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REVIEW OF THE GENUS *ENTEDON* DALMAN, 1820 (HYMENOPTERA, EULOPHIDAE, ENTEDONINAE) 1. 1. INFRAGENERIC DIVISION OF THE GENUS WITH THE DESCRIPTION OF A NEW SUBGENUS FROM AFRICA

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Review of the Genus *Entedon* Dalman, 1820 (Hymenoptera, Eulophidae, Entedoninae). 1. Infrageneric Division of the Genus *Entedon* with Description of a New Subgenus from Africa. Gumovsky A. V. — This is the first attempt to summarize data on the world fauna of *Entedon* (Hymenoptera, Chalcidoidea, Eulophidae, Entedoninae). Subdivision of the genus into subgenera is proposed: *Entedon* (s. str.) and *E.* (*Cederholmia*), subgen. n., the latter is established for the two new species, *Entedon* (*Cederholmia*) *halli* sp. n. (type species) and *E.* (*C.*) *danielssoni* sp. n. from Sierra-Leone and Republic of South Africa, respectively. The new subgenus is characterized by: frontal fork present, metanotum reduced to a very narrow, almost invisible strip, propodeum with convex submedian areas and two medially subparallel and anteriorly somewhat divergent median carinae, spiracular elevation delimited laterally and anteriorly by a deep curved groove, connected by a depression with a deep supracoxal groove reaching the propodeal nucha. Subdivision of *Entedon* s. str. into 8 species groups is proposed: *squamosus*, *cioni*, *hercyna*, *cyanellus*, *costalis*, *sparetus*, *crassiscapus* and *kerteszi*. The two latter groups are proposed for the first time; diagnoses and structure of the remaining groups are refined. Keys to subgenera and species groups are given.
K e y w o r d s: Hymenoptera, Eulophidae, Entedoninae, *Entedon*, species groups, Africa.

Огляд роду *Entedon* (Hymenoptera, Eulophidae, Entedoninae). 1. Підродовий поділ роду з описом нового підроду з Африки. Гумовський О. В. — Дана робота є першою спробою узагальнити дані зі світової фауни роду *Entedon* (Hymenoptera, Chalcidoidea, Eulophidae, Entedoninae). Запропоновано поділ роду на два підроди — *Entedon* s. str. та *Cederholmia* subgen. n., описаний за двома новими видами *Entedon* (*Cederholmia*) *halli* sp. n. (типовий вид) та *Entedon* (*Cederholmia*) *danielssoni* sp. n. із Сьєрра-Леоне та Південно-Африканської Республіки відповідно. Новий підрід характеризується розвиненою лобною розвилкою, редукованою до майже непомітної смужки задньоспинкою, проміжним сегментом з опуклою поверхнею, двома дещо розведеними у верхній та майже паралельними в нижній частинах серединними боровнами, розвиненим навколодихальцевим жолобом, що сполучається заглибиною з чітким навкологазиковим жолобом, який досягає шийки проміжного сегменту. Проведено критичний аналіз поділу підроду *Entedon* на групи видів, внаслідок чого уточнено їхні діагнози, групи доповнені новими видами. Запропоновано поділ підроду *Entedon* s. str. на 8 груп видів: *squamosus*, *cioni*, *hercyna*, *cyanellus*, *costalis*, *sparetus*, *crassiscapus* та *kerteszi*, з яких дві останні групи виділено вперше. Наведено таблиці для визначення підродів та груп видів роду *Entedon*.
К л ю ч о в і с л о в а: Hymenoptera, Eulophidae, Entedoninae, *Entedon*, групи видів, Африка.

Entedonine chalcid wasps are an important group of parasitoids regulating the populations of various phytophagous insects. They play a rather significant role in trophic webs of insects associated with both cultivated plants and weeds. Our knowledge of these parasitoids is incomplete. Preliminary studies show that there are many undescribed species in collections, and the species can no longer be determined without comprehensive keys. *Entedon* Dalman (Eulophidae, Entedoninae) requires taxonomic revision on a world-wide base. Identification of most *Entedon* species was based on the results of taxonomic treatment published 20–30 years ago. Since that time much material from both the Old and New Worlds was collected.

This paper is the first part of a study of the World fauna of *Entedon*. Its purpose is to revise species and species-groupings within *Entedon*, prepare proper diagnoses for the groups and clarify relationships among *Entedon* and other genera of entedonines.

The species of *Entedon* are recorded as larval (rarely egg) endoparasites of various species of Coleoptera, mainly Curculionidae, but also Anobiidae, Bostrychidae, Bruchidae, Buprestidae, Cerambycidae, Mordellidae, Nitidulidae and Scolytidae.

Since publication of Dalman's (1820) diagnosis of *Entedon* numerous species have been added to the genus. Most papers treated the European fauna (Walker, 1839; 1846; 1851; Förster, 1841; Thomson, 1878; Erdös, 1944; 1951; 1954; 1961; 1966; Graham, 1959; 1963; 1971; Bouček, 1974; Szelényi, 1977b; 1978; 1981; Askew, 1991; 1992; Gumovsky, 1995c). Fragmentary papers on the Asiatic fauna of *Entedon* included separate descriptions from Central Asia (Gumovsky, 1995), India (Ferrière, 1939), Mongolia (Szelényi, 1977a), Japan (Kamijo, 1988), China (Yang, 19965), Far East Russia (Gumovsky, 1995a; 1995b; 1996a; 1996b). African *Entedon* species were reviewed by Masi (1925, 1929), Ferrière (1930) and Rasplus (1990). Australian species, described by Girault (1913a; 1913b; 1915; 1927; 1928) and Dodd (1917) were listed by Bouček (1988). Ashmead (1888; 1894), Crawford (1907), Girault (1916a; 1916b; 1922) and Gahan (1931) described several species from Nearctic region. The Nearctic fauna was revised by Schauff (1988).

The very first infrageneric subdivision of genus *Entedon* was proposed by Thomson (1878), who divided the genus into sections. Erdös (1944; 1951) transformed these sections, with some corrections and relocations, into subgenera. Graham (1963; 1971) proposed a species-group subdivision instead. Some of Graham's species-groups corresponded to the subgenera established by Erdös. Separate *Entedon* species-group diagnoses proposed by Graham were refined by Askew (1991; 1992).

All previous attempts in partitioning Entedon concerned European species, while the fauna of other regions remained very poorly known. Species from other regions generally either were not used in species-group speculations at all, or were discussed in comparative diagnosis without further proposition for their placement. The situation can partly be explained by difficulties in the definition of the groups, despite serious progress since Thomson (1878).

