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Chrysocharis alpinus YEFREMOVA sp. nov. (Hymenoptera: Eulophidae) parasitising *Phyllonorycter emberizaepennella* BOUCHE (Lepidoptera: Gracillariidae)

Z.A. YEFREMOVA & S. ERLEBACH

A b s t r a c t : *Chrysocharis alpinus* sp. nov. YEFREMOVA is described from Austria. It was reared from *Phyllonorycter emberizaepennella* (BOUCHE 1834) by S. Erlebach and is a new host for *Chrysocharis*. The biology of *Chrysocharis* is reviewed.

K e y w o r d s : Hymenoptera, Eulophidae, Entedoninae, *Chrysocharis*, Lepidoptera, Gracillariidae, new species, new host, Europe, Austria.

Introduction

The type species of *Chrysocharis* FORSTER 1856 is *Chrysocharis femoralis* FORSTER, by subsequent designation by ASHMEAD (1904). The type has been examined by HANSSON (1985). Earlier, GRAHAM (1963) published a key to the British species. Morphology of *Chrysocharis* has been studied by EMSCHERMAN (1969). *Chrysocharis* species are primary parasitoids of leaf-mining lepidopterous, dipterous and hymenopterous larvae.

B i o l o g y : Diptera: *Agromyza oryzae*, *A. pusilla*, *A. scutella*; *Liriomysa huidobrensis*, *L. munda*, *L. sativa*, *L. trifolii* (HARDING 1965; CHRISTIE & PARRELLA 1987; CARBELLO, LEON & RAMIREZ 1990; LASALLE & PARRELLA, 1991); *Phytomyza albiseps*, *P. angelicae*. Lepidoptera: *Cameraria agrifoliella*, *C. caryaefoliella*, *C. nemoralis*, *C. cecidomyidis*, *Coleophora flavipennella*, *C. bariella*, *C. pruniella*, *Leucoptera malifoliella*, *Phyllocnistis citrella*, *P. unipunctella*, *Phyllonorycter crataegella*, *P. lantanella*, *P. manni*, *P. mespilella*, *P. populifoliella*, *P. propinquinella*, *P. quercifoliella* (RYANN et al. 1974; ZHONG & SHENG 1990; ZEROVA 1990; Nepticulidae (LINDQUIST & HARNDEN 1970). Hymenoptera: *Fenusa pusilla*, *F. ulmi*, *Heterarthrus nemorosus* (ASKEW 1968).

Distribution: Afrotropical Region, Australia, Holarctic Region, Neotropical Region, Oriental Region, Palaearctic Region.

Countries: Austria, Germany (VIDAL 1990), Bulgaria, Canada, Costa Rica, Cuba, Czech Republic, Fiji, Hawaii, Hungary, India, Italy (MASI 1954), Japan (IKEDA 1995), Kenya, Netherlands, New Zealand, Panama, Peru, Puerto Rico, Russia (KOLOMIETS 1965; TRJAPITZIN 1978), Spain, Tanzania, U.S.A. (LASALLE & SCHAUFF 1992), Uganda, U.K. (GRAHAM 1963), Venezuela, Yugoslavia.

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Fifty-eight species have been described from the Palaearctic. None of them has been reared from *Phyllonorycter emberizaepennella* (BOUCHE 1834). This present paper describes a new species of *Chrysocharis* from Austria (North Tyrol, Innsbruck), which was reared from 18. - 24.II.2000 from 20 larvae of *Phyllonorycter emberizaepennella* mining in the leaves of *Lonicera ruprechtiana*. The mines had been collected on 15.X.1999 by S. Erlebach and had been kept under natural conditions until the beginning of February, when they were placed in room temperature (+20 - +23 C).

The host has been recorded from the whole of Europe, except Spain, Portugal, some Mediterranean islands and regions.

