

## Key to males of Norwegian species of *Eupeodes* (Diptera: Syrphidae)

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MAZÁNEK, L., LÁSKA, P., BIČÍK, V., NIELSEN, T. R., 1999: Key to males of Norwegian species of *Eupeodes* (Diptera, Syrphidae). *Dipterologica bohemoslovaca* 9: 143-152

**Abstract:** A key to males of 12 species of *Eupeodes* Osten-Sacken, 1877 from Norway is given. The male terminalia of similar species are figured. *E. tirolensis* (Dušek et Láška, 1973) is new for the Norwegian fauna.

**Key words:** Diptera, Syrphidae, *Eupeodes*, key, Norway, new records.

### INTRODUCTION

The genus *Eupeodes* Osten-Sacken, 1877 belongs to the most difficult one due to great number of similar species, to great variation depending on the temperature during pupal stage (DUŠEK & LÁSKA 1974) and on the geographical origin (MAZÁNEK et al. 1999). Understanding of the genus demands very rich material of various geographical origin. When preparing the Check List of Norwegian Syrphidae (NIELSEN 1999) Tore Nielsen collected sufficient material which enables us to prepare a key to males of the described Norwegian species. A key is based also on the results of a revision of the type material of *E. chillcotti* Fluke, 1952 published simultaneously in this journal (MAZÁNEK et al. 1999). We treat the males only, as the identification of females has not yet been finished.

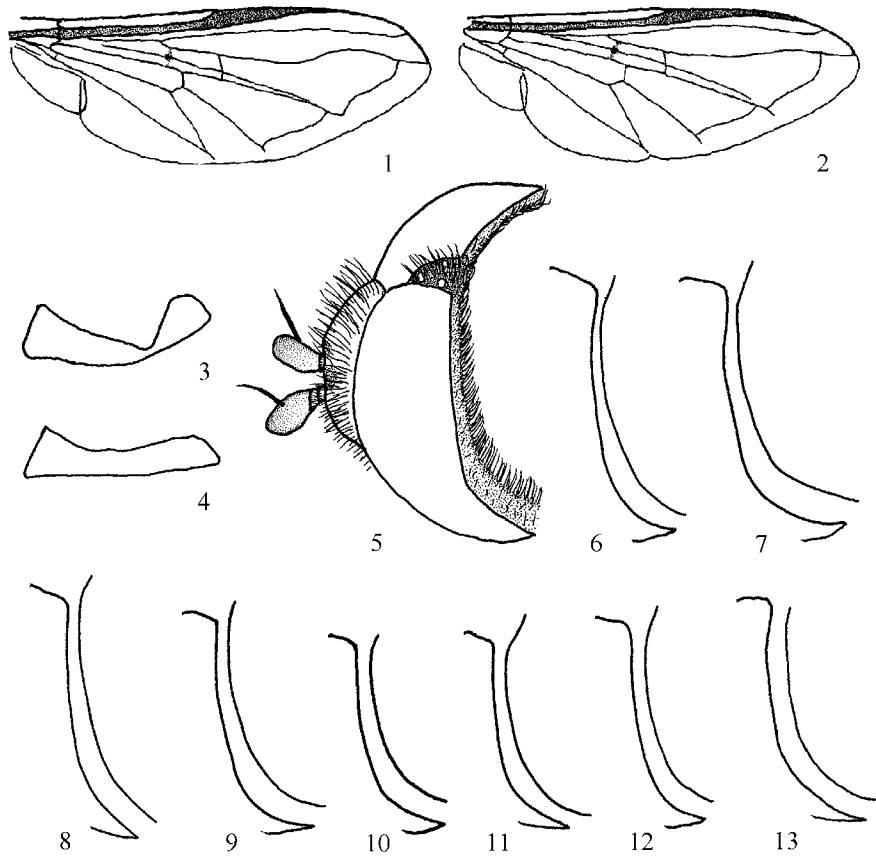
### METHODS

Only males are included in the key. External morphological variability has been studied in all specimens and has been compared with variability of male terminalia. Aedeagus, paramere and hypandrium of problematic species have been figured. The measurement of the anterior angle of approximation of eyes was done from vertical view on the contact area (Fig. 14). An other important character is the width of the postocular orbit (grey dusted stripe along the hind edge of the eye). These areas may sometimes look narrower due to shrinking caused by dry conservation. Also the microtrichia of the wings may sometimes be broken. This happens especially to very thin and fragile microtrichia, and may give the impression of a bare area. Such areas, however, are not completely bare; under high magnification the bases of lost microtrichia may still be seen as dots on the wing membrane.

