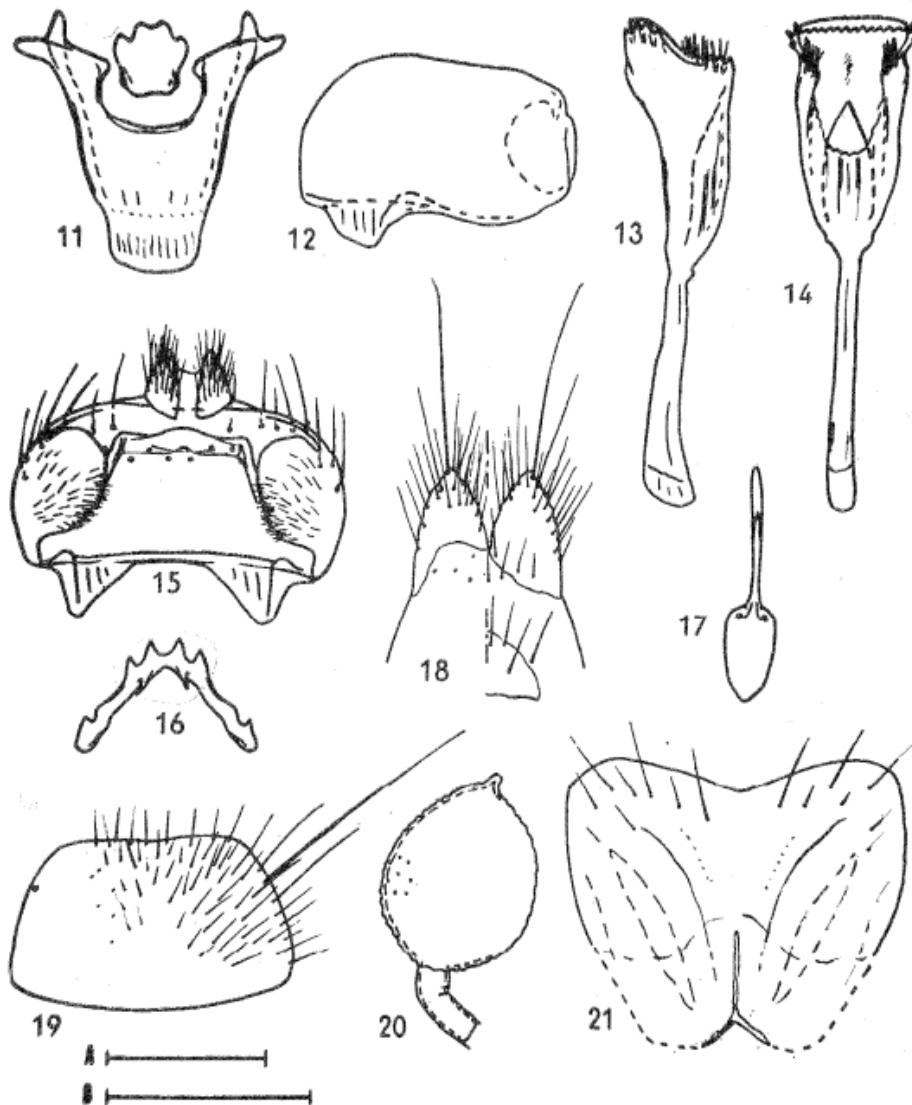
*Stegana (Stegana) vittata* (Coquilletti)  
(Figs. 11–21)

*Phortica vittata* Coquilletti, 1901: 618.

Original description of this species is supplemented here by a description of abdominal structures.

Griffiths 1972  
= *Epanthidium* and *Epanthidium* <sup>= *Surstylos*</sup>

Male. Abdominal spiracles well developed on 5th segment, reduced on 4th segment. Periandrium with a pair of anterior processes. Casper roughly semicircular, without teeth. Decasternum weakly sclerotized, with bent lateral arms. Hypandrium less than twice longer than wide, with short basal apodeme medially. Anterior parameres apically fused to a club-shaped formation. Posterior paramere medially with six pointed projections, two of them recurved. Ventral side of aedeagus concave, apical margin dorsolaterally dentate and bordered with a narrow rim, laterally with some hairs; apodeme clavate. Ejaculatory apodeme spoon-shaped.



Figs. 11–21. *S. vittata*; 11–17, ♂ (Redding); 11 — hypandrium, 12 — periandrium, lateral view, 13 — aedeagus with apodeme, lateral view, 14 — aedeagus, ventral view, 15 — periandrium, ventral view, 16 — posterior paramere, 17 — ejaculatory apodeme; 18–21, ♀ (Bear Mt.); 18 — cerci (left — ventral, right — dorsal), 19 — subanal plate, 20 — spermatheca, 21 — egg-guide. The scales A (♂) and B (♀) represent 0,2 mm.

**F**emale. Abdominal spiracles of 2nd to 6th segment developed, those of 2nd segment somewhat reduced. 8th tergite deeply notched medially at base, with several bristles. Apical margin of egg-guide shallowly concave. Cerci conical, with moderately long bristles in distal half and several bristles at basis.

**T**ype. *Phortica vittata* Coquillett; **Holotype**, sex unknown. No. 5508, without date and locality (UMW).

**M**aterial examined: 2 ♂♂, 1 ♀.

USA: Connecticut, Redding, 8. VII. 1932, Melander Igt., 2 ♂♂; New York, Bear Mt., 24. V. 1941, Melander Igt., 1 ♀ (UMW).

**D**istribution: Eastern part of USA.

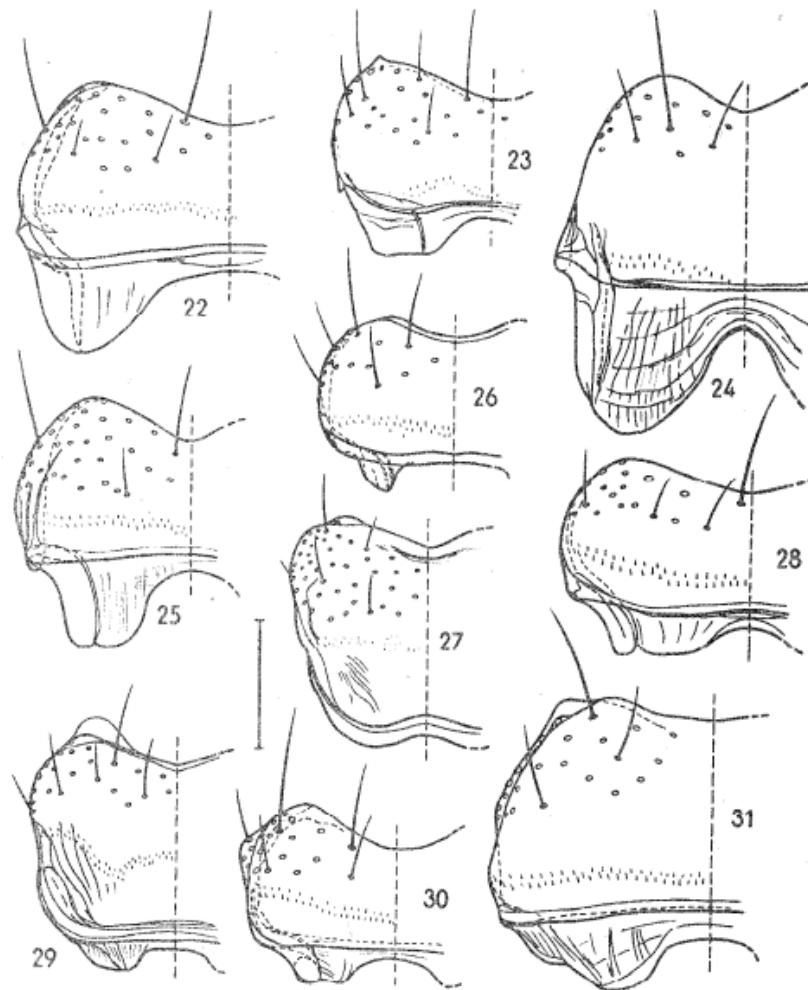
## 2. Subgenus *Steganina* Wheeler

*Stegana* subg. *Steganina* Wheeler, 1960: 110

Type-species: *Musca coleoptrata* Scopoli, 1763: 338 (by original design).

Okada (1971) divided the subgenus *Steganina* into three unnamed groups on the basis of cluster analysis of 11 external and 2 genitalic characters. Most of the species of his "group 1", including all European and North American species, show considerable degree of inter-relationship which obviously corresponds to a level of a natural species-group; this is named here as *coleoptrata* species-group. The following species belong to it: *S. antigua* Wheeler, *S. baechlii* sp. n., *S. coleoptrata* (Scop.), *S. dentifera* sp. n., *S. hypoleuca* Meigen, *S. longifibula* Takada, *S. mehadiae* Duda, *S. nigrithorax* Strobl, *S. similis* sp. n. and *S. wheeleri* sp. n. Two East Asian species, *S. unidentata* Takada and *S. shirozui* Okada, both also originally included into Okada's "group 1", may be separated from the *coleoptrata* group by a number of characters of male terminalia (clasper, posterior paramere, ejaculatory apodeme); perhaps they form another species-group.

Main diagnostic characters of the *coleoptrata* group are as follows: Face with at least one horizontal dark band. Palpi and praelabrum yellow. Sternopleura unicolorous. Abdominal spiracles reduced in size and/or in number (at least, those of 2nd segment reduced in size). Periandrium with more or less distinct anterior processes. Clasper deeply excavated distally, with one apical or subapical sclerotized spine, articulated with periandrium. Posterior paramere narrower than hypandrium, with short or moderately long lateral arms. Aedeagus mostly widened distally, apical margin with long hairs. Ejaculatory apodeme with slender stem, distal plate with two membranous patches. Egg-guide with posterior margin straight or slightly convex.



Figs. 22–31. Periandrum, lateral view, ♂: 22 — *S. similis* (holotype), 23 — *S. coleoptrata* (Velká Zdobnice), 24 — *S. antigua* (holotype), 25 — *S. longifibula* (Bad. Delliach), 26 — *S. nigrithorax* (Aigle), 27 — *S. mehadiae* (Hattula), 28 — *S. wheeleri* (holotype), 29 — *S. hypoleuca* (Pécs), 30 — *S. baechlii* (holotype), 31 — *S. dentifera* (holotype). The scale line represents 0.3 mm or 0.6 mm (Figs. 27, 29).

Key to species of coleoptera group

- 1 Large species; wing length more than 4.0 mm in female and 3.4 mm in male. 14 – 20 rows of acrostichals. Genae wide, ratio of their length to width 2.0 or less. Wings intensively darkened also posteriorly; all veins except basal parts of costa black. Palpi wide, with at least 20 setae. Carina high, strongly widened basally. ♂: Anterior lobe of hypandrium narrow, much longer than wide (Fig. 71), or anterior parameres nipped (Fig. 63). ♀: Cerci densely pubescent ventrally, at least in basal half. Subanal plate about as wide as long . . . . . 2
- Smaller species; wing length in female less than 3.5 mm, in male less than 3.1 mm. 8 – 12 rows of acrostichals. Genae narrower, their length/width ratio 2.7 or more. Wings darkened anteriorly, paler at posterior margin, veins mostly brown. Palpi regularly club-shaped, with at most 15 setae. Carina mostly flat, slightly widened dorsally. ♂: Anterior lobe of hypandrium short and wide, anterior parameres smooth. ♀: Cerci ventrally at base with several sparse setulae at most. Subanal plate nearly twice as wide as long . . . . . 3
- 2 (1) Mesonotum yellowish orange, sometimes with darker patches and stripes about middle. Carina below about twice wider than above, its widest part distinctly narrower than 2nd antennal segment. ♂: Hypandrium almost triangularly narrowed anterad, posterior paramere with numerous warts posteriorly (Fig. 101). ♀: Supraanal plate not longer than wide (Fig. 129). Europe, Caucasus . . . . . *S. hypoleuca* Meigen
- Mesonotum black or brownish black, paler laterally and at humeral part. Carina below three times wider than above, its widest part about as wide as 2nd antennal segment. ♂: Hypandrium anteriorly narrow, with nearly parallel sides (Fig. 71). Posterior paramere with single apical spine (Fig. 92). ♀: Supraanal plate about twice as long as basally wide (Fig. 132). Europe . . . . . *S. mehadiae* Duda
- 3 (1) Frons distinctly narrowed anteriorly, width ratio more than 1.5. ♂: Aedeagus widened proximally, separated from apodeme by a constriction (Fig. 75). ♀: Cerci very narrow, conical, with nearly pointed apex (Fig. 133). Europe . . . . . *S. baechlii* sp. n.
- Frons with nearly parallel lateral sides, width ratio less than 1.3. ♂: Aedeagus proximally not wider than distally, smoothly passing into apodeme. ♀: Cerci widely oval, apex rounded . . . . . 4
- 4 (3) The 3rd antennal segment elongate oval, ratio of its length to basal width 1.8 or more. ♂: Posterior paramere with long, straight process posteriorly (Fig. 100). Aedeagus apically lanceolate (Fig. 77). Female unknown. USA . . . . . *S. antigua* Wheeler
- 3rd antennal segment mostly ovoid, ratio of length to basal width 1.7 or less. ♂: Medial process of posterior paramere curved or absent. Aedeagus widely rounded apically . . . . . 5
- 5 (4) Genae wide, ratio of short diameter of eye to maximum width of genae 2.25 – 2.3. Dorsal margin of face widely rounded, lateral margins strongly divergent ventrally. Carina medially widened and ventrally pointed. ♂: Aedeagus cylindrical, at least twice as wide as apodeme (Fig. 80). Posterior paramere widely winged (Fig. 96). ♀: Cerci nearly semicircular (Fig. 135). Europe, Japan . . . . . *S. nigrithorax* Strobl
- Genae narrow, ratio of short diameter of eye to maximum width of genae 3.0 or more. Face angular dorsolaterally, lateral margins at most slightly divergent. Carina evenly narrow or gradually widened ventrad. ♂: Aedeagus distinctly widened apically, proximally slightly wider than apodeme. Posterior paramere not widely winged. ♀: Cerci mostly elongate oval . . . . . 6
- 6 (5) Mesonotum including scutellum and most of wing veins including basicosta

