Illustrated Key to the Western Palearctic Genera of Phaeogenini
(Hymenoptera, Ichneumonidae, Ichneumoninae)

Jesús Selfa & Erich Diller

Abstract

In this manuscript, a new key to the 29 genera of Phaeogenini in the Western Palearctic is presented. Gnathichneumon Aubert, 1958, is a subgenus of Dicaelotus Wesmael, [1845], stat. nov.; the subgenus Proscus Holmgren, [1890], is syn. nov. of Tycherus Foerster, [1869]; and the subgenus Rhexidermus Foerster, [1869], is syn. nov. of Heterischnus Wesmael, 1859.

Zusammenfassung

Die vorliegenden Arbeit enthält einen Gattungsschlüssel für die Subtribus Phaeogenini der Westpaläarktis. Aus diesem Faunenbereich sind derzeit 29 Genera der Phaeogenini bekannt. Gnathichneumon Aubert, 1958, wurde als ein Subgenus zu Dicaelotus Wesmael, [1845], festgelegt, stat. nov., da die Unterschiede zu Dicaelotus - die nach unten gebogenen Mandibulae und beim Weibchen das Fehlen der trennenden Furche zwischen Clypeus und Supraclypealarea - keine deutlichen Gattungskriterien, sondern nur die Kriterien einer Untergattung sind. Ebenso wurde das Subgenus Proscus Holmgren, [1890], ein syn nov. zu Tycherus Foerster, [1869], mit der Begründung, daß die Längsrif Nelung der Basis des zweiten Tergites für die Abtrennung als eigenes Subgenus nicht ausreichend ist. Das Subgenus Rhexidermus Foerster, [1869], wurde ein syn. nov. zu Heterischnus Wesmael, 1859, da das einzige Unterscheidungsmerkmal zwischen dem
Introduction

The tribe Phaeogenini (= Ichneumoninae cyclopneusticae, Phaeogeninae, Alomyini auct.) actually contains 29 genera in the Western Palearctic. It includes the smaller species of the subfamily Ichneumoninae, characterized by circular spiracles in the propodeum. According to Diller (1981), 6 subtribes of Phaeogenini occur in the world and 5 of them in the Western Palearctic.

The Phaeogenini are closely related to the tribe Alomyini although Alomyini have many different characteristics, e.g. front legs without trochantelli and semicircular spiracles in the propodeum. Some authors confuse convergence with a tribe or subfamily character and incorrectly still use the tribal name of Alomyini for Phaeogenini (sensu Wahl 1994, Townes et al. 1965; Townes 1969); however, both tribes must be separated.

The first modernized classification of Phaeogenini was given by Perkins (1959), considering 24 genera. Sittan (1977) included 33 genera; this author did not separate the genera Aphaleticus Wesmael, [1845], and Ectopoides Heinrich, 1951, which now belong to the tribe Platylabini. Rasnitsyn (1981) did so and proposed 31 genera according to Sittan, but did not distinguish the genera of Phaeogenes auct. (Dirophanes Foerster, [1869], Phaeogenes Wesmael, [1845], and Tycherus Foerster, [1869]). Diller (1981), parallel to their preliminary catalogue, listed these genera. He added the genera Aubertelerus Diller, 1981, and Dilleritomus Aubert, 1979, considered synonyms the genera Cinzaelotus Holmgren, [1890], Deloglyptus Foerster, [1869], Glyptichneumon Habermehl, 1917, Micrope Foerster, [1869], and Thyraeella Holmgren, [1890], listed before in Sittan and Rasnitsyn; and proposed Rhexidermus Foerster, [1869], and Proscus Holmgren [1890], as subgenera of Heterischnus Wesmael, 1859, and Tycherus Foerster, [1869], respectively. Later on Diller (1985) described the genus Raninia. According to these publications, there exist 30 genera of Phaeogenini in the Western Palearctic.

