

Revision of the Palaearctic species of the genus *Clinocentrus* (Hymenoptera, Braconidae)

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Revision of the Palaearctic species of the genus *Clinocentrus* Haliday is given. The composition and geographic distribution of the genus *Clinocentrus* and the probable generic position of fossil species described by Brues (1933) as **Clinocentrus** are discussed. The systematic position of this genus in Exothecinae is also discussed and arguments presented to support the differentiation of exothecines and rogadines. Nine species of *Clinocentrus* are figured and re-described. Three new species and two new subspecies are figured and described: *C. kalmyk* from Kalmykia, *C. kozlovi* from Mongolia, *C. rhyssipoloides* from Primorsk Territory of Russia, *C. umbratilis* ssp. *disruptus* from Taiwan and *C. vestigator* ssp. *orientalis* from Primorsk Territory of Russia. *C. stigmaticus* Marshall, 1897 and *C. jaroshevskyi* Telenga, 1941 are synonymized with *C. vestigator* (Haliday, 1836); *C. tarsalis* Ashmead, 1894—with *C. exsertor* (Nees, 1812) and *C. gracilipes* (Thomson, 1891)—with *C. cunctator* (Haliday, 1836). Lectotypes of *Exothecus analis* Wesm., 1838 and *C. antefurcalis* Granger, 1949 are designated. The new combination is given: *Rhyssipolis antefurcalis* (Granger). A key to 12 Palaearctic species of *Clinocentrus* is given.

KEYWORDS: Palaearctic Region; Braconidae; *Clinocentrus*; Systematics.

Introduction

The genus *Clinocentrus* Hal. comprises 23 species in the world fauna (Shenefelt, 1975). According to Shenefelt (1975) 13 species are known in the West Palaearctic Region (but some of these species names are synonyms—see Systematic section). Only 3 species are restricted to the Holarctic Region (*C. fumiferanae* Muesebeck, *C. mellipes* (Ashmead) and *C. tarsalis* Ashmead). Also 3 species are present in the Neotropic Region (but the status of these species needs clarification): *C. flaviventris* Ashmead from St. Vincent, *C. nigripectus* Enderlein from Brasil and *C. seminiger* Szépligeti from Bolivia. *C. compositus* (Baker) from Philippines, *C. muirii* (Fullaway) from Indonesia and Indian *C. foveatus* (Cameron) are restricted to the Oriental Region. And lastly 2 species (*C. antefurcalis* Granger and *C. longitarsis* Granger) were described from Madagascar (Granger, 1949). I have studied the type material of these species from the Museum National d'Histoire Naturelle, Paris. *C. longitarsis* (holotype: ♀, 'Madagascar, Perinet, Poret cote est.', 'Museum Paris, 3.32. A. Seyrig', 'Type') is a good species of *Clinocentrus* with almost completely smooth second

abdominal tergite. But *C. antefurcalis* (lectotype: ♀, 'Madagascar, Bekily, Reg. sud de l'ile', 'Museum Paris, IX.36. A. Seyrig', '42', 'Type'; designated here) actually belongs to the genus *Rhysipolis* Förster (comb. n.).

Brues (1933) described as *Clinocentrus* 6 species from Baltic amber. Unfortunately, almost the entire type-material from Königsberg Museum was destroyed and this makes it difficult to determine to which genera these species really belong. Analysis of descriptions and figures, however, allows some preliminary comments on these species. Thus, I think that *C. microps* Brues, *C. caudatus* Brues and *C. debilis* Brues belong in Doryctinae s. str. and possibly in the genera *Doryctes* Haliday or *Ontsira* Cameron. This opinion is supported by the presence of distinct propodeal areas and long palpi (these characters are not known for *C. microps*), long ovipositor sheath (equal to body length), usually slender antennae, distal tergites of abdomen strongly extending beyond third tergites, second abdominal tergite completely or almost completely smooth. Also, *C. microps* has a subcubical head, eye very small, antennae short and mesonotum granulate. Such characters hardly ever occur in *Clinocentrus*. *C. latitator* Brues has such characters (which are absent in *Clinocentrus*) as interstitial position of recurrent vein of fore wing, short antennae and very small size of body (1.5 mm). Therefore, the placement of this species in *Clinocentrus* is doubtful (possibly *C. latitator* should be placed in the genus *Oncophanes* Förster). Most probably only *C. latipennis* Brues and *C. robustus* Brues may be validly placed in *Clinocentrus* although these species do have characters which have not been noted for extant species of *Clinocentrus*: absence of notauli in distal part of mesoscutum (*C. latipennis*) and propodeum with areas (*C. robustus*).

Telenga (1941) indicated 4 species of this genus for the USSR fauna: *C. excubitor* (Haliday), *C. exsertor* (Nees), *C. gracilipes* (Thomson) and *C. jaroshevskiy* Telenga, of which only *C. exsertor* was known from the East Palaearctic (Amur Prov.). Belokobylskij and Tobias (1986) also added *C. umbratilis* Haliday, *C. brevicar* (Thomson), *C. stigmaticus* Marshall and *C. caucasicus* Tobias, the latter two known also from East Palaearctic. *C. jaroshevskiy* was considered as a probable synonym of *C. exsertor*. Therefore 7 species were known in Russian fauna up to this time.

New important information on life-history and biological peculiarities of *Clinocentrus gracilipes* (Thomson) was obtained by Shaw (1983). Shaw's data, however, do not allow one to conclude unequivocally to which subfamily *Clinocentrus* really belongs. According to some authors (Shaw, 1983; Achterberg, 1984; Shaw and Huddleston, 1991) exothecines (I include *Clinocentrus* in this group) was placed in the subfamily Rogadinae. For the separation of subfamily Rogadinae from subfamily Doryctinae s. str. an apomorphic character is used (but is it not quite constant): fore and usually middle tibiae of doryctines have 1 or more rows of short and often thick spines, which are absent in rogadines and exothecines. However Quicke and van Achterberg (1990) in their recent paper subdivided subfamily Rogadinae s. l. into 3 subfamilies: Rogadinae s. str., Exothecinae and Rhysalinae. I agree with such a separation of a Rogadinae and Exothecinae, because the first subfamily is an endoparasitic group (with unusual biological characteristics) and the second one (Exothecinae) is ectoparasitic. This essential difference was the principal argument for separation of these groups by Tobias (1981) and Belokobylskij and Tobias (1986). Rogadines are endoparasitic wasps that attack the larval instars of exposed 'macrolepidoptera' forming their cocoon within a 'mummy' (hardened and uncontracted skin) of the host. In contrast, exothecines are ectoparasitic wasps and attack concealed or semi-concealed instars of 'microlepidoptera' mostly leaf-mining

or leaf-rolling hosts, and without forming a 'mummy'. Doryctines have the same biological peculiarities as exothecines, but their hosts are mostly wood-boring or bark-boring beetles. Their differences in these important characteristics do not permit the inclusion of rogadines and exothecines in a common group. The latter group, exothecines, is much more similar to doryctines, but on the basis of plesiomorphic characteristics.

It is significant that the biological peculiarities of *Clinocentrus* show the change from ecto- to endoparasitism of the rogadine type (Shaw, 1983). The species *Clinocentrus* studied by Shaw, *C. gracilipes* (Thomson), attacks only concealed (or semi-concealed) late instar larvae of hosts, and eggs are laid in a transverse position immediately beneath the epidermis of hosts. The fully grown larva of *C. gracilipes* forms its cocoon within the skin of the host, which forms a 'mummy'. However, Belokobylskij and Tobias (1986) considered that *Clinocentrus* should be included in exothecines, but in a separate tribe Clinocentrini (Achterberg, 1991). There are 2 principal arguments for this opinion. In the first place, the species of *Clinocentrus* (as the majority of exothecines) attack the (semi-)concealed hosts of 'microlepidoptera' (Shenefelt, 1975; Shaw, 1983, Belokobylskij, unpublished data). These species use as hosts lepidopteran larvae from families Tortricidae, Momphidae, Choreutidae, Epermeniidae and Yponomeutidae. These hosts live within leaf-buds, seeds, shoots, spinning of floscules, needles or leaves; seldom in leaf-rolls or leaf miners (at least as early instar). The records of exposed instars of Geometridae and Noctuidae as hosts of *C. excubitor* and *C. cunctator* (Shenefelt, 1975) are very doubtful. And it was the concealed larvae of the hosts of *Clinocentrus* which resulted in the long ovipositor (the latter is short in rogadines).

In the second place, the species of *Clinocentrus* have only the initial stage of egg immersion in host body (immediately beneath the epidermis). The egg placement of *Clinocentrus* species reflects a *Rhysipolis*- or *Oncophanes*-like ancestry (Shaw, 1983; Shaw and Huddleston, 1991), but eggs of the latter genera are placed on the surface of the host's body. In addition, the *Clinocentrus* species killed their hosts as prepupae with the aid of venoms whose action are similar to such venoms used by ectoparasitic *Rhysipolis* species. The venom of most *Aleiodes* species (and all rogadines probably) functions only to cause temporary paralysis to facilitate oviposition, but not kill (Shaw and Huddleston, 1991).

On the basis of the above information I believe that the genus *Clinocentrus* should be placed in exothecines, but not rogadines (Belokobylskij, 1992, 1993). However, in its biological characteristics this genus occupies a peculiar, transitional position between Exothecinae and Rogadinae and must be separated in tribe Clinocentrini (Achterberg, 1991).

The following abbreviations are used in this paper: POL=postocellar line ; Od=maximal diameter of lateral ocelli; OOL=ocellar-ocular line; BMNH=The Natural History Museum, London (UK); HMB=Hungarian Natural Museum, Budapest (Hungary); IRSB=Institut Royal des Sciences Naturelles de Belgique, Bruxelles (Belgium); IZANU=Institute of Zoology, Ukrainian Academy of Sciences, Kiev (Ukraine); NMID=National Museum of Ireland, Dublin (Ireland); TUC=Texas A&M University, College Station (USA); USNM=United States National Museum, Washington (USA); ZIP=Zoological Institute, St. Petersburg (Russia); ZMH=Zoological Museum of the University, Helsinki (Finland); ZML=Zoological Museum of the University of Lund (Sweden). Asterisk (*) indicates the territories where the species is here recorded for the first time.

Systematics

Genus *CLINOCENTRUS* Haliday, 1833

- HALIDAY, 1833: 266; 1836: 40 (*Rogas (Clinocentrus)*); Marshall, 1888: 260; Szépligeti, 1904: 80; Hellén, 1927: 41; Fahringer, 1931: 191; Telenga, 1941: 119; Muesebeck and Walkley, 1951: 174; Tobias, 1971: 201; Shenefelt, 1975: 1187; Tobias, 1976: 45; Shaw, 1983: 316 (biology); Belokobylskij and Tobias, 1986; 71; Achterberg, 1991: 21.
- Camptocentrus* Kriechbaumer, 1894: 61 (type species *C. testaceus* Kriechbaumer, 1894 = *Clinocentrus kriechbaumeri* (Fahringer, 1941)); Achterberg, 1991: 21.
- Microrhogas* Cameron, 1910: 96 (type species *M. foveatus* Cameron, 1910); Shenefelt, 1975: 1204; Achterberg, 1991: 21.
- Neorhyssalus* Baker, 1917: 286 (type species *N. compositus* Baker, 1917); Shenefelt, 1975: 1188; Achterberg, 1991: 21.

Type species. *Clinocentrus umbratilis* Haliday, 1833.

Description. Head transverse. Ocelli usually small, almost in equilateral triangle. Eye usually with short and sparse hairs. Occipital carina distinct, completely developed and connected to the hypostomal carina near base of mandible; rarely occipital carina absent below. Maxillary palps 6-segmented, labial 4-segmented. Antennae filiform. Apical segment with distinct and usually long spine. Thorax. Notauli deep and sculptured. Prepectal carina complete. Sternauli (precoxal suture) distinct, often short, sculptured, sometimes almost smooth. Propodeum without areas usually and almost completely rugose. Femora slender. Tarsal claws simple. Radial cell of fore wing weakly shortened usually, but sometimes strongly shortened. Recurrent vein distinctly antefurcal. Nervulus postfurcal. In hind wing submedial cell large. First abdominal tergite with deep dorsople, with 2 distinct dorsal carinae, joining usually before middle. Second and third tergites with distinct laterotergites. Ovipositor sheath long, but shorter than abdomen. First-third tergites sculptured almost completely, sometimes third tergite weakly sculptured or almost smooth.

Key to the Palearctic species of the genus *Clinocentrus*

- 1 First abdominal tergite very long and narrow, its length 1.7–1.8 times its apical width (Fig. 8).—Second radiomedial cell large, its length 2.2–2.4 times its maximum width. First flagellar segment 2.5–3 times as long as its apical width 2
 - First abdominal tergite short and wide, its length 1.2–1.4 times its apical width or nearly equal to it 3
- 2 Middle antennal segments 2.2–2.5 times as long as broad. Hind legs uniformly and completely light brown. Body length 4.2–5.8 mm (Europe, Russian Far East).
 - umbratilis* ssp. *umbratilis* Haliday
 - Middle antennal segments 3 times as long as broad. Hind femur distally, hind tibia medially and hind basitarsus completely darkened, other parts of legs light brown. Body length 3–4 mm (Taiwan) *umbratilis* ssp. *disruptus* sp.n.
- 3 Radial cell of fore wing distinctly shortened; metacarpus (within radial cell) 1.3–1.5 times shorter than pterostigma (Figs 19, 26). Ovipositor sheath 1.1–1.3 times first abdominal tergite.—Body light reddish brown 4
 - Radial cell of fore-wing unshortened or weakly shortened; metacarpus (within radial cell) not shorter than pterostigma (Figs 33, 40, 42, 47). Ovipositor sheath usually 1.7–2.8 times first abdominal tergite (except of *vestigator*) 5
- 4 Transverse diameter of eye 1.4–1.6 times length of temple. Hypoclypeal depression strongly transverse, its width 2.5–3 times the distance from edge of depression to eye (Fig. 16). Length of second radiomedial cell 1.1–1.3 times its width (Fig. 19). First abdominal tergite with 2 distinct lateral projections in basal third (Fig. 22). Body length 3.6–4.5 mm *kalmyk* sp.n.

