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Diptera of the genus *Hilara* MEIGEN (*Empididae*, *Brachycera*) occurring in the Świętokrzyskie Mountains in Central Poland

[With 167 figures and 1 table in the text]

Abstract. 40 species of *Hilara* Mg. are recorded from the Świętokrzyskie Mountains in Central Poland. 20 species are new to the Polish fauna. *Hilara nadolna* sp.n., and *Hilara mroga* sp.n. are described.

Introduction

Empididae are relatively little known *Diptera*. The biology of these insects is known to a small degree, much less, than their distribution in Europe. Furthermore from many regions no data are available.

In Poland empidids have not been studied since many years. More informations about their occurrence in Poland date from the XIXth century (NOWICKI 1865, 1867, 1873; GRZEGORZEK 1873; SZNABL 1881; BOBEK 1890, 1894; CZWALINA 1893 and others). Informations on the occurrence of *Empididae* from the Świętokrzyskie Mountains are completely lacking. It is difficult to state, whether these identifications, by very famous entomologists, are correct, especially when the development of dipterology is taken into consideration. One can suppose that a part of these old identifications is of a rather historical value today.

References concerning *Empididae* discussed in this paper have been almost usually omitted by the contemporary authors although they represent an original contribution to the knowledge of European *Diptera*. Due to a considerable variability and differences between specimens from Poland, and from other regions of Europe, reporting figures seemed indispensable.

Area of investigation and methods. The study area covered the whole Świętokrzyskie Mountains (these are rather low mountains in the Central

Poland with the highest peak, Łysica, of 611 m above sea level). However, the material was collected most intensively from the Lubrzanka River and also from the initial sections of brooks flowing through the forest areas of the Świętokrzyski National Park. This refers especially to the upper affluents of the following rivers: Belnianka, Pokrzywianka and Czarna Woda. Detailed description of this area can be found in the paper of PIECHOCKI (1986), and Lubrzanka River is characterized in the paper of BURCHARD, JANOWSKA and NIESIOŁOWSKI (1982).

In general, the water system of the Świętokrzyskie Mountains is characterized by the presence of numerous streams. Their sources are usually located above the forest line. For the forest sections of the streams, characteristic are the banks covered with typical riverside plants, stony-sandy bottom, cold water carrying large amounts of organic matter, and a rapid current. Then the streams flow through meadows; the meadow sections are much longer (sometimes several kilometers long) and finally from small rivers, seldom broader than 10 m.

The samples of *Empididae* were taken in the years 1977–1983 from May to September. The insects were caught with a net over the water surface and also on riverside plants and scrub. Duration of sampling, including selection of the material, was about 30 min.

A total of about 6000 specimens of *Hilara* Mg. was collected and determined over the 6-year period of investigations. The materials, fixed in 75% ethanol, are in the collection of the Department of General Zoology of the University of Łódź.

Hereby, I would like to express my deep gratitude to Dr. Vladimír STRAKA from Turčianske múzeum A. KMEŤA, Martin (Czechoslovakia) for his kind help in determination and verification of the identifications of many species. Without his contribution, the determination of taxonomic status of numerous specimens would not be possible. I am also indebted to Mr. J. MAJECKI, MSc. (Department of Evolutionary Biology, University of Łódź), Dr. J. SICIŃSKI and Dr. J. WIEDEŃSKA (Department of General Zoology, University of Łódź) and Dr. W. MIKOŁAJCZYK (Institute of Zoology of the Polish Academy of Sciences, Warsaw) for collecting a part of the materials.

The list of species

H. hybrida COLLIN, 1961 (Fig.1, 34–37)

Material. Lubrzanka River, Ameliówka, 13. VI. 1980 – 1 ♂.

The species occurs in Great Britain, Germany (COLLIN 1961) and Czechoslovakia (STRAKA 1975).

New for Poland.

H. maura (FABRICIUS, 1777)

A spring species. Most common on the study area in May, occurs at almost on localities examined. Over the rivers it forms swarms of a great number of individuals.



Fig. 1-7. Front legs of the males. 1 - *H. hybrida*, 2 - *H. discoidalis*, 3 - *H. clypeata*, 4 - *H. intermedia*, 5 - *H. hirta*, 6 - *H. brevivittata*, 7 - *H. recedens*.

The species reported from Austria (STROBL 1892), Germany, Albania (ENGEL 1941-1943), Great Britain (COLLIN 1961), France (TREHEN 1969), Czechoslovakia (STRAKA 1975), Ireland (CHANDLER 1978) and Hungary (WÉBER 1981a).

In Poland noted from the Tatra Mountains (NOWICKI 1867, 1873), neighbourhoods of Nowy Sącz (GRZEGORZEK 1873), Warsaw (SZNABL 1881) and West Pomerania (KARL 1935).

H. discoidalis LUNDBECK, 1910 (Fig.2, 38-41)

Material. Lubrzanka River, Leszczyny, 13. VI. 1980 — a single larva was collected from the soil beside a wooded bank of the Lubrzanka. Imago was reared in the laboratory. Leszczyny, 16. VI. 1983 — 39 ♂♂, 7 ♀♀.