In this paper, we now consider Gnathichneumon Aubert, 1958, as a subgenus of Dicaelotus Wesmael, [1845], stat. nov.; the subgenus Proscus Holmgren, [1890], syn. nov. of Tycherus Foerster, [1869]; and the subgenus Rhexidermus Foerster, [1869], syn. nov. of Heterischnus Wesmael, 1859. Gnathichneumon Aubert, 1958, shares its characters with Dicaelotus Wesmael, [1845], except for the pattern of the mandibles; the subgenus Proscus Holmgren, [1890], belongs to the elongatus-Group (sensu Diller 1981), the longitudinally carinated area between gastrocoeli at Proscus is not a character for a distinct subgenus; and the subgenus Rhexidermus Foerster, [1869], differs from Heterischnus Wesmael, 1859, only by the length of antennae and the pattern of the ovipositor.
Key to subtribes

1(2) Mandible with one tooth ................................................................. 2
- Mandible with two teeth ..................................................................... 4

2(3) Clypeus separated from the face by a deep groove. Flagellar segments slender and long. Notauli deeply indented and long. Scutellum high and arched. Ovipositor long and wide, extending beyond apex of the gaster ............................................ Heterischnina (Heterischnus WESMAEL, 1859)

3(2) Clypeus not separated from the face by a deep groove. Flagellar segments short and sturdy. Notauli hardly indented. Scutellum flat. Ovipositor short, hardly extending beyond apex of the gaster............ Stenodontina (Stenodontus BERTHOUTHIEU, [1897])

4(5) Last gastral tergite at hind edge concave, but distinctly marked only in females. Ovipositor very short and bent upwards. In the males, the thyridiae are big, placed far off the base of second tergite. Head almost cubic or a toothed clypeus

.......................................................... Notosemina

5(4) Last gastral tergite at hind edge not concave. Males with other characters .......... 6

6(7) Thyridiae clearly present, big and distinctly indented ....................... Phaeogenina

7(6) Thyridiae absent, sometimes a very small impression at the position of the thyridiae or an impression at base of second tergite ........................................... Dicaelotina

Notosemina

1(2) Clypeus without tooth. Frons dull, densely punctate. Head subquadrate and strongly incised posteriorly (Fig. 1). Vertex with two yellow spots in the male and red in the female. Thorax of the female with red colour....... Notosemus FOERSTER, [1869]

2(1) Clypeus with a strong median apical tooth (Fig. 2). Frons shining, scarcely punctate. Temple small. Vertex without spots. Propodeum with a very small spiracles. Thorax of the female without red colour......................... Misetus WESMAEL, [1845]

Dicaelotina

1(2) Vein 3rm absent (Fig. 3). Gastrocoeli very short. Ovipositor as long as the postpetiolus. Head more or less enlarged, broader than the thorax (Fig. 4), and the distance between base of flagellum and genal carina is very wide. The apical edge of clypeus is concave .......................................................... Dilleritomus AUBERT, 1979

2(1) Vein 3rm present .................................................................................................................................................. 3

3(4) Propodeum without the area superomedia. Body shining, scarcely punctate. Tergite 2 with a pair of deep basal pits. Thyridiae absent. Thorax strongly dorsoventrally flattened. Scrobis frenalis without groove separating it posteriorly from the propodeum. Female with the plane of the face nearly at right angles to the long axis of the eye (Fig. 5). Upper tooth of mandible clearly longer than the lower.......................... Nematomicrus WESMAEL, [1845]

4(3) Propodeum with the area superomedia distinctly present. Body dull, coarsely punctate.......................................................... 5

5(6) Tergite 2 with a conspicuous transverse impression on the base of second tergite behind of postpetiolus, in males mostly distinct (thyridiae-like). Postpetiolus broad and densely punctate. Clypeus distinctly separated by a deep impression between supraclypeal area and clypeus........................................ Baeosemus FOERSTER, [1869]

6(5) Tergite 2 without conspicuous transverse impression on the base behind the postpetiolus.......................................................... 7

7(8) Area superomedia longitudinally shaped, heart shape or kidney shape, and receiving the costula behind the middle (Fig. 6). Mandibles long and broad, evenly tapered from the base to apex (pumilus-group), or mandibles very strongly tapered, the lower tooth weakly differentiated (punctiventris-group), or mandibles bent downwards; only in the female clypeus not separated by a groove from the supraclypeal area (Dicaelotus (Gnathichneumon)). Pronotum short. Hypopygium far or well removed from the apex of the ovipositor (Figs. 7, 8)....... Dicaelotus WESMAEL [1845].