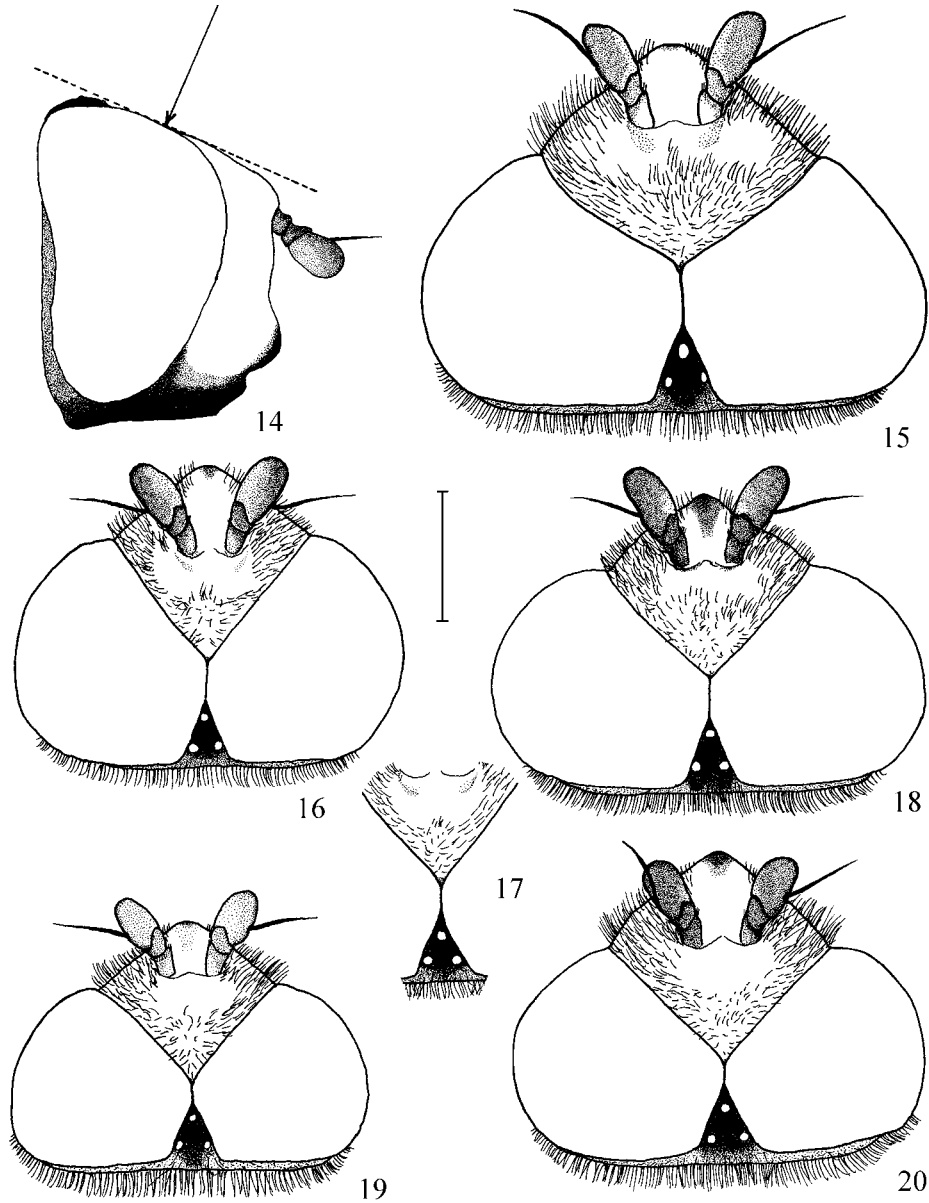
All species mentioned in the key were described in detail by DUŠEK & LÁSKA (1973, 1976) and VOCKEROTH (1992). The description of the features of genus *Eupeodes* was made by DUŠEK & LÁSKA (1973) on pages 415 - 418 under the name *Metasyrphus* Matsumura, 1917.