The species occurs in Denmark (LUNDBECK 1910), Great Britain (COLLIN 1961), Hungary (WÉBER 1963), Czechoslovakia (STRAKA 1975).

In Poland noted from Pomerania (KARL 1935).

H. clypeata MEIGEN, 1822 (*H. pinetorum* ZETT.) (Fig. 3, 42-45)

Material. Lubrzanka River, Cedzyna, 20. V. 1978 — 1 ♂, Czarna Woda River, Grabków, 23. VII. 1981 — 9 ♂♂, 15 ♀♀, Łomno, 23. VII. 1981 — 11 ♂♂, 41 ♀♀.

The species occurs in the whole Europe (ENGEL 1941-1943), reported from Great Britain (COLLIN 1961), Czechoslovakia (STRAKA 1975).

In Poland noted from the Tatra Mountains (NOWICKI 1867), Przemyśl (BOBEK 1894), Pomerania (CZVALINA 1893, KARL 1935). In a paper on the *Diptera* of the saline habitats of Poland SZADZIEWSKI (1983) reported this species from the saline habitats in Ciechocinek (Kujawy).

H. intermedia (FALLÉN, 1816) (Fig. 4, 46-49)

Material. Lubrzanka River, Ameliówka, 20. V. 1977 — 1 ♂, 20. V. 1981 — 7 ♂♂, 1 ♀, 30. V. 1980 — 1 ♂; Koprzywanica River, Baćkowice, 24. VII. 1981 — 1 ♂; Łagowica River, Wola Łagowska, 3. VI. 1982 — 1 ♂.

The species noted from Great Britain (COLLIN 1961), Czechoslovakia (STRAKA 1978, 1982), Ireland (CHANDLER 1978), Hungary (WÉBER 1983). According to STRAKA (1975) this species is common in the mountains.

New for Poland.

H. fuscipes (FABRICIUS, 1794)

Material. Lubrzanka River, Ameliówka, 17. VI. 1977 — 41 ♂♂ and ♀♀, 23. VI. 1978 — 35 ♂♂, 30 ♀♀, 17. VI. 1979 — 50 ♂♂ and ♀♀, 21. VIII. 1980 — 6 ♂♂, 5 ♀♀, Leszczyny, 16. VI. 1983 — 7 ♂♂; Szupianka River, Baszowice, 8. VII. 1981 — 1 ♂, Słupia Stara, 24. VII. 1981 — 1 ♂, 8 ♀♀; Świślina River, Rzepin, 17. VI. 1983 — 1 ♂, 1 ♀.

The species reported from Germany and Italy (ENGEL 1941-1943), northern Europe (COLLIN 1961), France (TREHEN 1969), Ireland (CHANDLER 1978) and Germany (CASPER, WAGNER 1982).

In Poland noted from the neighbourhoods of Nowy Sącz (NOWICKI 1873), Warsaw (SZNABL 1881) and from saline habitat near Inowrocław (SZADZIEWSKI 1983).



Fig. 8-15. Front legs of males. 8 - *H. interstincta*, 9 - *H. pilosa*, 10 - *H. veletica*, 11 - *H. lurida*, 12 - *H. terriphylla*, 13 - *H. longirostris*, 14 - *H. monedula*, 15 - *H. nigrina*.