The new data obtained during this study allow the current concepts of the genus *Entedon*, to be checked, and its limits, diagnosis and an infrageneric grouping, based on a broader taxonomic and geographic base, to be defined.

Genus *Entedon* Dalman

Entedon Dalman, 1820: 136; Walker, 1839: 20, ex parte; Thomson, 1878: 239 — 48; Erdös, 1944: 6; Erdös, 1951: 211; Erdös, 1954: 347; Graham, 1963: 190; Erdös, 1966: 418; Graham, 1971: 313; Schauff, 1988: 32; Rasplus, 1990: 223; Schauff, 1991: 50; *Pleuropachus* Westwood, 1837: 437; *Pleuropachys* Förster, 1856: 78; *Eriglyptus* Crawford, 1907: 179; *Entedonella* Girault, 1913b:154; *Metriocharis* Silvestri, 1914: 214; *Nephelentedon* Erdös, 1944: 18 (as a subgenus); *Megalentedon* Erdös, 1944: 27 (as a subgenus); *Dolichentedon* Erdös, 1944: 18 (as a subgenus); *Trochentedon* Erdös, 1944: 61 (as a subgenus).

D i a g n o s i s: Propodeum without lateral plicae, with single (subgen. *Entedon* s. str.) median carina which may diverge anteriorly and be set in groove-like depression, or with two almost parallel carinae (sbg. *Cederholmia*, subgen. n.); propodeal spiracles on elevated area, which bears lateral subconical projection behind spiracle; antennae of both sexes with either 3-segmented funicle and 2-segmented clava or 4-segmented funicle and 1-segmented clava; lower margin of clypeus truncate or produced forwards; mandibles with 2 teeth; pronotum reduced dorsally, usually with lateral expansions, often with sharp transverse carina; frontal fork often absent, although sometimes well developed; first gastral segment laterally with oval membranous dark or light area adjacent to the petiolar emargination; gastral petiole reduced to narrow transverse band or

distinctly, elongate (up to 2.5 times as long as broad in some species); stigmal vein mostly sessile; length of postmarginal varies from shorter than length of stigmal to slightly longer than the latter.

Subgenus *Entedon* s. str.

Type species: *Entedon cyanellus* Dalman, 1820 (designated by Ashmead, 1904)

D i a g n o s i s. Propodeum with one median carina (Figs. 4–7); which sometimes diverges anteriorly, forming a fork (for instance, in *E.* (*E.*) *triangulatus*), or representing as slightly raised keel-like carina (mostly *cioni* and *hercyna* species-group), or disappearing posteriorly in raised coarse reticulation (Fig. 6, *crassiscapus* species-group). If frontal fork present (Fig. 6, *4*) (*crassiscapus* and *cioni* species-groups), then groove delimiting spiracular elevation of propodeum separated from a supracoxal groove, and submedian areas mostly coriaceous or densely reticulated (Fig. 6, *1*, 7, *1*), but not convex and smooth. If propodeum has a deep curved groove stretching around the spiracular elevation up to propodeal nucha along supracoxal flange (Fig. 4, *1*, 5, *1*), and submedian areas convex, smooth and shiny (*squamosus* species-group), then the frontal fork absent. Metanotum often small, but always distinct and visible. Males either have frontal fork and no light basal spot on gaster, or have basal gastral spot and no frontal fork. Single median carina and developed metanotum support the monophyly of the subgenus.

Subgenus *Cederholmia* Gumovsky, subgen. n.

Type species: *Entedon* (*Cederholmia*) *halli* Gumovsky, sp. n. sbg. n.

D i a g n o s i s. Propodeum (Fig. 1, *1*, *2*, Fig. 2, *1*, Fig. 3, *1*) with two median carinae delimiting median strip on sides and separating the strip from the submedian areas; the carinae subparallel medially and somewhat diverging anteriorly. The spiracular elevation of propodeum rounded, convex, with short lateral projection behind the spiracle. The spiracular elevation delimitted laterally and anteriorly by a deep curved groove, connected by a depression with deep supracoxal groove reaching propodeal nucha; submedian areas convex, smooth and shiny. Frontal fork present in both known species (Figs. 1, 2). Metanotum reduced to a very narrow almost invisible strip. Genae curved, convex laterally. Paired median carinae and reduced metanotum support monophyly of the subgenus.

The subgenus is named in honour of the Swedish zoologist Dr. Lennart Cederholm (Lund University), one of the type material collectors.

Entedon (*Cederholmia*) *halli* Gumovsky, sp. n.

Type materials. Holotype ♀, "Sierra-Leone: Karina distr., at road Makeni — Kabala, 11°57' W, 9°17' N, 28. XI. 1993, loc. 10, Lund University Sierra Leone Expedition 1993, leg. L. Cederholm, R. Danielsson, R. Hall". Holotype in collection of Zoological Museum of Lund University.

F e m a l e (Fig. 1, *1*). Length 2 mm. Face black with green tint, with golden triangle under toruli; thorax black, propodeum and face green. Coxae greenish blue, trochanters white, femora reddish with white tips, hind tibia brown in about its proximal half, mid tibia light brown in its middle with proximal 1/5 and distal 1/4 white, fore tibia white in its ends and reddish with two dark brown strips on upper and inner sides in middle part; first three segments all whitish, last one infuscated. Antennal scape white with dorsal margin infuscated, the remaining antennal segments darkened. Wings

hyaline, venation of wings slightly brownish, almost hyaline. Gaster brown with violetish tint, oval membranous area adjacent to the petiolar emargination at first tergite darkened, indicated just by rounded depressions.

Head in dorsal view (Fig. 1, *5*) 2.8–3 times as broad as long; ocelli moderate in size; POL 3.8–4 OOL. Occipital margin marked off by sharp carina, slightly raised laterally. Hind ocelli separated from eyes by distance slightly shorter than their own major diameter, and separated from occipital margin by about 1/2 their major diameter. Eye very densely pubescent, eye height almost 4 times as long as malar space. Occiput densely setose below occipital margin and posterior orbits of eye densely setose along occipital margin and hind orbits.