#### KEY TO MALES

- 1 a Metasternum bare; vein  $r_{4+5}$  strongly dipped at middle (Fig. 1). Holarctic. Body length 8.6 - 11.4 mm, wing length 8 - 10 mm. (sg. *Lapposyrphus* Dušek et Láská) ..  
 ..... *E. lapponicus* (Zetterstedt, 1838)



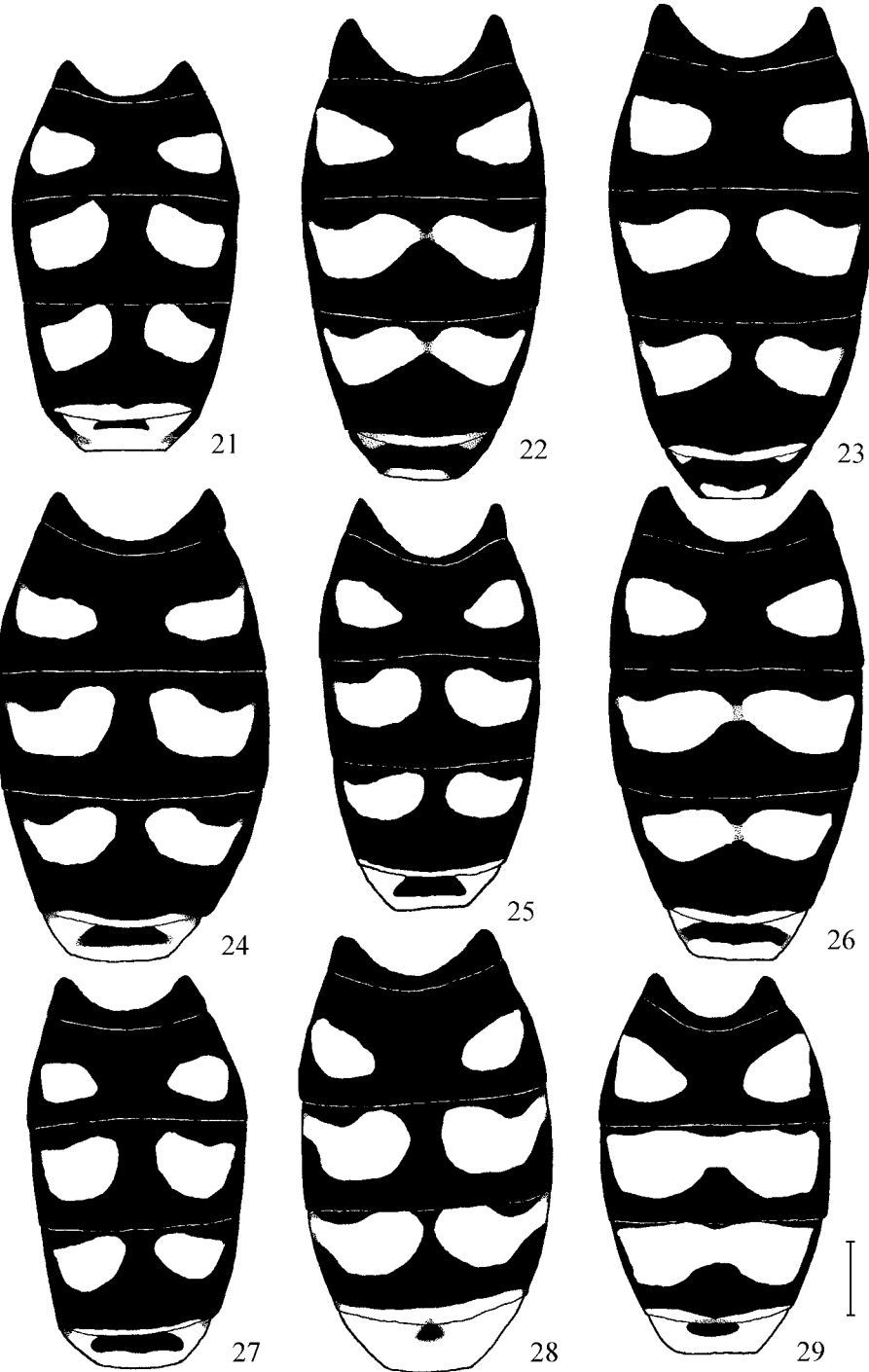
Figs. 1 - 13: 1 - 2. Wings. 1 - *Eupeodes (Lapposyrphus) lapponicus*. 2 - *E. luniger*. Figs. 3 - 4. Sternites 5 of males in ventral view. 3 - *E. corollae*. 4 - *E. luniger*. Figs. 5 - 13. Postocular orbits of males in dorsolateral view. 5 - *E. nitens*. 6 - *E. nielseni*. 7 - *E. bucculatus*. 8 - *E. luniger*. 9 - *E. punctifer*. 10 - *E. tirolensis*. 11 - *E. curtus*. 12 - *E. latifasciatus*. 13 - *E. abiskoensis*.