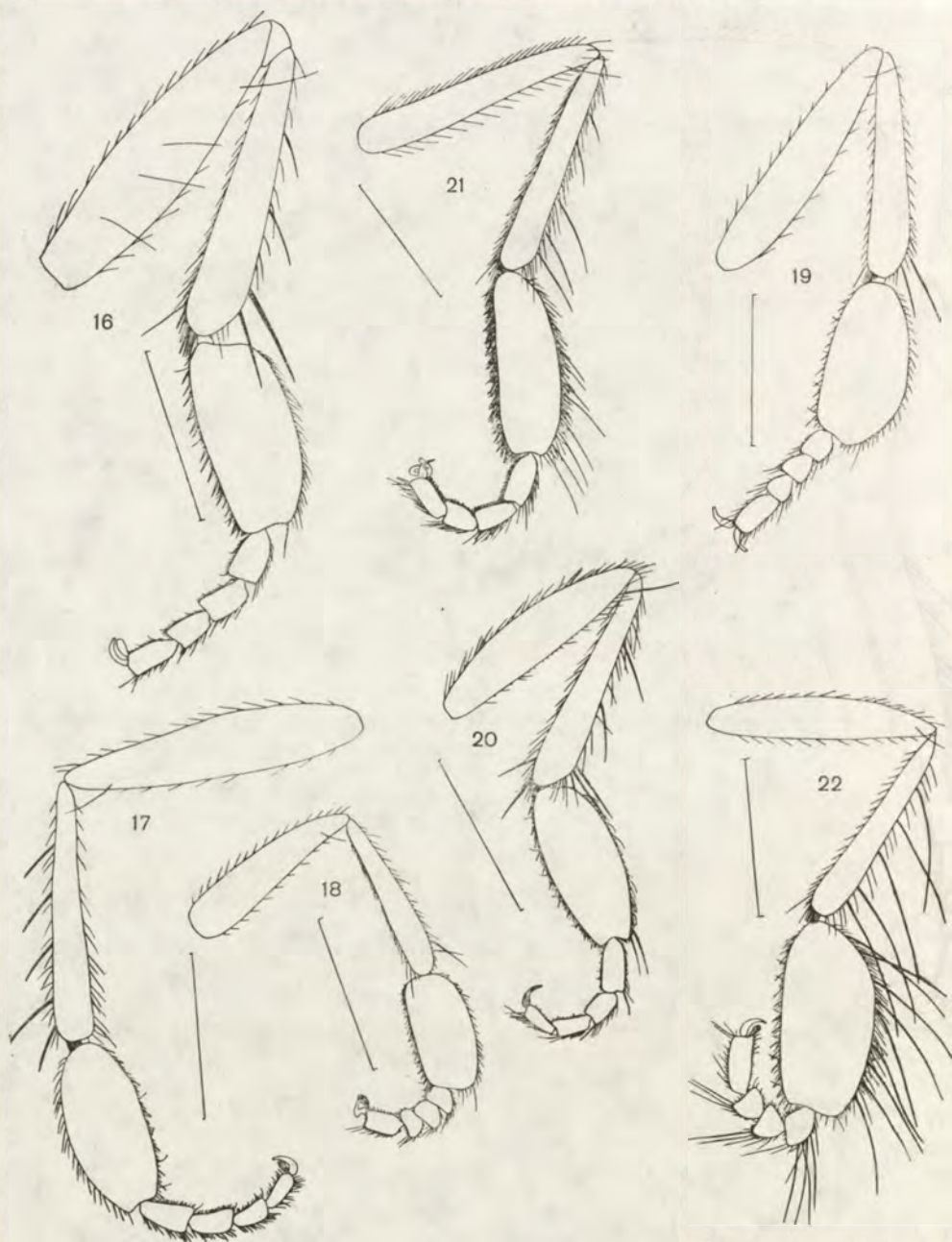


Fig. 16-22. Front legs of males. 16 - *H. merula*, 17 - *H. subpollinosa*, 18 - *H. brevistyla*, 19 - *H. longivittata*, 20 - *H. manicata*, 21 - *H. apta*, 22 - *H. barbipes*.



Fig. 23-30. Front legs of the males. 23 - *H. nadolna*, 24 - *H. mroga*, 25 - *H. chorica*, 26 - *H. woodi*, 27 - *H. biseta*, 28 - *H. cilipes*, 29 - *H. griseifrons*, 30 - *H. lasiochira*.

H. hirta STROBL, 1892 (Fig. 5, 50–53)

Material. The species caught not exactly in the Świętokrzyskie Mts, but nearly in the Niebieskie Źródła Reservation near Tomaszów Mazowiecki, 21. IX. 1979 – 30 ♂♂, 5 ♀♀.

H. hirta was reported from Austria (ENGEL 1941–1943), Great Britain and France (COLLIN 1961), Hungary (WÉBER 1981b).

In Poland noted from Pomerania (KARL 1935).

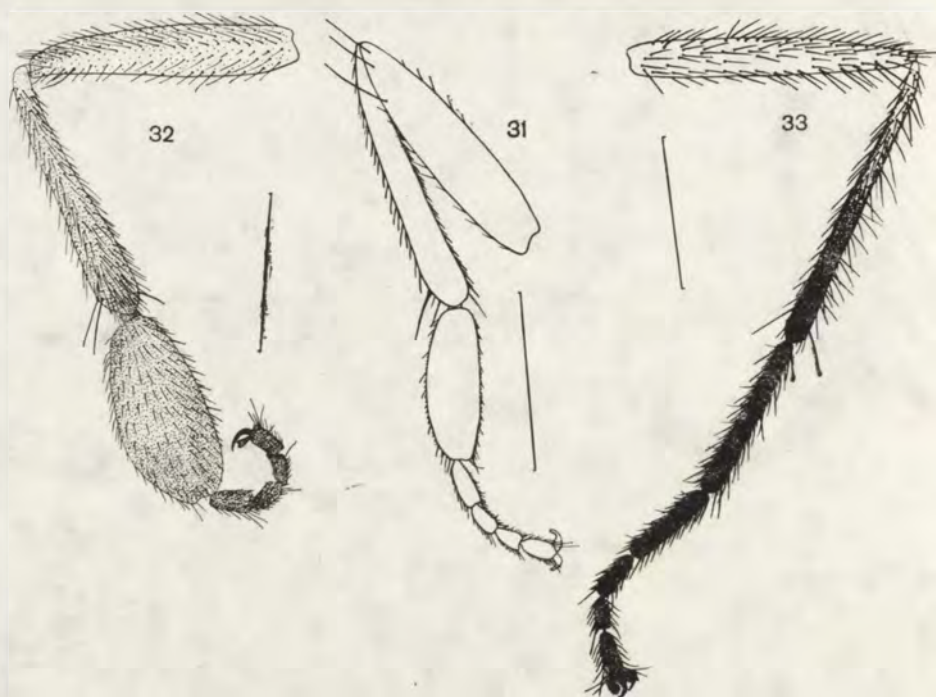


Fig. 31–33. Front legs of the males. 31 – *H. litorea*, 32 – *H. subcalinota*, 33 – *H. obscura*.