The morphological terminology follows ASKEW (1968) and GRAHAM (1959). Acronyms are as follows: F1, first segment of antenna; F2, second segment; F3, third segment; F4, fourth segment; SMV, submarginal vein; MV, marginal vein; PMV, postmarginal vein; SV, stigmal vein; sculpture terminology follows HARRIS (1979).

Abbreviations are as follows: TLMF - Tiroler Landesmuseum Ferdinandeum, Innsbruck, Austria.

Generic diagnosis: Antenna of female 3-segmented and 2-segmented (clava) and male antenna 4-segmented and 1-segmented (clava), with numerous setae. Frontal fork distinct, connected with ocellar carina. Pronotum with sharp transverse carina. Propleurae separate posteromedially, prosternum visible (Fig. 7). Propodeum with median carina in deep groove. Propodeum smooth. MV of forewing with 2 setae. PMV longer than SV. Sexual dimorphism present.

Chrysocharis alpinus YEFREMOVA sp. nov. (Figs. 1-8)

D i a g n o s i s . Antenna brown, scape yellow, all legs (including coxae) white. Ocellar carina connected to frontal fork.

F e m a l e . Body length 1.65 mm, fore wing length 1.12 mm

Body green marked with dark blue (including thorax, gaster and face). Md yellow. Antenna brown, scape white. All legs white. Wings hyaline. Eyes reddish, ocelli orange.

H e a d . Height 35, breadth 42. Face reticulate. Eyes setose. Clypeal suture not distinct. Tentorial pits invisible. Malar sulcus present (Fig. 1). Md with 2 big teeth, second tooth divided into 5-6 small teeth (Fig. 3). Distance between compound eyes 18. Back of head with strong ridge forming a small smooth occiput. Vertex with large paired setae. Fine transverse carina present between lateral ocelli and compound eyes, the carina not connecting with frontal grooves. Frontal grooves of a slightly modified X-shape, connected to ventral scrobes that meet at less than 0.5 distance to anterior ocellus. Antennae inserted below centre of face. Antenna. Relative measurements: scape (12 × 2), pedicel 4, F1, 6, F2, 6, F3, 8; clava 2-segmented 10. 1 anellus (Fig. 2).

M e s o s o m a . Pronotum small, narrow, invisible dorsally, alveolate. Mesoscutum alveolate, Mesoscutal midlobe with two pairs setae. Scutellum alveolate with one pair setae. Size of alveola of axillae smaller than that of mesoscutum and scutellum. Propodeum (37 × 12). Median carina on propodeum incomplete, present posteriorly, simple (Fig. 8) Metanotum small, triangular, smaller than that in male. Sublateral complete plicae present. Stigma rounded. Propodeal callus smooth with 4 setae. Forewing (85 × 37) 2. 24 times longer than broad. Relative measurements: SMV 14, parastigma 6, MV 36, PMV 10, SV 7. PMV longer than SV 1. 4 times. Speculum present, closed below.

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Costal cell without setae Cubital vein curved, intercubital vein present. Empty stripe between PMV and SV absent (Fig. 6). Petiole short, conical, its hind margin broadly emarginate. Only mid legs with one spur, trochantellus present.

M e t a s o m a (52 × 40), ovipositor length 40. Gaster smooth, with numerous rows of setae. Gaster rounded, larger than thorax (40.5 × 20.5). Laterotergites visible. Cercal setae 5. Sheaths of ovipositor slightly extended beyond gaster, joined to gonocoxite IX. Distal bridge absent. Gonopophyses with numerous teeth. Gonostyli with trichoid sensillae. Bulbus of gonopophyses seperate and supported by a muscle (Fig. 5).

M a l e : (Figs. 9-12). Body length 1.75 mm, forewing length 1.26 mm

Body green with metallic reflection (head, thorax). Axillae bronze. Face green, Md yellow. Antennae brown, scape white. Legs white (except hind coxae green), wings hyaline. Gaster brown with yellow spot on tergites 1-4.