- Transverse diameter of eye 2 times length of temple. Hypoclypeal depression almost round, its width 2 times the distance from edge of depression to eye (Fig. 23). Length of second radiomedial cell 1.75 times its width (Fig. 26). First abdominal tergite with small lateral projections in basal third (Fig. 29). Body length 2.1 mm
kozlovi sp.n.
- 5 Second radiomedial cell of fore wing small, its length 1.6 times maximum width, shorter than length of brachial cell. Second abscissa of radial vein 1.75 times shorter than first radiomedial vein (Fig. 33). Body length 3.5 mm . . . *hungaricus* Szépligeti
- Second radiomedial cell of fore wing distinctly longer, its length 1.9–2.9 times maximum width, not shorter than length of brachial cell. Second abscissa of radial vein usually longer than first radiomedial vein (Figs 40, 42, 47, 54, 61). . . . 6
- 6 Ovipositor short, its sheath 1.1–1.2 times first abdominal tergite, about half as long as first–third tergites combined. Costal vein of fore wing, pterostigma and first abscissa of costal vein of hind wing of male distinctly thickened (Fig. 42) . . . 7
- Ovipositor long, its sheath 2–2.8 (rarely 1.5–1.8) times first abdominal tergite, usually longer than first–third tergites combined (rarely 1.2–1.4 times shorter). Costal vein and pterostigma of male unthickened 8
- 7 Eye height of female 3–3.3 times height of cheek. Third abdominal tergite of female usually smooth (Fig. 43), but sometimes rugulose. Body usually mostly dark. Palpi reddish brown, lighter distally. Body length 3.1–3.9 mm (W. Europe, Russia, Kazakhstan) *vestigator* ssp. *vestigator* (Haliday)
- Eye height of female 3.9–4.3 times height of cheek. Third abdominal tergite of female almost completely distinctly rugulose-striate (Fig. 82). Body light reddish brown. Palpi light brown. Body length 2.7–3.5 mm (Russian Far East) *vestigator* ssp. *orientalis* ssp. n.
- 8 Ocelli larger, Od 1.2–1.8 times (occasionally 2 times) greater than OOL, rarely Od almost equal to OOL (Fig. 45).—Length of third antennal segment 2.5–2.8 (occasionally 3) times its apical width (Fig. 46). Length of second radiomedial cell 2.2–2.6 times its maximum width, 1.2–1.4 times length of brachial cell (Fig. 47). Body length 3.1–5.8 mm
excubitor (Haliday)
- Ocelli smaller, Od 1.2–2 times shorter than OOL 9
- 9 Antennal segments short. Length of third antennal segment 1.7–2.4 times its apical width (Figs 53, 60). First abdominal tergite short and wide, its length not greater than its apical width (Figs 57, 64) 10
- Antennal segments longer. Length of third antennal segment 2.8–4.3 times its apical width (Figs 67, 74, 85, 92). First abdominal tergite longer and narrower, its length 1.2–1.5 (rarely 1.1) times its apical width (Figs 71, 78, 89, 96) 11
- 10 Length of third antennal segment 2–2.4 times its apical width (Fig. 53). Hind femur 4.7–5.3 times as long as wide (Fig. 56). Discoidal cell petiolate anteriorly (Fig. 54). Third abdominal tergite distinctly rugose completely, rarely finely rugulose (Fig. 57). Palpi and legs usually light reddish brown, but darkened in melanistic specimens. Body length 3.1–5.7 mm. *exsertor* (Nees)
- Length of third antennal segment 1.7 times its apical width (Fig. 60). Hind femur 4 times as long as wide (Fig. 63). Discoidal cell almost sessile anteriorly (Fig. 61). Third abdominal tergite almost smooth, but here and there very finely sculptured in basal half (Fig. 64). Palpi and legs mostly dark reddish brown. Body length 4 mm
arcticus Hellén
- 11 Length of third antennal segment 4–4.3 times its apical width (Fig. 67). Propodeum with 2 distinct and uniformly curved carinae laterally. Third abdominal tergite weakly sclerotized, almost completely smooth, but punctulate and very indistinctly rugulose here and there (Fig. 71). Scutellum distinctly and irregularly sculptured posteriorly. Body length 3.6–5.1 mm *rhysipoloides* sp. n.
Length of third antennal segment 2.8–3.5 times its apical width (Figs 74, 85, 92). Propodeum without such carinae laterally. Third abdominal tergite strongly

sclerotized, distinctly rugose in greater part (Figs 78, 89, 96). Scutellum smooth posteriorly 12

- 12 Third abdominal tergite completely finely and densely transversely aciculate (Fig. 78), but sometimes (male) these aciculae very fine. Length of first abdominal tergite 1.2–1.3 times its apical width (Fig. 78). Transverse diameter of eye 1.3–1.5 times length of temple (Fig. 73). Eye with distinct and short hairs. Veins of fore wings of male weakly thickened. Body length 3.4–4 mm *cunctator* (Hal.)
- Third abdominal tergite usually with distinct arched and almost longitudinal rugae, with transverse rugae in distal one-third only (Figs 89, 96). If third tergite almost completely transversely striate (some specimens of *brevicalcar*), then length of first abdominal tergite 1.4–1.5 times its apical width (Fig. 89). Transverse diameter of eye 1.5–2 times length of temple (Fig. 84). Eye without hairs. Veins of fore wing of male not thickened. 13
- 13 Od 1.2 times shorter than OOL, sometimes almost equal to it (Fig. 84). Length of thorax 1.9 times its height (Fig. 79). Second radiomedial cell long, its length 2.7–2.8 times its maximum width, 1.5 times length of brachial cell (Fig. 86). Second abscissa of radial vein 1.7 times first radiomedial vein. Length of first abdominal tergite 1.4–1.5 times its apical width (Fig. 89). Distal abdominal segments distinctly extending beyond tergite 3 (Fig. 89). Body length 2.6–3.1 mm *brevicalcar* (Thomson)
- Od 1.6–2 times shorter than OOL (Fig. 91). Length of thorax 1.6–1.8 times its height. Second radiomedial cell short, its length 1.8–2.4 times its maximum width, nearly equal to length of brachial cell, but sometimes slightly longer or shorter (Fig. 93). Second abscissa of radial vein nearly equal to or 1.1–1.3 times longer than first radiomedial vein. Length of first abdominal tergite 1.2–1.3 times its apical width (Fig. 96). Distal abdominal segments usually very weakly extending beyond tergite 3 (Fig. 96). Body length 2.6–4.3 mm. *caucasicus* Tobias

Clinocentrus umbratilis ssp. *umbratilis* Haliday, 1833

(Figs 1–8)

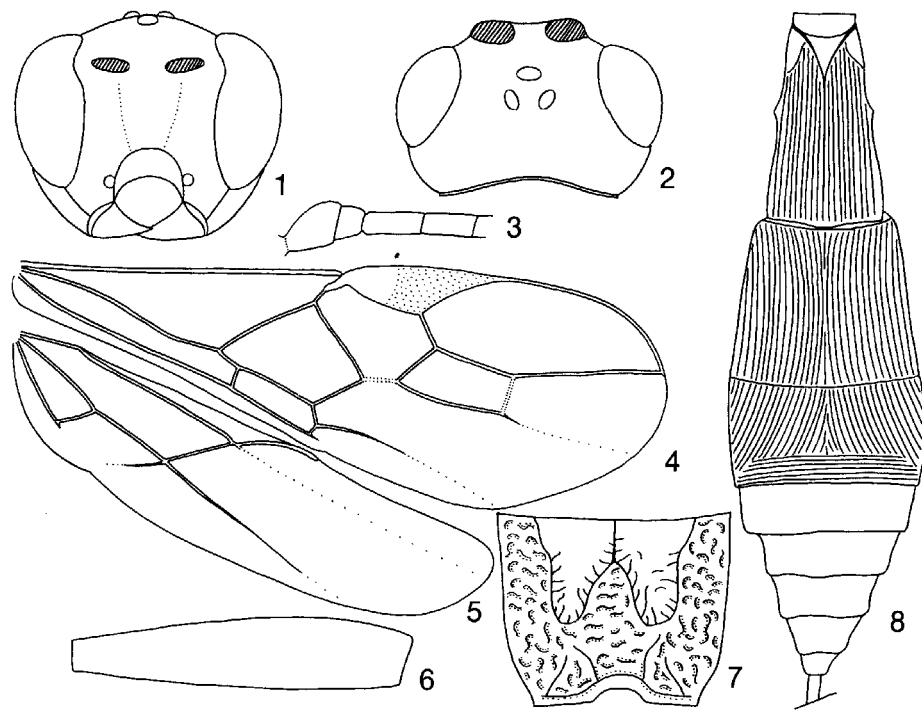
Clinocentrus umbratilis Haliday, 1833: 266 (holotype: ♀, (Ireland ?) 'From box 9', '♀ *Rogas* (*Clinocentrus*) (sic!) *umbratilis* Haliday, C. van Achterberg, 1986, Holotype'; NMID; examined); 1836: 95 (*Rogas* (*Clinocentrus*)); Marshall, 1888: 264; Hellén, 1927: 43; Fahringer, 1931: 201; Shenefelt, 1975: 1192; Belokobylskij and Tobias, 1986: 71.

Exothecus (*Clinocentrus*) *petiolaris* Thomson, 1891: 1688 (holotype: ♀, (Sweden, 'Ringsjon i Skane'), green square, '*petiolaris* m. '); ZML; examined); Shenefelt, 1975: 1192.

Clinocentrus umbratilis var. *polonicus* Fahringer, 1931: 201 (holotype: ♀, 'Kamienik (Polen)'; lost ?); Telenga, 1941: 126; Shenefelt, 1975: 1192.

Material. 1♀, **Ireland**, holotype *C. umbratilis*; 1♀, **Sweden**, holotype *E. (C.) petiolaris* Thoms. **Germany**: 1♂, 'Berlin, Freinwalde, 17.6.07, Dr G. Enderlein S.'; 1♂, 'Suhl, NSG Vessertal, 25.5.1988, leg. A. Taeger'; 1♀, 2♂, without geographical data; **Poland**: 1♀, 'Stettin, Eikerberg, Dr Hanau S., 20.6.1913'; **Ukraine**: 1♀, Kanev Nature Reserve, forest, 21.V.1975 (V. Tobias); 1♀, Kharkov Prov., Krasnokutsk, park, 9.VIII.1992 (A. Kotenko); **Russia**: 1♀, Moskow Prov., Prioksko-Terrassny Nature Reserve, 18.VI.1985 (Krauklis); 1♀, near Leningrad, Murino, forest, 12.VI.1991 (S. Belokobylskij); 3♂, Kabarovsk, Khekhtsir, forest, 13–14.VI.1985 (S. Belokobylskij); 1♀, Khabarovsk Terr., Amurzet, oak-forest, 18.VI. 1985 (S. Belokobylskij); 1♂, Primorsk Terr., 10 km W Anuchino, forest, 7.VI.1985 (S. Belokobylskij); 1♀, Primorsk Terr., Nikolaevka, river Ilistaya, oak-forest, 7.VI.1985 (S. Belokobylskij); 1♀, Primorsk Terr., 30 km SE Ussuriysk, Ussyriysk Nature Reserve, mixed forest, 11.VI.1993 (S. Belokobylskij).

Description. Female. Body length 4.5–5.8 mm. Head width 1.6–1.8 times its medial length. Temple roundly narrowed behind eye. Transverse diameter of eye 1.7–2 times longer than temple. POL almost equal to or 1.2–1.4 times shorter than



FIGS 1-8. *Clinocentrus umbratilis* Hal.: (1) head, frontal view; (2) head, dorsal view; (3) four basal segments of antenna; (4) fore wing; (5) hind wing; (6) hind femur; (7) propodeum, dorsal view; (8) abdomen, dorsal view.

Od, 1.7-2 times shorter than OOL; Od 1.4-1.8 times shorter than OOL. Eye with short dense hairs, 1.4-1.5 times as high as broad. Cheek height 4-5 times less than eye height and 1.5-1.8 times less than basal width of mandible. Face width 1.2-1.3 times less than eye height and 1.1-1.2 times greater than the height of face and clypeus combined or almost equal to it. Distance between tentorial pits 2-3 times the distance of one of them from eye. Clypeus strongly convex. Width of hypoclypeal depression 1.5-1.6 times the distance from edge of depression to eye. Occipital carina and hypostomal carina joined near base of mandible.

Antennae 32-segmented. First flagellar segment 2.5-3 times as long as its apical width, 1.1-1.2 times as long as second segment. Penultimate segment 2-2.2 times as long as wide.

Thorax. Length 1.6-1.9 times its height. Prescutellar depression usually with 3 distinct carinae, rugulose or almost smooth, about 0.33 as long as scutellum. Sternauli straight, oblique, rugose, occupying nearly half of lower part of mesopleura. Subalar depression distinct and rugose.

Fore wing. Radial cell not shortened; metacarpus (within radical cell) 1.3-1.5 times longer than pterostigma. Second radial abscissa 1.9-2.4 times longer than first abscissa, 1.9-2.6 times shorter than third abscissa, 1.5-1.9 times longer than first radiomedial vein. Second radiomedial cell long and weakly narrowed distally, its length 2.2-2.4 times its maximum width, 1.1-1.2 times length of brachial cell. Recurrent vein 1.3-2 times longer than second abscissa of medial vein. Distance

from nervulus to basal vein 1.2–1.8 times nervulus length. In hind wing, first abscissa of mediocubital vein 1.2–1.4 times longer than second abscissa; recurrent vein slightly antefurcal or interstitial, unsclerotized.

Legs. Hind femur 4.5–5.5 times as long as wide. Inner spur of hind tibia 0.29–0.33 times hind basitarsus. Hind tarsus 1.2–1.3 times hind tibia; second tarsal segment 1.8–2 times shorter than first segment, 1.5–1.8 times longer than fifth segment (without pretarsus).

Abdomen. First tergite without basal protuberances, distinctly and almost linearly widened from base to apex, with spiracular protuberances before middle, with 2 distinct dorsal carinae joined in basal 0.25. Apical width of first tergite 1.7–2.3 times its minimum width, 1.7–1.8 (rarely 1.6) times less than its length. Medial length of second tergite 1.2–1.4 times its basal width, 1.2–1.4 times length of third tergite. Second suture distinct and weakly curved. Distal tergites weakly extending beyond third tergite. Posterior one-third of abdomen compressed. Ovipositor sheath 1.8–2 times first abdominal tergite, 1.2–1.3 times shorter than first–third tergites combined.

Sculpture. Head smooth, but sometimes frons and face finely rugulose laterally. Mesothorax smooth mostly. Mesoscutum sinuously rugose mediodistally. Scutellum smooth posteriorly. Propodeum irregularly areolate, with medial carina in basal 0.2–0.25, smooth in basal 0.15–0.3, sparsely rugose with dense small rugae. First, second and basal half of third abdominal tergites distinctly striate, third tergite finely transversely striate in distal 0.33–0.5.

Colour. Head and thorax reddish brown or sometimes dark, with large light brown spots. Propodeum and abdomen dark brown. Usually face and 2 basal antennal segments light brown. Other antennal segments dark brown. Palpi yellow. Legs light brown, but sometimes dark. Wings light. Pterostigma brown or dark brown, yellow in basal 0.33.

Male. Body length 4.2–4.6 mm. Od 1.1–1.3 times shorter than OOL, sometimes equal to it. Antennae slender, 29–32-segmented. Penultimate segment 3–4 times as long as wide. Tarsi slender. Length of first abdominal tergite 1.7–2 times its apical width. Otherwise similar to female.

Var. *polonius* Fahringer. Differs from usual form in having body completely reddish brown and ovipositor as long as abdomen (Fahringer, 1931: 201).

Distribution. England, Finland, Germany, Ireland, Lithuania, Poland, Russia (European part, Khabarovsk and Primorsk Territories), Sweden, Ukraine.

***Clinocentrus umbratilis* ssp. *disruptus*, ssp. n.**

Material. HOLOTYPE ♀, Taiwan, Nantou Hsien, Meifeng, 22.V.1982 (R. Whar-ton) (TUC).