H. beckeri STROBL, 1892

Material. Eastern part of the Świętokrzyskie Mts in the Jeleniowskie range, near a bank of a small stream, 18. VII. 1978 – 2 ♂♂; Lubrzanka River, Ameliówka, 28. VII. 1983 – 28 ♂♂, 30 ♀♀, 16. VI. 1983 – 6 ♂♂, 2 ♀♀; Warkocz River, Porąbki, 21. VII. 1981 – 8 ♂♂, 3 ♀♀, Góra Chelmowa, in the forest, over the surface of a small pool, 24. VII. 1981 – 1 ♀; Słupianka River, Słupia Stara, 24. VII. 1981 – 10 ♂♂, 19 ♀♀; Belnianka River, Huta Stara, 27. VII. 1983 – 1 ♂, 1 ♀.

Noted from Austria, Germany (STROBL 1892), central and northern Europe (ENGEL 1941–1943), Great Britain (COLLIN 1961), Hungary (WÉBER 1963), France (TREHEN 1969), Czechoslovakia (STRAKA 1975) and Ireland (CHANDLER 1978).

In Poland noted from West Pomerania only (KARL 1935).

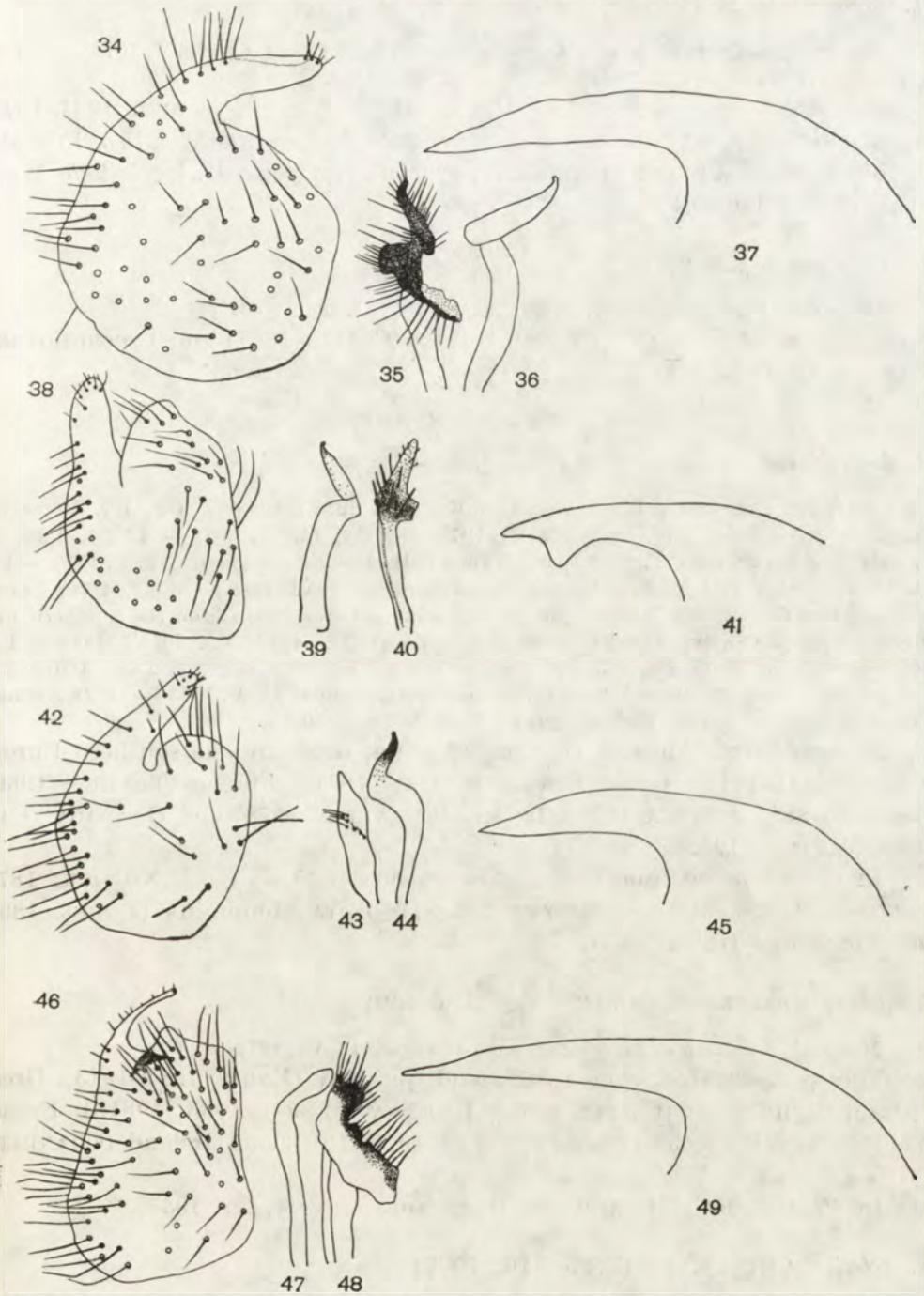


Fig. 34-49. 34-37 - *H. hybrida*: 34 - lamella, 35 - cerci, 36 - paramera, 37 - hypandrium; 38-41 - *H. discoidalis*; 42-45 - *H. clypeata*; 46-49 - *H. intermedia*. For explanations see figs. 34-37.