Figs. 14 – 20: 14 – Marked view of anterior angle of approximation of eyes and of connection of eyes. Figs. 15 - 20. Heads of males under the view in fig. 14. 15 - *Eupeodes lundbecki* (Gvammen). 16 - *E. luniger* (Voss). 17 - *E. luniger* (Isdalen). 18 - *E. bucculatus* (Dalhaugen). 19 - *E. curtus* (Lakselv). 20 - *E. abiskoensis* (Spiterstulen, 4.vii.1975). (Scale 1 mm).

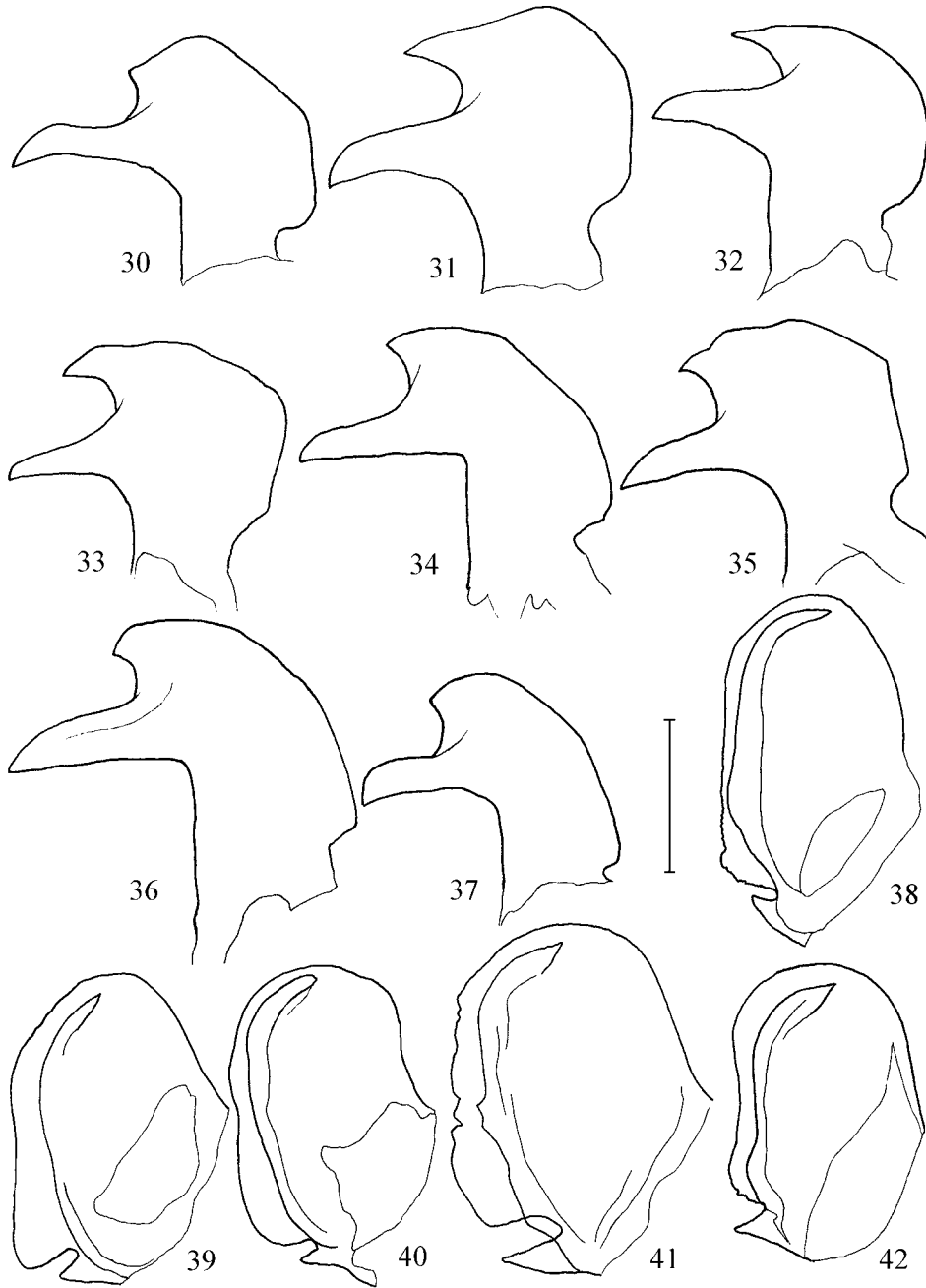
- b Metasternum hairy; vein  $r_{4+5}$  only slightly curved at middle (Fig. 2). (sg. *Eupeodes* Osten Sacken, 1877) ..... 2
- 2 a Anterior angle of approximation of eyes broad - about  $120^\circ$  (Fig. 15); microtrichia covering about 1/2 of wing membrane, discoidal cell partly bare; upper half of eye with an area of enlarged facets with distinct border. Northern and middle Europe. Body length 10 - 13 mm, wing length 8 - 10 mm .. *E. lundbecki* (Soot-Ryen, 1946)
- b Anterior angle of approximation of eyes at most  $105^\circ$  (in *E. nielseni*), in most species  $90^\circ$  or less (Figs. 16 - 20); microtrichia covering more than 1/2 of wing membrane; discoidal cell completely covered in microtrichia; upper facets not so enlarged and border of their area vague ..... 3
- 3 a Male terminalia remarkably large and sternite 5 greatly reduced at middle (Fig. 3); postocular orbit very broad near vertex, about 3/4 of its maximal width; scutellum usually pale haired. Palaearctic, Afrotropical. Body length 6.5 - 10 mm, wing length 5.5 - 8.6 mm ..... *E. corollae* (Fabricius, 1794)
- b Male terminalia small, sternite 5 not reduced at middle (Fig. 4) ..... 4