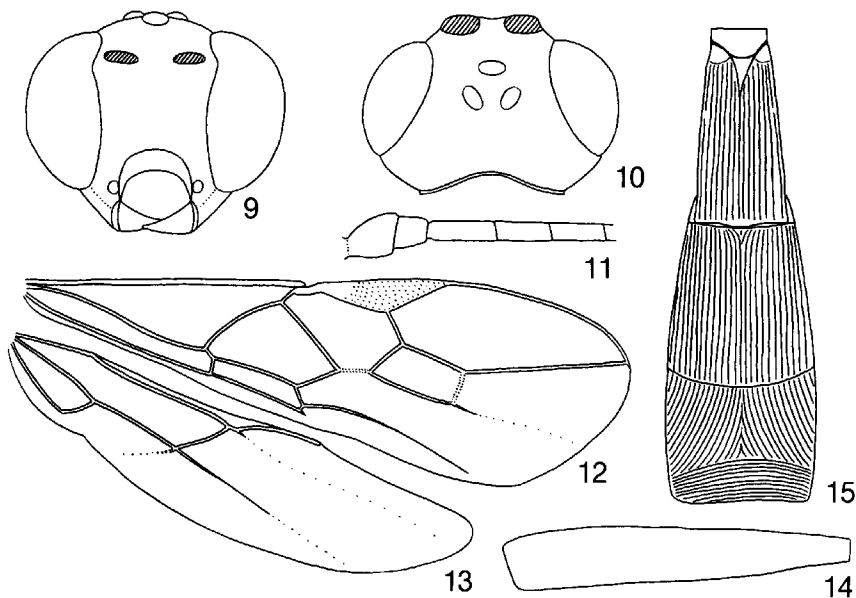
Description. Differs from nominate subspecies in the following features.

Female. Body length 3.4 mm. Fifteenth flagellar segment 3 times as long as wide. Length of thorax 1.9 times its height. Length of second radiomedial cell of fore wing 2.1 times its width. First abdominal tergite almost without spiracular protuberances. Hind femur distally, hind tibia medially and hind basitarsus darkened.

Male unknown.

Distribution. Taiwan Is.

Discussion. *C. umbratilis* Hal. is very closely related to *C. compositus* (Baker) (Baker, 1917) from Philippines (Figs 9–15). I have studied the holotype of *C. compositus* (from USNM): ♀, 'Mt. Makiling, Luzon, Baker', '*Neorhyssalus compositus* Baker'. The species are distinguished by the following features:



FIGS 9-15. *Clinocentrus compositus* (Baker): (9) head, frontal view; (10) head, dorsal view; (11) five basal segments of antenna; (12) fore wing; (13) hind wing; (14) hind femur; (15) abdomen, dorsal view.

Temple strongly and almost linearly narrowed behind eye, transverse diameter of eye 2.3 times longer than temple (Fig. 10). Face width 1.6 times less than height of eye and slightly less than height of face and clypeus combined (Fig. 9). Distance between tentorial pits 4.5 times the distance of one of them from eye. Abdomen narrower. Third abdominal tergite distinctly and densely striate, especially in basal half. Body length 3.8 mm—*compositus* (Baker).

Temple weaker and convex roundly narrowed behind eye, transverse diameter of eye 1.7-2 times longer than temple (Fig. 2). Face width 1.2-1.3 times less than height of eye, 1.2 times height of face and clypeus combined (Fig. 1). Distance between tentorial pits 2.5-3 times the distance of one of them from eye. Abdomen wider. Third abdominal tergite usually finely rugulose. Body length 4.7-5.8 mm—*umbratilis* Hal.

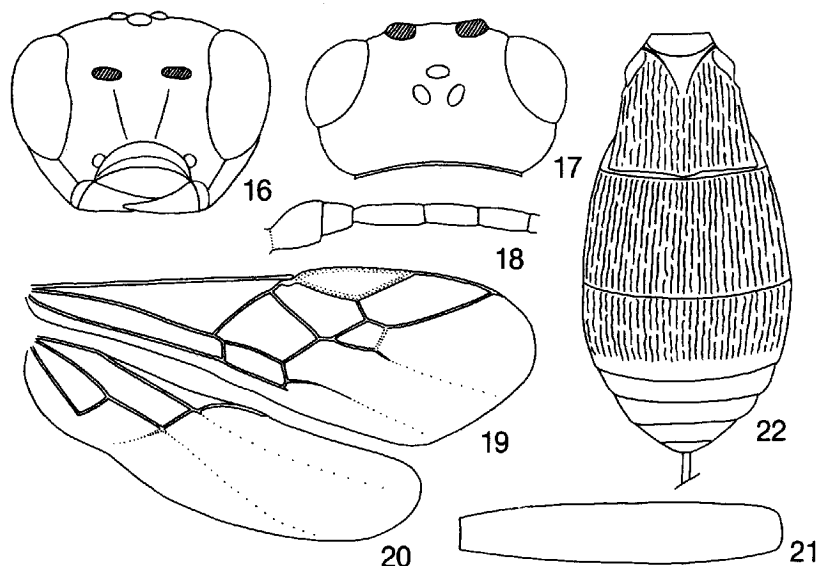
***Clinocentrus kalmyk*, sp. n.**

(Figs 16-22)

Material. HOLOTYPE ♀, **Russia**, Kalmykia, 30 km N Sarpa, near Lake Tsagan-Nur, 19.V.1986 (A. Kotenko) (IZANU).

PARATYPES 5 ♀, 3♂, **Russia**, Kalmykia, 30 km N Sarpa, near Lake Tsagan-Nur, 19 and 20.V.1986 (A. Kotenko) (IZANU, ZIP).

Description. Female. Body length 3.7-4.5 mm Head width 1.9-2 times its medial length. Temple uniformly roundly narrowed behind eye. Transverse diameter of eye 1.4-1.6 times longer than temple. POL equal to or 1.1-1.3 times shorter than Od, 1.8-1.9 times shorter than OOL; Od 1.5-1.6 times shorter than OOL. Eye with short and dense hairs, 1.4 times as high as broad. Cheek height 3.7-4.3 times less than eye height and 1.5-1.8 times less than basal width of mandible. Face width



FIGS 16-22. *Clinocentrus kalmyk* sp. n.: (16) head, frontal view; (17) head, dorsal view; (18) five basal segments of antenna; (19) fore wing; (20) hind wing; (21) hind femur; (22) abdomen, dorsal view.

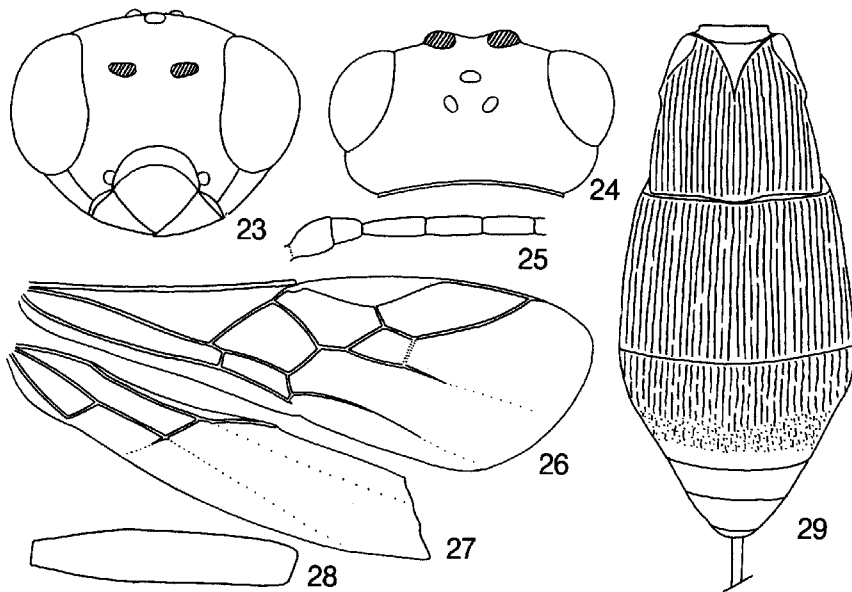
almost equal to eye height or slightly greater than it and 1.5-1.7 times greater than height of face and clypeus combined. Distance between tentorial pits almost 2 times the distance of one of them from eye. Hypoclypeal depression transverse, its width 2.5-3.1 times the distance from edge of depression to eye. Occipital carina not joined to hypostomal carina and absent below.

Antennae thickened, 29-30-segmented. First flagellar segment 3.3-3.5 times as long as its apical width, 1.2-1.3 times as long as second segment. Penultimate segment 2 times as long as its width.

Thorax. Length 1.5-1.6 times its height. Prescutellar depression with distinct medial carina, rugulose, 2-2.3 times shorter than scutellum. Sternauli straight, oblique, rugulose, situated in medial part of mesopleura and nearly equal to 0.5 of lower part of the latter.

Fore wing. Radial cell strongly shortened; metacarpus (within radial cell) 1.3-1.5 times shorter than pterostigma, 1.3-1.4 times longer than distance between apex of radial cell and apex of wing. Second radial abscissa 1.1-1.3 times shorter than first abscissa or slightly longer than it sometimes, 4.5-7 times shorter than third abscissa, 1.5-2.3 times shorter than first radiomedial vein. Second radiomedial cell short and subtrapeziform, its length 1.1-1.3 times its maximum width, 1.5-2.3 times shorter than length of brachial cell. Recurrent vein 1.5-2.1 times longer than second abscissa of medial vein. Distance from nervulus to basal vein nearly equal to nervulus length. In hind wing, first abscissa of mediocubital vein 1.5-1.6 times longer than second abscissa; recurrent vein unsclerotized.

Legs. Hind femur 5.2-5.8 times as long as wide. Inner spur of hind tibia 5.6-6.7 times shorter than hind basitarsus. Hind tarsus slightly longer than hind tibia. Second tarsal segment 2-2.2 times shorter than first segment. 1.4-1.7 times longer than fifth segment (without pretarsus).



FIGS 23-29. *Clinocentrus kozlovi* sp. n.: (23) head, frontal view; (24) head, dorsal view; (25) five basal segments of antenna; (26) fore wing; (27) hind wing; (28) hind femur; (29) abdomen, dorsal view.

Abdomen. First tergite with distinct protuberances in basal third, then distinctly and almost linearly widened to apex, with 2 weak dorsal carinae. Apical width of first tergite 1.4-1.5 times its width near protuberances, 2.3-2.6 times its minimum width, 1.1-1.2 times its length. Medial length of second tergite 1.3-1.5 times less than its basal width, 1.4-1.5 times medial length of third tergite. Second suture distinct and curved. Distal tergites weakly extending beyond third tergite. Ovipositor sheath 1.1-1.3 times longer than or equal to first abdominal tergite, 2.4-2.7 times shorter than first-third tergites combined.

Sculpture. Head and mesothorax smooth, but frons transversely striate. Mesoscutum rugulose in mediiodistal third, subalar depression widely rugose. Propodeum completely rugose and sparsely granulate. First and second abdominal tergites completely and most of third tergite rugose; third tergite almost smooth in distal edge.

Colour. Body light reddish brown. Antennae dark brown, but lighter basally. Palpi and legs light brown. Wing light. Pterostigma yellow.

Male. Body length 3.6-3.9 mm. Antennae 31-segmented. Otherwise similar to female.

Discussion. This species differs from all other species of *Clinocentrus* in the large and strongly transverse hypoclypeal depression and strongly shortened radial and second radiomedial cells.

Distribution. Russia (Kalmykia).

***Clinocentrus kozlovi*, sp. n.**

(Figs 23-29)

Material. HOLOTYPE ♀, **Mongolia**, Bayan-Khongor Aimak, Ekhin-Gol Oasis, on Reaumuria, 11-14.VIII.1969 (M. Kozlov) (ZIP).

Description. Female. Body length 2.1 mm. Head width almost 2 times greater than its medial length. Temple strongly roundly narrowed behind eye. Transverse diameter of eye 2 times longer than temple. POL 1.7 times longer than Od. 1.8 times shorter than OOL; Od almost 3 times shorter than OOL. Eye with sparse and very short hairs, 1.3 times as high as broad. Cheek height 4.5 times less than eye height and 1.5 times less than basal width of mandible. Face width slightly less than eye height and 1.5 times greater than height of face and clypeus combined. Distance between tentorial pits 2.25 times the distance of one of them from eye. Hypoclypeal depression almost round, its width 2 times the distance from edge of depression to eye. Occipital carina not joined to hypostomal carina and absent below.

Antennae rather slender, remaining 21 segments. First flagellar segment 3.8 times as long as its apical width, 1.2 times as long as second segment.

Thorax. Length 1.6 times its height. Prescutellar depression with distinct medial carina, a finely sculptured, 2-2.3 times shorter than scutellum. Sternauli straight, weakly oblique, sculptured, occupying 0.67 of lower part of mesopleura.

Fore wing. Radial cell strongly shortened, metacarpus (within radial cell) 1.5 times shorter than pterostigma, 1.1 times longer than distance between apex of radial cell and apex of wing. Second radial abscissa 1.5 times longer than first abscissa, 3.8 times shorter than third abscissa, 1.3 times shorter than first radio-medial vein. Second radiomedial cell small and irregularly trapeziform, its length 1.75 times its maximum width, 1.4 times shorter than length of brachial cell. Recurrent vein 1.5 times longer than second abscissa of medial vein. Distance from nervulus to basal vein equal to nervulus length. In hind wing, first abscissa of mediocubital vein 1.3 times longer than second abscissa; recurrent vein weakly sclerotized.

Legs. Hind femur 5.5 times as long as wide. Inner spur of hind tibia 6 times shorter than hind basitarsus. Hind tarsus as long as hind tibia. Second tarsal segment 2 times shorter than first segment, 1.4 times longer than fifth segment (without pretarsus).

Abdomen. First tergite with weak protuberances in basal quarter, then weakly and almost linearly widened to apex, with 2 distinct dorsal carinae joined near middle of tergite. Apical width of first tergite 2 times its minimum width, slightly greater than its length. Medial length of second tergite 1.2 times less than its basal width, 1.5 times medial length of third tergite. Second suture distinct and curved. Distal tergites weakly extending beyond third tergite. Ovipositor sheath 1.2 times first abdominal tergite, 2.2 times shorter than first-third tergites combined.

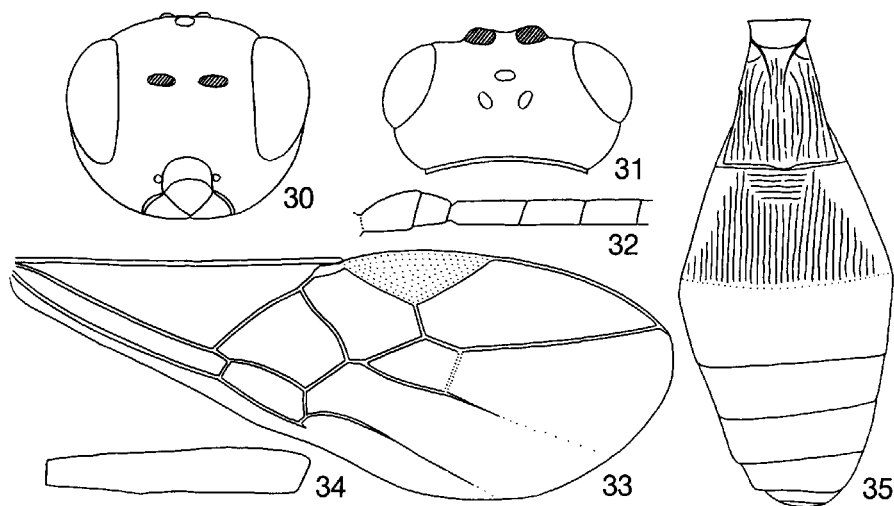
Sculpture. Head and mesothorax smooth mostly. Frons finely and transversely striate. Mesoscutum mediodistally and subalar depression widely rugulose. Propodeum reticulate-rugose completely, with sparse granulation. First and second abdominal tergites completely and third at most part distinctly and densely striate, third tergite almost smooth distally.