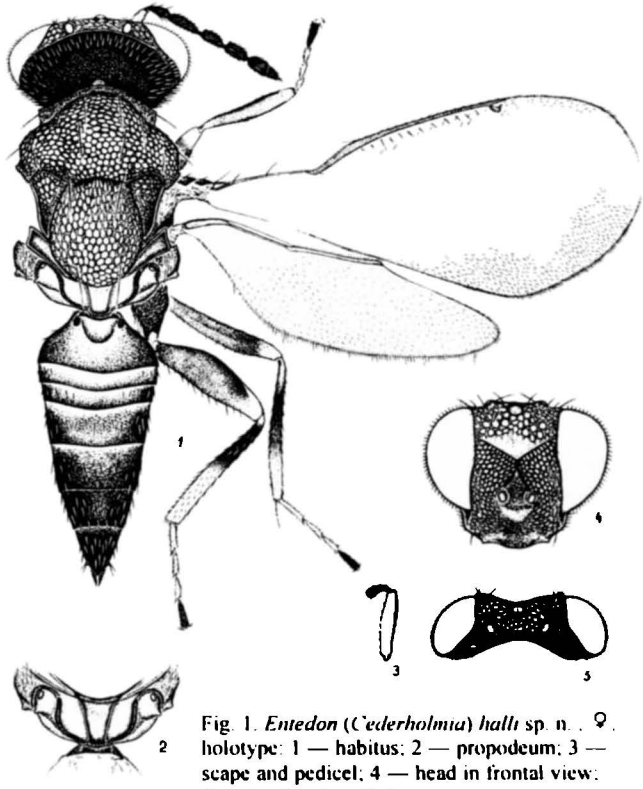

Fig. 1. *Entedon* (*Cederholmia*) *halli* sp. n., ♀, holotype: 1 — habitus; 2 — propodeum; 3 — scape and pedicel; 4 — head in frontal view; 5 — head in dorsal view.

Head in frontal view (Fig. 1, *4*) 1.26–1.28 times as broad as high. Frontal fork complete, frons smooth above its arms up to level of their conjunction with orbits. Eye height/interocular distance in ratio 27/24, eye height 3.85 times as long as malar space. Face setose below frontal fork along orbits and in lower part. Antennal scrobes intermediate between V- and Y-shaped, the raised surface between them does not forming a peak. Breadth of oral fossa 2.4 times as long as malar space. Antennae inserted somewhat above level of ventral eye margins. Scape (Fig. 1, *3*) short, 4 times as long as broad, 1.6–1.7 times as long as eye height, with ventral margin slightly flattened; combined length of pedicel and flagellum 0.85 times as long as breadth of head; pedicel 3 times as long as broad, 0.66 times as long as 1st funicular segment. First funicular segment 2.4–2.5, second 2, and third 1.7 times as long as broad, clava two-segmented, 2.5 times as long as broad, with distinct terminal spine.

Thorax 1. 4 times as long as broad. Pronotal collar not carinated, pronotal shoulders acuminate at lateral apices in points of setale insertions; mesoscutum almost twice as broad as long, the parapsidal grooves slightly indicated by very shallow depressions; scutellum 1.2 times as long as broad, slightly longer than mesoscutum. Axillae with one seta. Metanotum reduced, invisible. Propodeum (Fig. 1, *2*) wide, with two median carinae somewhat diverging anteriorly, delimiting on sides trapeziform median strip from the submedian areas. Median strip very slightly sculptured anteriorly, submedian areas convex, smooth and shiny. Spiracular elevation of propodeum rounded, convex, with short lateral projection behind the spiracle, delimited laterally and anteriorly by a deep curved groove, connected by depression with deep supracoxal groove reaching propodeal nucha (lateral sulcus complete); supracoxal flange narrow. Fore femur near-

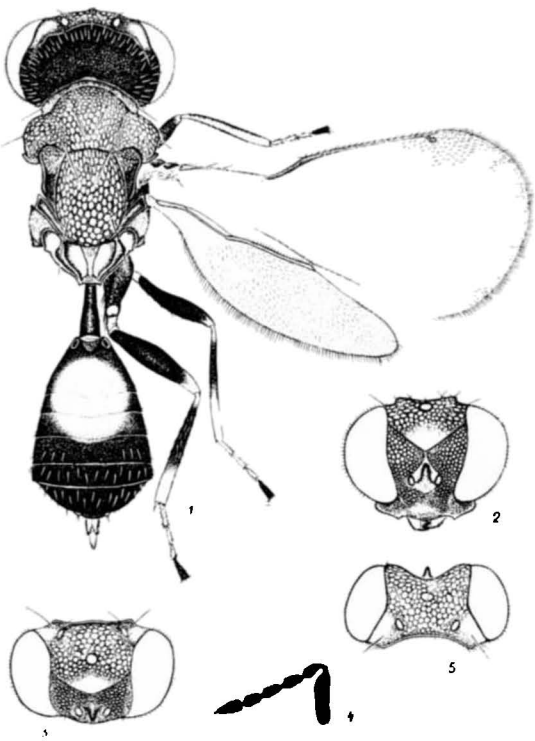

Fig. 2. *Entedon (Cederholmia) danielssoni* sp. n., subgen. n., ♂, holotype. 1 — habitus, 2 — head in frontal view; 3 — head in dorso-frontal view, 4 — antenna, 5 — head in dorsal view.

ly 4, mid femur slightly more than 5, hind femur 3.6–3.7 times as long as broad; fore tibia about 4, mid tibia 13.3, hind tibia 8 times as long as broad; mid and hind tibiae haired with elongate setae, setae of mid tibia as long as or slightly longer than breadth of tibia; spur of mid tibia about twice as long as breadth of tibia, spur of hind and fore tibia short, nearly invisible.

Fore wing twice as long as broad, costal cell bare, 6 times as long as broad, submarginal vein with flattened triangular area at its base and 2 setae on its dorsal surface before "break", where it meets parastigma; marginal vein of the same length as costal cell, postmarginal vein slightly longer (4/3) than stigmal vein; speculum open below; fringe of apical margin short.

Gastral petiole transverse, reduced to narrow band. Gaster 2.3–2.4 times as long as broad.

M a l e. Unknown.

B i o l o g y. Unknown. Swept from sparse vegetation, mostly very dry grass along roadside.

E t y m o l o g y. Species is named in honour of Swedish entomologist Dr. Rangar Hall, one of the type material collectors.

D i s t r i b u t i o n. The species is known only from the holotype, collected in Sierra-Leone, West Africa.

Entedon (*Cederholmia*) *danielssoni* Gumovsky, sp. n.

M a t e r i a l s. Holotype ♂, "RSA [Republic of South Africa]: Natal, Richards Bay, 28°46′ S, 32°04′ E, 24. X. 1994, loc. 31, leg. R. Danielsson". Paratypes 5♂, 1♀, with the same data as holotype. Holotype and paratypes in collection of Zoological Museum of Lund University.