- 4 a Basal part of alula with bare area at middle; postocular orbit broad near vertex, more than 1/2 of its maximal width (Fig. 10); lateral margins of tergite 5 partly to completely dark; abdominal spots (yellow spots on tergites 3 and 4) of characteristic shape, oblique, distinctly separated and not reaching lateral margins (Fig. 21). Boreoalpine. Body length 7.5 - 10.6 mm, wing length 6.3 - 8.4 mm ..... *E. tirolensis* (Dušek et Láska, 1973)
- b Alula completely covered in microtrichia or postocular orbit narrower near vertex (Figs. 6, 8); abdominal spots not so oblique ..... 5
- 5 a Lateral margins of tergite 5 dark; postocular orbit very narrow near vertex, less than 1/3 of its maximal width (Figs. 5, 6); all or nearly all long hairs on basal part of front femur black; sternites with large rectangular black spots ..... 6
- b Lateral margins of tergite 5 pale, exceptionally partly dark (usually upper corners); postocular orbit broader near vertex (Figs. 7 - 13); long hairs on basal part of front femur at least partly pale (except *E. punctifer*) ..... 7
- 6 a Abdominal spots usually connected or nearly connected (Fig. 22); more than 1/2 of second basal cell and whole alula covered in microtrichia; anterior angle of approximation of eyes less than  $90^\circ$ ; male terminalia without or almost without upper tooth at base of aedeagus (Fig. 30). Palaearctic. Body length 9 - 11 mm, wing length 6.7 - 8.8 mm ..... *E. nitens* (Zetterstedt, 1843)
- b Abdominal spots almost always separated (Fig. 23); less than 1/2 of second basal cell covered in microtrichia; basal part of alula with bare area at middle; anterior angle of approximation of eyes usually more than  $90^\circ$ ; male terminalia with well