- brownish black to black. Anterior width of genae nearly as great as posterior width, ventral margin of genae distinctly convex. ♂: Anterior lobe of hypandrium narrow, its basal width equal to about one third of width of hypandrium (Fig. 62). Posterior paramere with parallel lateral margins (Fig. 95). ♀: Cerci short, with widely rounded apex (Fig. 131). Holarctic . . . . *S. coleoptrata* (Scopoli)
- Body and wing veins yellowish brown to brown. Genae narrowed anteriorly, or with ventral margin straight. ♂: Anterior lobe of hypandrium half as wide as hypandrium, or very short, band shaped. Lateral margins of posterior paramere not parallel. ♀: Cerci longer, more or less pointed at apex . . . . . 7
- 7 (6) The 3rd antennal segment ovoid, with widely rounded apex. Buccal angle about 130°. 2nd abdominal tergite yellowish, paler than other tergites. ♂: Posterior paramere triangularly elongated, much longer than wide, medially with short posterior process (Fig. 93). ♀: Cerci ventrally bare (Fig. 143). Europe, Japan . . . . . *S. longifibula* Takada
- The 3rd antennal segment elongate oval or ovoid, with distinct apex. Buccal angle at most 110°. Abdomen almost unicolorous. ♂: Posterior paramere distinctly wider than long, medial posterior process long or lacking . . . . . 8
- 8 (7) Primary prescutellars only slightly longer than secondary ones. Carina angular, strongly widened ventrad. ♂: Posterior paramere with long, curved medial process posteriorly (Fig. 98). Aedeagus with dorsal teeth reaching apex (Fig. 76). Female unknown. USA . . . . . *S. dentifera* sp. n.
- Primary prescutellars nearly twice as long as secondary ones. Carina slightly widened ventrad. ♂: Posterior paramere with straight posterior margin, without medial process. Aedeagus with dorsal teeth by far not reaching apex. ♀: Cerci ventrally with sparse setulae at least basally . . . . . 9
- 9 (8) Carina almost evenly narrow, ending below middle of face. Legs and halteres yellow. Frons with nearly parallel sides. ♂: Posterior paramere with pair of narrow keel-shaped ledges posteriorly (Fig. 97). ♀: Posterior margin of egg-guide nearly straight (Fig. 122). Europe . . . . . *S. similis* sp. n.
- Carina club-like widened ventrad, ending above middle of face. Apices of femora and halteres and bases of tibiae brown. Frons slightly narrowed anterad. ♂: Posterior paramere without keels (Fig. 99). ♀: Egg-guide with posterior margin widely emarginate (Fig. 126). USA . . . . . *S. wheeleri* sp. n.

*Stegana (Steganina) antigua* Wheeler  
(Figs. 24, 35, 45, 54, 66, 77, 91, 100, 102, 120)

*Stegana (Steganina) antigua* Wheeler, 1960: 110.

*Stegana coleoptrata*: Wheeler, 1952: 212.

♂: Frons yellow to pale brown, slightly darkened anterad; ocellar triangle brown. Lateral margins of frons slightly concave, distinctly convergent anterad. Width ratio of frons 1.21 – 1.25, length/width ratio 1.27 – 1.32. Genae yellow, at anterior and posterior angles brown, rather wide and short, nearly equally wide along whole length. Buccal angle about 100°. Face slightly widened ventrad, with rounded dorsolateral angles. Carina high, nose-shaped, widened ventrad, ending distinctly below middle of face. The 3rd antennal segment very long, 1.8 – 2.0 times as long as basally wide, regularly elongate ovate. Arista 7–8/5–6. Palpi club shaped, strongly widened apically, with 4 – 5 marginal and 5 – 7 discal setae ventrally.

Mesonotum light brown to brown, yellow anteriorly, with 3 – 5 narrow

longitudinal stripes, or entire anterior half of mesonotum yellow (holotype); 10 rows of acrostichals; primary prescutellars strong, nearly twice longer than secondary ones; scutellum light brown, medially with narrow yellow stripe. Pleurae yellow, with wide dark-brown band. Wings brown, paler posteriorly, almost clear at posterior margin; veins pale brown to brown, C light brown, basicosta brown. Wing length 2.5—2.8 mm. C-i 2.14—2.32, Ac-i 7.0—9.5, 4v-i 1.85—2.1. Halteres pale yellow. Legs yellow, mid and hind femora apically and tibiae basally brownish.

Abdomen light brown to dark-brown, gradually darkened posterad, hind tergite margins black. Terminalia: Perianthium with very long, wide anterior processes. Clasper with strong, acute tooth at apex, inner margin strongly convex. Hypandrium with rather narrow anterior lobe which is nearly three times narrower than hypandrium itself. Posterior paramere wide, posteriorly strongly convex, with strong triangular process medially, anteriorly concave. Aedeagus slightly widened basally, apically lanceolate, narrower apical part with rows of long hairs; apodeme about 1.5 times narrower than aedeagus at base and evenly passing into it.

Type. *Stegana antigua* Wheeler; Holotype, male; USA; Dead Run Va., 15. VII. 1915, R. C. Shannon (first label), *Stegana antigua* Whlr., det. 1960 M. R. Wheeler (second label) (UMW).

Material examined: 2 ♂♂.

USA: Virginia: Holotype; Massachusetts: Petersham, 26. VI. 1961, A. L. Melander lgt., 1 ♂ (UMW).

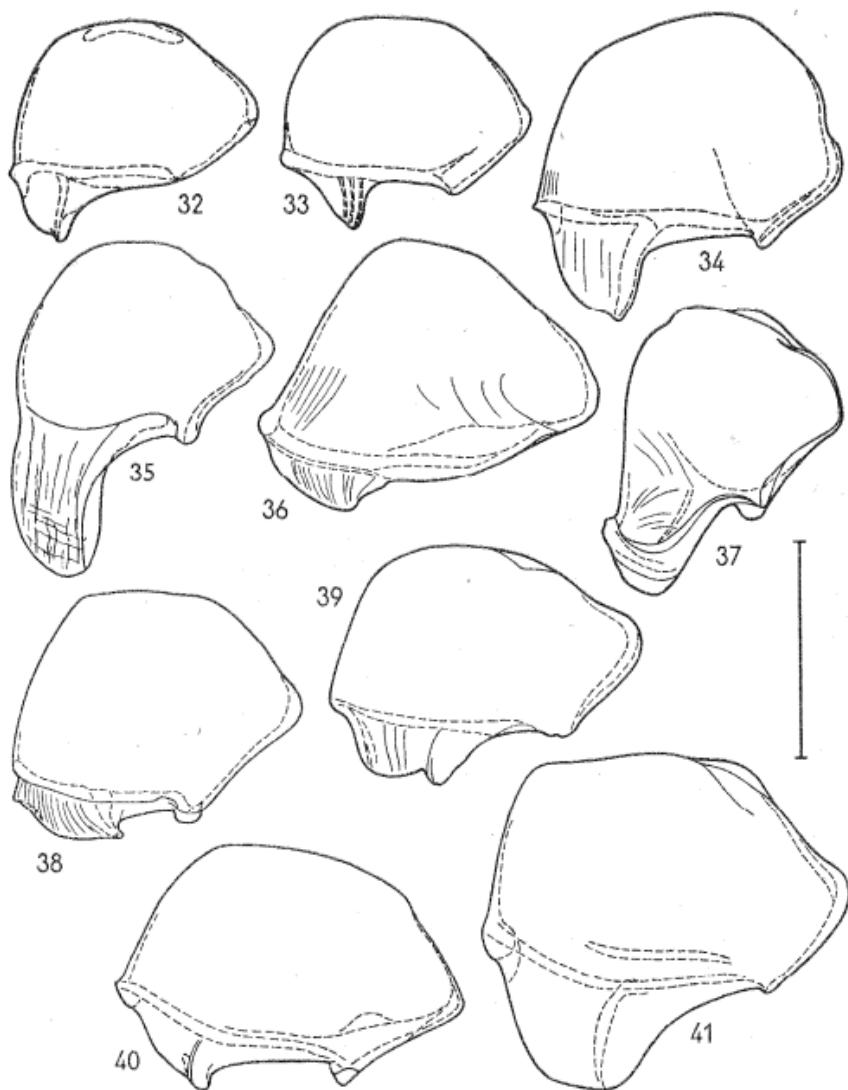
Distribution: USA, Eastern part.

*Stegana (Steganina) baechlii* sp. n.

(Figs. 30, 32, 43, 60, 70, 75, 85, 94, 109, 117, 123, 133, 144, 146, 155)

Frons light brown, ocellar triangle blackish brown. Lateral margins slightly emarginate, strongly converging anterad. Width ratio of frons 1.55—1.6, length/width ratio 1.38—1.45 in male, 1.31—1.38 in female. Genae yellow, with blackish brown stripe posteriorly, long and narrow, posteriorly slightly widened. Buccal angle about 90°, rounded at apex. Face distinctly widened ventrad, with rather distinct dorsal angles. Carina high, nearly pointed dorsad, strongly widened ventrad, ending far below middle of face. The 3rd antennal segment brown with darker apex, shortly oval, somewhat pointed apically. Arista 5—6/6—7. Palpi club-shaped, strongly widened distally, with 4—5 marginal and 4—5 discal setae.

Mesonotum including scutellum brown, paler laterally. 10 rows of acrostichals, primary prescutellars 1.5 times longer than secondary ones. Pleurae yellow, with narrow dark brown stripe. Wings dark brown anteriorly, light brown posteriorly, all veins brown. Wing length 2.6—2.8 mm in male, 2.9—3.0 mm in female. C-i 2.07—2.11, Ac-i 13.5—17.5, 4v-i 1.69—1.96. Halteres yellow, apex light brown. Legs yellow, apices of femora, bases of tibiae and last tarsal segments brownish.



Figs. 32-41. Periandrium, lateral view, ♂ (the same specimens as in Figs. 22-31): 32 — *S. baechlii*, 33 — *S. nigrithorax*, 34 — *S. longifibula*, 35 — *S. antigua*, 36 — *S. hypoleuca*, 37 — *S. mehadiae*, 38 — *S. dentifera*, 39 — *S. wheeleri*, 40 — *S. coleoptrata*, 41 — *S. similis*. The scale line represents 0.4 mm (Figs. 32-34, 39-41), 0.6 mm (Figs. 35, 38) or 0.8 mm (Figs. 36, 37).

Abdomen light brown, hind margins of tergites dark brown. ♂: Periandrium with short, deeply incised anterior process. Clasper regularly vaulted, narrowed distally, inner margin projecting distally, apex with rounded, strongly sclerotized tooth. Anterior lobe of hypandrium short, as wide as  $\frac{3}{4}$  of the hypandrium width. Posterior paramere wide, anterior margin concave, posterior one convex, with shallow impression medially, lateral margins nearly straight. Aedeagus wide, conical, widest basally, with longitudinal keels and teeth; hair crown reaching to about middle of aedeagus, dorsal apical lobe triangularly narrowed. Base of aedeagus about thrice wider than apodeme and constricted from it. ♀: Cerci narrow, triangular, ventrally at base pubescent. Egg-guide with posterior margin emarginate, anterior one straight; posterior two fifths of egg-guide bristled, the longest macrotrichia about 10 times longer than the shortest.