H. brevivittata MACQUART, 1827 (Fig. 6, 54–57)

Material. Lubrzanka River, Ameliówka, 19. V. 1978 – 4 ♂♂, 30. V. 1978 – 13 ♂♂, 8 ♀♀, 16. VI. 1983 – 1 ♂, Cedzyna, 20. V. 1978 – 1 ♂.

Reported from the central and northern Europe (ENGEL 1941–1943), Great Britain (COLLIN 1961) and Czechoslovakia (STRAKA 1975). Probably the old specimens under the name *H. bistrata* ZETT. are *H. brevivittata* MACQ.

New for Poland.

H. recedens WALKER, 1851 (Fig. 7, 58–61)

Material. Słupianka River, Słupia Stara, 16. VI. 1983 – 1 ♂.

The species noted from Great Britain (COLLIN 1961) and Czechoslovakia (STRAKA 1975).

New for Poland.

H. interstincta FALLÉN, 1816 (Fig. 8, 62–65)

Material. Lubrzanka River, Zagnańsk-Gruszka, 22. VI. 1978 – 1 ♂, 1 ♀, Brzezinki, 23. VI. 1978 – 2 ♂♂, Ameliówka, 23. VI. 1978 – 2 ♂♂, 13. VI. 1980 – 12 ♂♂, 9 ♀♀, 20. V. 1981 – 9 ♂♂, 2 ♀♀, 19. V. 1983 – 2 ♂♂, 16. VI. 1983 – 2 ♂♂, Cedzyna, 19. V. 1977 – 1 ♂, 24. VI. 1978 – 1 ♂; Łagowica River, Wola Łagowska, 3. VI. 1982 – 8 ♂♂, 4 ♀♀; Czarna Woda River, Czarny Las Reservation, 5. VI. 1982 – 1 ♂; Stream from the northern part of Święty Krzyż, Święty Krzyż Reservation, 3. VI. 1982 – 4 ♂♂, 1 ♀, 30. VI. 1983 – 1 ♂; Belnianka River, Huta Stara, 3. VI. 1982 – 1 ♀, 15. VI. 1983 – 2 ♂♂, 2 ♀♀; Affluent of the Pokrzywianka River, the first forest fragment, Dębno, 18. V. 1983 – 1 ♂; Affluent of the Belnianka River, Bieliny, 29. VI. 1983 – 1 ♂, 10 ♀♀.

Reported from Albania, Hungary, Austria, Germany and southern Europe (ENGEL 1941–1943), Great Britain (COLLIN 1961), France (TREHEN 1969), Czechoslovakia (STRAKA 1975), Ireland (CHANDLER 1978) and Germany (CASPERS, WAGNER 1982).

In Poland noted from the neighbourhoods of Nowy Sącz (NOWICKI 1873, GRZEGORZEK 1873), Warsaw (SZNABL 1881), Tatra Mountains (BOBEK 1890) and Pomerania (KARL 1935).

H. pilosa ZETTERSTEDT, 1842 (Fig. 9, 66–69)

Material. Lubrzanka River, Zagnańsk-Jaworze, 18. VI. 1978 – 1 ♂.

The species stated from Austria and Germany (ENGEL 1941–1943), Great Britain, Scandinavia (COLLIN 1961), Hungary (WÉBER 1963, 1981b), France (TREHEN 1969), Czechoslovakia (STRAKA 1975, 1978) and Ireland (CHANDLER 1978).

In Poland noted from West Pomerania only (KARL 1935).

H. veltica CHVÁLA, 1981 (Fig. 10, 70–73)

Material. Słupianka River, Słupia Stara, 24. VII. 1981 – 1 ♂, 1 ♀; Czarna Woda River, Czarny Las Reservation, 28. VII. 1983 – 1 ♂, 1 ♀; Affluent of the Belnianka River, Bieliny, 29. VII. 1983 – 2 ♂♂, 1 ♀.