8(7) Hypopygium reaching close to the apex of the ovipositor.............................................................. 9

9(10) Pronotal collar short (Fig. 9). Female with the hind margin of the mandible strongly excised towards the base (Fig. 10). Head of the male distinctly transverse (Fig. 11). Temples narrower, distinctly shorter than the breadth of an eye. Antennae of the male not narrowed towards the base. Genal carina meeting oral carina far from the mandible base. Apex of the gaster blunt (Fig. 12)................................. Colpognathus WESMAEL, [1845]

10(9) Pronotal collar long (Fig. 13). Hypopygium not reaching close to the apex of the ovipositor. Female with the hind margin of the mandible not excised towards the base (Fig. 14). Head of the male enlarged or almost cubic. Antennae of the male narrowed towards the base. Apex of the gaster sharp (Fig. 15)................................................. 11

11(12) In the female, scapus twice as long as the flagellar segment 1 (Fig. 16). Thyridiae absent, but sometimes with a shallow transverse impression laterally at the position of them (Fig. 17). Head of the female somewhat prognathous (Fig. 18), clypeus and supraclypeal area very short. Head of the male enlarged. Area superomedia slender and long. Costula weak and before the middle of area superomedia................................................................. Eparces FOERSTER, [1869]

12(11) In the female, scapus almost as long as the flagellar segment 1. Thyridiae absent, but sometimes with a transverse impression laterally at the position of them. Head
of the female not prognathous. Head of the male almost cubic, the temples at least as long as the breadth of an eye (Fig. 19). ........................ Centeterus WESMAEL, [1845]

Figs. 3-8: 3) Dilleritomus apertor AUBERT, female: alar veinnation aspect. 4) Dilleritomus apertor AUBERT, female: head and pronotum, in dorsal view. 5) Nematonicrus tenellus WESMAEL, female: thorax and base of gaster, in lateral view. 6) Dicaelotus pudibundus (WESMAEL), female: propodeum, in dorsal view. 7) Dicaelotus ruficoxatus (GRAVENHORST), female: apex of gaster, in lateral view. 8) Dicaelotus pumilus (GRAVENHORST), female: apex of gaster, in lateral view.
### Phaeogenina