**Types.** Holotype, male: Switzerland, Aarau, 1966, Schmid lgt. (coll. Bächli, ZMZ). Paratypes (3 ♂♂, 2 ♀♀): Switzerland: same data as holotype, 2 ♀♀ (ZMZ). Finland: Lohja (Lojo), without date, Frey lgt., 1 ♂ (ZMH). Hungary: Pécs, VI. 1910, Thalhammer lgt., 1 ♂ (MNB).

**Distribution:** Central and northern Europe.

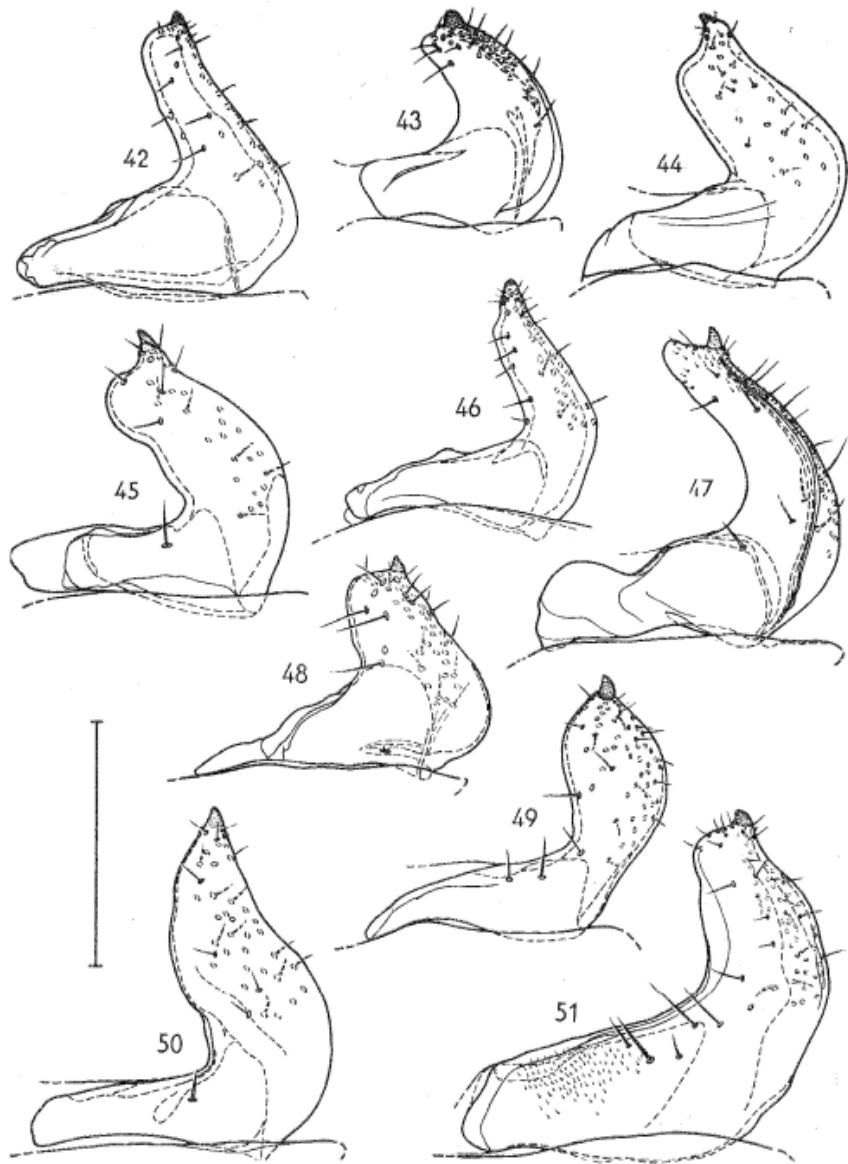
↳ *Stegana (Steganina) coleoptrata* (Scopoli)  
(Figs. 23, 40, 46, 55, 62, 73, 83, 95, 107, 119, 124, 131, 138, 151, 158)

*Musca coleoptrata* Scopoli, 1763: 338.  
*Stegana* sp. A: Wheeler, 1952: 212.

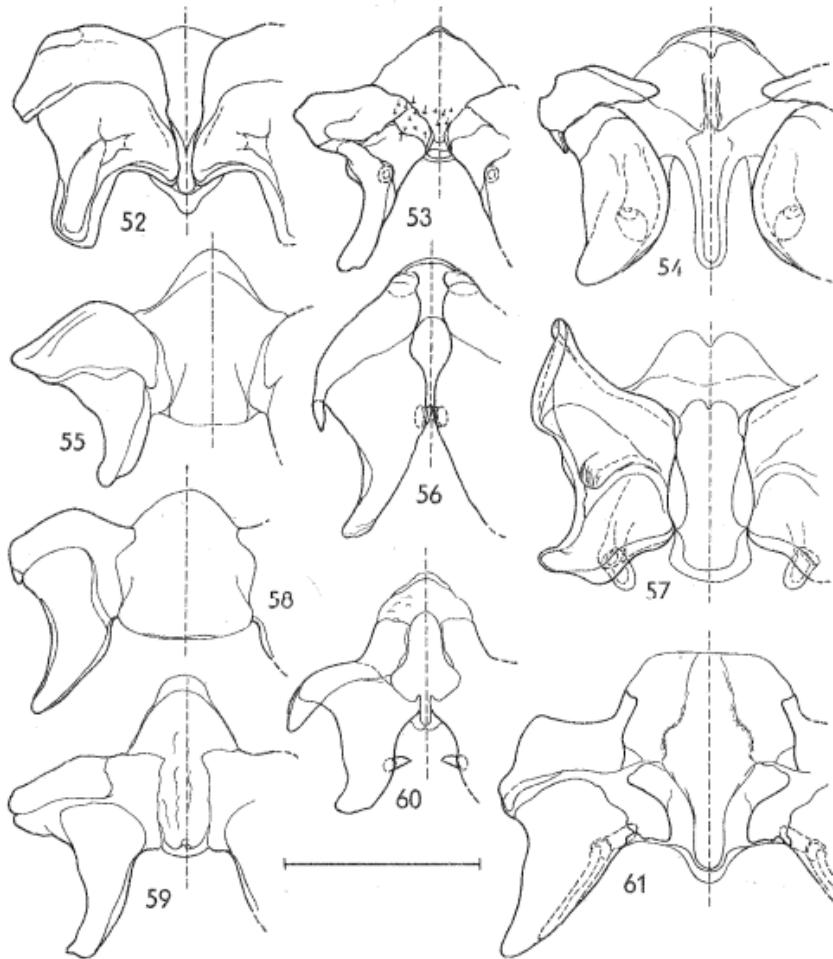
Frons blackish brown, regularly lighter anterad. Lateral margins distinctly emarginate; width index 1.05 – 1.14, length/width index 1.18 – 1.26 in male, 1.08 – 1.15 in female. Genae yellow, blackish brown posteriorly, wide, widest at middle. Buccal angle 110 – 120°. Face somewhat widened ventrad; carina flat, widened ventrad, ending above middle of face. The 3rd antennal segment brownish black, yellowish brown basally, short and wide, with rounded apex. Arista 6–8/6–7. Palpi narrowly club-shaped, with 4 – 6 marginal and 6 – 9 discal bristles.

Mesonotum including scutellum dark brown to brownish black. 10 – 12 rows of acrostichals; primary prescutellars not quite twice as long as the secondary ones. Pleurae yellowish brown, with wide black band regularly paler posterad. Wings brown, posteriorly light brown; veins black to blackish brown, costa brown, basicosta black. Wing length 2.6 – 2.9 mm in male, 3.0 – 3.5 mm in female. C-i 2.02 – 2.13, Ac-i 9.5 – 12.3, 4v-i 1.85 – 2.08. Halteres yellow with brown apex. Legs yellow, apices of femora and bases of tibiae brownish black, apical two tarsal segments of all legs brown.

Abdomen brownish black, ♂: Spiracles on 3rd to 5th segments. Periandrium with short anterior processes. Clasper with widely rounded inner margin, apex with slightly pointed, weakly sclerotized tooth. Anterior lobe of hypandrium about three times narrower than the hypandrium itself.



Figs. 42–51. Clasper, ♂ (the same specimens as in Figs. 22–31): 42 — *S. similis*, 43 — *S. baechlii*, 44 — *S. wheeleri*, 45 — *S. antigua*, 46 — *S. coleoptrata*, 47 — *S. longifibula*, 48 — *S. nigrithorax*, 49 — *S. mehadiae*, 50 — *S. dentifera*, 51 — *S. hypoleuca*. The scale line represents 0.3 mm or 0.45 mm (Figs. 49, 51).



Figs. 52–61. Decasternum, ♂ (the same specimens as in Figs. 22–31): 52 — *S. mehadiae*, 53 — *S. nigrithorax*, 54 — *S. antigua*, 55 — *S. coleopterata*, 56 — *S. longifibula*, 57 — *S. hypoleuca*, 58 — *S. similis*, 59 — *S. wheeleri*, 60 — *S. baechlii*, 61 — *S. dentifera*. The scale line represents 0.3 mm or 0.45 mm (Figs. 52, 57).

Posterior paramere wide, nearly trapezoidal, with pair of longitudinal keels posteriorly. Aedeagus evenly fused with apodeme, widened posteriorly, with distal hair crown. ♀: Spiracles on 2nd to 6th abdominal segments (those of 2nd segment reduced). Cerci semicircular, wide, with scarce pubescence

basally. Egg-guide scarcely pubescent posteriorly, posterior margin shallowly emarginate.

**Types.** *Musca coleoptrata* Scopoli; **type(s)** lost (Horn & Kähle, 1935–1937: 175). Type locality: Yugoslavia, Idria ("In fenestra domo mco").

Material examined: 26 ♂♂, 26 ♀♀.

**Czechoslovakia:** Velká Zdobnice (Orlické hory Mts.), VIII. 1965, Zeman lgt., 2 ♂♂, 10 ♀♀ (EMH). **Poland:** Warszawa, VII. 1975, Ekipa lgt., 1 ♂ (ZIW). **Sweden** (examples of localities; 11 ♂♂, 11 ♀♀): Sorsele; Gaddede; Rättvik; Rövarskulan; Billebjär; Enslöf nr. Halmstad (ZIL). **Finland** (examples of localities; 9 ♂♂, 5 ♀♀): Vihti (Vichtis); Lohja (Lojo); Tvärminne; Helsinki; Nykarleby; Muonio (ZMH). **USSR:** Kamtschatka: Bol'scherjetsk, without date, Wuorentans lgt., 1 ♂ (ZHM). **USA:** Washington: Olympic Natl. For., nr. Sequim, VIII. 1951, Wheeler lgt., 2 ♂♂ (UTA).

**Distribution:** Holarctic, probably mainly in the northern parts, including northern Japan: Hokkaido (Kimura, 1976; Okada, pers. inform.).

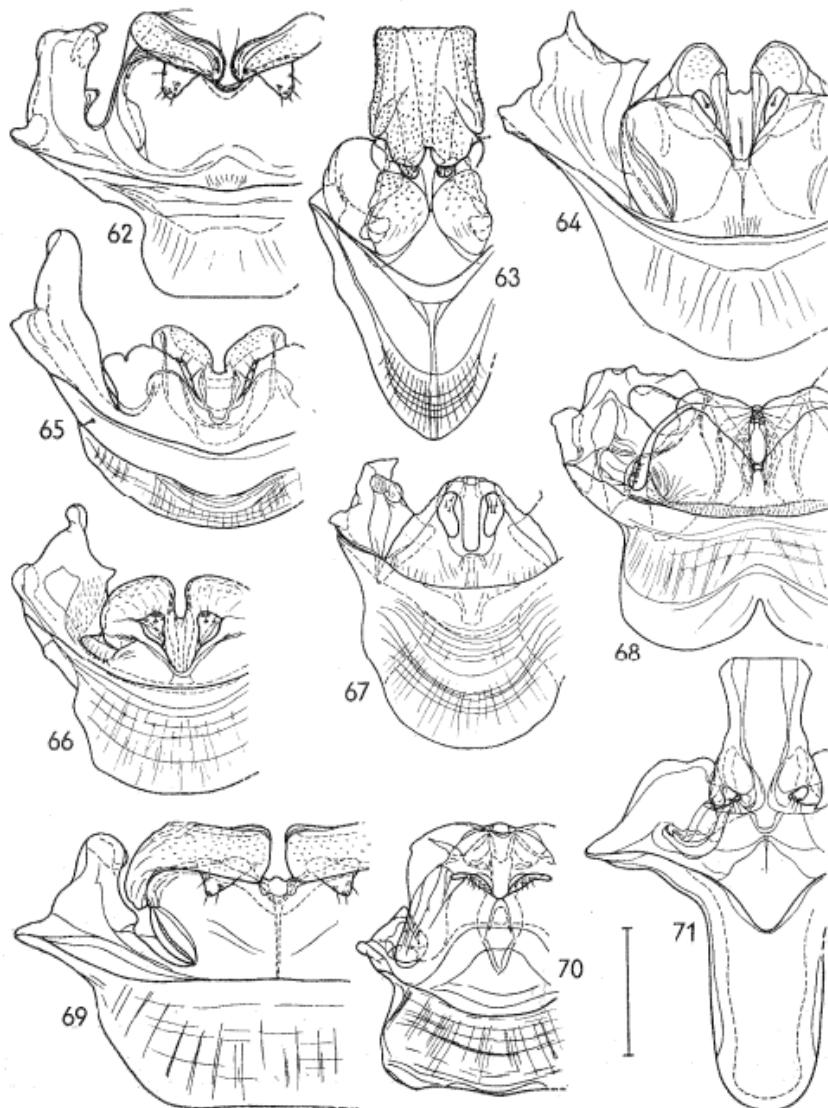
**Remark:** In view of lacking type specimens, Scopoli's concept of this species was deduced from the original description. The scanty characters given in it, viz. small size and dark colour of thorax, wings and legs, support the present interpretation as most probable.