M a l e. Length 1. 8 mm (holotype). Body (Fig. 2, *1*) bright copper dorsally, propodeum and face green, coxae greenish blue, trochanters white, wings hyaline, venation of wings light yellow, femora dark metallic green with white tips, hind tibia darkened in about its proximal 2/3, mid tibia darkened in its proximal 3/5, remaining parts white; fore tibia with two white strips on upper and inner sides; first three segments of all tarsi whitish, last one infuscated; antennae black; wings hyaline, venation of wings pale, almost hyaline. Gaster with light broad basal spot, oval membranous area adjacent to the petiolar emargination at first tergite darkened.

Head in dorsal view (Fig. 2, *5*) twice as broad as long; ocelli small; POL 3.66 OOL. Occipital margin marked off by sharp carina with distinct lateral raised "peaks" (Fig. 2, *3*). Hind ocelli about equidistant from eyes and from occipital margin, separated from both by about their own major diameter, or distance between hind ocellus and occipital margin slightly shorter than the diameter. Dorsal surface of head with slightly raised reticulation, space along hind eye orbits bordered upon eye margin, line connecting hind ocellus with eye margin and line connecting hind ocellus with lateral peak of occipital margin, smooth. Eye densely pubescent. Occiput densely setose below occipital margin and hind posterior orbital margins (Fig. 1, *1*).

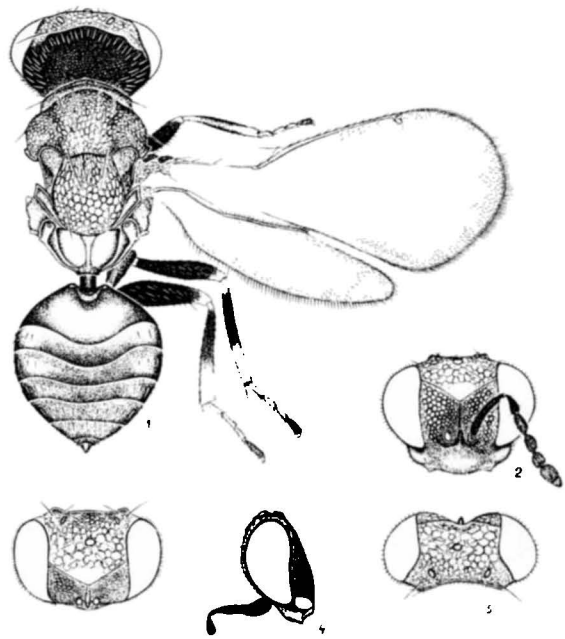

Fig. 3. *Entedon* (*Cederholmia*) *danielssoni* sp. n. , subgen. n. , ♀, paratype: 1 — habitus; 2 — head in frontal view; 3 — head in dorsofrontal view; 4 — head in lateral view; 5 — head in dorsal view.

Head in frontal view (Fig. 2, *2*) 1.37–1.42 times as broad as high. Frontal fork complete, frons with smooth triangular sector medially above its arms. Eye height/interocular distance in ratio 25/21, eye height 5 times as long as malar space. Face with short setae under frontal fork along orbits, setae in lower face sparse. Interscrobes smooth with raised surface forming short, but distinct sharp prominent peak.

Breadth of oral fossa 2.8–2.9 times as long as malar space. Gena curved with prominent bulge adjacent to eye. Antennae (Fig. 2, *4*) inserted at the level of about 1/5 eye height above ventral eye margins. Scape short, 4 times times as long as broad, with apical "neck", 0.66–1.7 times as long as eye height; combined length of pedicel and flagellum 0.7–0.8 times as long as breadth of head; pedicel bulb-shaped, twice as long as broad, about as long as 1st funicular segment; all three funicular segments 1.66 times as long as broad, separated by quite long peduncles, clava two-segmented, 2.29 times as long as broad, with distinct terminal spine.

Thorax (excluding petiole) 1.5–1.6 times as long as broad. Pronotum with 4 dorsal setae, pronotal collar not carinate; mesoscutum 1.88 times as broad as long, the parapsidal grooves indicated by weak impressions with finer reticulation; scutellum 1.33 times as long as broad, 1.38 as times long as mesoscutum; mesoscutal and scutellar setae long. Axillae with one seta. Metanotum reduced, invisible in dorsal view, indicated by narrow stripe under overhanging mesoscutal edge. Propodeum elongate, with two median carinae, delimiting on sides wineglass-shaped median strip from narrow smooth convex submedian areas, the carinae diverge anteriorly and subparallel in posterior half. Median strip with weak alutaceous surface anteriorly. Spiracular elevation of propodeum not convex, with weak lateral projection connected with supracoxal flange behind the