<table>
<thead>
<tr>
<th>Step</th>
<th>Condition</th>
<th>Taxon</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1(6)</td>
<td>Vein 3rm lost</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>2(5)</td>
<td>Propodeum sloping from the anterior margin of the area superomedia or from the base to the apex</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>3(4)</td>
<td>Thyridiae large. Propodeum sharply sloping from the anterior margin of the area superomedia to the apex. Mesopleurum in part rugose, otherwise much more coarsely punctate.</td>
<td>Trachyrurus THOMSON, 1891</td>
<td></td>
</tr>
<tr>
<td>4(3)</td>
<td>Thyridiae small. Propodeum gradually sloping from the base to apex. Mesopleurum with fine distinct punctures, not rugose</td>
<td>Hemichneumon WESMAEL, 1857</td>
<td></td>
</tr>
<tr>
<td>5(2)</td>
<td>Propodeum not sloping. Radial cell of the frontal wing short and broad. Radial vein strongly curved (Fig. 20). Nervellus of the hind wing oppositus. Propodeum coriaceous and dull. Thyridiae present. Ovipositor raised</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6(1)</td>
<td>Vein 3rm present</td>
<td>Epitomus FOERSTER, [1869]</td>
<td>7</td>
</tr>
<tr>
<td>7(12)</td>
<td>Clypeus with teeth apically</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>8(9)</td>
<td>Clypeus separated from the supraclypeal area by a narrow deep groove, its apical edge with two sharp teeth in the centre (Fig. 21). Propodeum sharply sloping from the base to the apex. Area superomedia transverse and short. Petiolar area with longitudinal hollows extending to the distal part. Female apex of gaster laterally flattened. Head enlarged, broader than the thorax. Ovipositor curved upwards, with broad valvae (Fig. 22)</td>
<td>Diaschisaspis FOERSTER, [1869]</td>
<td></td>
</tr>
<tr>
<td>9(8)</td>
<td>Clypeus with two blunt teeth. Propodeum gradually sloping from the base to the apex. Area superomedia long and slender</td>
<td>Paraethecerus PERKINS, 1953</td>
<td>10</td>
</tr>
<tr>
<td>10(11)</td>
<td>Thyridiae placed very far from the base of the tergite 2 (Fig. 23). Clypeus concave and impressed apically, above two blunt teeth (Fig. 24)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11(10)</td>
<td>Thyridiae placed at base of tergite 2. Apical edge of the clypeus straight, above two blunt teeth (Fig. 25). Mandibles and temples very broad</td>
<td>Auberteterus DILLER, 1981</td>
<td></td>
</tr>
<tr>
<td>12(7)</td>
<td>Clypeus without teeth apically</td>
<td></td>
<td>13</td>
</tr>
<tr>
<td>13(16)</td>
<td>Postpetiolus with strong and dense punctures, often polished</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td>14(15)</td>
<td>Postpetiolus dorsally strongly intumescent (Fig. 26). Thorax long and dorsoventrally flattened, the propodeum about twice as long as the breadth of the petiolar area (Fig. 26), carinae of the propodeum mostly indistinct. Female with the face almost at right angle to the axis of the eye (Fig. 26)</td>
<td>Eriplatys FOERSTER, [1869]</td>
<td></td>
</tr>
<tr>
<td>15(14)</td>
<td>Postpetiolus polished and with moderately dense, coarse, strong punctures. Thorax not flattened dorsoventrally (Fig. 27). Face of the female not inflexed (Fig. 27)</td>
<td>Herpestomus WESMAEL, [1845]</td>
<td></td>
</tr>
<tr>
<td>16(13)</td>
<td>Postpetiolus often mat or striate, or its punctures smaller or not dense</td>
<td></td>
<td>17</td>
</tr>
<tr>
<td>17(18)</td>
<td>Apical edge of the clypeus with a large semicircular depression in the centre, without subapical ridge (Fig. 28). Genal carina not directly meeting the oral carina. Area superomedia weakly transverse, almost of kidney shape</td>
<td>Oiorhinus WESMAEL, [1845]</td>
<td></td>
</tr>
</tbody>
</table>
18(17) Clypeus differeni, sometimes with a centrally impressed or interrupted subapical ridge, but never with a semicircular depression. Genal carina meeting the oral carina directly at the base or distant from the base of the mandibles. 19

19(20) Clypeus with a thin and straight apical margin. Area superomedia very small and long, about four times longer than the breadth of the apical carina (Fig. 29). Body slender. Flagella long and slender. Propodeum long, conspicuously produced apically. Base of tergite 2 depressed. Thyridiae far from base of tergite 2. ........................................... Oronotus WESMAEL, [1845]

20(19) Clypeus different. Area superomedia not very small and long. Body stout and moderately slender ........................................... 21

21(24) Clypeus not distinctly separated from the weakly differentiated supraclypeal area, or mostly with a vague impression between. Base of tergite 2 depressed. 22

22(23) Clypeus not distinctly separated from the weakly differentiated supraclypeal area, or mostly with a vague impression between. Base of tergite 2 depressed. ........................................... Diadromus WESMAEL, [1845]