Colour. Body light reddish brown. Antennae dark brown, lighter basally. Palpi and legs light brown. Wings light. Pterostigma light brown.

Male unknown.

Discussion. This species is closely related to *C. kalmyk* sp. n. and differs in having the eyes large, hypoclypeal depression almost round, weakly transverse second abdominal tergite, first-third abdominal tergites distinctly longitudinally striate.

Distribution. Mongolia.



FIGS 30-35. *Clinocentrus hungaricus* Szépl.: (30) head, frontal view; (31) head, dorsal view; (32) five basal segments of antenna; (33) fore wing; (34) hind wing; (35) abdomen, dorsal view.

Clinocentrus hungaricus Szépligeti, 1906

(Figs 30-35)

Clinocentrus hungaricus Szépligeti, 1906: 607 (holotype: ♂ (Hungary), 'Budapest, M. Renuf (?), '96.V.4, Szépligeti'. 'Holotypus, ♂ *Clinocentrus hungaricus* Szépl., 1906, des. J.Papp, 1967', 'Hym. Typ. No 404, Mus. Budapest'; HMB; examined); Fahringer, 1931: 199; Telenga, 1941: 127; Shenefelt, 1975: 1190.

Material. 1♂, HOLOTYPE of *C. hungaricus*.

Description. Male. Body length 3.5 mm. Head width 1.7 times its medial length. Temple convex, roundly and strongly narrowed behind eye. Transverse diameter of eye 1.7 times longer than temple. POL 1.6 times longer than Od, 1.6 times shorter than OOL; 2.5 times shorter than OOL. Eye without hairs, 1.4 times as high as broad. Cheek height 2.5 times less than eye height and nearly equal to basal width of mandible. Face convex, its width slightly greater than eye height and 1.6 times greater than height of face and clypeus combined. Distance between small tentorial pits slightly longer than the distance of one of them from eye. Clypeus distinctly convex. Hypoclypeal depression almost round, its width 1.25 times less than distance from edge of depression to eye. Occipital carina and hypostomal carina joined near base of mandible.

Antennae 31-segmented. First flagellar segment 3 times as long as its apical width, slightly longer than second segment. Penultimate segment 2 times as long as wide.

Thorax. Length 1.5 times its height. Prescutellar depression rugulose, 0.33 as long as scutellum (which is weakly convex). Sternauli short, shallow, rugulose, occupying nearly 0.33 of lower part of mesopleura. Subalar depression shallow, wide and rugulose.

Fore wing. Radial cell weakly shortened, metacarpus (within radial cell) 1.2 times longer than pterostigma. Second radial abscissa almost equal to first abscissa, 5.8

times shorter than straight third abscissa, 1.75 times shorter than first radiomedial vein. Second radiomedial cell small and short, weakly narrowed distally, its length 1.6 times its maximum width, 1.3 times shorter than length of brachial cell. Recurrent vein 2.8 times longer than second abscissa of medial vein. Distance from nervulus to basal vein equal to nervulus length. In hind wing, first abscissa of mediocubital vein 1.5 times longer than second abscissa; recurrent vein interstitial.

Legs. Hind femur 6.4 times as long as wide. Inner spur of hind tibia 0.33 times hind basitarsus. Hind tarsus 1.2 times shorter than hind tibia. Second tarsal segment 2 times shorter than first segment, 1.25 times longer than fifth segment (without pretarsus).

Abdomen. First tergite without basal protuberances, distinctly and almost linearly widened from base to apex, with small spiracular protuberances before middle, with 2 distinct dorsal carinae not joined and reaching distal one third. Apical width of first tergite 1.9 times its minimum width, 1.3 times less than its length. Medial length of second tergite slightly less than its basal width, 1.3 times length of third tergite. Second suture very shallow and weakly curved. Distal tergites distinctly extending beyond third tergite.

Sculpture. Head completely smooth. Mesoscutum smooth, but rugulose mediodistally. Scutellum smooth posteriorly. Mesopleurae smooth. Propodeum not areolate, rugose, smooth basally. First and second (except on sides) abdominal tergites striate, third tergite very finely transversally striate medially only.

Colour. Most of head, entire prothorax and abdomen beyond second tergite light reddish brown. Face light brown. Head near ocelli and sides of thorax dark reddish brown; thorax dorsally, first and second abdominal tergites almost black. Tegulae yellow. Antennae reddish brown basally, black on most part. Palpi pale yellow. Legs light brown, tarsi reddish brown. Wings light. Pterostigma brown.

Female unknown.

Discussion. *C. hungaricus* Szépl. is closely related to *C. vestigator* (Hal.) and differs in having the second radiomedial cell very short, first abdominal tergite narrow, hypoclypeal depression small, face wide, pterostigma and costal vein of fore wing of male unthickened.

Distribution. Hungary.

Clinocentrus vestigator ssp. *vestigator* Haliday, 1836

(Figs 36–43)

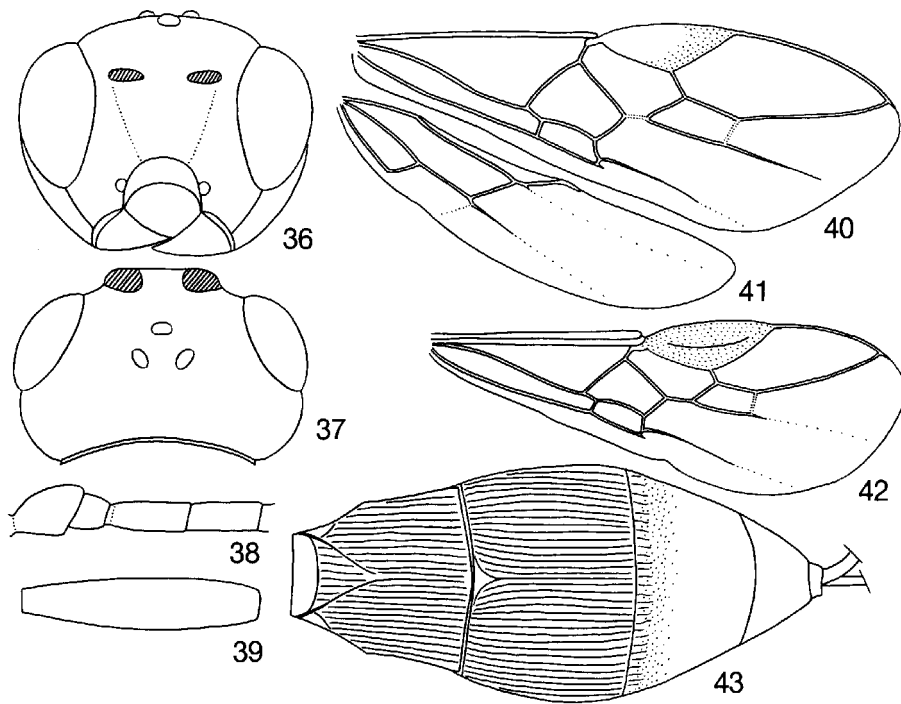
Rogas (*Clinocentrus*) *vestigator* Haliday, 1836: 95 (lectotype: ♀ (Angliam, Hiberniam), '♀ Rogas (*Clinocentrus*) *vestigator* Haliday, C. van Achterberg, 1986, Lectotype'; NMID; examined); Marshall, 1888: 263; Fahringer, 1931: 202; Telenga, 1941: 126; Shenefelt, 1975: 1192.

Clinocentrus stigmaticus Marshall, 1897: 131 (holotype: ♂, 'Angleterre'; lost), **syn. n.**; Shenefelt, 1975: 1191; Belokobylskij and Tobias, 1986: 71.

Oncophanes obsoletus Hellén, 1957: 44 (holotype: ♀ (Finland), 'Rantasalmi', 'S. Hellén', '3625', 'Mus. Zool. H:fors, spec. typ. No 13046 *Oncophanes obsoletus* Hellén'; ZMH; examined); Shenefelt, 1975: 1129 (*Oncophanes*); Belokobylskij and Tobias, 1986: 71.

Clinocentrus jaroshevskiyi Telenga, 1941: 126 (holotype: ♀, 'Khar'kov, 15.VI.1885 (Jaroshevskiy)'; lost), **syn. n.**; Belokobylskij and Tobias, 1986: 72 (as synonym of *C. exsertor*).

Material. 1 ♀, **Ireland**, lectotype of *C. vestigator*; 1 ♀, **Finland**, holotype of *O. obsoletus*. **Norway**: 1 ♀, 'Norvegia E, coll. Strand', 'Lillestrommen, 2.VII. 03';



Figs 36-43. *Clinocentrus vestigator* (Hal.): (36) head, frontal view; (37) head, dorsal view; (38) four basal segments of antenna; (39) hind femur; (40) fore wing (female); (41) hind wing (female); (42) fore wing (male); (43) abdomen, dorsal view.

Lithuania: 1♂, near Vilnius, 5-20.VI.1980 (V. Tobias); **Kazakhstan:** 1♀, Dzhungarsky Alatau, Koktuma on lake Alakol', 25.VI.1962 (V. Tobias); 1♀, Maralikha, steppe, 11.VII.1973 (M. Kozlov); **Russia:** 1♂, Voronezh Nature Reserve, 11.VII.1960 (V. Tobias); 3♀, 18♂, Chelyabinsk prov., Il'mensky Nature Reserve, 12, 14, 15, 17, 20. VII.1958 (V. Tobias); 1♂, Tomsk Prov., lake Berchikul', 18.VII.1911 (Gorchakovsky leg.); 1♂, Chita Prov., Kyra, forest-steppe, 17.VI.1975 (D. Kasparyan); 1♂, Chita Prov., Bylyra, birch wood with *Larix*, 22.VI.1975 (D. Kasparyan); 1♂, Chita Prov., left bank of Onon river, 5-7 km away from Tsasuchay, gorge, 12.VII.1990 (A. Kotenko).

Description. Female. Body length 3.1-3.9 mm. Head width 1.7-1.8 times its medial length. Temple convex, roundly and strongly narrowed behind eye. Transverse diameter of eye 1.3-1.5 times longer than temple. POL 1.2-1.8 times longer than Od, 1.5-2 times shorter than OOL; Od 2-2.8 times shorter than OOL. Eye without hairs, 1.3-1.4 times as high as broad. Cheek height 3-3.3 times less than eye height and 1.3-1.5 times less than basal width of mandible. Face distinctly convex (especially medially), its width nearly equal to eye height and 1.4-1.6 times greater than height of face and clypeus combined. Distance between tentorial pits 2-2.2 times the distance of one of them from eye. Clypeus distinctly convex. Hypoclypeal depression round, its width 1.2-1.3 times the distance from edge of depression to eye. Occipital carina and hypostomal carina joined near base of mandible.

Antennae 26–27-segmented. First flagellar segment 2.6–3 times as long as its apical width, 1.1–1.2 times as long as second segment. Penultimate segment nearly 2 times as long as its width.

Thorax. Length 1.5–1.6 times its height. prescutellar depression finely rugulose, with distinct medial carina, about 0.33 as long as convex scutellum. Sternauli distinct, shallow, rugulose, occupying 0.66 of lower part of mesopleura. Subalar depression wide and rugose.

Fore wing. Radial cell shortened, length of metacarpus (within radial cell) equal to or slightly greater than length of pterostigma. Second radial abscissa 2–3 times longer than first abscissa, 2.6–3 times shorter than weakly curved third abscissa, 1.2–1.6 times longer than first radiomedial vein. Second radiomedial cell not long and very weakly narrowed distally, its length 2–2.6 times its maximum width, 1.2–1.3 times length of brachial cell. Recurrent vein 1.3–1.7 times longer than second abscissa of medial vein. Distance from nervulus to basal vein equal to nervulus length. In hind wing, first abscissa of mediocubital vein 1.2–1.5 times longer than second abscissa; recurrent vein ante- or postfurcal.

Legs. Hind femur 4.3–5 times as long as wide. Inner spur of hind tibia 0.29–0.33 times hind basitarsus. Hind tarsus slightly shorter than hind tibia; second tarsal segment 2–2.3 times shorter than first segment, 1.1–1.3 times longer than fifth segment (without pretarsus).

Abdomen. First tergite without basal protuberances, strongly and almost linearly widened from base to apex, with small, but distinct spiracular protuberances before middle, with 2 distinct dorsal carinae joined in basal third or only strongly converging. Apical width of first tergite 2–2.2 times its minimum width, nearly equal to its length. Medial length of second tergite 1.2–1.4 times less than its basal width, 1.3–1.5 times length of third tergite. Second suture rather distinct and weakly curved. Distal tergites weakly extending beyond third tergite. Ovipositor sheath 1.1–1.2 times first abdominal tergite, 2–2.2 times shorter than first–third tergites combined.

Sculpture. Head smooth, but face finely rugulose laterally. Mesothorax smooth. Mesoscutum sinuously rugulose in small area mediodistally. Scutellum smooth posteriorly. Propodeum without areolae, almost completely rugose, but smooth or finely rugulose basally. First and second abdominal tergites distinctly striate. Third tergite usually almost smooth and finely granulo-striate basally; sometimes third tergite rugulose at most part.

Colour. Head light reddish brown, sometimes lighter ventrally. Frons and head dorsally and sometimes face darkened at most part. Thorax black or dark reddish brown. First abdominal tergite and distal part of abdomen dark reddish brown; medial part of abdomen reddish brown. Sometimes abdomen almost completely dark reddish brown. Antennae almost black, but 2 basal segments reddish brown. Palpi reddish brown, but usually lighter distally. Tegulae yellow. Legs reddish brown, all tibiae distally and tarsi darker. Wings infusate. Pterostigma light brown, distinctly darker in distal one third and below.

Male. Body length 3.5–3.8 mm. Eye height 2.4–2.7 times height of cheek. Antennae 23–26-segmented. First flagellar segment 3.5–4 times as long as its apical width. Penultimate segment 2.3–2.5 times as long as wide. Costal vein of fore wing thickened. Pterostigma enlarged and strongly sclerotized. Second radial abscissa 3–3.6 times first abscissa, 1.5–2 times first radiomedial vein. Nervulus distad of basal

vein by 0.5–1.5 times its length. First abscissa of costal vein of hind wing distinctly thickened. Propodeum granulate or finely rugulose basally. Third abdominal tergite usually rugulose at most part. Body usually darker. Abdomen sometimes completely black. Legs light reddish brown. Pterostigma dark. Otherwise similar to female.

Discussion. This species is related to *C. exsertor* (Nees) and differs in having the short ovipositor, almost completely smooth third abdominal tergite (usually), longer antennal segments, thickened costal vein and pterostigma of male.

Distribution. Denmark, England, Finland, Ireland, Kazakhstan, Lithuania, Norway, Poland, Russia (European part, southern Ural, Tomsk and Chita Provinces), Yugoslavia.

Hosts. *Tortrix* sp. (Tortricidae), *Epermenia illigerella* Hb. (Epermeniidae), *Ypsolophus vittellus* (L.) (Yponomeutidae) (Shenefelt, 1975).

Remarks. The holotype of *C. jaroshevskiy* Telenga is lost. But according to the description, this species has no differences from *C. vestigator* and is characterized by short ovipositor, shortened radial cell, short abdominal tergites and smooth third abdominal tergite. *C. stigmaticus* Marshall is nothing but the male of *C. vestigator*.

***Clinocentrus vestigator* ssp. *orientalis* ssp.n.**

(Fig. 82)

Material. HOLOTYPE ♀, **Russia**, Primorsk Terr., Khasan, forest, 29.VIII.1988 (S. Belokobylskij) (ZIP).