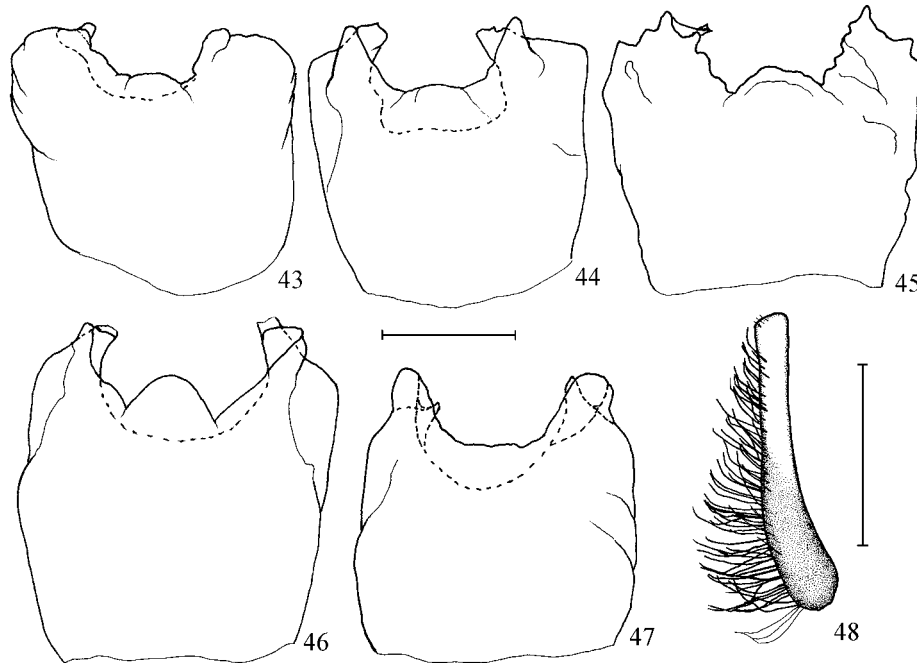
Figs. 21 - 29. Abdomens of males in dorsal view: 21 - *E. tirolensis* (Prestegård). 22 - *Eupeodes nitens* (Revesand). 23 - *E. nielseni* (Krokstrand). 24 - *E. punctifer* (Rognan). 25 - *E. luniger* (Isdalen). 26 - *E. bucculatus* (Dalhaugen). 27 - *E. curtus* (Lakselv). 28 - *E. abiskoensis* (Spiterstulen, 2.vii.1975). 29 - *E. latifasciatus* (Nové Oldřívky). (Scale 1 mm).