23(22) Apex of clypeus with a vague impression and strongly roughened. Flagellar segment 1 (postanellus) hardly shorter than segment 2. Cheek deeply excavated in the adjacent mandibular area (Fig. 31) Raninia DILLER, 1985

24(21) Clypeus separated from the supraclypeal area, which is usually conspicuously differentiated by a sharp groove. Face and clypeus conspicuously short; if the clypeus is inflexed apically, at usual with an apical margin directed downwards and towards the lateral angles ........................................... 25

25(30) Apex of clypeus impressed. ........................................... 26

26(29) Oral carina not strongly raised and excavated behind the base of the mandible. Gena not excavated. Clypeal foveae large (Fig. 32) ........................................... Mevesia HOLMGREN, [1890]

27(28) Oral carina not strongly raised and excavated behind the base of the mandible. Gena not excavated. Clypeal foveae large (Fig. 32) ........................................... Orotylus HOLMGREN, [1890]

28(27) Clypeus slightly impressed, sparsely punctuated and polished. Face convex (Fig.33). Flagellar segment 1 (postanellus) shorter than segment 2. Hind coxae of the female with ventral keels (Fig. 34) ........................................... Aethecerus WESMAEL, [1845]

29(26) Oral carina strongly raised and excavated behind the base of the mandible (Fig. 36). Gena excavated, strongly in the male. Clypeal foveae smaller. Apex of clypeus strongly impressed, above it with a more or less distinct ridge which is strongly impressed or obliterated centrally (Fig. 35). Clypeus separated from the supraclypeal area by a sharp groove. Upper side of scapus more or less swollen at base and apex with profile of its upper margin somewhat concave (Fig. 37). Mandibles and temples not very widened. Hind coxa of the female sometimes with a small ventral tubercle or keel ........................................... Aethecerus WESMAEL, [1845]

30(25) Clypeus not impressed or only shallow depressed and polished in osculator-group of Tycherus, in this case hind coxa below with a carina ........................................... 31

31(34) Apical edge of the clypeus thick. Gena excavated. Mandibles broad ........................................... 32
32(33) Apical edge of the clypeus very thick, and coarsely punctate. In the female, the hind coxa with a ventral tooth beginning at the distal edge (Fig. 38)..........................\textit{Phaeogenes} Wesmael, [1845]

33(32) Apical edge of the clypeus thick and smooth or almost smooth, rarely punctate but not coarsely; in the osculator-group weakly concave. In the female, if present, the ventral tooth and/or keel begins at its internal area, never at the back-border of the hind coxa (Fig. 39)..........................\textit{Tycherus} Forster, [1869]

34(31) Apical edge of the clypeus thin and sharply rough. Gena not excavated. Mandibles narrowed and of concave profile on external part. In the female, the ventral tooth and/or keel beginning at the distal edge of hind coxa (Fig. 40)..........................\textit{Dirophanes} Forster, [1869]

\textbf{Fig 20-22}: 20) \textit{Epitomus infuscatus} (Gravenhorst), male: frontal wing, aspect of veins. 21) \textit{Diaschisaspis campoplegoides} Holmgren, female: head, in frontal view. 22) \textit{Diaschisaspis campoplegoides} Holmgren, female: apex of gaster, in lateral view.
Acknowledgements

The authors are thankful to Mrs. A. ALBRECHT and Mrs. H. SCHUBERTH for correction of the manuscript.

Bibliography

THOMSON, C.G. 1891. Opuscula entomologica. XLVII. Bidrag till kännedom af ichneumones pneustici, 15: 1603-1656.
Authors' addresses:

Jesús SELFA.
Departament de Biologia Animal (Entomologia).
Universitat de València.
Dr. Moliner, 50.
E-46100 Burjassot. València.
Spain

Erich DILLER
Zoologische Staatssammlung.
Münchhausenstraße, 21.
D-81247 München.
Germany