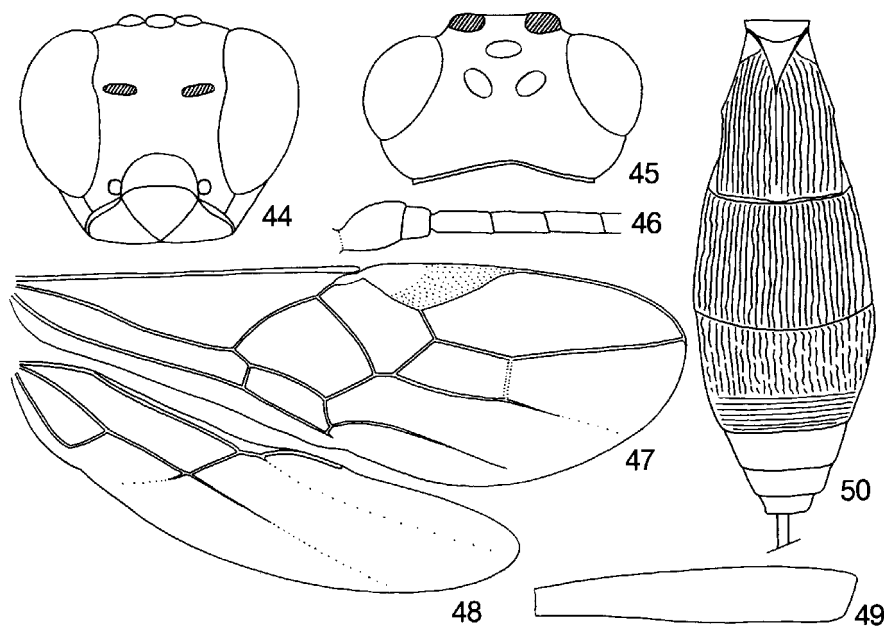
PARATYPES. **Russia:** Primorsk Terr.: 1♂, Benevskoe, southward Lazo, 18.VIII.1978 (D. Kasparyan) (ZIP); 1♀, Barabash-Levada, 3.IX.1978 (D. Kasparyan) (ZIP); 1♂, Khasan District, 15 km S Sukhanovka, Vityaz', at light, 2.VIII.1982 (I. Kerzhner) (ZIP); 1♂, 30 km S Slavyanka, forest, glades, 4.VIII.1985 (S. Belokobylskij) (ZIP); 1♂, Spassk, forest, 20.VIII.1987 (S. Belokobylskij) (ZIP); 3♀, 1♂, Khasan, Golubiny Utyos (Rock of Pigeon), oak-forest, shrubs, 26–28.VIII.1988 (S. Belokobylskij) (ZIP, BMNH); 1♂ with label as in holotype (BMNH); 1♂, Anisimovka, glades, forest, 4.IX.1988 (S. Belokobylskij) (ZIP); 1♂, 5 km W Anisimovka, glades, 6.VIII.1993 (S. Belokobylskij) (ZIP); 1♂, 10 km E Pos'et, Gvosdevo, oak-forest, 1.VI.1989 (S. Belokobylskij) (ZIP).

Description. The new subspecies differs from the nominate one in the following features.

Female. Body length 2.8–3.2 mm. Transverse diameter of eye 1.6–1.8 times longer than temple. POL almost equal to or slightly shorter than Od. Eye height 3.9–4.3 times cheek height. Antennae 25–27-segmented. Sternauli occupying half of lower part of mesopleura. Second radial abscissa of fore wing 1.2–1.5 times longer than first abscissa, 3–4.2 times shorter than third abscissa, slightly shorter or 1.2 times longer than first radiomedial vein. Second abdominal suture distinct, always deep and crenulate. Third abdominal tergite distinctly striate almost completely, smooth only distally, striae straight or weakly curved outwards apically. Body light reddish brown, dorsal part of head, mesoscutum, propodeum and first abdominal tergite usually darker. Palpi light brown.

Male. Body length 2.7–3.5 mm. Pterostigma and costal vein of fore-wing distinctly enlarged and sclerotized. Second radial abscissa 2.5 times longer than first abscissa sometimes, 2.5 times shorter than third abscissa, 1.7 times longer than first radiomedial vein. Otherwise similar to female.

Distribution. **Russia** (Primorsk Territory).



FIGS 44-50. *Clinocentrus excubitor* (Hal.): (44) head, frontal view; (45) head, dorsal view; (46) five basal segments of antenna; (47) fore wing; (48) hind wing; (49) hind femur; (50) abdomen, dorsal view.

***Clinocentrus excubitor* Haliday, 1836**

(Figs 44-50, 81)

Rogas (Clinocentrus) excubitor Haliday, 1836: 94 (lectotype: ♀ (Ireland), '♀ *Rogas (Clinocentrus) excubitor* Haliday, C. van Achterberg, 1986, Lectotype'; NMID; examined); Marshall, 1888: 262; Hellén, 1927: 42; Fahringer, 1931: 197; Telenga, 1941: 121; Shenefelt, 1975: 1189; Belokobylskij and Tobias, 1986: 72.

Exothecus marginellus Wesmael, 1838: 86 (holotype: ♀, (Belgium), 'E. *Marginellus* ♀', 'Coll. Wesmael', 'E. *Marginellus* det. C. Wesmael'; IRSB; examined); Shenefelt, 1975: 1189.

Material. Sweden (3♀, 2♂), Germany (1♂), Slovakia (3♀), Albania (1♀), Vietnam (1♀), Ukraine (1♂), Georgia (1♀), SW Kazakhstan (1♂), Russia [Krasnodar Terr. (2♀), Chelyabinsk (1♀), Irkutsk (1♂) and Chita (4♀) Provinces, Khabarovsk (2♀) and Primorsk (18♀, 1♂) Territories, Sakhalin Is. (1♀), Kunashir Is. (1♀)].

Description. Female. Body length 3.9-5.8 mm. Head width 1.8-2 times its medial length. Temple strongly and almost linearly narrowed behind eye. Transverse diameter of eye 1.8-2.5 times longer than temple. POL 1.2-2 times shorter than or (very rarely) almost equal to Od, equal to or 1.2 times shorter than OOL; Od 1.1-1.7 times (sometimes almost 2 times) longer than OOL, very rarely almost equal to it. Eye with short and sparse hairs, 1.4-1.5 times as high as broad. Cheek height 8-12.5 times less than eye height and 3-4 times less than basal width of mandible. Face width 1.5-1.8 times less than eye height and 1.1-1.2 times greater than height of face and clypeus combined or equal to it. Distance between tentorial pits 4-8 times the distance of one of them from eye. Clypeus distinctly convex. Width of hypoclypeal depression 1.8-2.3 times the distance from edge of depression to eye. Occipital carina and hypostomal carina joined near base of mandible.

Antennae thickened, 29–36-segmented. First flagellar segment 2.5–2.8 (rarely almost 3) times as long as its apical width, 1.2 times as long as second segment. Penultimate segment 1.8–2.2 times as long as wide.

Thorax. Length 1.6–1.8 times its height. Prescutellar depression sparsely rugulose, with distinct medial carina, 3–4 times shorter than weakly convex scutellum. Sternauli straight, not oblique, short, rugulose, occupying 0.3–0.45 of lower part of mesopleura. Subalar depression shallow, distinct and rugose.

Fore wing. Radial cell not shortened, metacarpus (within radial cell) 1.2–1.3 times longer than pterostigma. Second radial abscissa 2–2.4 times longer than first abscissa, 2–2.8 times shorter than straight third abscissa, 1.3–1.7 times longer than first radiomedial vein. Second radiomedial cell long and weakly narrowed distally, its length 2.2–2.6 (rarely 2.1) times its maximum width, 1.2–1.4 times length of brachial cell. Recurrent vein 2–3 times longer than second abscissa of medial vein. Distance from nervulus to basal vein nearly equal to nervulus length. In hind wing, first abscissa of mediocubital vein 1.1–1.6 times longer than second abscissa, sometimes nearly equal to it; recurrent vein slightly antefurcal, unsclerotized.

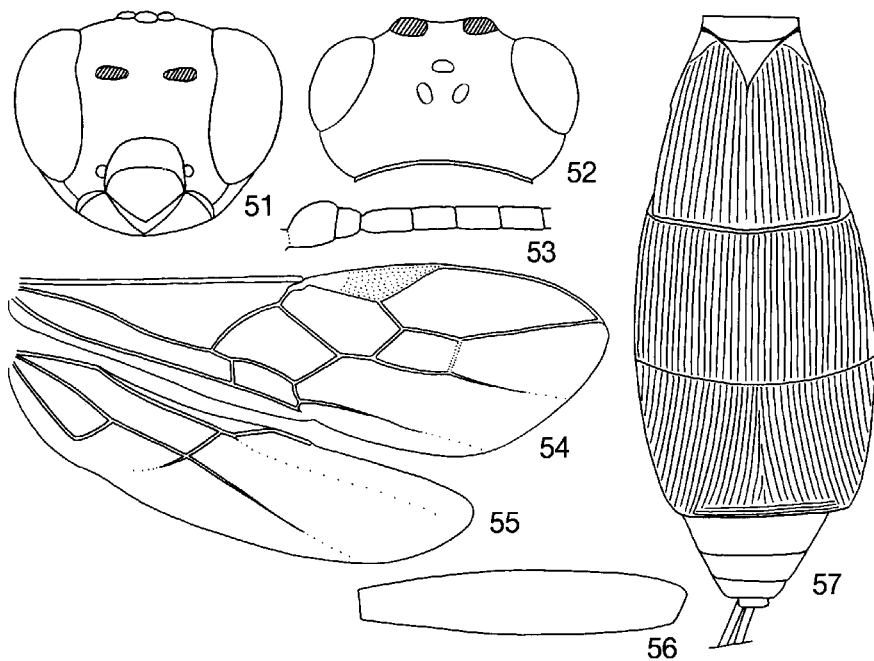
Legs. Hind femur 5.3–6.3 times as long as wide. Inner spur of hind tibia 0.25–0.28 times hind basitarsus. Hind tarsus nearly as long as hind tibia; second tarsal segment 2–2.3 times shorter than first segment, 1.3–1.6 times longer than fifth segment (without pretarsus).

Abdomen. First tergite without basal protuberances, almost linearly widened from base to apex, with distinct spiracular protuberances before middle, with 2 distinct dorsal carinae, joined in basal third or near middle. Apical width of first tergite 1.6–2 times its minimum width, 1.2–1.3 (rarely 1.4–1.5) times less than its length. Medial length of second tergite 1.1–1.3 times less than its basal width, but sometimes almost equal to it or slightly greater, 1.3–1.5 times length of third tergite. Second suture distinct and curved, but sometimes very weak. Distal tergites distinctly extending beyond third tergite, but sometimes weakly extending; these distal tergites distinctly compressed sometimes. Ovipositor sheath 1.7–2.4 times first abdominal tergite, 1.1–1.2 (rarely 1.5) times shorter than first–third tergites combined, sometimes almost equal to or slightly longer.

Sculpture. Head smooth, but face finely rugulose laterally. Mesothorax smooth. Mesoscutum rugose mediodistally. Scutellum smooth or punctulate posteriorly. Propodeum not areolate, but usually with medial carina in basal 0.25 or 0.20, which is sometimes bifurcate, almost completely reticulate-rugulose, but granulate or almost smooth basally. First and second abdominal tergites densely striate. Third tergite with weakly curved and usually irregular rugae (sometimes fine), but in distal third usually transversely striate with granulation; sometimes this tergite very finely striate, almost smooth.

Colour. Head black or reddish brown. Thorax (light) reddish brown, dorsally dark brown or black; propodeum dark. Abdomen almost black, laterally and sometimes medially light or yellowish reddish brown. Sometimes almost all body black or light reddish brown. Antennae (dark) brown, lighter basally. Palpi and legs yellow or light brown, but (in dark specimens) sometimes darkened. Wing light. Pterostigma brown, yellow in distal third.

Male. Body length 3.1–3.4 mm. Antennae more slender, 28-segmented. First flagellar segment 3.3–3.5 times as long as its apical width. Sometimes length of second radiomedial cell of fore wing 1.8 times its maximum width. Abdomen



FIGS 51-57. *Clinocentrus exsertor* (Nees): (51) head, frontal view; (52) head, dorsal view; (53) six basal segments of antenna; (54) fore wing; (55) hind wing; (56) hind femur; (57) abdomen, dorsal view.

sometimes narrower. Medial length of second tergite 1.25 times its basal width. Otherwise similar to female.

Discussion. This species is closely related to *C. umbratilis* Hal. and differs in having the shorter and wider first abdominal tergite, large ocelli (Od not shorter than OOL), short cheek, and long hind tarsi. This species also differs from *C. exsertor* (Nees) in having large ocelli, slender basal flagellar segments of antenna, short cheek, large second radiomedial cell of fore wing, and long and narrow first abdominal tergite.

Distribution. Belgium, England, Finland, France, Georgia, Germany, Hungary, Ireland, *Kazakhstan, Netherlands, Poland, Russia (European part, *Ural, *S. Siberia, *south Far East), Slovakia, Sweden, Ukraine. Indonesia, USA, *Vietnam.

Hosts. *Gravitarmata margarotana* Hein., *Eucosmomorpha albersana* Hb., *Pandemis corylana* F. (Tortricidae), *Parornix scoticella* Staint. (Gracillariidae) (Shenefelt, 1975).

Remarks. It may be possible that *C. tenuicornis* (Thomson, 1891) is a junior synonym of *C. excubitor* (Haliday, 1836). But short description of *C. tenuicornis* does not allow a more definite conclusion; the type material of this species was possibly lost (see remark to *C. exsertor* (Nees)).

***Clinocentrus exsertor* Nees, 1812**

(Figs 51-57)

Bracon exsertor Nees, 1812: 32 (syntypes: ♀ (Germany), 'prope Sickershausen'; lost); Marshall, 1888: 260; Hellén, 1927: 42; Fahringer, 1931: 197; Telenga, 1941: 122; Shenefelt, 1975: 1189; Belokobylskij and Tobias, 1986: 72.

Bracon orbitator Nees, 1834: 91 (syntypes: ♀, 'Italia'; lost (?)); Shenefelt, 1975: 1190.

Exothecus (Clinocentrus) striolatus Thomson, 1891: 1688 (holotype: ♀ (Sweden, 'norra Skane'), 'Jg', 'striolatus m. '; ZML; examined); Shenefelt, 1975: 1192; Belokobylskij and Tobias, 1986: 72.

Clinocentrus tarsalis Ashmead, 1894: 47 (holotype: ♀, 'Ohio', 'Type', 'Ashmead Collection', 'Type No. 40375 U.S.N.M.', '*Clinocentrus tarsalis* Ashm. ♀'; USNM; examined), **syn. n.**; Shenefelt, 1975: 1192.