H e a d . Frontal shape transverse. Height 34, breadth 30. Face reticulate. Eyes setose. Clypeal margin produced. Clypeal suture present. Tentorial pits visible. Malar sulcus present. Malar space smooth. Md with 2 large teeth, second large tooth divided into several small teeth (5-6). Antennae inserted below centre of face. Scrobes meeting at less than 0.5 distance to anterior ocellus, transverse frontal fork meeting connection of scrobes. Ocellar carina absent. Large paired setae on vertex present. Maxillary and labial palpi invisible. Antennae with 4 segments and clava. Relative measurements: scape (14 × 4. 5), scape broader than that of female, pedicel 5, F1, F2 8, F3 8, F4 6, clava 1-segmented, 11. 1 anellus. Antennae with numerous trichoid and placoid sensillae (compare with that in female) (Fig. 9).

M e s o s o m a . Pronotum small, transverse, alveolate. Mesoscutum alveolate, with numerous setae. Notauli incomplete and indicated posteriorly by broad shallow depression with alveolate sculpture. Axillae slightly above mesoscutum, reticulate. Scutellum large with one pair setae, alveolate. Size of alveola in all sculptures the same. Dorsellum concealed in dorsal view, very small and triangular. Propodeum small without lateral propodeal corner, with two complete sublateral plicae. Propodeal callus smooth with 4 setae. Median carina absent. Mid leg with spur. Trochantellus absent. Fore wing (80. 5 × 42). SMV with 2 setae, 10, MV 45, PMV 8, SV 5. Speculum smaller than that of female, very narrow, closed below. Setae absent between SV and PMV, the area looking like an empty stripe (Fig. 10). Petiole short cylindrical, as long as broad, smooth.

M e t a s o m a . Gaster (70 × 40) and longer than thorax (59 × 45), smooth, brown with yellow spot. Gaster oblong and narrower than that in female. Laterotergites invisible. Cercal setae 5. Length of genitalia equal to that of last sternite (Fig. 11). Parameres long, narrow, with one seta. Volsellar plate present. Parameres with ridge present. Digitus triangular with 2 developed spines and one reduced spine. Aedeagus with separate narrow valves, length of apodeme 2 times more than that of aedeagus (Fig. 12).

H o l o t y p e : 1♀, Austria: Nordtirol, Innsbruck, Zeughaus, 18.-24.2.2000, NR. 10641, (*Phyllonorycter emberizaepennella*), Erlebach leg. (TLMF) 2000-01. P a r a t y p e s : Austria: 7♂♂, 2♀♀, same data as holotype (TLMF).

B i o l o g y a n d h o s t . Ex larvae of *Phyllonorycter emberizaepennella* (Lepidoptera: Gracillariidae) mining the leaves of *Lonicera ruprechtiana*.

D i s t r i b u t i o n . Currently known from North Tyrol (Austria, Innsbruck), western Austria. We suggest that this species may be more widespread throughout central and western Europe.

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E t y m o l o g y . The species name is derived from the name Alps where this material was collected by the second author S. Erlebach.

Discussion

This species is related to *Chrysocharis albicoxis* ERDOS 1958, but differs in the colour of the legs (all legs snow-white). Moreover, *Chrysocharis alpinus* has large alveolate sculpture in the mesoscutum, scutellum, propleurae and prosternum; in contrast *Ch. albicoxis* has the mesoscutum, scutellum and propodeum shiny and weakly sculptured.