Stegana (*Steganina*) *dentifera* sp. n.  
(Figs. 31, 50, 61, 65, 76, 82, 98, 111, 115)

♂: Frons light brown, with paler spots, distinctly narrowed anterad, lateral margins slightly emarginate; width ratio 1.26, length/width ratio 1.34. Genae yellow, blackish at buccal angles, relatively narrow, slightly widened posterad. Buccal angle about 100°. Face slightly widened ventrad, with round dorsal angles; carina high, angular, triangularly widened ventrad, ending below middle of face. The 3rd antennal segment blackish brown but yellowish basally, elongate oval with rounded apex, 1.7 times as long as wide. Arista 7–8/6. Palpi club-shaped with wide apex, bearing 5–6 marginal bristles and about 8 discal ones.

Mesonotum mostly brown, with two dark brown and two yellow stripes laterally; scutellum brown, with yellow medial stripe. 10 rows of acrostichals; prescutellars strong, primary prescutellars slightly longer than the longest secondary ones. Pleurae yellow, with wide dark-brown lateral band. Wings brown to dark brown, gradually lighter posteriorly, hind margin slightly brownish; veins dark brown, C basally brown, basicosta dark brown. Wing length 3.0 mm. C-i 1.89, Ac-i 8.8, 4v-i 1.83. Halteres yellow. Legs yellow, only mid femora apically and mid tibiae basally brown.

The first abdominal tergite dark yellowish, the 2nd one yellow with blackish brown hind parts, other segments blackish brown, narrowly yellowish laterally. Periandrium with very short, laterally constricted anterior processes. Clasper regularly narrowed distally, with slightly con-



Figs. 62–71. Hypandrium, ♂ (the same specimens as in Figs. 22–31): 62 – *S. coleoptrata*, 63 – *S. hypoleuca*, 64 – *S. wheeleri*, 65 – *S. dentifera*, 66 – *S. antigua*, 67 – *S. longifibula*, 68 – *S. nigrithorax*, 69 – *S. similis*, 70 – *S. baechlii*, 71 – *S. mehadiae*. The scale line represents 0.2 mm (Figs. 62, 64, 68, 69), 0.3 mm (Figs. 65–67, 70), 0.4 mm (Fig. 71) or 0.6 mm (Fig. 63).

vex inner margin; apex with wide, blunt tooth. Hypandrial anterior lobe very short, not quite twice narrower than hypandrium. Posterior paramere wide, with anterior margin deeply and regularly emarginate; posterior margin with blunt triangular process which is bent caudad. Aedeagus slightly constricted at basis, subbasally slightly wider than apodeme, distally bell-shaped, with irregular crown of short hairs; dorsal denticles reaching apex.

Type. Holotype, male: USA, Virginia: Mount Solon, Augusta co., Va., 26. VI. 1951, W. W. Wirth collector (stream margin) (UMW).

Distribution: USA.

*Stegana (Steganina) hypoleuca* Meigen, sp. propr.  
(Figs. 29, 36, 51, 57, 63, 78, 88, 101, 108, 128, 129, 140, 150)

*Stegana hypoleuca* Meigen, 1830: 80.

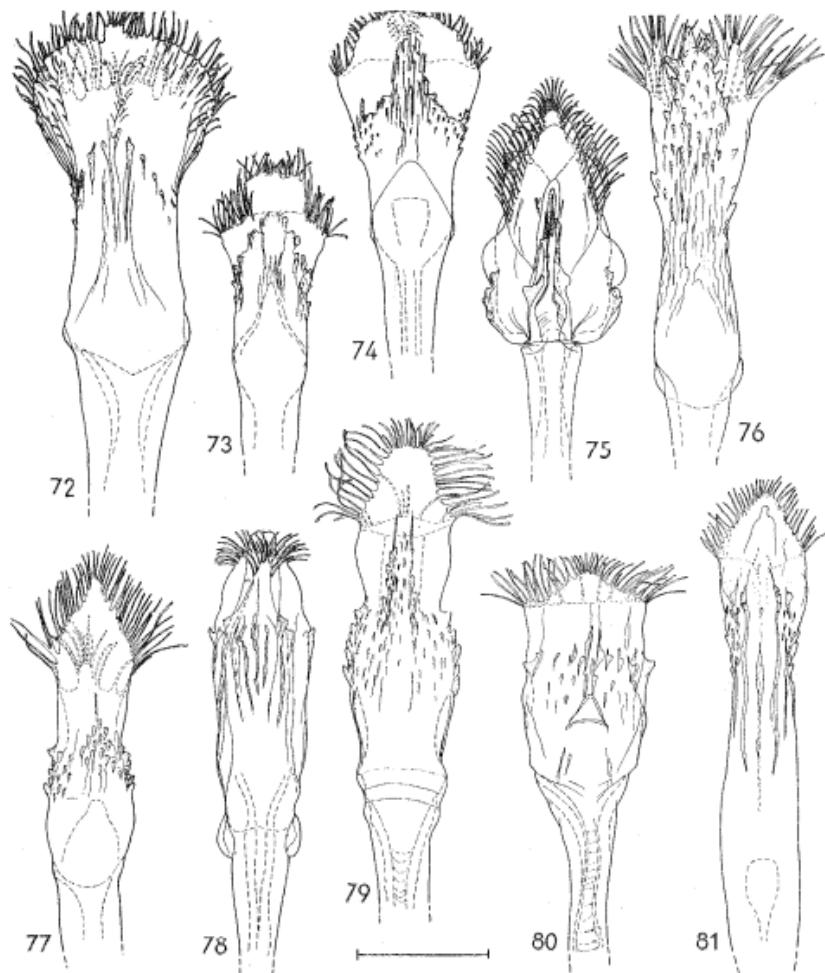
*Stegana stroblii* Mik, 1898: 216, syn. n.

*Stegana coleoptrata*: Duda, 1934: 17.

Frons dark brown, yellow to yellowish brown laterally and at middle, ocellar triangle blackish brown. Lateral margins of frons nearly parallel, width ratio 1.01 – 1.1, length/width ratio 1.15 – 1.25 (both measured in female). Genae yellow with both anterior and posterior margins darker, very wide, somewhat narrowed anteriorly. Buccal angle 120 – 130°. Face widened ventrad, with widely rounded dorsal angles. Carina high, with wide and slightly bifurcate base, ventrally about twice wider than in middle part but distinctly narrower than 2nd antennal segment and ending below middle of face. The 3rd antennal segment brownish black but yellowish brown to yellow basally, long, with nearly pointed apex. Arista 11–12/8–10. Palpi wide, irregularly oval, with 12–15 marginal and 9 – 12 discal setae.

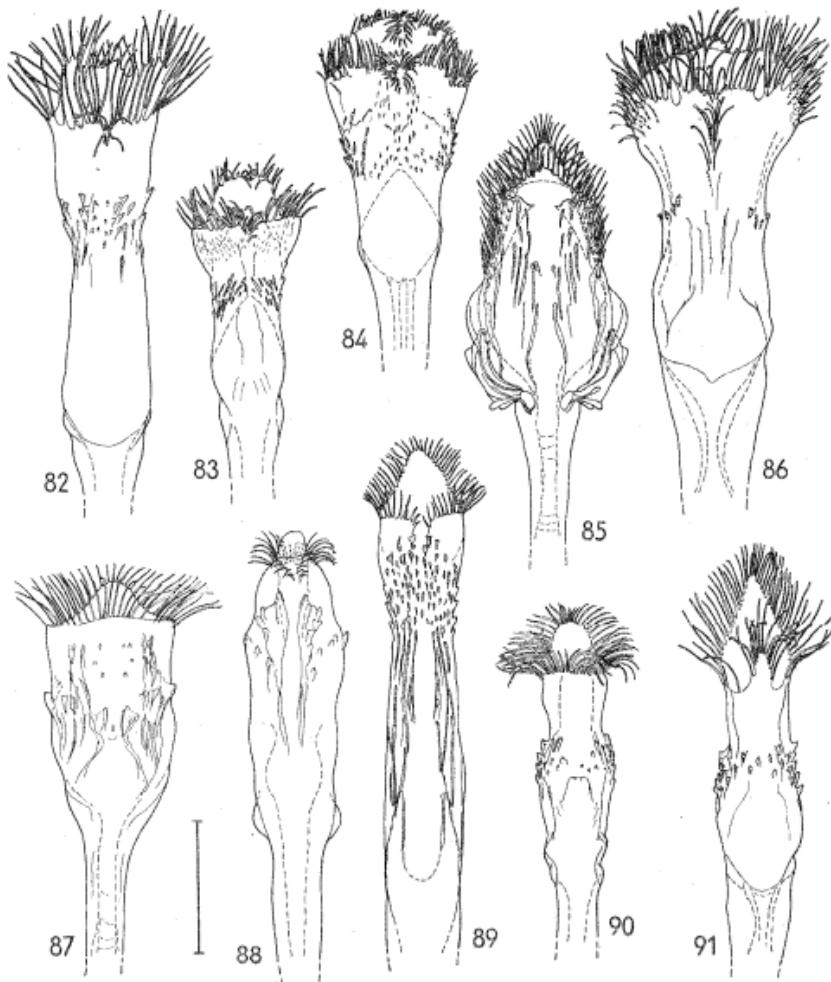
Mesonotum completely orange yellow to brownish yellow or with three darker longitudinal stripes medially and darker patches anteriorly. Scutellum brown to brownish black, posteriorly with yellowish brown rim, 14 – 20 rows of acrostichals; primary prescutellars at least twice as long as secondary ones. Pleurae pale yellow to whitish, with wide velvet black band. Wings brownish grey, anteriorly brownish black; all veins including basicosta black but costa yellowish brown. Wing length 4.8 – 5.3 mm in female. C-i 2.22 – 2.43, Ac-i 5.0 – 8.1, 4v-i 0.49 – 0.54. Halteres yellowish brown, brown apically. Fore legs yellow, apices of femora and bases of tibiae somewhat darker, mid and hind legs with apical third to half of femora and basal third to half of tibiae black. Tarsi gradually darkened towards apex.

♂ (mas novus), terminalia: Periandrium with minute anterior processes. Clasper somewhat narrowed apically, sides slightly sinuate, apex with wide, blunt, strongly sclerotized tooth, inner margin with numerous microtrichiae



Figs. 72–81. Aedeagus, dorsal view, ♂ (the same specimens as in Figs. 22–31): 72 — *S. wheeleri*, 73 — *S. coleopterata*, 74 — *S. similis*, 75 — *S. baechlii*, 76 — *S. dentifera*, 77 — *S. antigua*, 78 — *S. hypoleuca*, 79 — *S. longifibula*, 80 — *S. nigrithorax*, 81 — *S. mehadiae*. The scale line represents 0.2 mm (Figs. 72, 79, 80), 0.3 mm (Figs. 73–77), 0.4 mm (Fig. 81) or 0.6 mm (Fig. 78).

proximally. Anterior hypandrial lobe basally as wide as hypandrium. Anterior parameres with blunt denticles. Posterior paramere widely winged, deeply emarginate at anterior margin, posteriorly bearing wide,



Figs. 82-91. Aedeagus, ventral view, ♂ (the same specimens as in Figs. 22-31): 82 - *S. dentifera*, 83 - *S. coleoptrata*, 84 - *S. similis*, 85 - *S. baechlii*, 86 - *S. wheeleri*, 87 - *S. nigrithorax*, 88 - *S. hypoleuca*, 89 - *S. mehadiae*, 90 - *S. longifibula*, 91 - *S. antigua*. The scale line represents 0.2 mm (Figs. 82-85, 90, 91) or 0.4 mm (Fig. 89).

vaulted process with dense denticles. Aedeagus slightly constricted at connection with apodeme, distally widened, with small, narrow dorsal apical process and slightly developed hair crown. ♀, terminalia: Cerci

elongate oval, ventrally completely micropubescent. Egg-guide widened posteriorly, with unequally long setae on posterior half; anterior margin deeply notched, posterior margin slightly incised.