Material. 1♀, **Sweden**, HOLOTYPE of *C. striolatus*; 1♀, **USA**, holotype of *C. tarsalis*. West Europa (2♀, 1♂); **Sweden** (5♀, 1♂); **France** (1♀); **Germany** (43♀, 40♂); **Poland** (3♀, 1♂); **Hungary** (2♀); **Lithuania** (2♀); **Belarus** (6♀, 5♂); **Ukraine** [Cherkassk (1♀), Poltava (7♀, 1♂), Chernigov (1♂), Zhitomir (1♀, 1♂), Kiev (1♀), Zakarpat (1♀), Kharkov (1♀) Provinces]; **Moldova** (2♀, 2♂); **Georgia** (2♂); **Azerbaijan** (1♂); **Kazakhstan** (67♀, 11♂); **Russia** [Murmansk (1♀), Arkhangelsk (1♀); Leningrad (4♀, 3♂), Novgorod (1♀, 7♂), Smolensk (1♀), Yaroslavl (6♀, 3♂), Moscow (1♀), Kaluga (2♀), Voronezh (2♀, 1♂) Provinces, Krasnodar Territory (5♀, 6♂), Kabardino-Balkariya (1♀), Chelyabinsk (1♀, 2♂), Omsk (1♀) Provinces, Krasnoyarsk Territory (1♀), Tuva (1♂), Chita (14♀, 2♂), Amur (1♀) and Kamchatka (2♀) Provinces]; **Mongolia** (2♀).

Description. Female. Body length 3.8–5.7 mm. Head width 1.6–1.8 times its medial length. Temple roundly narrowed behind eye. Transverse diameter of eye 1.4–1.7 times (rarely 2 times) longer than temple. POL equal to or 1.2–1.5 times shorter than Od, 1.5–2 times shorter than OOL; Od 1.2–2 times shorter than OOL. Eye with sparse and short hairs, 1.3–1.5 times as high as broad. Cheek 4.6–7 times less than eye height and 1.8–3 times less than basal width of mandible. Face convex (especially medially), its width 1.2–1.3 times less than eye height and 1.2–1.6 times greater than height of face and clypeus combined. Distance between tentorial pits 2.7–3.5 times the distance of one of them from eye. Hypoclypeal depression round, its width 1.6–2.4 times the distance from edge of depression to eye. Occipital carina and hypostomal carina joined near base of mandible.

Antennae thickened, 33–37-segmented. First flagellar segment 2–2.4 times as long as its apical width, 1.1–1.2 times as long as second segment. Penultimate segment 1.6–1.8 times as long as wide.

Thorax. Length of 1.5–1.8 times its height. Prescutellar depression rugose (but sometimes rugulose), with distinct medial carina, 3–3.8 times shorter than weakly convex scutellum. Sternauli distinct, deep, rugulose, occupying 0.35–0.58 of lower part of mesopleura. Subalar depression distinct, shallow, wide and rugose.

Fore wing. Radial cell slightly shortened, metacarpus (within radial cell) 1.1–1.3 times longer than or (sometimes) equal to pterostigma. Second radial abscissa 1.3–1.8 times longer than first abscissa, 2.5–3.2 times shorter than almost straight third abscissa, 1.1–1.4 times longer than first radiomedial vein. Second radiomedial cell small and weakly narrowed distally, its length 1.9–2.1 (rarely 2.3) times maximum width, nearly equal to length of brachial cell or sometimes 1.1–1.3 times longer than it. Recurrent vein 1.5–2.6 times longer than second abscissa of medial vein. Distance from nervulus to basal vein 0.7–1 times nervulus length. In hind wing, first abscissa of mediocubital vein 1.2–1.5 times longer than abscissa; recurrent vein interstitial or antefurcal.

Legs. Hind femur 4.7–5.3 times as long as wide. Inner spur of hind tibia 0.25–0.29 times hind basitarsus. Hind tarsus 1.1–1.2 times shorter than hind tibia. Second tarsal segment 2–2.2 times shorter than first segment, 1.5–1.6 longer than fifth segment (without pretarsus).

Abdomen. First tergite without basal protuberances, distinctly and almost linearly or weakly roundly widened from base to apex, usually with weak spiracular protuberances before middle, with distinct 2 dorsal carinae, joined near basal third. Apical width of first tergite 1.9–2.3 times its minimum width, nearly equal to or slightly longer or shorter than its length. Medial length of second tergite 1.2–1.5 times less than its basal width, 1.2–1.5 times length of third tergite. Second suture rather distinct (but sometimes weak) and weakly curved. Distal tergites distinctly extending beyond third tergite, but sometimes weakly so. Ovipositor sheath 1.9–2.8 times first abdominal tergite, 1.1–1.3 times shorter than first–third tergites combined.

Sculpture. Head smooth, face rugulose medially and frons sometimes with distinct rugae near antennal sockets. Mesoscutum smooth, but rugose mediodistally. Scutellum smooth or finely punctulate posteriorly. Propodeum usually with distinct and short medial longitudinal carina, without areola, reticulate-rugose (almost) completely. First-third abdominal tergites distinctly and usually weakly sinuously striate, sometimes third tergite (very) finely rugulose, or rugae curved, or smooth laterally, rarely with transversal rugae posteriorly.

Colour. Body black usually. Head around eye and ventrally (sometimes completely), mesoscutum partly or completely and usually third abdominal tergite light reddish brown or yellowish brown. Sometimes (in southern specimens) body almost completely light reddish brown, but usually propodeum, mesopleurac ventrally and first abdominal tergite darker. Antennae almost black, (light) reddish brown basally. Palpi light brown or dark reddish brown (in dark specimens). Legs light reddish brown, but distinctly darkened in dark specimens. Wings faintly infuscate or light. Pterostigma brown, yellow in basal 0.33 or 0.66.

Male. Body length 3.1–4.7 mm. Ocelli often larger, Od almost equal to OOL. Abdomen narrower and longer. Length of first abdominal tergite 1.1–1.4 times its apical width. Medial length of second tergite nearly equal to or slightly less than its basal width. Otherwise similar to female.

Discussion. This species is closely related to *C. excubitor* (Hal.) and differs in having the thick antennal segments, small ocelli, short second radiomedial cells, long cheek, shorter and wider first abdominal tergite.

Distribution. Aserbaijan, Belarus, Belgium, Czechia, England, Finland, France, Georgia, Germany, Hungary, Italy, Kazakhstan., Lithuania, Moldova, Mongolia, Poland, Russia (european part, *Urals, Siberia, Far East), Slovakia, Spain, Sweden, Switzerland, Ukraine, USA.

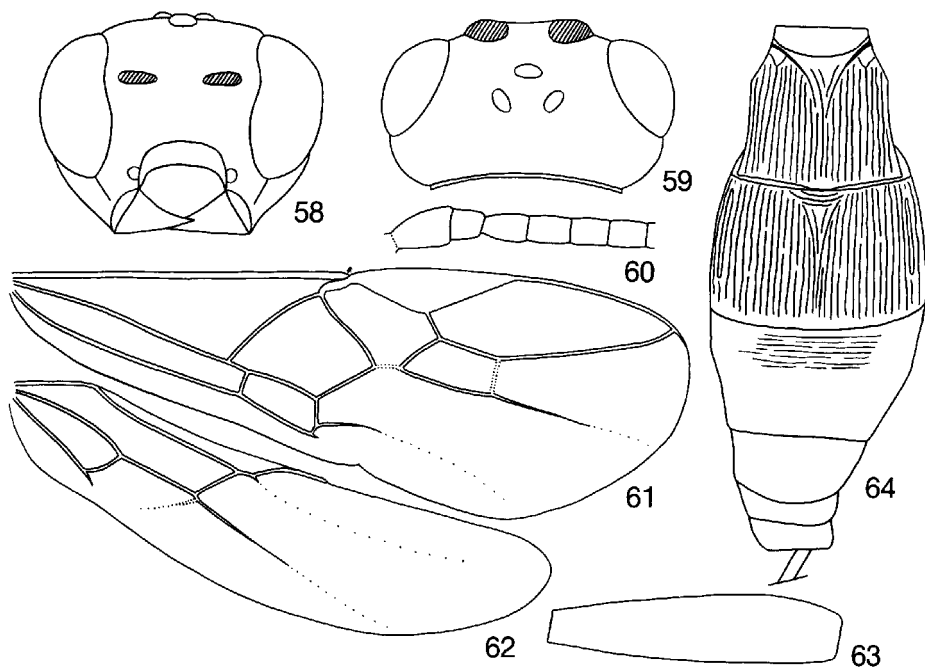
Hosts. *Gypsonoma sociana* Hw., *Rhyacionia buoliana* Den. et Schiff., *Cnephasia genitalana* P. et M., *Grapholitha delineana* Wal. (Tortricidae), *Mompha conturbatella* Hb. (Mompidae) (Shenefelt, 1975).

Remarks. I have studied the specimen in Thomson's collection with a label '*tenuicornis* m.'. But the locality ('Sjobo') is not that given in the description ('Degeberga'). Also morphological characters of the specimen and its description are not identical. Therefore this specimen is not a type of *C. tenuicornis* (Thoms.), but without any doubt belongs to *C. exsertor* (Nees). The specimen with Thomson's label '*C. cunctator* (Hal.)' (geographic label 'Biost' (?)) is actually *C. exsertor*.

***Clinocentrus arcticus* Hellén, 1927**

(Figs 58–64)

Clinocentrus arcticus Hellén, 1927: 42 (holotype: ♀, Finland, 'Gavrilova', 'Hellén', '393', 'Holotype *Clinocentrus arcticus* Hellén, 1927': ZMH; examined); Fahringer, 1931: 195; Telenga, 1941: 123; Shenefelt, 1975: 1188; Belokobylskij and Tobias, 1986: 72.



FIGS 58-64. *Clinocentrus arcticus* Hellén: (58) head, frontal view; (59) head, dorsal view; (60) six basal segments of antenna; (61) fore wing; (62) hind wing; (63) hind femur; (64) abdomen, dorsal view.

Material. 1♀, **Finland**, HOLOTYPE *C. arcticus*.

Description. Female. Body length 4 mm. Head width 1.8 times its medial length. Temple strongly roundly narrowed behind eye. Transverse diameter of eye 1.3 times longer than temple. POL 1.5 times longer than Od, 1.5 times shorter than OOL; Od 2.2 times shorter than OOL. Eye with very short and sparse hairs, 1.5 times as high as broad. Cheek height 6 times less than eye height and 2.5 times less than basal width of mandible. Face with distinct and wide protuberance medially, its width slightly less than eye height and 1.5 times greater than height of face and clypeus combined. Distance between tentorial pits 2.8 times the distance of one of them from eye. Hypoclypeal depression weakly oval, its width 1.75 times the distance from edge of depression to eye. Clypeus distinctly convex. Occipital carina and hypostomal carina joined near base of mandible.

Antennae thickened, remaining 19 segments. First flagellar segment 1.7 times as long as its apical width, 1.1 times as long as second segment. Length of eighteenth segment 1.25 times its width.

Thorax. Length 1.6 times its height. Prescutellar depression with distinct medial carina, rugose, 3.5 times shorter than scutellum. Sternauli finely crenulate, straight, short, nearly equal to half of lower part of mesopleura. Subalar depression deep and rugose.

Fore wing. Radial cell weakly shortened, metacarpus (within radial cell) slightly longer than pterostigma. Second radial abscissa 1.8 times longer than first abscissa, 2.9 times shorter than third abscissa, 1.25 times longer than first radiomedial vein. Second radiomedial cell small, its length 2.3 times its maximum width, slightly

greater than length of brachial cell. Recurrent vein 2.5 times longer than second abscissa of medial vein. Distance from nervulus to basal vein almost equal to nervulus length. In hind wing, first abscissa of mediocubital vein 1.5 times longer than second abscissa; recurrent vein unsclerotized and almost interstitial.

Legs. Hind femur 4 times as long as wide. Inner spur of hind tibia 0.26 times hind basitarsus. Hind tarsus slightly shorter than hind tibia. Second tarsal segment 2 times shorter than first segment, 1.4 times longer than fifth segment (without pretarsus).

Abdomen. First tergite without basal protuberances, distinctly and almost linearly widened from base to apex, with distinct spiracular protuberances before middle, with 2 weak dorsal carinae joined in basal third. Apical width of first tergite nearly 1.8 times its minimum width, slightly greater than its length. Medial length of second tergite 1.2 times less than its basal width, 1.4 times length of third tergite. Second suture distinct, but shallow (especially medially) and weakly curved. Distal tergites distinctly extending beyond third tergite. Ovipositor sheath 2 times longer than first abdominal tergite, 1.2 times shorter than first-third tergites combined.

Sculpture. Head smooth; frons laterally and face medially rugulose; cheek finely rugulose. Mesothorax smooth; mesoscutum rugulose mediodistally. Scutellum smooth posteriorly. Propodeum not areolate, completely roughly and irregularly reticulate. First and second abdominal tergites distinctly striate, second tergite distally and third tergite almost entirely smooth, but third tergite with very fine and broken rugae here and there.

Colour. Body black. Abdomen behind first tergite dark reddish brown. Antennae black, reddish basally. Palpi darkened. Legs dark reddish brown, all tibiae and tarsi distinctly lighter. Wing faintly infusate. Pterostigma brown, lighter basally.

Male unknown.

Discussion. This species is closely related to *C. exsertor* (Nees) and differs in having the short antennal segments, almost smooth third abdominal tergite, palpi, coxae and femora dark reddish brown. *C. arcticus* Hellén may be distinguished from *C. vestigator* (Hal.) in the short cheek, short and thick antennal segments, long ovipositor sheath, black body and dark legs.

Distribution. Finland.

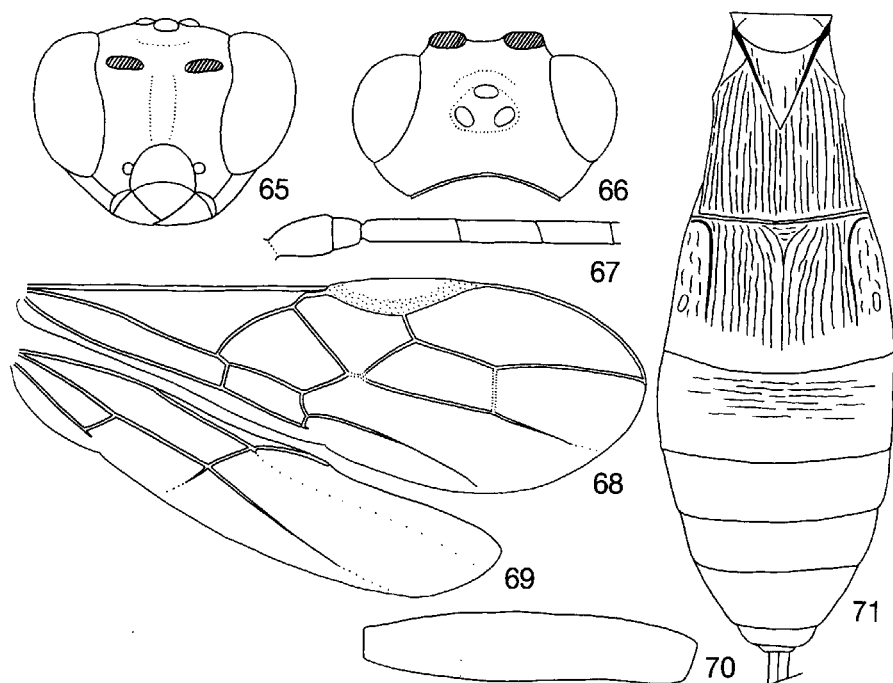
Clinocentrus rhytipoloides, sp. n.

(Figs 65-71)

Material. HOLOTYPE ♀, **Russia**, Primorsk Territory, Khasan District, SW Barabash, source Narva, 4.VIII.1978 (D. Kasparyan) (ZIP).