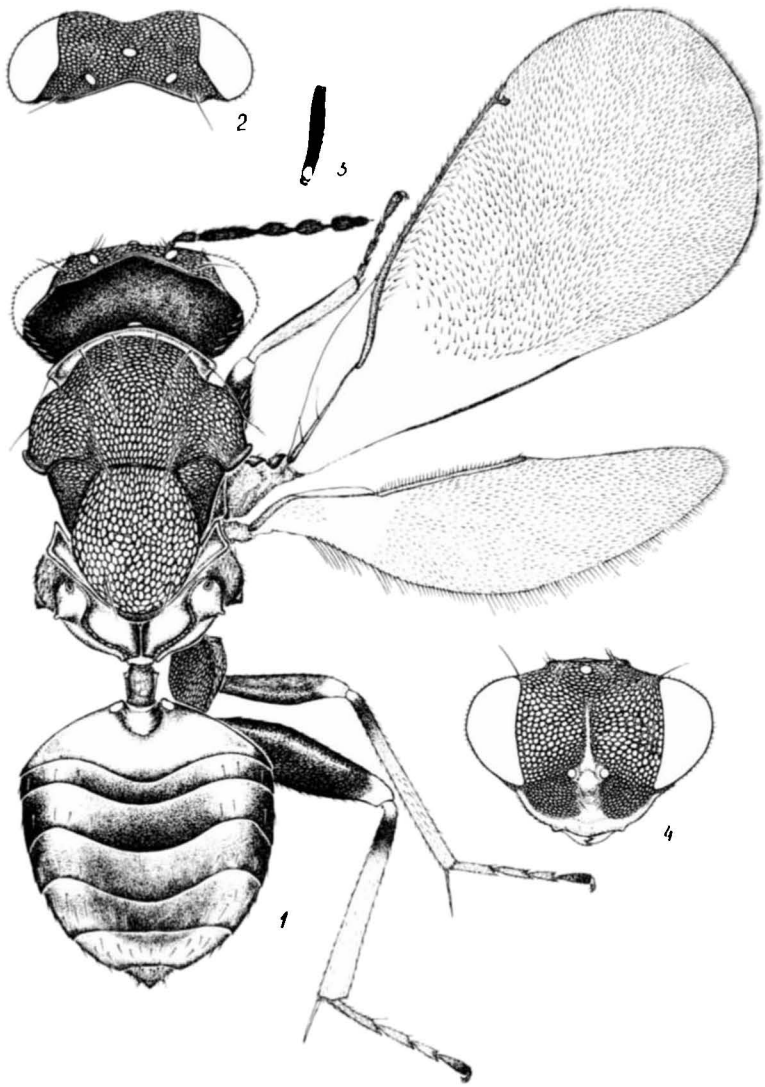

Fig. 4. *Entedon* (*Entedon*) *nomizonis* Kamijo, ♀, paratype: 1 – habitus; 2 – head in dorsal view; 3 – scape; 4 – head in frontal view.

spiracle, delimited laterally and anteriorly by a deep curved groove narrowly connected with shallow, wide, but distinctly delimited supracoxal groove reaching propodeal nucha (lateral sulcus complete); suprcoxal flange narrow, bottom of spiracular elevation not delimited from supracoxal flange. Propodeal callus with 8–10 setae. Fore femur 4.2, mid femur 5, hind femur 4.5–5 times as long as broad; fore tibia about 7.66, mid tibia 14, hind tibia 8.6–10 times as long as broad; mid and hind tibiae moderately setose; spur of mid tibia 1.4–1.6 times as long as breadth of tibia, spur of hind and fore tibia visible, about half breadth of their tibiae, or slightly shorter.

Fore wing 1.8–1.9 times as long as broad, costal cell bare, 8.5–10 times as long as broad, submarginal vein with small flattened area at its base and 2 setae on its dorsal surface before "break", where it meets parastigma; marginal vein slightly longer than costal cell, postmarginal and stigmal veins short, equal in length; basal vein represented by row of several hairs in basal part of wing; fringe of apical margin twice as long as average breadth of marginal vein.

Gastral petiole elongate, twice as long as broad; broadest in distal part. Gaster 1.6–1.7 times as long as broad.

Female (Fig. 3). Differs from male in general black colour, with weak green reflection, mainly at smooth parts. Antennae brown, flagellum slightly lighter than scape and pedicel. Space along hind eye orbits reticulated. Antenna (Fig. 3, *2*, *4*) with scape 3.75 times as long as broad, somewhat S-shaped expanded basally, its apical "neck" developed, but slightly shorter than in male, 0.65 times as long as eye height; combined length of pedicel and flagellum 3/4 times as long as breadth of head; pedicel drop-

shaped, twice as long asl broad, slightly longer than 1st funicular segment; the latter twice as long as broad, 2nd slightly longer than broad, 3rd as long as broad; funiculars, which are of the same length, separated by moderate, but distinct peduncles. Clava two-segmented, wider than funicle, almost twice (1.77) times as long as broad, without distinct terminal spine. Legs shorter than in male, mid tibia 10, hind 6 times as long as broad. Fore wing somewhat longer than in male (twice as long as broad). Petiole cylindrical, twice as long as broad, gaster short-ovate, 1.18 times as long as broad.

B i o l o g y. Unknown. Swept from flowers and various grasses at rather shrubby area along roadside.

E t y m o l o g y. Species is named in honour of Swedish entomologist, Dr. Roy Danielsson, Curator of the Insect collection of Lund University, collector of material of this species as well as type species of the subgenus.

D i s t r i b u t i o n. All the type specimens were collected in Republic of South Africa.

D i s c u s s i o n. The new species resembles *E.* (*E.*) *punctiscapus* Thomson in the general appearance of the female and in the combination of the 3-segmented funicle, and smooth elongate propodeum with the developed supracoxal groove in the male. The new species greatly differs from *E.* (*E.*) *punctiscapus* by diagnostic characters of the subgenus, the

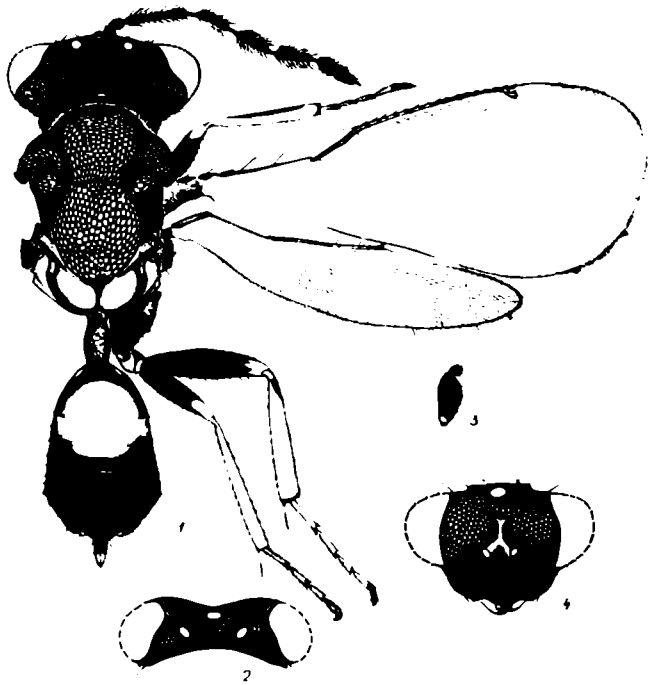

Fig. 5. *Entedon* (*Entedon*) *nomizonis* Kamijo, ♂, paratype: 1 — habitus; 2 — head in dorsal view; 3 — scape and pedicel; 4 — head in frontal view.