**Type.** *Stegana hypoleuca* Meigen; **Lectotype**, female: Denmark: Sieland, VII. 1824, Mus. Westerm. (1st label), Prob. a syntype, Lyneborg det. 1979, *S. hypoleuca* Meig. (2nd label) (ZMC); here designated. **Paralectotype**, female: Copenhagen, Coll. Winthem (NMW). Specimen(s) from FRG: Kiel, mentioned in the Meigen's description (and probably belonging to other species) are not found.

*Stegana stroblii* Mik; **Lectotype**, female: Roumania, Transs., Bucsecs, 2. VIII. 1896, Strobl lgt., No. 255 (NMA); design. by Basden, 1961: 167.

Material examined: 1 ♂, 20 ♀♀.

**Czechoslovakia:** Hluboká nad Vltavou, VI. 1976, 2 ♀♀, VI. 1977, 1 ♀, Secký lgt. (DMS). **Hungary:** Pécs, VIII. 1924, Thalhammer lgt., 1 ♂ (MNB). **Roumania:** **Lectotype** of *S. stroblii* Mik; Baile-Herculane (Herkulesbad), VII. 1895, Ganglbauer lgt., 1 ♀ (MNB). **Denmark:** **Lectotype** of *S. hypoleuca* Meigen. **Sweden:** Helsingborg, data from 1942 to 1946, Ringdahl lgt., 12 ♀♀; Skärälid, VI. 1936, Ringdahl lgt., 1 ♀ (ZIL). **USSR:** Georgia: Lake Ritsa, V. 1975, Zombori lgt., 1 ♀ (MNB).

**Distribution:** Europe, Caucasus.

**Remarks.** The single examined male is heavily damaged, lacking head and wings; apart from the terminalia, very few characters could be observed.

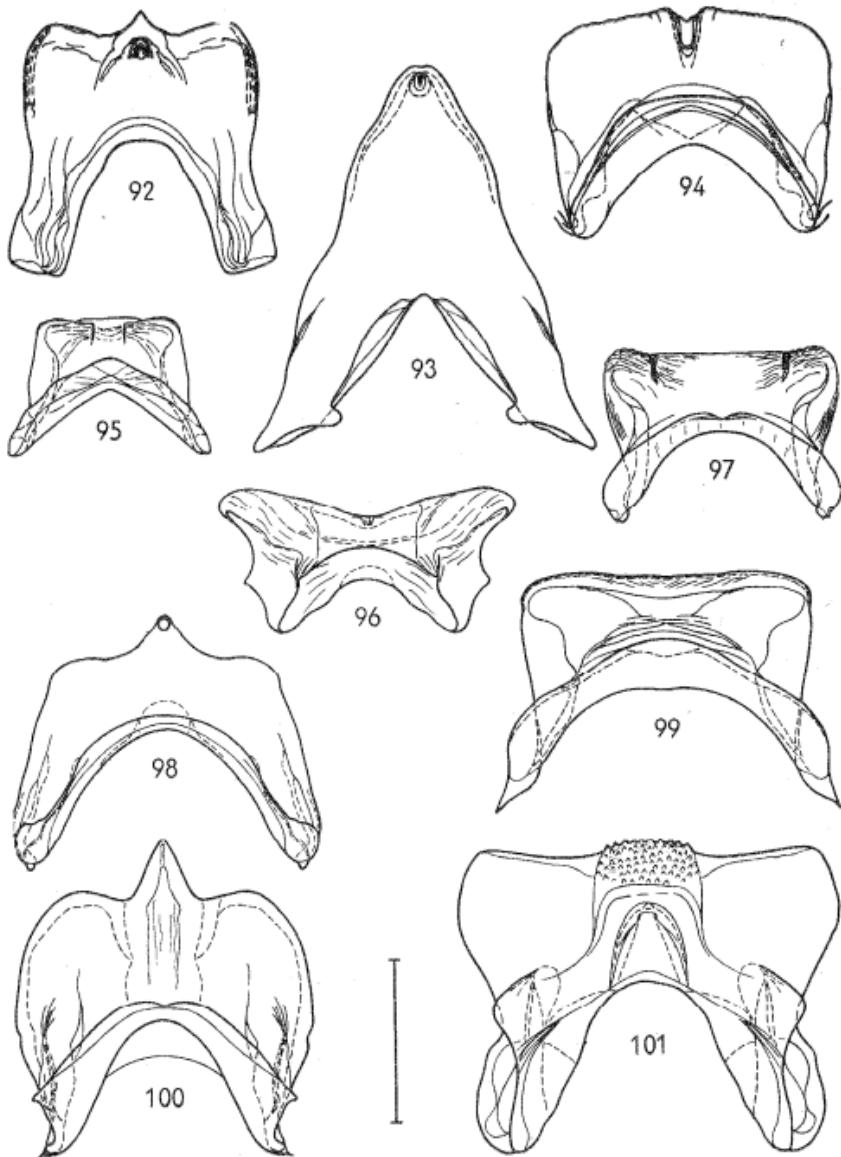
The specimen from USSR (Georgia) differs from European specimens by more distinct colour pattern of mesonotum and by narrower genae, but its conspecificness with *S. hypoleuca* is fairly certain.

✓ *Stegana (Steganina) longifibula* Takada  
(Figs. 25, 34, 47, 56, 67, 79, 90, 93, 110, 118, 127, 136, 143, 148, 154)

*Stegana (Steganina) longifibula* Takada, 1968: 123.

Frons brown, ocellar triangle dark brown. Lateral margins of frons nearly straight, regularly converning anterad; width ratio 1.1–1.15, length/width ratio 1.3–1.39 in male, 1.22–1.26 in female. Genae yellow with brown stripe posteriorly, long and rather narrow, gradually widened posteriorly. Buccal angle 135–140°. Face slightly widened ventrad, dorsal angles distinct; carina narrow, high, very slightly widened ventrad, reaching to about middle of face. The 3rd antennal segment blackish brown with black apex, very short, nearly circular, apex widely rounded. Arista 7–8/5–6. Palpi wide, club-shaped, with 4–5 marginal and 5–7 discal setae.

Mesonotum including scutellum light brown. 10 rows of acrostichals; primary prescutellars slightly longer than secondary ones. Pleurae yellow to pale yellow, lateral band brown anteriorly and gradually paler posteriorly. Wings light greyish, anteriorly brown. Basicosta brown, rest of costa and other veins light brown. Wing length 2.8–2.95 mm in male, 3.0–3.2 mm in female. C-i 1.8–1.98, Ac-i 11.0–14.5, 4v-i 1.23–1.42. Halteres yellow, apex light brown to brown. Legs yellow, apices of femora brown, last tarsal segment brownish in all legs.



Figs. 92–101. Posterior paramere, ♂ (the same specimens as in Figs. 22–31): 92 — *S. mehadiae*, 93 — *S. longifibula*, 94 — *S. baechlii*, 95 — *S. coleoptrata*, 96 — *S. nigrithorax*, 97 — *S. similis*, 98 — *S. dentifera*, 99 — *S. wheeleri*, 100 — *S. antigua*, 101 — *S. hypo-leuca*. The scale line represents 0.2 mm or 0.3 mm (Figs. 92, 95, 97, 98, 101).

Abdomen brown, hind margins of tergites darker; male with 2nd tergite and small lateral spots on subsequent tergites yellowish brown. ♂: Perianthium with long, rather narrow anterior processes. Clasper with longitudinal ridge on inner margin and large, heavily sclerotized subapical tooth; apex of clasper protruding, covered with micro- and macrotrichiae. Hypandrial anterior lobe wide and long, basally as wide as hypandrium. Posterior paramere elongate triangular, posteromedially with a tooth-like process. Aedeagus slightly constricted at connection with apodeme and about middle, dorsal apical lobe long and narrow, hair crown consisting of very long setae. ♀: Cerci elongate, with distinct apex, bare ventrally. Egg-guide covered by hairs in about distal half, anteriorly with deep, narrow notch, posterior margin emarginate.

Type. *Stegana longifibula* Takada; Holotype, male. Japan: Kushiro, Hokkaido, 8. VIII. 1967, Takada lgt. (Sapporo Univ.).

Material examined: 5 ♂♂, 17 ♀♀.

**Switzerland:** Aarau, "65/66", Schmid lgt., 1 ♂, 7 ♀♀ (ZMZ). **Austria:** Bad Dellach, 17. VII. 1897, Oldenberg lgt., 1 ♂ (IPE). **Denmark:** Dreussen, without date, Westermann lgt., 1 ♀ (ZMC). **Sweden:** Kullaberg, various data, Andersson and Ringdahl lgt., 3 ♀♀; Bolmen, VII. 1957, Ringdahl lgt., 1 ♀; Åsljunga, VII. 1915, without collector, 1 ♀ (ZIL). **Finland:** Lohja (Lojo), without date, 1 ♀; Helsinki, without date, 1 ♀; Kirkkonummi (Kyrkslätt), 9. IV. 1955, 1 ♀, all Frey lgt. (ZMH). **Roumania:** Baia Sprie (Felsőbánya), without date, Krompaszky lgt., 1 ♂ (MNB); Cimpulung-Moldovenesc, 13. VI. 1976, lgt. et coll. Ceianu, 1 ♂. **Japan:** Hokkaido, lgt., coll. et det. Okada, 1 ♂, 1 ♀.

Distribution: Europe, Japan.

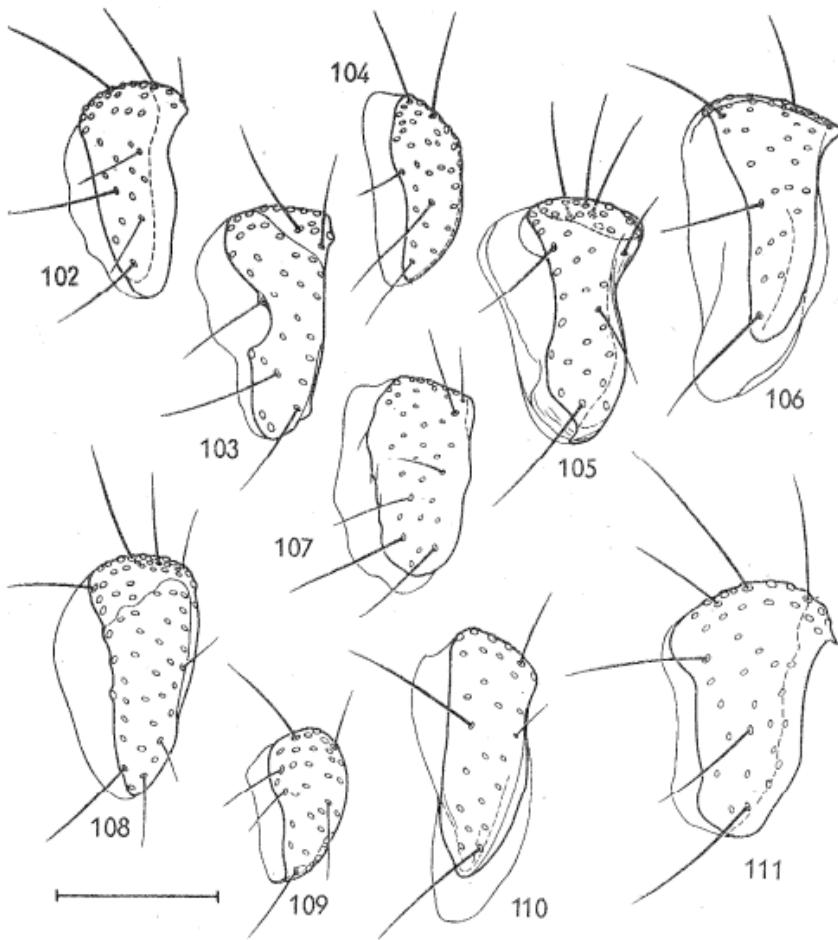
♂ *Stegana (Steganina) mehadiae* Duda

(Figs. 27, 37, 49, 52, 71, 81, 89, 92, 105, 113, 121, 132, 137, 145, 156)

*Stegana coleoptrata* var. *mehadiae* Duda, 1924: 181.

Frons dark brown, anteriorly blackish brown, ocellar triangle black, facialia yellow to pale brown. Lateral margins of frons parallel and nearly straight; width ratio 1.0 – 1.08, length/width ratio 1.19 – 1.25 in male, 1.13 – 1.21 in female. Genae yellow with posterior blackish brown stripe, very wide, posteriorly still widened. Buccal angle about 120°. Face slightly widened ventrad, with widely rounded dorsal angles; carina high, basally bifurcate, about three times widened ventrad, ending far below middle of face, ventrally as wide as 2nd antennal segment. Third antennal segment brownish black to black, long, with angular apex. Arista 9–11/6–8. Palpi very wide, oval, with 7 – 9 marginal and 10 – 12 discal setae.