PARATYPES. **Russia**: Primorsk Territory: 1♀, Khasan District, SW Barabash, source Narva, 5.VIII.1978 (D. Kasparyan) (ZIP); 1♀, 30 km E Spassk, forest, glades, 25.VIII.1982 (S. Belokobylskij) (ZIP); 1♀, Vladivostok, Sedanka, border of forest, glades, 21.VIII.1986 (A. Kotenko) (IZANU); 1♀, Khasan District, 7 km N Zanadvorovka, forest, glades, 8.VIII.1985 (S. Belokobylskij) (ZIP); 2♀, Spassk, forest, glades, shrubs, 25.VII.1991 and 12.VII.1993 (S. Belokobylskij) (ZIP, BMNH); 1♀, 20 km SE Ussuriysk, forest, 5.VIII.1991 (S. Belokobylskij) (ZIP); 1♀, Reserve 'Kedrovaya Pad', mixed forest, 28.V.1989 (S. Belokobylskij) (BMNH); 1♀, same place, 21.IX.1976 (L. Zhiltzova) (ZIP); 1♀, Khabarovsk, park, 31.VII.1978 (D. Kasparyan) (ZIP).

Description. Female. Body length 3.6-5.1 mm. Head width 2 times its medial length. Temple strongly and almost linearly narrowed behind eye. Transverse



FIGS 65-71. *Clinocentrus rhytipoloides* sp. n.: (65) head, frontal view; (66) head, dorsal view; (67) five basal segments of antenna; (68) fore wing; (69) hind wing; (70) hind femur; (71) abdomen, dorsal view.

diameter of eye 1.9-2.1 times longer than temple. POL 1.1-1.2 times shorter than Od, 1.8-2 times shorter than OOL; Od 1.5-1.6 times shorter than OOL. Eye with very short and sparse hairs, 1.3 times as high as broad. Cheek height 5-5.6 times less than eye height and 1.4-1.7 times less than basal width of mandible. Face with distinct vertical narrow area medially, width of face 1.2-1.3 times less than eye height and almost equal to height of face and clypeus combined. Distance between tentorial pits 2.5-3 times the distance of one of them from eye. Hypoclypeal depression weakly transversal, its width 1.3-1.6 times the distance from edge of depression to eye. Occipital carina and hypostomal carina joined near base of mandible.

Antennae weakly thickened, 35-39-segmented. First flagellar segment 4-4.3 times as long as its apical width, 1.3 times as long as second segment. Penultimate segment 2-2.5 times as long as wide.

Thorax. Length of 1.6-1.7 times its height. Prescutellar depression with distinct medial carina, sparsely rugulose, 2.5-2.7 times shorter than scutellum. Subalar depression rugulose. Sternauli weakly S-shaped, sculptured, occupying nearly 0.66 of lower part of mesopleura.

Fore wing. Radial cell not shortened, metacarpus (within radial cell) 1.2-1.3 times longer than pterostigma. Second radial abscissa 3 times longer than first abscissa, 1.6-1.8 times shorter than third abscissa, 1.3 times longer than first radiomedial vein. Second radiomedial cell long, its length 2.7-2.9 times its maximum width, 1.5-1.6 times length of brachial cell. Recurrent vein 3.8-4.5 times longer than second abscissa of medial vein. Distance from nervulus to basal vein 0.5-0.75 times nervulus

length. In hind wing, first abscissa of mediocubital vein nearly equal to second abscissa; recurrent vein distinct, interstitial or antefurcal.

Legs. Hind femur 4.8–5 times as long as wide. Inner spur of hind tibia 0.25–0.28 times hind basitarsus. Hind tarsus slightly longer than hind tibia; second tarsal segment 2.2–2.3 times shorter than first segment, 1.4–1.6 times longer than fifth segment (without pretarsus).

Abdomen. First tergite without basal protuberances, strongly and almost linearly widened from base to apex, with small and distinct spiracular protuberances before middle, with 2 distinct and unjoined dorsal carinae. Apical width of first tergite 1.9–2 times its minimum width, 1.1–1.2 times less than its length. Medial length of second tergite 1.2–1.3 times less than its basal width, 1.7–2 times length of weakly sclerotized third tergite. Second suture very shallow and weakly curved. Distal tergites distinctly extending beyond third tergite. Ovipositor sheath 1.5–1.8 times first abdominal tergite, 1.1–1.3 times shorter than first–third tergites combined.

Sculpture. Head finely punctulate, frons, face laterally and vertex (partly) with distinct rugae. Mesothorax finely punctulate or smooth. Mesoscutum densely and roughly punctulo-granulate anteriorly, rugulose mediodistally. Scutellum rugose posteriorly. Prepectus rugose. Propodeum rugose, with 2 long and curved lateral carinae and usually 1 short medial carina. First and second abdominal tergites distinctly striate. Distal part of second tergite and third tergite almost smooth, but sometimes latter one with fine and transverse rugae basally.

Colour. Body black, with large light reddish or yellowish brown spots at head, mesoscutum, mesopleurae and distal part of abdomen. Ventral part of head, palpi, usually mesopleura, legs and lateral part of abdomen yellow or light brown. Antennae reddish brown, but lighter basally. Hind femur darkened distally. Wings faintly brownish. Pterostigma brown.

Male unknown.

Discussion. *C. rhyssoloides* sp. n. is related to *C. vestigator* (Hal.) but differs in having the temple almost linearly narrowed behind eye, long antennal segments and second radiomedial cell, weakly sclerotized third abdominal tergite, and longer ovipositor sheath. This new species is distinguished also from *C. excubitor* (Hal.) by the small ocelli, long antennal segments, weakly sclerotized and almost smooth third abdominal tergite, propodeum with 2 distinct and curved lateral carinae.

Distribution. Russia (Primorsk Territory).

Clinocentrus cunctator Haliday, 1836

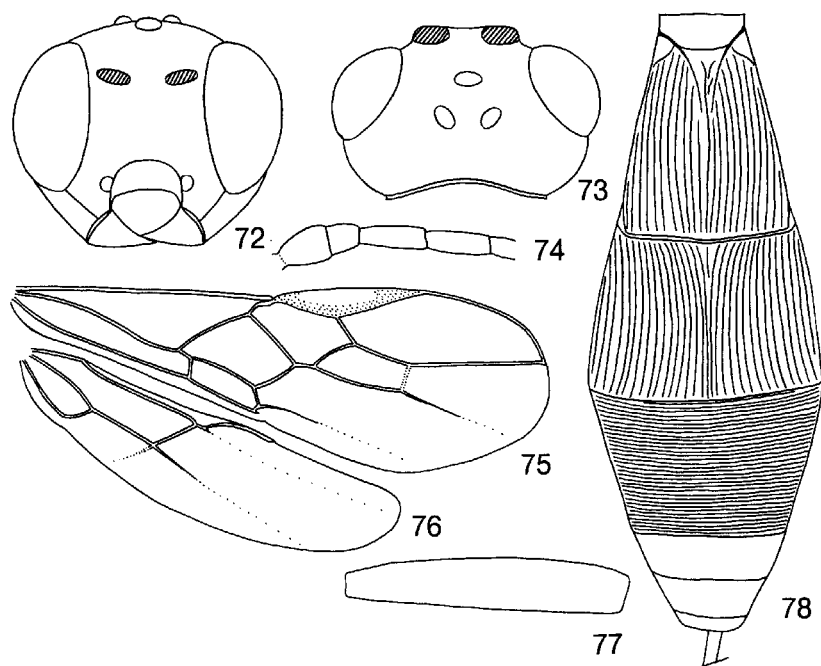
(Figs 72–78, 80)

Rogas (*Clinocentrus*) *cunctator* Haliday, 1836: 95 (lectotype: ♀ ('Hiberniae occidentalis'), white rhomb, green square, '♀ *Rogas* (*Clinocentrus*) *cunctator* Haliday, C. van Achterberg, 1986, Lectotype'; NMID; examined); Marshall, 1888: 261; Fahringer, 1931: 196; Telenga, 1941: 124; Shenefelt, 1975: 1188.

Exotheus analis Wesmael, 1838: 85 (lectotype: ♀ ('environs de Bruxelles'), 'g. Jum. Schout', 'E. *Analis* ♀', 'Coll. Wesmael', 'E. *analis* det C. Wesmael'; IRSB; designated here); Shenefelt, 1975: 1188.

Exotheus (*Clinocentrus*) *gracilipes* Thomson, 1891: 1689 (lectotype (Belokobylskij, Tobias, 1986): ♀ (Sweden), 'Yd' (= Yddinge), '*gracilipes* m.'; ZML; examined), **syn. n.**; Shenefelt, 1975: 1190; Shaw, 1983: 316; Belokobylskij, Tobias, 1986: 72.

Material. 1♀, **Ireland**, lectotype of *C. cunctator*; 1♀, **Belgium**, lectotype of *C. analis*; 1♂, '24M', '*E. analis* ♂', 'Coll. Wesmael', '*E. analis*, det. C. Wesmael'



FIGS 72-78. *Clinocentrus cunctator* (Hal.): (72) head, frontal view; (73) head, dorsal view; (74) four basal segments of antenna; (75) fore wing; (76) hind wing; (77) hind femur; (78) abdomen, dorsal view.

(paralectotype); 1♀, **Sweden**, lectotype of *C. gracilipes*. **Germany**: 1♀, 'Leipzig, Connervitz, 14.5.92, Dr. R. Krieger'; 1♀, 'Aachen, August' (Förster' collection); **Georgia**: 1♂, Batumi, 21.VI.1974 (V. Tobias); **Russia**: 1♀, Novgorod Prov., 20 km NW Pestovo, Tychkino, 5.VIII.1991 (V. Tobias); 1♀, Chita Prov., 30 km SW Borzya, Adon-Cholon, 1100 m, 31.VII.1990 (A. Kotenko).

Description. Female. Body length 3.5-3.6 mm. Head width 1.5-1.6 times its medial length. Temple strongly and roundly narrowed behind eye. Transverse diameter of eye 1.3-1.5 times longer than temple. POL equal to or 1.3 times longer than Od, 1.7-2 times shorter than OOL; Od 1.8-2.2 times shorter than OOL. Eye with sparse and short hairs, 1.5 times as high as broad. Cheek height 5.3-6.8 times less than eye height and 2.2-2.7 times less than basal width of mandible. Face with weak protuberances medially, width of face 1.3 times less than eye height, slightly greater than height of face and clypeus combined. Distance between tentorial pits 4.3-4.7 times the distance of one of them from eye. Clypeus weakly convex. Hypoclypeal depression round, its width 1.7-1.8 times the distance from edge of depression to eye. Occipital carina and hypostomal carina joined near base of mandible.

Antennae 28-segmented. First flagellar segment 3.3-3.5 times as long as its apical width, slightly longer than second segment. Penultimate segment 2.5 times as long as wide.

Thorax. Length 1.5-1.6 times its height. Prescutellar depression usually with 5 distinct carinae, almost smooth between carinae, almost a third as long as scutellum.

Sternauli straight, oblique, rugose, occupying nearly half of lower part of mesopleurae. Subalar depression distinct and completely rugose.

Fore wing. Radial cell not shortened, metacarpus (within radial cell) 1.2–1.3 times longer than pterostigma. Second radial abscissa 2–2.7 times longer than first abscissa, 1.9–2.4 times shorter than third abscissa, 1.4–1.7 times longer than first radiomedial vein. Second radiomedial cell long and distinctly narrowed distally, its length 2.3–2.5 times its maximum width, 1.3–1.4 times length of brachial cell. Recurrent vein 1.5–2 times longer than second abscissa of medial vein. Distance from nervulus to basal vein equal to nervulus length. In hind wing, first abscissa of mediocubital vein 1.3 times longer than or equal to second abscissa; recurrent vein interstitial and unsclerotized.

Legs. Hind femur 5.3–5.8 times as long as wide. Inner spur of hind tibia 0.29–0.33 times hind basitarsus. Hind tarsus slightly longer than hind tibia; second tarsal segment 2–2.3 times shorter than first segment, 1.5 times longer than fifth segment (without pretarsus).

Abdomen. First tergite without basal protuberances, distinctly and almost linearly widened from base to apex, with very small spiracular protuberances near middle, with 2 distinct dorsal carinae, which are not joined. Apical width of first tergite 2–2.3 times its basal width, 1.1–1.3 times less than its length. Medial length of second tergite 1.1–1.2 times less than its basal width, 1.2–1.3 times length of third tergite. Second suture weak and curved. Distal tergites distinctly (but not far) extending beyond third tergite. Ovipositor sheath 1.9–2.2 times first abdominal tergite, 1.1–1.2 times shorter than first–third tergites combined.

Sculpture. Head smooth, face sometimes finely sculptured latero-ventrally. Mesothorax smooth. Mesoscutum rugulose mediodistally. Scutellum smooth posteriorly. Propodeum without areas and middle carina, sparsely rugose, very finely granulate basally. First abdominal tergite distinctly and densely striate, second tergite densely and finely sinuously striate, sometimes with small part of concentric rugae mediobasally. Third tergite finely and densely transversely aciculate.

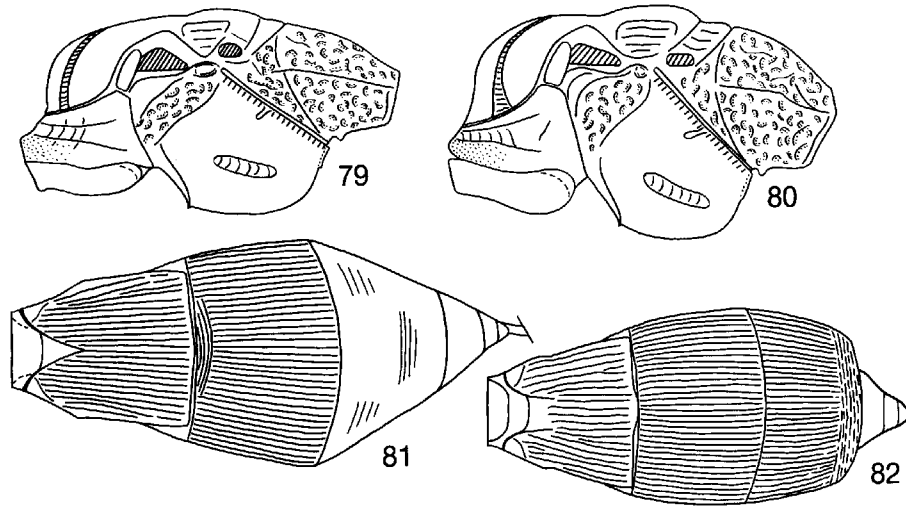
Colour. Body reddish brown, partly darker, sometimes black. Head round eyes and ventrally, pro- and mesopleurae mostly light brown. Antennae dark reddish brown, light reddish brown basally. Palpi and legs yellow or light brown. Wings light. Pterostigma yellow, distinctly dark distally.

Male. Body length 3.4–4 mm. Second radial abscissa of fore wing 2.3–3 times longer than first abscissa. Length of second radiomedial cell 2.5–2.7 times its maximum width, 1.4–1.5 times length of brachial cell. Veins of fore wing slightly thickened. Apical width of first abdominal tergite 1.8 times its basal width, 1.4–1.5 times less than its length. Otherwise similar to female.

Discussion. *C. cunctator* (Hal.) is closely related to *C. excubitor* (Hal.) and differs in having the third abdominal tergite finely (sometimes almost indistinct) and transversely aciculate, small ocelli, longer temples and cheeks. This species is distinguished from *C. exsertor* (Nees) by the unusual sculpture of third abdominal tergite, long second radiomedial cell of fore wing, and long antennal segments.

Distribution. Belgium, Czechia, England, Finland, France, Georgia, Germany, Hungary, Ireland, Netherlands, Russia (European part, *East Siberia), Slovakia, Sweden.