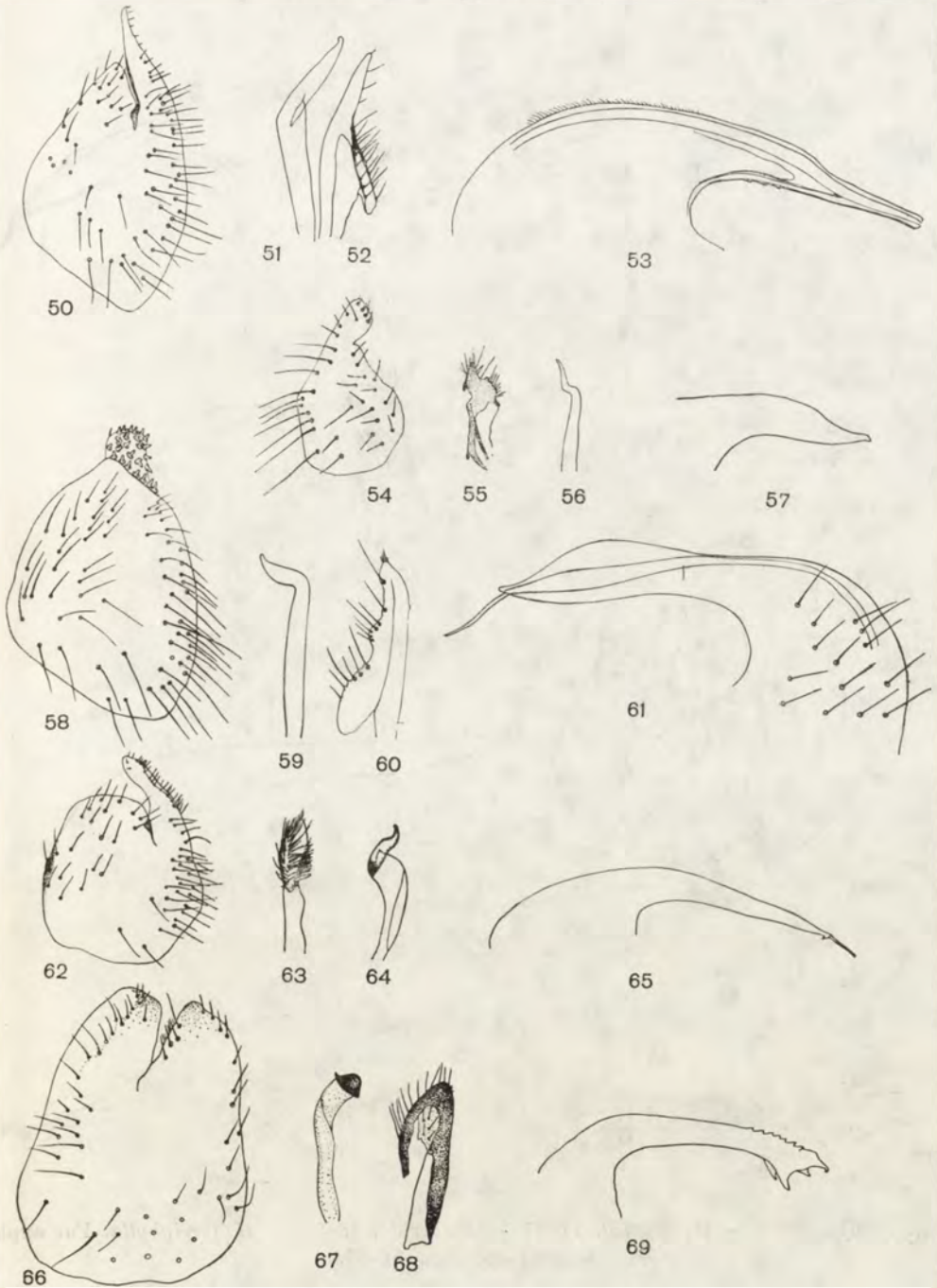


Fig. 50-69. 50-53 - *H. hirta*, 54-57 - *H. brevivittata*, 58-61 - *H. recedens*, 62-65 - *H. interstincta*, 66-69 - *H. pilosa*. For explanations see figs. 34-37.