Mesonotum dark brown to black, narrow lateral bands and large humeral spots yellow to yellowish brown; scutellum blackish brown to black. 14 – 18 rows of acrostichals, primary prescutellars at least twice as long as secondary ones. Pleurae yellow, with wide, velvet black longitudinal band.

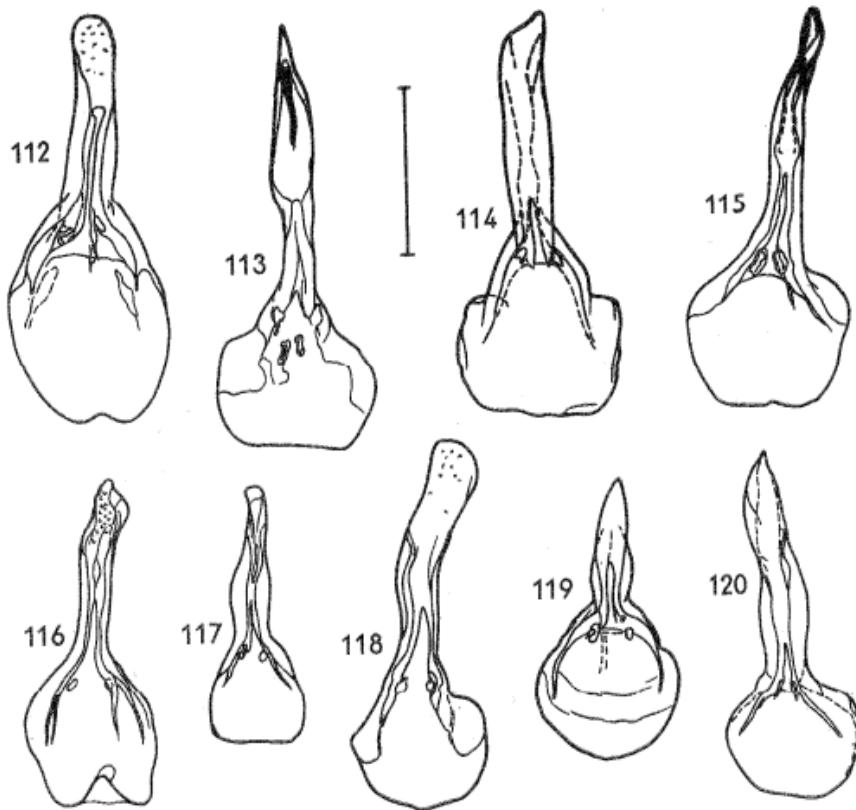


Figs. 102–111. Anal plate, ♂ (the same specimens as in Figs. 22–31): 102 – *S. antigua*, 103 – *S. wheeleri*, 104 – *S. nigrithorax*, 105 – *S. mehadiae*, 106 – *S. similis*, 107 – *S. coleoptrata*, 108 – *S. hypoleuca*, 109 – *S. baechlii*, 110 – *S. longifibula*, 111 – *S. dentifera*. The scale line represents 0.2 mm or 0.3 mm (Figs. 105, 108).

Wings intensively brownish grey, brownish black anteriorly and with all veins black in female, somewhat paler and with costa (except of basicosta) brown in male. Wing length 3.4–3.8 mm in male, 4.45–4.55 mm in female. C-i 2.18–2.40, Ac-i 7.25–8.4, 4v-i 1.59–1.96. Halteres yellowish brown, apex brown. Fore legs yellow, apices of femora and bases of tibiae

brownish, mid and hind legs with apical halves of femora and basal halves of tibiae black; all tarsi entirely light brown.

Abdomen black to blackish brown. ♂: Perianthrium without anterior processes but with narrow, slightly sclerotized complete rim anteriorly. Clasper strongly widened subapically, apically with large, heavily sclerotized tooth. Hypandrium with long and narrow anterior lobe. Anterior parameres smooth. Posterior paramere nearly quadrate, with emarginate anterior margin and strong medial tooth-like process posteriorly. Aedeagus narrow, basally somewhat screw-shaped, asymmetrical, distally slightly



Figs. 112–120. Ejaculatory apodeme, ♂ (the same specimens as in Figs. 22–31): 112 – *S. wheeleri*, 113 – *S. mehadiae*, 114 – *S. similis*, 115 – *S. dentifera*, 116 – *S. nigrithorax*, 117 – *S. baechili*, 118 – *S. longifibula*, 119 – *S. coleoptrata*, 120 – *S. antigua*. The scale line represents 0.2 mm.

widened, with triangular dorsal apical lobe and crown of equally long setae. ♀: Abdominal spiracles on 2nd to 6th segments, those of 2nd segment reduced in size. Cerci elongate, nearly triangular, densely pubescent ventrally in about basal half. Egg-guide with pubescence reaching nearly to anterior margin; anterior margin deeply notched medially, posterior margin slightly emarginate.

Egg bright yellow, elongate elliptic, with knob on each end; length about 0.6 mm. Longitudinal vela along nearly whole length, cross-striated. Surface sculpture ventrally with about 35 cells per row, corners of cells prickly pointed. Dorsal surface with about 30 long warts in two irregular rows.

Type. *Stegana coleoptrata* var. *mehadiae* Duda; Holotype, female: Roumania, Mehadia, 11. VI. 1904, Kertész lgt. (MNB).

Material examined: 3 ♂♂, 67 ♀♀.

Czechoslovakia: Ševčín, VII.–VIII. 1973, Máca lgt., 3 ♀♀; Chotýčany, VII.–VIII. 1973, Máca lgt., 2 ♀♀; Purkarec, VI. 1975, Máca lgt., 1 ♀; Hluboká nad Vltavou, VI. 1976, V.–VI. 1977, Secký lgt., 1 ♂, 40 ♀♀ (DMS and coll. Máca). Denmark: without locality and date, coll. Westerman, 1 ♂ (ZMC). Sweden: Ulrika, VII. 1961, Donner lgt., 1 ♀; Bolmen, VI. 1954, Ringdahl lgt., 1 ♀; Hälsingborg, VI. 1959, Ringdahl lgt., 4 ♀♀; without locality, "VII. 09", lgt. ?, 1 ♀ (ZIL). Finland: Lohja (Lojo), without date, Frey lgt., 5 ♀♀; Kokemäki (in Satakunta), VI. 1953, Tuomikoski lgt., 2 ♀♀; Hattula, V. 1920 and without date, Wegelius lgt., 1 ♂, 4 ♀♀; Lammi nr. Hattula, VI. 1956, Hackman lgt., 1 ♀; Leppävirta, VII. 1949, Wegelius lgt., 1 ♀ (ZMH). Roumania: Holotype of *S. mehadiae* Duda.

Distribution: Central and northern Europe.

Remark: Wings of two females from Czechoslovakia (Hluboká n. Vltavou) have elongate hyaline areas in distal part; however, surroundings of veins are always darkened. Other differences from *S. mehadiae* have not been found in these specimens. Cases of similar aberrant colouring have also been noted in *S. hypoleuca* (Mik, 1898, Olden堡, 1914) and *S. (?) coleoptrata* (Séguay, 1934, Pl. 22).

#### *Stegana (Steganina) nigrithorax* Strobl, sp. propr.

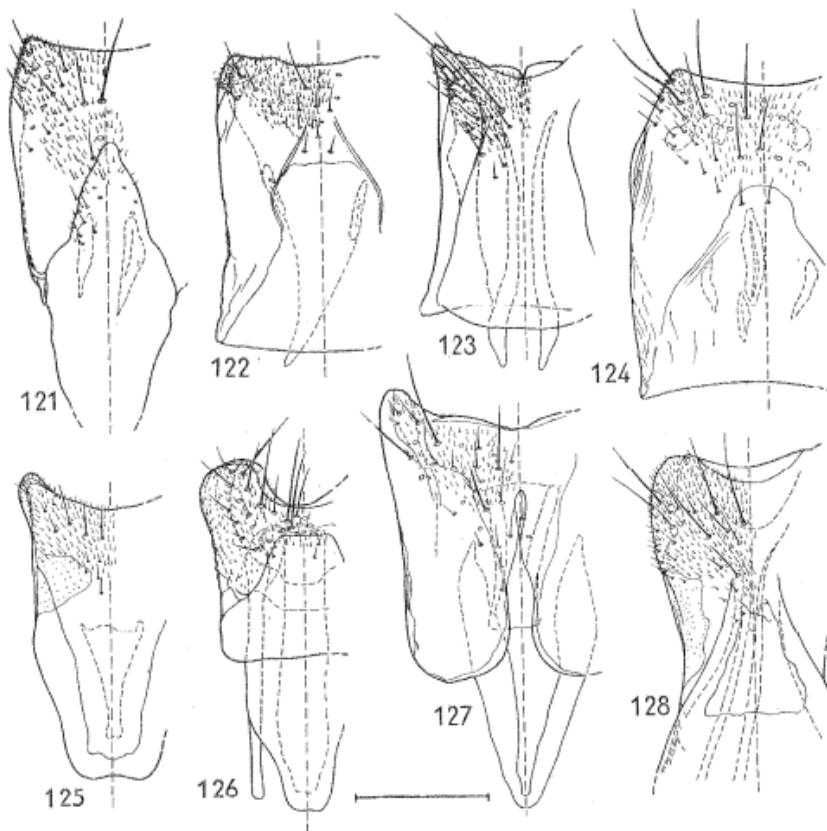
(Figs. 26, 33, 48, 53, 68, 80, 87, 96, 104, 116, 125, 135, 141, 147)

*Stegana coleoptrata* var. *nigrithorax* Strobl, 1898: 266.

↳ *Stegana (Steganina) excavata* Okada, 1971: 86, syn. n.

*Stegana coleoptrata*: Duda, 1934: 17.

Frons dark brown, ocellar triangle brownish black, facials yellowish brown. Lateral margins concave, slightly converning anterad; width index 1.12 – 1.20, length/width index 1.27 – 1.29 in male, 1.23 – 1.27 in female. Genae yellow but posteriorly with dark brown stripe, short, very wide and posteriorly widened. Buccal angle about 90°. Face dorsally widely rounded, without distinct angles, strongly widened ventrad; carina low, flat, reaching middle of face, strongly bulb-like widened ventrally. The 3rd antennal segment dark brown with black apex, short ovate, with an-



Figs. 121–128. Egg-guide, ♀: 121 — *S. mehadiae* (Hluboká n/Vlt.), 122 — *S. similis* (Liepaja), 123 — *S. baechlii* (Aarau), 124 — *S. coleoptrata* (Velká Zdobnice), 125 — *S. nigrithorax* (paralectotype), 126 — *S. wheeleri* (paratype), 127 — *S. longifibula* (Aarau), 128 — *S. hypoleuca* (Hluboká n/Vlt.). The scale line represents 0.2 mm (Figs. 123, 124, 127), 0.3 mm (Figs. 121, 122, 125, 126) or 0.4 mm (Fig. 128).

gular apex. Arista 7–8/5–6. Palpi strongly club-shaped, with 3–4 marginal and 4–6 discal setae.

Mesonotum yellowish brown to brown, with five narrow dark brown longitudinal stripes; scutellum dark brown, lighter anteriorly. 8–10 irregular rows of acrostichals; primary prescutellars twice as long as secondary ones. Pleurae yellow, longitudinal black band gradually paler posterad. Wings yellowish brown tinged, dark brown anteriorly; costa yellowish brown, other veins and basicosta dark brown. Wing length 2.5–2.7 mm

in male, 2.8 – 3.0 mm in female. C-i 2.2 – 2.31, Ac-i 6.5 – 8.1, 4v-i 1.72 – 1.96. Halteres yellow, apex brownish at tip. Legs yellow, mid and hind legs with apical half of femora and basal half of tibiae blackish brown; tarsi dark yellow with last two segments brown.

Abdomen brown to dark brown, hind margins of tergites blackish. ♂: Periandrium with minute anterior processes. Clasper with outer margin strongly convex and densely covered with numerous setulae; inner margin slightly prominent subapically; apex with narrow tooth. Hypandrium with wide, medially notched anterior lobe; posterolateral processes of hypandrium strongly widened. Posterior paramere winged, very wide and short, with medial tooth-like process posteriorly. Aedeagus smoothly passing into apodeme, strongly widened subbasally, cylindrical and almost three times as wide as apodeme distally; dorsal apical lobe widely triangular, hair crown wide. ♀: Cerci short oval, with some setulae ventrally at base. Egg-guide narrowed anteriorly, with setae in about posterior third.