- developed upper tooth at base of aedeagus (Fig. 31). Northern and central Europe. Body length 8.8 - 10.4 mm, wing length 8 - 8.4 mm ..... *E. nielsenii* (Dušek et Láška, 1976)
- 7 a Long hairs on basal part of front femur distinctly longer than width of femur, all intensively black (rarely several pale hairs present at basal end of femur, Fig. 48); about 1/2 second basal cell and whole alula covered in microtrichia; abdominal spots distinctly separated with tendency of upper corners to reach lateral margins (Fig. 24); male terminalia (Figs. 32, 38, 43) with distal upper tooth at base of aedeagus. Northern Holarctic. Body length 7.6 - 10.5 mm, wing length 7.2 - 8.2 mm ..... *E. punctifer* (Frey in Kanervo, 1934)
- b Long hairs on basal part of front femur comparatively short, at least some pale. If almost all black then second basal cell completely covered in microtrichia or male terminalia without upper tooth at base of aedeagus ..... 8
- 8 a Postocular orbit near vertex less than 1/2 of its maximal width (figs. 7, 8); suture of eyes more than 0.30 mm (Figs. 16 - 18); alula with bare area at middle of base or completely covered in microtrichia ..... 9
- b Postocular orbit not so narrow near vertex (Figs. 11 - 13); alula always completely covered in microtrichia; suture of eyes less than 0.27 mm (Figs. 19, 20) ..... 10
- 9 a Basal part of alula with bare area at middle; second basal cell usually less than 1/2 covered in microtrichia; anterior angle of approximation of eyes distinctly less than 90° (about 80°, Figs. 16, 17); abdominal spots almost always separated, not reaching lateral margins (Fig. 25); male terminalia with two well developed teeth at base of aedeagus (Fig. 33). Palaearctic. Body length 8 - 12 mm, wing length 7.9 - 9.5 mm .. *E. luniger* (Meigen, 1822)
- b Alula completely covered in microtrichia, rarely with small bare area at middle of basal part; second basal cell usually more than 1/2 covered in microtrichia; anterior angle of eyes about 90° (Fig. 18); abdominal spots usually connected at middle, mostly not reaching lateral margins (Fig. 26); male terminalia (Figs. 34, 39, 44) only with one well developed tooth at base of aedeagus. Palaearctic. Body length 7.3 - 12 mm, wing length 6.2 - 10.2 mm ..... *E. bucculatus* (Rondani, 1857)
- 10 a Postocular orbit very broad (Figs. 12, 13); abdominal spots either connected without tendency to reach lateral margins of tergites (Fig. 29) or separated with tendency to reach lateral margins (Fig. 28); second basal cell often not completely covered in microtrichia; base of aedeagus with only one tooth (Figs. 36, 37) and paramere with big tooth at base (Figs. 41, 42) ..... 11
- b Postocular orbit somewhat narrowed near vertex (Fig. 11); abdominal spots distinctly separated at middle and not reaching lateral margins of tergites (Fig. 27); second basal cell completely covered in microtrichia; male terminalia (Figs. 35, 40, 45) with two developed teeth at base of aedeagus and with small tooth at base of

Figs. 30 - 42. Male terminalia. 30 - 37. Bases of aedeagorum in lateral view. 30 - *Eupeodes nitens* (Metveit). 31 - *E. nielsenii* (Krokstrand). 32 - *E. punctifer* (lectotype). 33 - *E. luniger* (Isdalen). 34 - *E. bucculatus* (Rognan). 35 - *E. curtus* (Popoff Island). 36 - *E. abiskoensis* (Spiterstulen, 2.vii.1975). 37 - *E. latifasciatus* (Nové Oldřůvky). Figs. 38 - 42. Parameres in lateral view. 38 - *E. punctifer* (Kongsvoll). 39 - *E. bucculatus* (lectotype). 40 - *E. curtus* (Noatun). 41 - *E. abiskoensis* (Spiterstulen, 2.vii.1975). 42 - *E. latifasciatus* (Zděchov). (Scale 0.1 mm).





Figs. 43 – 48: 43 - 47. Hypandria in dorsal view. 43 - *Eupeodes punctifer* (lectotype). 44 - *E. bucculatus* (Bretolet). 45 - *E. curtus* (Noatun). 46 - *E. abiskoensis* (Spiterstulen, 2.vii.1975). 47 - *E. latifasciatus* (Nové Oldřůvky). (Scale 0.2 mm). Fig. 48 - Femur 1 of male of *E. punctifer* (only black hairs are figured, Grønnåsen). (Scale 1 mm).

paramere. Northern Holarctic. Body length 7 - 9 mm, wing length 6.3 - 7.2 mm .....  
 ..... *E. curtus* (Hine, 1922)