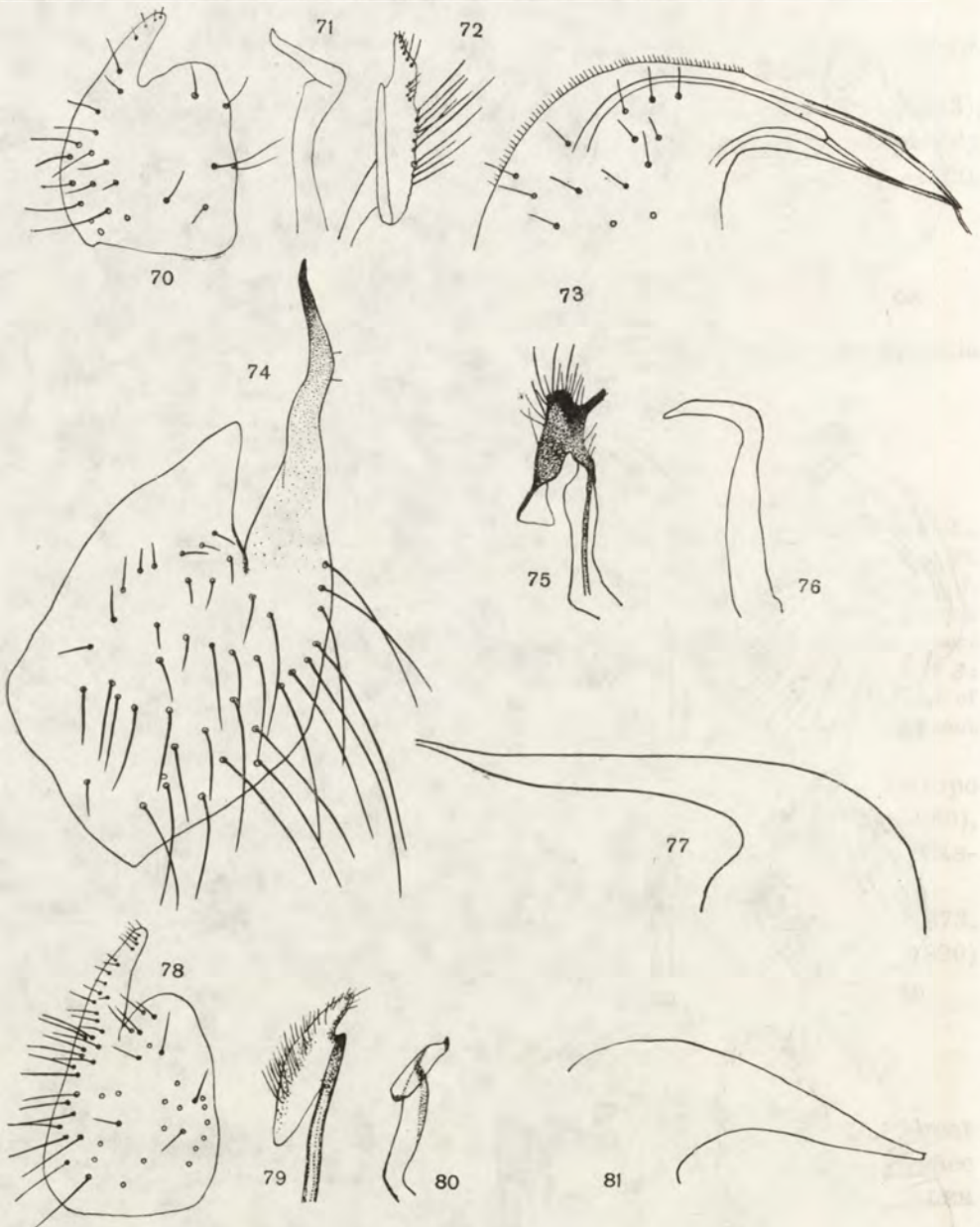


Fig. 70-81. 70-73 - *H. veletica*, 74-77 - *H. lurida*, 78-81 - *H. terriphylla*. For explanations see figs. 34-37.