**Types.** *Stegana coleopterata* var. *nigrithorax* Strobl; **Lectotype**, male: Austria: Styria, Gesäus, 24. VI. 1909, Strobl lgt., No. 253/6; selected by Basden, 1958 (published by Basden, 1961) (NMA).

*Stegana excavata* Okada; **Holotype**, male: Japan: Tokyo, Asakawa, 13. VIII. 1968, lgt. et coll. Okada.

Material examined: 7 ♂♂, 4 ♀♀.

**Switzerland:** Aigle, VIII. 1970, Bächli lgt., 1 ♂; Aarau, "65/66", Schmid lgt., 1 ♂ (ZMZ). **Austria:** **Lectotype** ♂ and **paralectotype** ♀ (on the same pin) of *S. coleopterata* var. *nigrithorax*. **Hungary:** Pécs, IX. 1909, Thalhammer lgt., 1 ♂ (MNB). **Poland:** Slupsk (Stolp i. P., Klein Strellin), VI. 1913, Karl lgt., 1 ♀; VII. 1919, Arnshagen lgt., 1 ♀ (ZIW). **Sweden:** Kullaberg, VII. 1976, Andersson lgt., 1 ♂ (ZIL). **Finland:** Helsinki, without date, Frey lgt., 1 ♀; No. 725, 2331 (without other data), 1 ♂ (ZHM). **Japan:** Masutomi, Yamanashi Pref., 12. VIII. 1961, Saigusa lgt., 1 ♂ (**Paratype** of *S. excavata* Okada; coll. Okada).

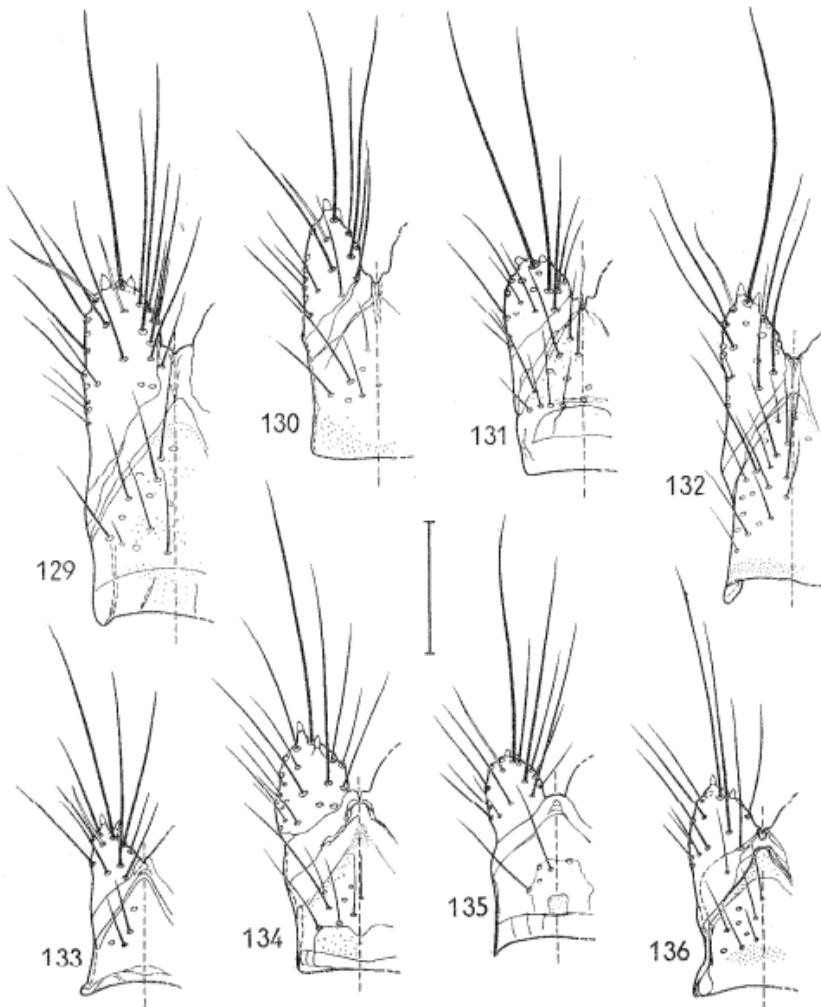
**Distribution:** Europe, Japan.

*Stegana (Steganina) similis* sp. n.

(Figs. 22, 41, 42, 58, 69, 74, 84, 97, 106, 114, 122, 134, 142, 152, 153)

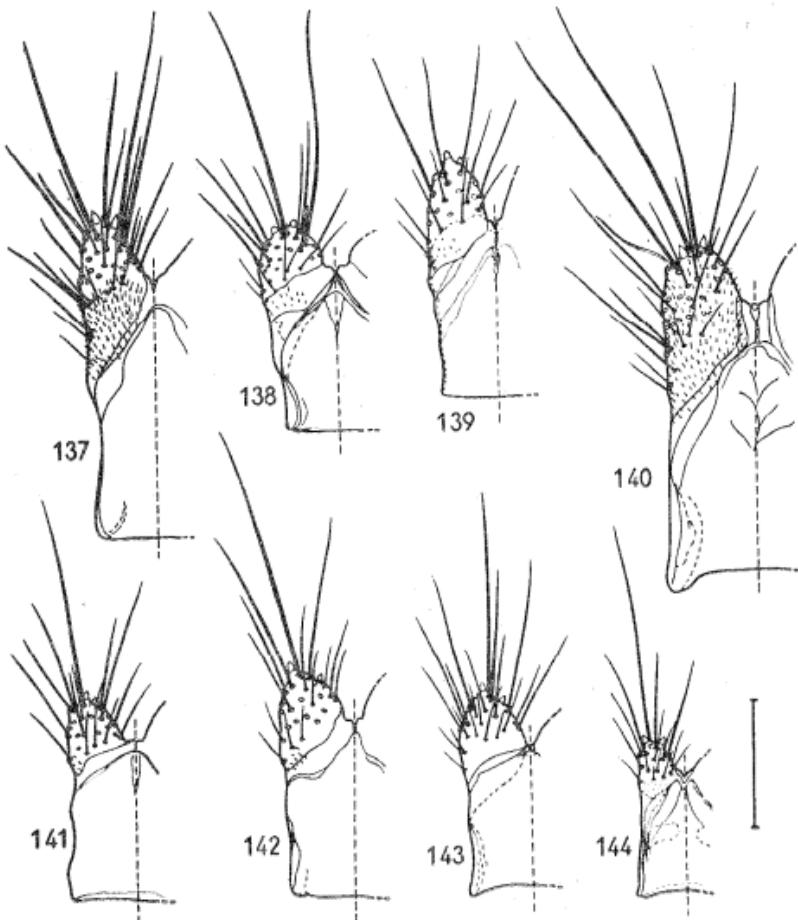
Frons brown to light brown, ocellar triangle dark brown; lateral margins nearly straight; width ratio 1.05 – 1.11, length/width ratio 1.26 – 1.34 in male, 1.15 – 1.22 in female. Genae yellow, very narrow, widened and slightly prominent posterad; buccal angle 100–110°. Face slightly widened ventrad; carina narrow, high, reaching below middle of face. The 3rd antennal segment brown with black apex, elongate, with blunt apical angle. Arista 8–9/6–7. Palpi club shaped, with 3 – 5 marginal and 6 – 8 discal bristles.

Mesonotum and scutellum light brown to brown, mesonotum with diffuse darker stripes. 10 – 12 rows of acrostichals; primary prescutellars not quite twice as long as secondary ones. Pleurae yellow, with longitudinal band ante-



Figs. 129–136. Cerci, dorsal view, ♀ (the same specimens as in Figs. 121–128): 129 – *S. hypoleuca*, 130 – *S. wheeleri*, 131 – *S. coleoptrata*, 132 – *S. mehadiae*, 133 – *S. baechlii*, 134 – *S. similis*, 135 – *S. nigrithorax*, 136 – *S. longifibula*. The scale line represents 0.2 mm.

riorly brown, posteriorly light brown. Wings yellowish, light brown anteriorly; veins light brown, basicosta brown. Wing length 2.7–3.0 mm in



Figs. 137–144. Cerci, ventral view, ♀ (the same specimens as in Figs. 121–128): 137 — *S. mehadiae*, 138 — *S. coleoptrata*, 139 — *S. wheeleri*, 140 — *S. hypoleuca*, 141 — *S. nigrithorax*, 142 — *S. similis*, 143 — *S. longifibula*, 144 — *S. baechlii*. The scale line represents 0.2 mm.

male, 2.9—3.5 mm in female. C-i 2.08—2.19, Ac-i 11.5—12.9, 4v-i 1.82—2.22. Halteres yellow, rarely with somewhat darkened apex. Legs yellow, mid and hind legs sometimes with brownish apices of femora and bases of tibiae; last tarsal segment brownish on all legs.

Abdomen brown, hind margins of tergites dark brown to black. ♂: Periandrium with long, wide anterior processes. Clasper wide, with prominent,

round inner margin distally; apex with slightly sclerotized tooth. Hypandrial anterior lobe wide, 0.6 – 0.7 times as wide as hypandrium. Posterior paramere wide, rhomboid, with pair of longitudinal keels and with transverse impressions posteriorly; lateral margins convergent anteriorly. Aedeagus fluently fused with apodeme, gradually widened distally, with distinct hair crown. ♀: Cerci long, oval, with some setulae ventrally at base. Egg-guide with short setae in posterior quarter; posterior margin nearly straight.