Hosts. *Prochoreutis sehestediana* (Fabr.), *P. myllerana* (Fabr.), *Anthophila fabriciana* (L.) (Choreutidae) (Shenefelt, 1975).



FIGS 79-82. *Clinocentrus brevicealcar* (Thoms.) (79); *C. cunctator* (Hal.) (80); *C. excubitor* (Hal.) (81); *C. vestigator* ssp. *orientalis* ssp. n. (82): (79) (80) thorax, lateral view; (81) (82) abdomen, dorsal view.

***Clinocentrus brevicealcar* Thomson, 1891**

(Figs 79, 83-89)

Exothecus (*Clinocentrus*) *brevicealcar* Thomson, 1891: 1689 (lectotype (Belokobylskij, Tobias, 1986): ♀ (Sweden), 'Rsio' (= Ringsjon), '*brevicealcar* m.': ZML; examined); Fahringer, 1931: 195; Telenga, 1941: 125; Shenefelt, 1975: 1188; Belokobylskij and Tobias, 1986: 72.

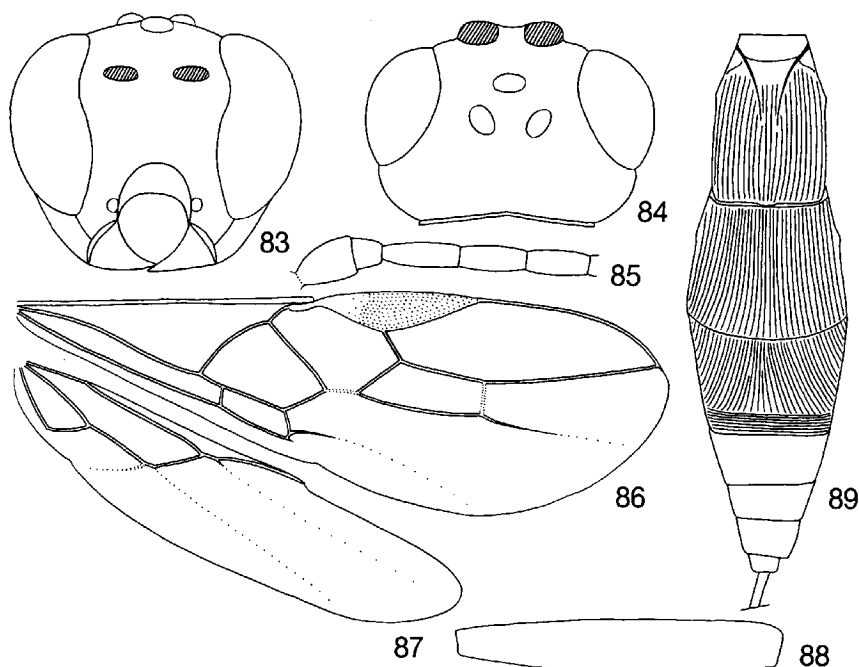
Material. 1♀, Sweden, lectotype of *C. brevicealcar*. Russia: 1♀, Krasnodar Terr., Sochi, Lasarevskoe, forest, 30.IV.1979 (V. Tobias).

Description. Female. Body length 2.6-3.1 mm. Head width 1.6-1.8 times its medial length. Temple strongly and roundly narrowed behind eye. Transverse diameter of eye almost 2 times longer than temple. POL 1.1-1.2 times longer than Od, almost equal to OOL; Od 1.2 times shorter than or almost equal to OOL. Eye without hairs, 1.3-1.4 times as high as broad. Cheek height 6-7 times less than eye height and 2.3 times less than basal width of mandible. Face width 1.3-1.5 times less than eye height and 1.3 times greater than height of face and clypeus combined. Distance between tentorial pits 2.5-3 times the distance of one of them from eye. Clypeus distinctly convex. Hypoclypeal depression round, its width 1.5-1.8 times the distance from edge of depression to eye. Occipital carina and hypostomal carina joined near base of mandible.

Antennae 24-segmented. First flagellar segment almost 3 times as long as its apical width, slightly longer than second segment. Penultimate segment 2 times as long as wide.

Thorax. Length 1.9 times its height. Prescutellar depression with distinct medial carina, sparsely rugose, 3-3.5 times shorter than scutellum. Sternauli finely crenulate, straight, short, occupying nearly 0.33 of lower part of mesopleura. Subalar depression deep and rugose.

Fore wing. Radial cell not shortened, metacarpus (within radial cell) 1.1-1.2 times longer than pterostigma. Second radial abscissa 2.6 times longer than first abscissa, 2



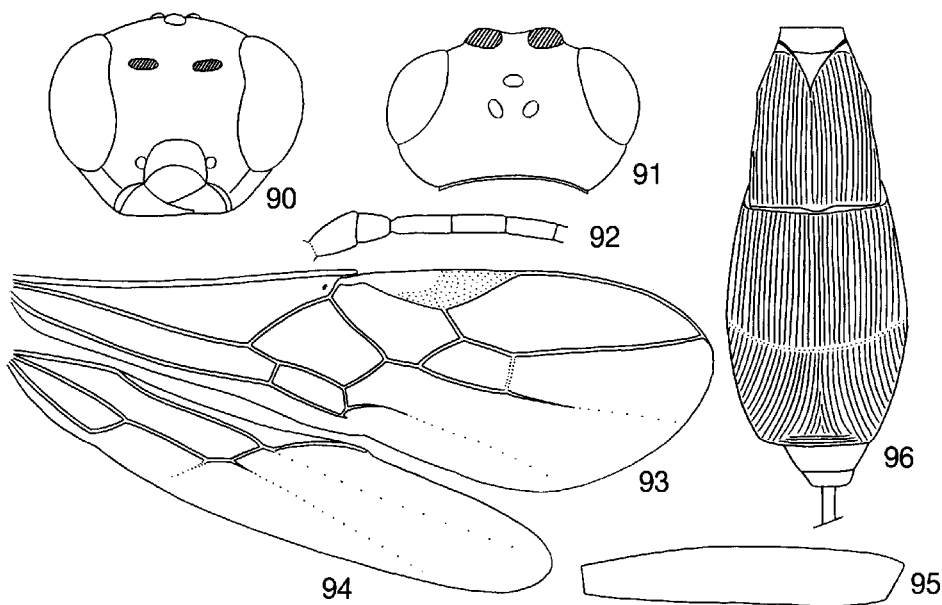
FIGS 83-89. *Clinocentrus brevicelear* (Thoms.): (83) head, frontal view; (84) head, dorsal view; (85) five basal segments of antenna; (86) fore wing; (87) hind wing; (88) hind femur; (89) abdomen, dorsal view.

times shorter than third abscissa, 1.7 times longer than first radiomedial vein. Second radiomedial cell long, its length 2.7-2.8 times its maximum width, 1.5 times length of brachial cell. Recurrent vein 1.3-1.4 times longer than second abscissa of medial vein. Distance from nervulus to basal vein 1.2-1.5 times nervulus length. In hind wing, first abscissa of mediocubital vein 1.3-1.4 times longer than second abscissa; recurrent vein slightly antefurcal or postfurcal and unsclerotized.

Legs. Hind femur 6-6.3 times as long as wide. Inner spur of hind tibia 0.2-0.25 times hind basitarsus. Hind tarsus nearly equal to hind tibia; second tarsal segment 2-2.2 times shorter than first segment, 1.2-1.5 times longer than fifth segment (without pretarsus).

Abdomen. First tergite without basal protuberances, weakly and roundly widened from base to apex, with weak spiracular protuberances before middle, with 2 weak dorsal carinae, not joined or joined in basal third. Apical width of first tergite 1.7-1.9 times its minimum width, 1.4-1.5 times less than its length. Medial length of second tergite nearly equal to its basal width, 1.4 times length of third tergite. Second suture distinct and curved. Distal tergites distinctly extending beyond third tergite. Posterior half of abdomen distinctly compressed. Ovipositor sheath 2.2 times first abdominal tergite, 1.1-1.3 times shorter than first-third tergites combined.

Sculpture. Head smooth, face laterally and cheek finely sculptured. Mesothorax smooth. Mesoscutum rugulose and granulate mediodistally. Scutellum almost smooth posteriorly. Propodeum with 2 distinct and finely granulate basal areas, with medial carina in basal third; with sparse and irregular rugae and reticulo-granulate, almost smooth basally. First and second abdominal tergites distinctly striate; third



FIGS 90-96. *Clinocentrus caucasicus* Tobias: (90) head, frontal view; (91) head, dorsal view; (92) five basal segments of antenna; (93) fore wing; (94) hind wing; (95) hind femur; (96) abdomen, dorsal view.

tergite very finely striate, striae curved or almost transverse, tergite almost smooth distally.

Colour. Body (light) reddish brown, partly darker dorsally. Palpi yellow. Antennae dark brown, two basal segments light brown. Legs yellow. Wing light. Pterostigma yellow, faintly darker in distal half.

Male unknown.

Discussion. *C. brevicar* (Thoms.) is closely related to *C. excubitor* (Hal.) and differs in having the glabrous eyes, long antennal segments and thorax, long and different shaped first abdominal tergite, radial vein arising distinctly before middle of pterostigma.

Distribution. England, Russia (south of European part), Sweden.

Clinocentrus caucasicus Tobias, 1976

(Figs 90-96)

Clinocentrus caucasicus Tobias, 1976: 45, 218 (holotype: ♀, Georgia, Batumi, Kahaberi, 9.IX.1968 (Biolaboratory); ZIP; examined); Belokobylskij and Tobias, 1986: 71.

Material. **Ukraine** (Poltava (1♀) and Lugansk (1♂) Provinces); **Georgia** (1♀, paratype); **Azerbaijan** (4♀, 3♂, including paratypes); **Russia** [Krasnodar (1♀) and Primorsk (44♀, 6♂) Territories, Sakhalin Is. (1♀)]; **Mongolia** (6♂); **Taiwan Is.** (1♀, 'Taiwan, Nantou Hsien, Meifeng, V-22-1982, R. Wharton').

Description. Female. Body length 2.6-4.3 mm. Head 1.5-1.8 times is medial length. Temple roundly narrowed behind eye. Transverse diameter of eye 1.5-1.9 times longer than temple. POL almost equal to or 1.2 times shorter than Od, 1.6-2.3 times shorter than OOL; Od 1.6-2 times shorter than OOL. Eye without hairs, 1.3-1.4 times as high as broad. Cheek height 3.5-5 times less than eye height and 1.4-2

times less than basal width of mandible. Face convex, its width almost equal to or 1.1–1.3 times less than eye height, 1.1–1.3 times greater than height of face and clypeus combined. Distance between tentorial pits 1.8–2.5 times the distance of one of them from eye. Hypoclypeal depression round, its width 1.1–1.4 times the distance from edge of depression to eye. Occipital carina and hypostomal carina joined near edge of mandible.

Antennae 29–35-segmented. First flagellar segment 2.8–3.5 times as long as its apical width, 1.1–1.2 times second segment. Penultimate segment 2–2.3 times as long as wide.

Thorax. Length 1.6–1.8 times its height. Prescutellar depression almost smooth or finely rugulose, with 3–5 carinae, 2.5–3 times shorter than scutellum. Sternauli short, shallow, straight, occupying 0.4–0.53 of lower part of mesopleura. Subalar depression shallow, wide and rugose.

Fore wing. Radial cell slightly shortened, metacarpus (within radial cell) 1.1–1.4 times longer than pterostigma. Second radial abscissa 1.1–1.7 times longer than first abscissa or equal to, 2.8–4.3 times shorter than straight third abscissa, 1.1–1.3 times longer than first radiomedial vein or equal to it, sometimes slightly shorter. Second radiomedial cell small, its length 1.8–2.4 times its maximum width, 1.1–1.2 times length of brachial cell, sometimes equal to it or 1.2 times shorter. Recurrent vein 1.2–2 times longer than second abscissa of medial vein. Distance from nervulus to basal vein 0.4–1.4 times nervulus length. In hind wing, first abscissa of mediocubital vein 1.1–1.3 times longer than second abscissa; recurrent vein interstitial or distinctly antefurcal.

Legs. Hind femur 5–5.5 times as long as wide. Inner spur of hind tibia 0.29–0.32 times hind basitarsus. Hind tarsus slightly shorter than hind tibia; second tarsal segment 2–2.3 times shorter than first segment, 1.3–1.5 times longer than fifth segment (without pretarsus).

Abdomen. First tergite without basal protuberances, distinctly widened from base to apex, sides curved, with small spiracular protuberances before middle or without, with 2 distinct dorsal carinae usually joined in basal third. Apical width of first tergite 2–2.5 times its minimum width, 1.2–1.3 times less than its length. Medial length of second tergite 1.1–1.2 times its basal width or equal to it, 1.3–1.5 times length of third tergite. Second suture shallow and weakly curved. Distal tergites very weakly extending beyond third tergite. Ovipositor sheath 1.9–2.4 times first abdominal tergite, 1.1–1.3 times shorter than first–third tergites combined.

Sculpture. Head smooth, sometimes face finely sculptured laterally. Mesothorax smooth. Mesoscutum rugulose on a small part mediodistally. Scutellum smooth posteriorly. Propodeum without distinct areas, but sometimes with narrow areola, with distinct longitudinal carina in basal 0.14–0.33, mostly or almost completely densely rugose, usually densely granulate or almost smooth in basal third or fifth. First–third abdominal tergites densely striate but third tergite with finely curved rugae and this sculpture finer and partly transverse distally.

Colour. Body light reddish brown, distinctly darker dorsally. Sometimes body black almost completely or dark reddish brown with light spots. Antennae reddish brown, distinctly darker distally. Palpi light brown. Legs light brown or light reddish brown, partly darkened. Wings faintly brownish. Pterostigma brown, yellow in basal 0.33.

Male. Body length 2.9–3.9 mm. Transverse diameter of eye 1.2–1.6 times longer than temple. Antennae slender. First flagellar segment 3–4 times as long as its apical

width. Abdomen more slender. Distal tergites of abdomen distinctly extending beyond third tergite. Legs usually darkened distally. Otherwise similar to female.

Discussion. This species is related to *C. excubitor* (Haliday) and *C. exsertor* (Nees) and occupies an intermediate position between these 2 species. This species is distinguished from *C. excubitor* by the small ocelli, short second radiomedial cell of fore wing and distal tergites of female abdomen almost completely concealed under third tergite. *C. caucasicus* is distinguished from *C. exsertor* by the long antennal segments and first abdominal tergite, distal tergites of female abdomen almost completely concealed under third tergite. Also, *C. caucasicus* is closely related to *C. foveatus* (Cameron) (Indonesia, Vietnam; holotype (in Berlin Museum): ♀, 'Bintang, Roettger S.', '12591', '*Microrhogas foveator* Cam., type. Bintang', '♀ *Microrhogas foveatus* Cameron, C. van Achterberg, 1979, Holotype', '*Clinocentrus foveatus* (Cam.) det. C. v. Achterberg, 1979'). These species are distinguished by the following characters:

<i>C. caucasicus</i> Tobias	<i>C. foveatus</i> (Cameron)
Temple roundly narrowed behind eye.	Temple almost linearly narrowed behind eye.
Transverse diameter of eye 1.5–2 times longer than temple.	Transverse diameter of eye 2.6–2.7 times longer than temple.

Distribution. Azerbaijan, *China (Taiwan Is.), Georgia, *Mongolia, Russia (southern european part, south Far East), Ukraine.

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