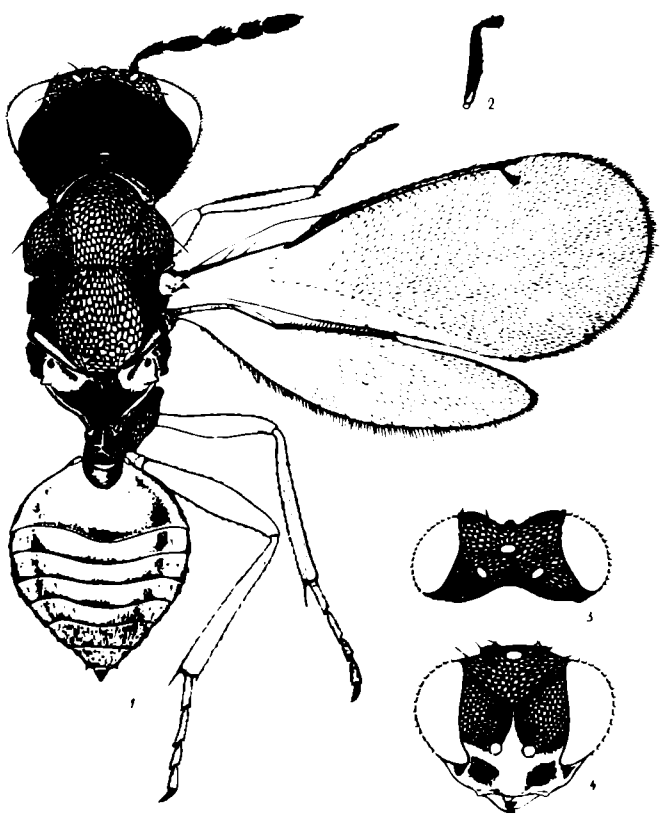

Fig. 6. *Entedon* (*Entedon*) *albifemur* Kamijo, ♀, paratype: 1 — habitus, 2 — scape and pedicel; 3 — head in dorsal view; 4 — head in frontal view.

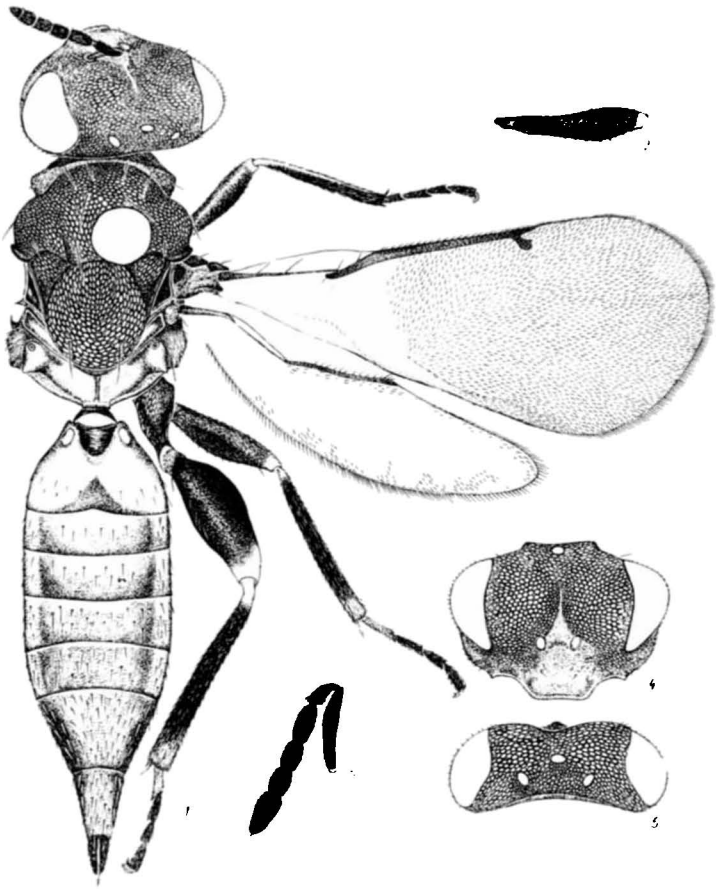

Fig. 7. *Entedon* (*Entedon*) *kerteszi* Erdös, ♀. Lectotype: *1* — habitus; *2* — fore femur; *3* — antenna; *4*, *5* — head views: *4* — frontal, *5* — dorsal

longer petiole, the basal light spot in the male, and the scape with a "neck" in both sexes.

Conclusion. Apart from similarities in characters specific to the subgenus as at whole, both new species have a smooth area above the frontal fork and short convex genae with lateral bulges below eye (Fig. 1, *4*, Fig. 2, *3*, Fig. 3, *2*). Despite the features the species share, they significantly differ (Fig. 1, 2, 3; Table 1).

The subgenus *Cederholmia* described above has the following characters, which I consider as plesiomorphies: complete V-shaped frontal fork, light-coloured trochanters, propodeum with convex, smooth submedian areas, small rounded spiracular tubercles with short apical projections and distinct spiracular-supracoxal groove (lateral sulcus), dividing spiracular tubercle and supracoxal flange from propodeal submedian areas. In the subgenus *Cederholmia*, *E.* (*C.*) *danielssoni* sp. n. is the more primitive species than *E.* (*C.*) *halli* sp. n. as shown by posession of a longer petiole, the narrower median strip and deeper spiracular-supracoxal groove. I hypothesize, that the ances-

Table 1. Differences between species of the subgenus *Cederholmia* (subgen. n.)

Character (for females)	*E. (C.) halli*	*E. (C.) danielssoni*
Petiole shape	transverse band	elongate, cylindrical
Median stripe delimited by median carinae	trapeziform	"wineglass"-shaped
Gaster: length/breadth	2.3–2.4	1.18
1st antennal segment: length/breadth	2.4–2.5	2
Antennal clava: length/breadth	2.5	1.77
Eye height/malar space	3.85	4.1–4.2
Head in dorsal view: width/length	2.8–3.0	2
Scape shape	straight, without apical "neck"	S-shaped, with apical "neck"
Colour of scape	white	black
Colour of dark parts of legs	red to brownish	black

tral form of *Entedon* shared morphological characters with *E.* (*C.*) *danielssoni* sp. n. except for the propodeal median strip bordered by two submedian carinae. The latter character is an apomorphy indicating appearance of the subgenus. I hypothesize the subgenus *Cederholmia* branched off earliest from common *Entedon*-stem as indicated by apical "diverging fork" of propodeal median carina downwards. The median carina division led to the appearance of the median strip delimited by two median carinae slightly diverged anteriorly. Similar changes to the median propodeal carina took place in the genus *Pediobius*, but species of that genus had the "diverging fork" of median propodeal carina placed basally at the propodeum, and directed upwards.

Subgenus *Entedon* is much more superior in the number of species than *Cederholmia*, and includes several species-groups. The revised concept of this species grouping is proposed in the following.