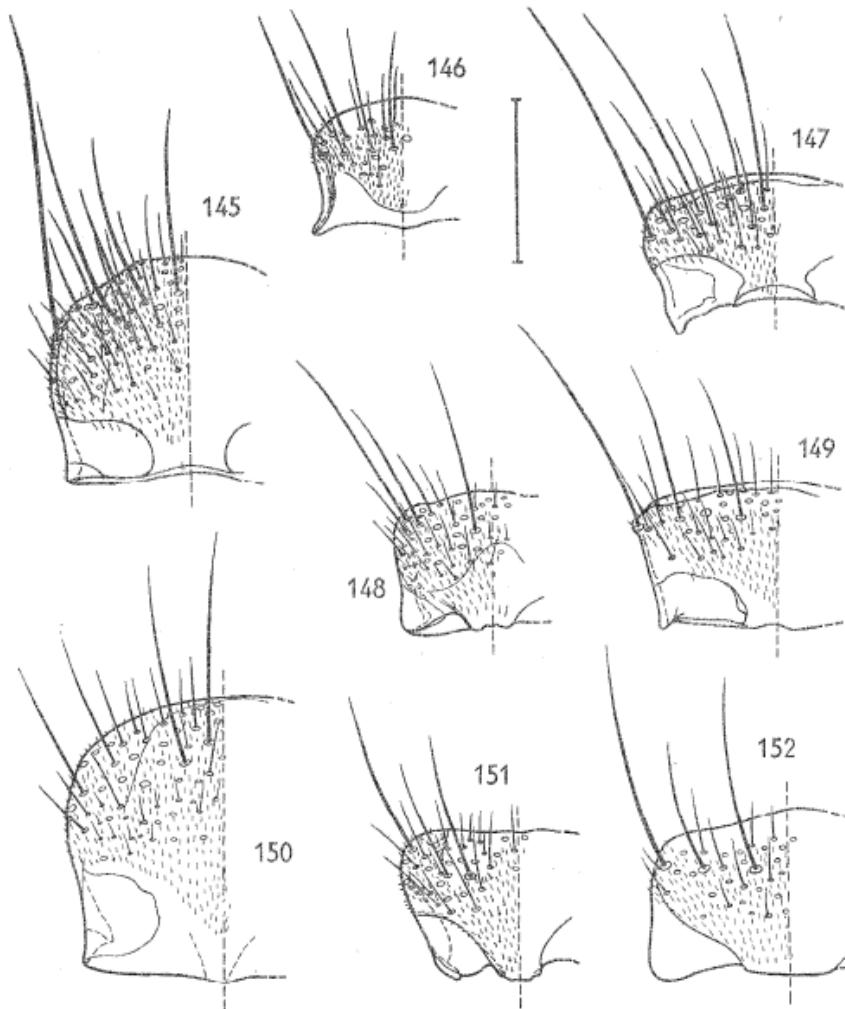
**Types.** Holotype, male: GDR, Grünwald bei Berlin, 7. IX. 1916, Oldenberg lgt. (IPE). Paratypes (29 ♂♂, 65 ♀♀): Switzerland: Aigle, VIII. 1970, 1 ♂; Zürich, VI. 1969, 1 ♀, VII. 1970, 1 ♂; Seelisberg, VIII. 1973, 1 ♂; Scuol, VIII. 1978, 1 ♂; Biel, VII. 1973, 1 ♂, 1 ♀; all Bächli lgt; Aarau, "65/66", Schmid lgt., 1 ♂, 12 ♀♀ (ZMZ). Austria: Almsee, without date, Czerny lgt., 1 ♂; Hammern bei Freithal, VII. 1876, Mik lgt., 1 ♂; with only label "det. Frauenfeld", 1 ♂ (NMW). FRG: Lübeck, VIII. 1935, coll. Winthem, 1 ♀ (NMV). West Berlin: Pichelsberg, VI. 1899, 1 ♂, VI. 1900, 1 ♂, 1 ♀, V. 1901, 1 ♀, VIII. 1902, 1 ♂, VI. 1905, 1 ♀, Oldenberg lgt. (IPE). Czechoslovakia: Vranov nad Dyji (Frain), VIII. 1881, Mik lgt., 1 ♀, VIII. 1883, Handlirsch lgt., 13 ♀♀, without date, Pokorny lgt., 1 ♀ (NMW); Gombasek nr. Rožňava, VI. 1969, Rozkošný lgt., 1 ♀ (coll. Máca). Hungary: Aranyosgadány, VII. 1976, Papp lgt., 1 ♂, 1 ♀; Badacseny, without date, 1 ♀; Pécs, IX. (year?), 1 ♂; Jászberény, without date, 1 ♂; all Thalhammer lgt.; Pétermenkó in Zempléni hills, VI. 1924, Zsirkó lgt., 1 ♀ (MNB). Roumania: Mehadia, VI. 1904, Kertész lgt., 1 ♀ (MNB); Vlăsia marches (Snagov forest nr. Bucuresti), IX. 1976, 1 ♂; Cimpulung-Moldovenesc, VII. 1976, 1 ♀; Pojorita nr. Cimpulung-M., VII. 1970, 1 ♂, 1 ♀; Falcău-Sădău nr. Suceava, VIII. 1970, 1 ♀; all lgt. et coll. Ceianu. Poland: Slupsk (Stolp i. P., Klein Strelin), VIII. 1921, Karl lgt., 1 ♀; Warszawa, VIII. 1975, Ekipa lgt., 2 ♀♀ (ZIW). Sweden: Bjarred (in Uppland), VII. 1964, 1 ♂, 1 ♀; Kullaberg, VII. 1974, 1 ♂; Halltorps (Halltoro, Ölandia), without date, 1 ♂; all Andersson lgt.; Bolmen (in Småland), VII. 1944, V.–VI. 1946, VII. 1957, VIII. 1958, Ringdahl lgt., 2 ♂♂, 6 ♀♀; Hälsingborg, VIII. 1958, Ringdahl lgt., 1 ♂ (ZIL). Finland: Åland Is., Jomala, VII. 1922, 1 ♀; Vihti (Vichtis), without date, 1 ♀; Lohja (Lojo), without date, 2 ♂♂, 3 ♀♀; Morvas, without date, 1 ♀; all Frey lgt.; Kuusisto (Kuustö), without date, Lundström lgt., 1 ♀; Nylandia, without date, Tengström lgt., 1 ♀; Helsinki, without date, Ahnger lgt., 1 ♀; Kangasala (in Tavastland), without date, 1 ♂; Tampero (Tammerfors), without date, 1 ♀; both Lundahl lgt.; Forssa, without date, Tuomikoski lgt., 1 ♂; Jakobstad, VII. 1957, VIII. 1958, Storå lgt., 1 ♂, 1 ♀; Pedersöre, VIII. 1938, Storå lgt., 1 ♂ (ZMH). USSR: Latvia: Liepaja (Libau), without date, Siebert lgt., 1 ♂ (IPE); Leningrad region: Vyborg (Viipuri), without date, Thuneberg lgt., 1 ♂; Kivenappa (Kivinebb), without date, Sahlberg lgt., 1 ♀ (ZMH).

#### Distribution: Central and northern Europe.

**Remark:** This species shows considerable variability of colouring and of some morphological details; however, we consider all above mentioned specimens conspecific.

Stegana (Steganina) wheeleri sp. n.  
(Figs. 28, 39, 44, 59, 64, 72, 86, 99, 103, 112, 126, 130, 139, 149, 157)

Frons dark yellow to diffuse light brown, ocellar triangle dark brown, facialia yellow; lateral margins slightly sinuate and distinctly converging



Figs. 145—152. Subanal plate, ♀ (the same specimens as in Figs. 121—128): 145 — *S. mehadiae*, 146 — *S. baechlii*, 147 — *S. nigrithorax*, 148 — *S. longifibula*, 149 — *S. wheeleri*, 150 — *S. hypoleuca*, 151 — *S. coleopterata*, 152 — *S. similis*. The scale line represents 0.2 mm.

anteriorly; width ratio 1.17 — 1.19, length/width ratio 1.39 in male, 1.19 in female. Genae yellow with darker stripe posteriorly, narrow and long. Buccal angle 100 — 110°. Face slightly widened ventrad, with rounded

dorsal angles; carina high, slightly widened ventrad, reaching to about middle of face. The 3rd antennal segment brownish black with paler apex, oval, apically rounded. Arista 8/6-7. Palpi narrowly lanceolate, apex pointed; 3-4 marginal and 4 long discal setae.

Mesonotum yellowish brown, with five narrow, dark brown longitudinal stripes; scutellum dark brown, with one medial and two lateral yellow stripes. 12 rows of acrostichals; primary prescutellars nearly twice as long as secondary ones. Pleurae whitish yellow, with black, wide band. Wings brown, anteriorly dark brown; costa yellowish, basicosta light brown, other veins dark brown. Wing length 3.15 mm in male, 3.2 mm in female. C-i 1.88-1.92, Ac-i 8.2-9.4, 4v-i 1.75-1.92. Halteres yellowish, with light brown apex. Legs yellow, apices of femora and bases of tibiae dark brown.

Abdomen dark brown. ♂: Anterior lobes of periandrium short, wide, medially connected. Clasper with distally prominent inner margin and small, heavily sclerotized apical tooth. Hypandrium with short, widely rounded anterior lobe laterally reaching nearly lateral angles of hypandrium. Posterior paramere wide, with parallel sides and emarginate anterior margin, posteriorly without keels, with fine transverse impressions along posterior margin. Aedeagus evenly fused with apodeme, strongly widened distally, there nearly three times wider than apodeme, only slightly serrate, with distal crown of dense setulae. ♀: Cerci narrow, conical, ventrally at base with some setulae; apex distinct. Egg-guide short, pubescent on about posterior half; anterior margin straight, posterior one emarginate.

**Types.** **Holotype**, male: USA: Tennessee, Rutledge, VII. 1954, Wheeler lgt. (UTA).  
**Paratype**, female: same data and deposition as in holotype.

Distribution: USA.

#### Unplaced name

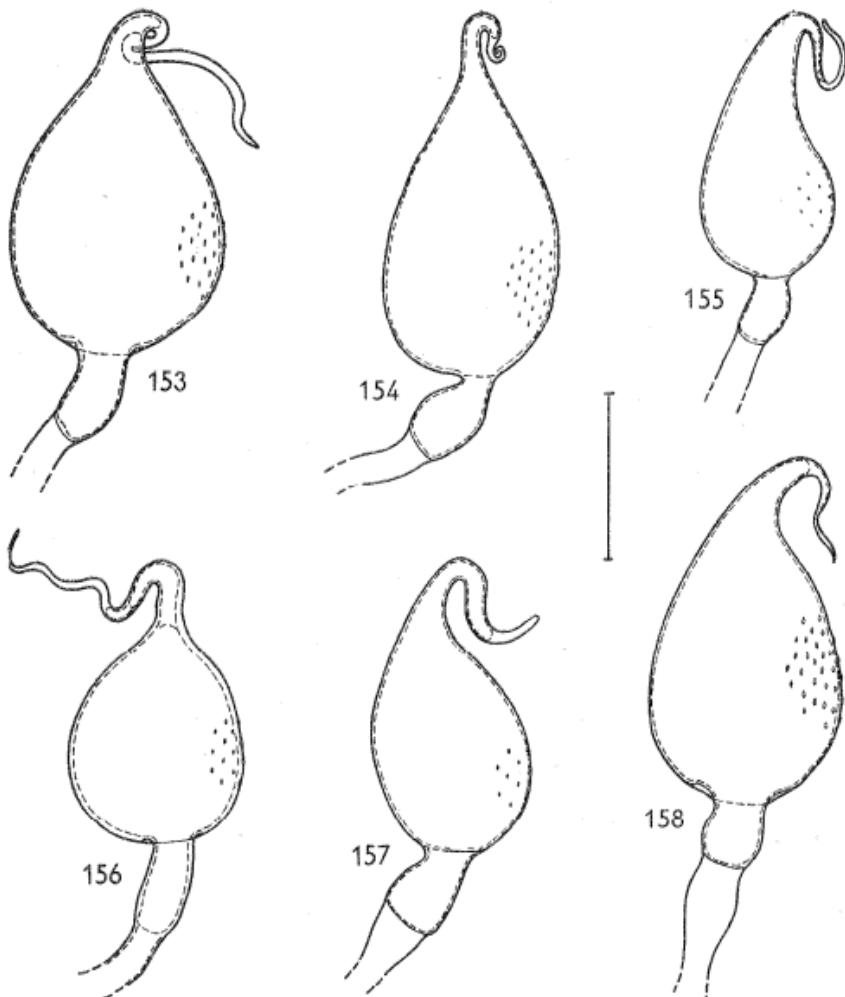
*Stegana annulata* Haliday, 1833: 172

*syn. of vittata* ST HALL & RODS. 1984: 175

This nominal species has uncertain affinities within the subgenus *Steganina*; its description is very short, type material is lost.

#### Discussion

Of the two species of subgenus *Stegana* examined, *S. vittata* is probably more primitive than *S. furta* and of closer relationships to species of the subgenus *Steganina* in some respects; the former species has less reduced abdominal spiracles, comparatively well developed anterior parameres and unmodified (not strongly elongated) hypandrium. It seems that this sub-



Figs. 153–158. Spermatheca, ♀ (the same specimens as in Figs. 121–128): 153 — *S. similis*, 154 — *S. longifibula*, 155 — *S. baechlii*, 156 — *S. mehadiae*, 157 — *S. wheeleri*, 158 — *S. coleoptrata*. The scale line represents 0.2 mm or 0.3 mm (Fig. 156).

genus originated in the Neotropic region, where considerable number of species occurs (Wheeler, 1970); in other regions, members of this subgenus were found in only small numbers. On the other hand, all known members of *S. coleoptrata* group are Holarctic; it is not excluded that some

undescribed or incompletely described exotic species will be found to belong here, but their number will not probably be very high. This group is perhaps of East Asian origin.

From the point of view of imaginal morphology, the *S. coleoptrata* group represents a homogeneous, natural complex. Apart from the presence of a number of diagnostic characters at species level, genitalic characters of all studied species show great uniformity. In most of species, rate of differentiation of external characters, mainly those of presupposed phylogenetic importance (see list of Okada, 1971) corresponds to the rate of differentiation of genitalic characters. However, in some cases, differences among species in some external characters do not correlate with these in genitalia. Thus, *S. coleoptrata* and *S. similis* are very close to one another in genitalia but are well differentiated in external characters; the reverse situation is in the couple *S. similis* — *S. longifibula*. Some of the external characters show, moreover, rather great intraspecific variability, which weakens their diagnostic importance. This applies namely for body colour and shape of genae and face. In turn, shape of frons, antennal segments and palpi are relatively constant. In the width of frons, slight sexual dimorphism is manifested — frons in females is somewhat wider than in males.

Within the *S. coleoptrata* group, three complexes of species may be distinguished, which members show considerable degree of similarity and perhaps of relationships to each other. The species *S. coleoptrata*, *S. similis* and *S. wheeleri* are undoubtedly most closely related. Whereas the genitalic differences among them tend to be minimal, the distinctiveness of their external characters, as colour of body and wings, shape of genae, carina and frons, are considerable. The second complex of species, viz. *S. antigua*, *S. longifibula*, *S. baechlii*, *S. dentifera*, and *S. nigrithorax*, show great uniformity in external and some of the genitalic characters (clasper, decasternum, periandrium, aedeagus, posterior paramere). Of them, *S. antigua* and *S. longifibula* show most similarities and may be considered for a pair of allopatric siblings; analogical but weaker relationships appear in couple *S. dentifera* and *S. nigrithorax*. The last complex is represented by *S. hypo-leuca* and *S. mehadiae*; they are clearly separated from the rest of the group by relatively conspicuous morphologic characters. Close relationships between these two species are very probable in spite of considerable differences in a number of characters such as the shape of hypandrium, forceps, decasternum etc. More profound analysis of phylogenetic relationships is premature as yet, in view of the almost complete lack of knowledge of other criteria, as preimaginal morphology and bionomical data.

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