11a Abdominal spots distinctly separated but with tendency to reach lateral margins of tergites by elongate upper corners, upper margins of abdominal spots distinctly concave (Fig. 28); hypandrium with small lingula (Fig. 46). Northern Holarctic. Body length 7 - 9.4 mm, wing length 6.6 - 7.5 mm .....  
 ..... *E. abiskoensis* (Dušek & Láska, 1973)

b Abdominal spots connected, rarely vaguely separated and without tendency to reach lateral margins of tergites, upper margins of abdominal spots almost straight (Fig. 29); hypandrium without lingula (Fig. 47). Holarctic. Body length 8.8 - 9.4 mm, wing length 6.6 - 7.4 mm .....  
 ..... *E. latifasciatus* (Macquart, 1829)

#### Figured specimens

*Eupeodes abiskoensis* (Dušek et Láska, 1973): Spiterstulen, On: Lom, 2.vii.1975, 4.vii.1975.

*Eupeodes bucculatus* (Rondani, 1857): Lectotype ♂: Italy, "Agri parmensis", date is not given. Deposited in Museo Zoologico de "la Specola" sezione del museo di storia



naturale, Firenze (Italy); OS Gausdal: Dalhaugen, EIS 62, 17.-18. vii. 1993; Bretolet, Switzerland, 2x 17 - 18, P. Goeldlin coll.

*Eupeodes curtus* (Hine, 1922): Popoff Island, Alaska, 10.vii.1899, Harriman Expedition 1899, T. Kincaid leg. F. C. Thompson 1976 det.; Lakselv (EIS 174), Fn: Porsanger, 26-27.vi.1979; FØ: Sør-Varanger: Noatun, EIS 160, 20.vi.1990.

*Eupeodes latifasciatus* (Macquart, 1829): Nové Oldřívky (sq. 6272), distr. Opava, Czech Republic, 19.vii.1996, L. Mazánek leg.; Zděchov, (sq.6774), distr. Vsetín, Czech Republic, 5.viii.1994, L. Mazánek leg.

*Eupeodes lundbecki* (Soot-Ryen, 1946): Gvammen, Tei: Hjartdal, 12.vii.1976.

*Eupeodes luniger* (Meigen, 1822): Isdalen, Hoy: Bergen, 14.vi.1970; Voss, HOI: Voss, 16.v.1970, B. Stangeland leg.

*Eupeodes nielsenii* (Dušek et Láška, 1976): Krokstrand (EIS 124), Nsi: Rana, 20.vi.1981.

*Eupeodes nitens* (Zetterstedt, 1843): Metveit, AAy: Grimstad, 25.vii.1976; AAY, Tromøy: Revesand, EIS 6, 30.vi.1986.

*Eupeodes punctifer* (Frey in Kanervo, 1934): Lectotype ♂: Fennia, Petsamo, Nautsi, Erkki Kanervo leg. Deposited in the Zoological Museum in Turku; Grønnåsen, Gargia (EIS 165), Fi: Alta, 30.vi.1979; Rognan (EIS 127), Nsi: Saltdal, 19-22.vi.1981; STI, Oppdal: Kongsvoll, EIS 79, vierbelte ovenfor fjellstua, 4.vii.1994.

*Eupeodes tirolensis* (Dušek et Láška, 1973): Prestegård, 900 m, Tei: Vinje, 13.vii.1976.

All males from Norway leg. et coll. T. R. Nielsen except those where others are mentioned.

Note: After preparing of this key a new species (*E. duseki*) was found from Scandinavia. The description of this new species with differential diagnose will be given in paper: MAZÁNEK, L., LÁSKA, P. & BIČÍK, V.: Two new Palaearctic species of *Eupeodes* similar to *E. bucculatus* (Diptera, Syrphidae). Paper will be printed out in 1999 Volucella 4 (1/2) in Stuttgart.

#### ACKNOWLEDGEMENTS

We want to express our gratitude to J. R. Vockeroth, Biosystematics Research Institute, Research Branch, Ottawa (Canada); Claus Claussen, Flensburg (Germany) and to Heikki Hippa, Swedish Museum of Natural History, Stockholm (Sweden) for letting us study types or specimens in their care, for valuable information or for help with literature.

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