Keys to subgenera species-groups and species groups subgenera in genus of *Entedon*:

1 (2). Propodeum with two subparallel medially and somewhat diverging anteriorly median carinae (Figs. 1–3); frons with frontal fork always complete; rounded, convex spiracular elevations of propodeum with short lateral projections behind the spiracle, delimited laterally and anteriorly by a deep curved groove, connected by depression with deep supracoxal groove reaching propodeal nucha; submedian areas convex, smooth and shiny. Metanotum reduced to very narrow strip, almost invisible. Genae clearly bulging below eye in frontal view (Fig. 1, *1*, Fig. 2, *2*, Fig. 3, *2*)., Male gaster with pale basal spot ..... Subgenus *Cederholmia* subgen. n.

2 (1). Propodeum with one median carina (Figs. 4–7); the latter can be divergent anteriorly, representing a raised keel-like carina or disappearing posteriorly in raised coarse reticulation (Fig. 6), but not divided into two separate carinae in posterior part. If frontal fork present (Fig. 6, *4*, (*crassiscapus* and *cioni* species-groups), then propodeum coriaceous or coarsely reticulated, groove delimiting spiracular elevation of propodeum disconnected from supracoxal groove, and male gaster without pale basal spot. Otherwise, if propodeum with deep curved groove stretching around spiracular elevation and along supracoxal flange to propodeal nucha (Fig. 4, *1*, 5, *1*), male gaster with pale basal spot (Fig. 5, 1), and submedian areas convex, smooth and shiny (*squamosus* species-group), then frontal fork absent. Metanotum often small, but always distinct and visible ..... Subgenus *Entedon* s. str.. 3

3 (4). Frontal fork present 5

4 (3). Frontal fork absent 7

5 (6). Propodeum reticulated, sometimes median carina of the latter disappears completely or posteriorly in raised coarse reticulation (Fig. 6), trochanters hyaline, petiole well developed, stout, wider than long, eyes densely setose ..... .*crassiscapus* species-group
This new species-group includes the widespread *Entedon* (*Entedon*) crassiscapus Erdös (type series examined) and Japanese *E.* (*E.*) *albifemur* Kamijo from Japan (Fig. 6, paratype examined).

6 (5). Propodeum coriaceous or smooth, median carina complete, trochanters darkened, petiole reduced, strongly transverse, eyes moderately setose ..... .*cioni* species-group
I agree with diagnosis given for the group by Askew (1991) except for the following limitations of the author: breadth of oral fossa at most twice as long as malar space, male funicle 4-segmented and clava 1-segmented. The characters vary within other species-groups of *Entedon*. The group includes cosmopolitan *Entedon* (*Entedon*) *methion* Walker, the European *E.* (*E.*) *cionobius* Thomson (lectotype examined), *E.* (*E.*) *fructicola* Gumovsky, *E.* (*E.*) *nigrini* Bouček (paratypes examined), *E.* (*E.*) *stephanopachi* Hedquist (holotype examined), *E.* (*E.*) *cioni* Thomson (lectotype examined), *E.* (*E.*) *euphorion* Walker, *E.* (*E.*) *zanara* Walker, *E.* (*E.*) *leucocnemis* Erdös (holotype examined), *E.* (*E.*) *ulmi* Erdös (holotype examined), *E.* (*E.*) *oxys* Askew, *E.* (*E.*) *incultus* Askew, *E.* (*E.*) *tibialis* Szelényi (holotype examined), *E.* (*E.*) *setifrons* Askew, *E.* (*E.*) *albiscapus* Askew, Chinese *E.* (*E.*) *yichunicus* Yang, *E.* (*E.*) *wilsonii* Yang, and the Nearctic *E.* (*E.*) *ernobii* Ashmead, *E.* (*E.*) washingtoni Girault.

7 (8). Propodeum with deep curved groove (spiracular-supracoxal groove, lateral sulcus) extending around spiracular elevation and along supracoxal flange to nucha, submedian areas convex, smooth and shiny, occipital margin sharp, toothed, its lateral sites raise, forming more or less expressed "peaks"; gastral petiole often elongate, especially in males (Fig. 5, *1*); occipital margin toothed, male gaster mostly with pale basal spot ..... .*squamosus* species-group

As defined here, I relocate some species from the species-group *ergias* sensu Askew (1991) to species-group *squamosus*. Along with numerous undescribed species, the group also includes the European *Entedon* (*Entedon*) *squamosus* Thomson (lectotype examined), *E.* (*E.*) *armigera* Graham, *E.* (*E.*) *marci* Askew, *E.* (*E.*) *punctiscapus* Thomson (lectotype examined), Holarctic *E.* (*E.*) *ergias* Walker, Mongolian *E.* (*E.*) *triangulatus* Szelényi (holotype, paratype studied), *E.* (*E.*) *nomizonis* Kamijo from Japan and Far East Russia (Figs. 4, 5, paratypes examined), *E.* (*E.*) *amethysteus* Gumovsky from Far East Russia, Nearctic *E.* (*E.*) *procerus* Schauff, *E.* (*E.*) *robustus* (Crawford), *E.* (*E.*) *tachypterelli* Gahan, *E.* (*E.*) *teedoe* Schauff, all African *E.* (*E.*) *perturbatus* Walker, *E.* (*E.*) *apionidis* Ferrière (paralectotypes examined), *E.* (*E.*) *albiziarum* Rasplus, *E.* (*E.*) *bouceki* Rasplus, *E.* (*E.*) *bruchivorus* Rasplus (paratypes examined), *E.* (*E.*) *delvarei* Rasplus, *E.* (*E.*) *diabolus* Rasplus, *E.* (*E.*) *omnivorus* Rasplus, *E.* (*E.*) *pterocarpi* Rasplus, *E.* (*E.*) *senegalensis* Rasplus, *E.* (*E.*) *vuattouxi* Rasplus, *E.* (*E.*) *zairensis* Rasplus, Indian *E.* (*E.*) *pempheridis* Ferrière (paralectotypes examined) and Australian species *E.* (*E.*) *aereiscapus* (Girault), *E.* (*E.*) *albigenu* (Dodd), *E.* (*E.*) *australiansis* (Girault), *E.* (*E.*) *excelsus* (Girault), *E.* (*E.*) *genu* (Girault), *E.* (*E.*) *laticeps* (Girault), *E.* (*E.*) *magnificus* (Girault & Dodd), *E.* (*E.*) *rex* (Girault), *E.* (*E.*) *secundus* (Girault), and *E.* (*E.*) *victoriensis* (Girault).