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Authors' addresses:

Zoya A. YEFREMOVA
Department of Zoology
Ul'yanovsk State Pedagogical University
pl. 100-letya Lenina, 4
RU-432700 Ul'yanovsk, Russia

Siegfried ERLEBACH
Tiroler Landesmuseum Ferdinandeum
Naturwissenschaftliche Sammlungen, Feldstrasse 11a
A-6020 Innsbruck, Austria

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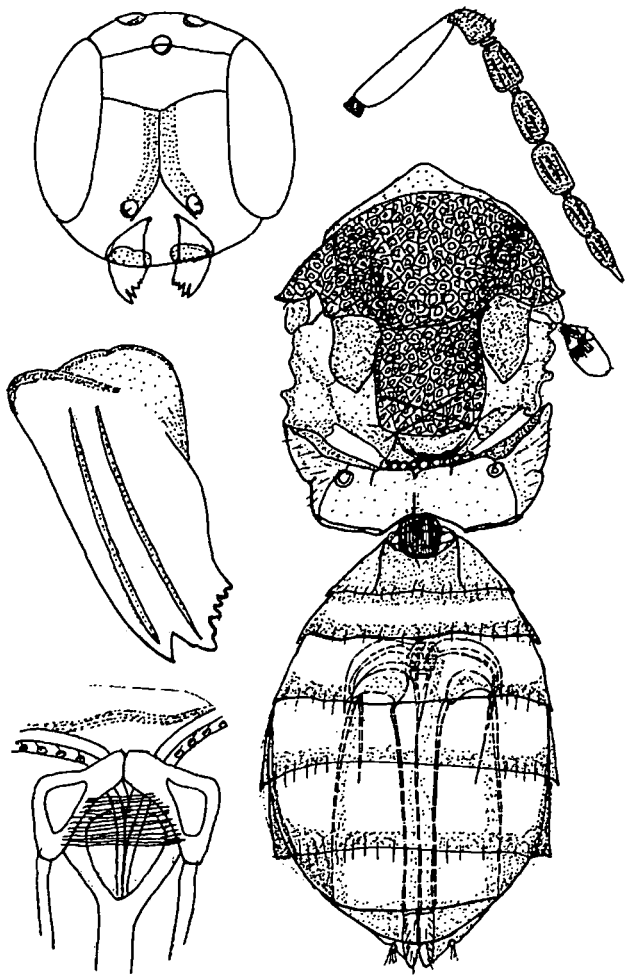

Figs 1-5. *Chrysocharis alpinus* YEFREMOVA sp. nov., female. **1**, head (dorsal view); **2**, right antenna; **3**, right mandible; **4**, body; **5**, part of structure of gonopophyses bulbus (ventral view).

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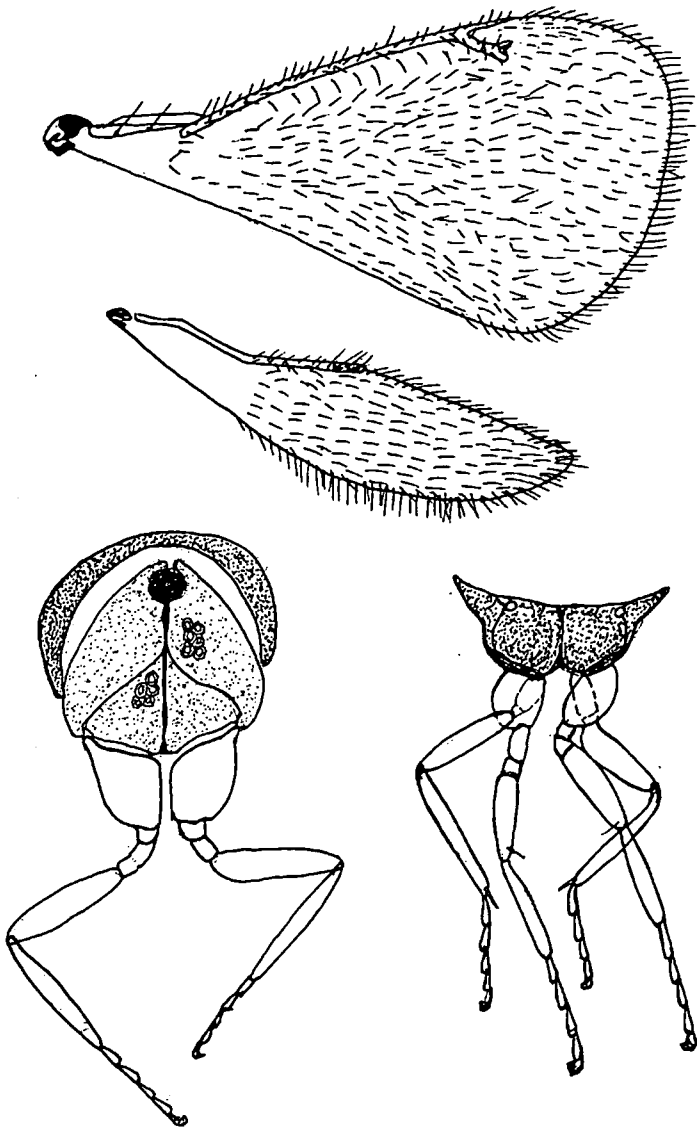