8 (7). Propodeum with supracoxal groove at most deep only in posterior part near nucha, mostly fused with supracoxal flange, its apical margin unclear, submedian areas flat with diverse sculpture, not smooth convex, supracoxal groove at most deep in posterior part near propodeal nucha, mostly fused with supracoxal flange, its apical margin unclear 9

9 (10). Fore tibia with one pale frontal stripe 11

10 (9). Fore tibia completely dark or with two more or less distinct stripes 13

11 (12). Anterior margin of clypeus truncate, femora slender; pronotum setose just at collar, and nucha setose just near occipital margin ..... *sparetus* species-group
The group includes the European *Entedon* (*Entedon*) *sparetus* Walker, *E.* (*E.*) *mecini* Askew, *E.* (*E.*) *insignis* Erdös (type series examined), *E.* (*E.*) *longiventrosus* Dalla Torre (lectotype examined), *E.* (*E.*) *thomsonianus* Erdös (type series examined), Centro-Asiatic *E.* (*E.*) *zerovae* Gumovsky, and also several undescribed species.

12 (11). Anterior margin of clypeus produced forwards, femora thickened, pronotum densely setose downwards from its collar and nucha with two rows of setae along occipital margin and genae ..... *kerteszi* species-group
This new group includes the European *Entedon* (*Entedon*) *kerteszi* Erdös (Fig. 7, holotype examined) and Nearctic *E.* (*E.*) *occidentalis* Girault.

13 (14). Anterior margin of clypeus truncate, fore tibiae with two white strips or wholly darkened, occipital margin mostly sharp, forming more or less raising crest with pronounced, rounded off peaks (like in *squamosus* species-group), male gaster sometimes with pale basal spot ..... *hercyna* species group
As defined here, the group includes European *E.* (*E.*) *hercyna* Walker, *E.* (*E.*) *apionis* Erdös (type series examined), *E.* (*E.*) *procioni* Erdös, *E.* (*E.*) *meliloti* Askew (lectotype examined), *E.* (*E.*) *reticulatus* Erdös (lectotype examined), *E.* (*E.*) *urticarii* Erdös (type series examined), *E.* (*E.*) *gracilior* Graham, *E.* (*E.*) *calcicola* Graham, *E.* (*E.*) *ulicis* Perris, *E.* (*E.*) *heyeri* Ratzeburg, *E.* (*E.*) *abdera* Walker, *E.* (*E.*) *nigritarsis* Erdös (lectotype, paralectotype examined), Holarctic *E.* (*E.*) *ergias* Walker, Palaearctic *E.* (*E.*) *diotimus* Walker, European *E.* (*E.*) *loti* Erdös (lectotype examined), *E.* (*E.*) *alveolatus* Gumovsky from Far East Russia, Chinese *E.* (*E.*) *pumilae* Yang, *E.* (*E.*) *tumiditempli* Yang, *E.* (*E.*) *betulae* Yang, *E.* (*E.*) *pini* Yang, *E.* (*E.*) *broussonetiae* Yang, and the Nearctic *E.* (*E.*) *ashmeadi* Schauff, *E.* (*E.*) *higeloviae* Ashmead (paratypes examined), *E.* (*E.*) *columbianus* Ashmead (paratypes examined), *E.* (*E.*) *genei* Schauff (paratypes examined), *E.* (*E.*) *leucopus* (Ashmead), *E.* (*E.*) *anthonomi* Schauff (paratypes examined), *E.* (*E.*) *pecki* Schauff (paratypes examined), *E.* (*E.*) *procerus* Schauff (paratypes examined), *E.* (*E.*) *robustus* (Crawford), *E.* (*E.*) *tachypterelli* Gahan, *E.* (*E.*) *teedoe* Schauff (holotype, paratypes examined), and also several undescribed species.'

14 (13). Anterior margin of clypeus at least slightly produced forwards 15

15 (16). Fore tibia with two clear white strips, most species with mid and hind tibiae broadly white ..... *cyanellus* species-group
This group includes the European *E.* (*E.*) *cyanellus* Dalman, *E.* (*E.*) *biroi* Erdös (lectotype, paratypes examined), *E.* (*E.*) *astragali* Erdös (lectotype, paratypes examined), *E.* (*E.*) *nubilatus* Erdös (lectotype, paratypes examined), *E.* (*E.*) *subimpressus* Thomson (lectotype examined), *E.* (*E.*) *pallicrus* Erdös (lectotype, paratypes examined), *E.* (*E.*) *parvicalcar* Thomson (lectotype examined), *E.* (*E.*) *subovatus* Thomson (lectotype, paratypes examined), the Mongolian *E.* (*E.*) *calvescentitus* Szelényi (lectotype, paratypes examined), *E.* (*E.*) *ductus* Szelényi (holotype, paratypes examined), *E.* (*E.*) *intumescens* Szelényi (lectotype, paratypes examined), and also some undescribed species.

16 (15). Fore tibia predominantly dark, rarely with hardly discernible pale strips and (sometimes in *E.* (*E.*) *sylvestris*), about the distal quarter or less of mid and hind tibiae white, or legs completely dark ..... *costalis* species-group

As defined here, I relocate species from the *metatarsalis* and *pharnus* (sensu Graham, 1971) species-groups to the *costalis* species-group. The group includes, apart from numerous undescribed species, the European *E.* (*E.*) *costalis* Dalman (lectotype, paralectotype examined), *E.* (*E.*) *aestivalis* Erdös (lectotype, paralectotype examined), *E.* (*E.*) *auratus* Masi (lectotype examined), *E.* (*E.*) *erdoesi* Delucchi, *E.* (*E.*) *fufius* Walker, *E.* (*E.*) *fuscitarsis* Thomson (lectotype examined), *E.* (*E.*) *secundarius* Masi (lectotype, paralectotype examined), *E.* (*E.*) *abdera* Walker, *E.* (*E.*) *longulus* Bouček (lectotype examined), *E.* (*E.*) *metatarsalis* Thomson (lectotype examined), *E.* (*E.*) *montanus* Erdös (lectotype examined), *E.* (*E.*) *pharnus* Walker, *E.* (*E.*) *philiscus* Walker, *E.* (*E.*) *pseudonigritarsis* Erdös (lectotype, paralectotype examined), *E.* (*E.*) *rumicis* Graham, *E.* (*E.*) *secundarius* Masi (lectotype, paralectotype examined), *E.* (*E.*) *aestivalis* Erdös (lectotype, paralectotype examined), *E.* (*E.*) *subfumatus* Erdös (type series examined), *E.* (*E.*) *nigritarsis* Erdös (lectotype, paralectotype examined), *E.* (*E.*) *rumicis* Graham, *E.* (*E.*) *sylvestris* Szelényi (type series examined), and the Nearctic *E.* (*E.*) *darleneae* Schauff (paratypes examined).

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