Figs 6-8. *Chrysocharis alpinus* YEFREMOVA sp. nov., female. **6**, fore and hind wings; **7**, propleurae, prosternum and fore legs; **8**, part of propodeum and mid and hind legs.

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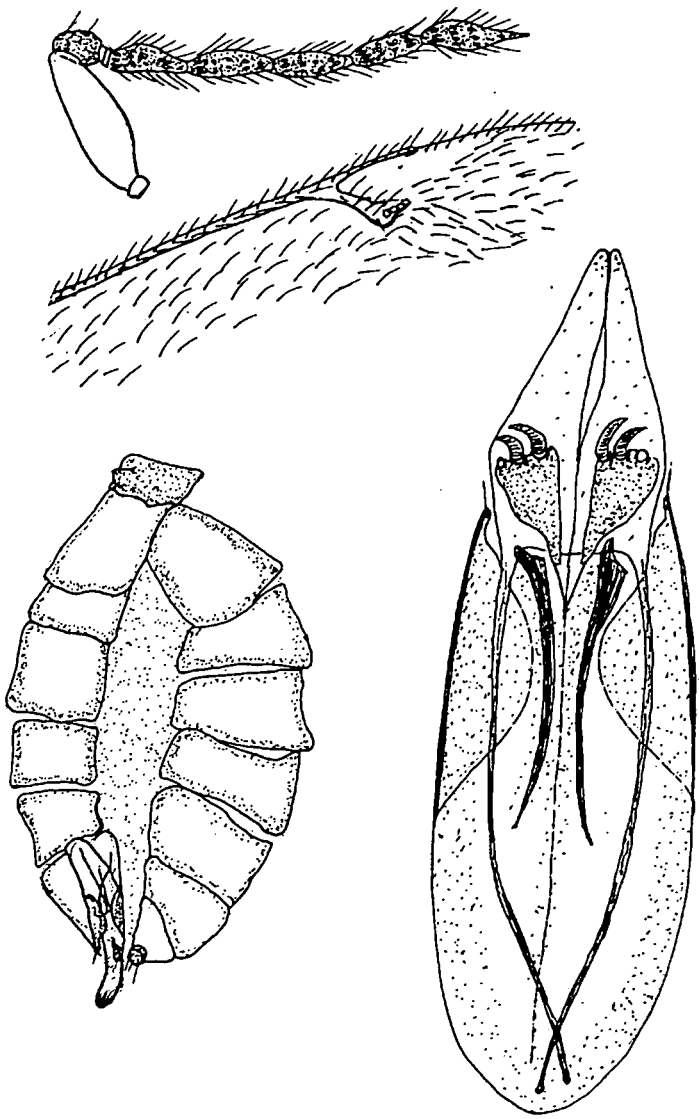

Figs 9-12. *Chrysocharis alpinus* YEFREMOVA sp. nov., male. **9**, right antenna; **10**, part of venation of forewing; **11**, position of genitalia in abdomen; **12**, genitalia, male (dorsal view).

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