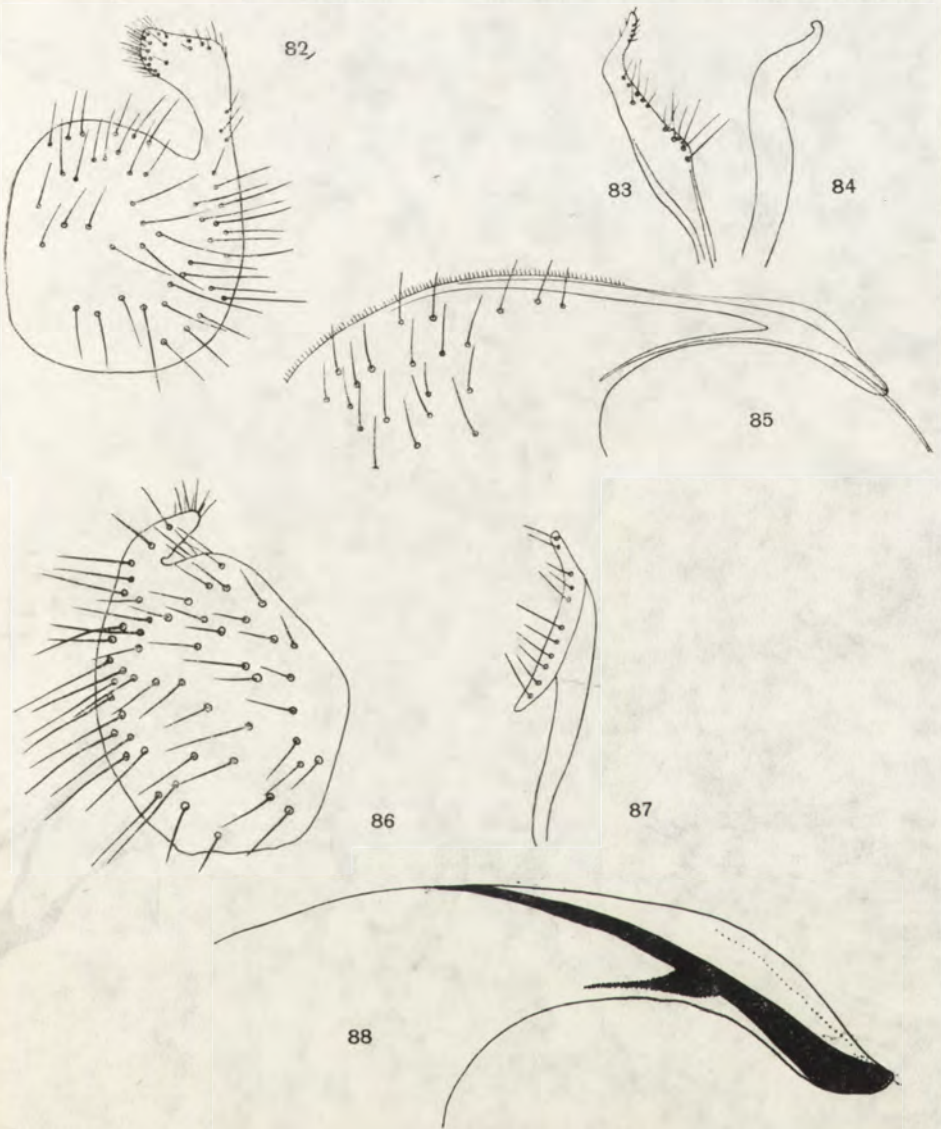


Fig. 82-88. 82-85 - *H. longirostris*, 86-88 - *H. monedula*. For explanations see figs. 34-37.

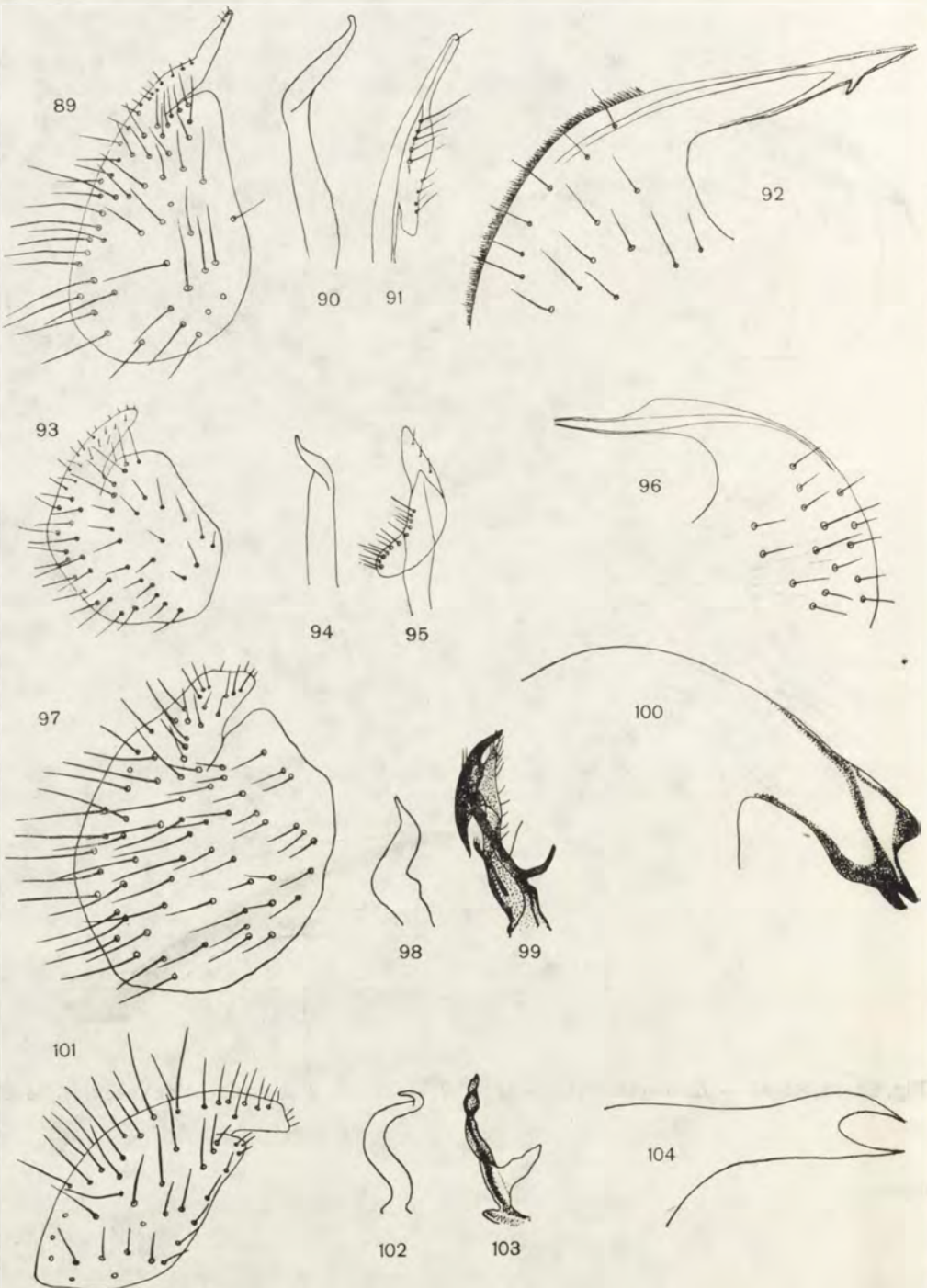


Fig. 89-104. 89-92 - *H. nigrina*, 93-96 - *H. merula*, 97-100 - *H. subpollinosa*, 101-104 - *H. brevistyla*. For explanations see figs. 34-37.

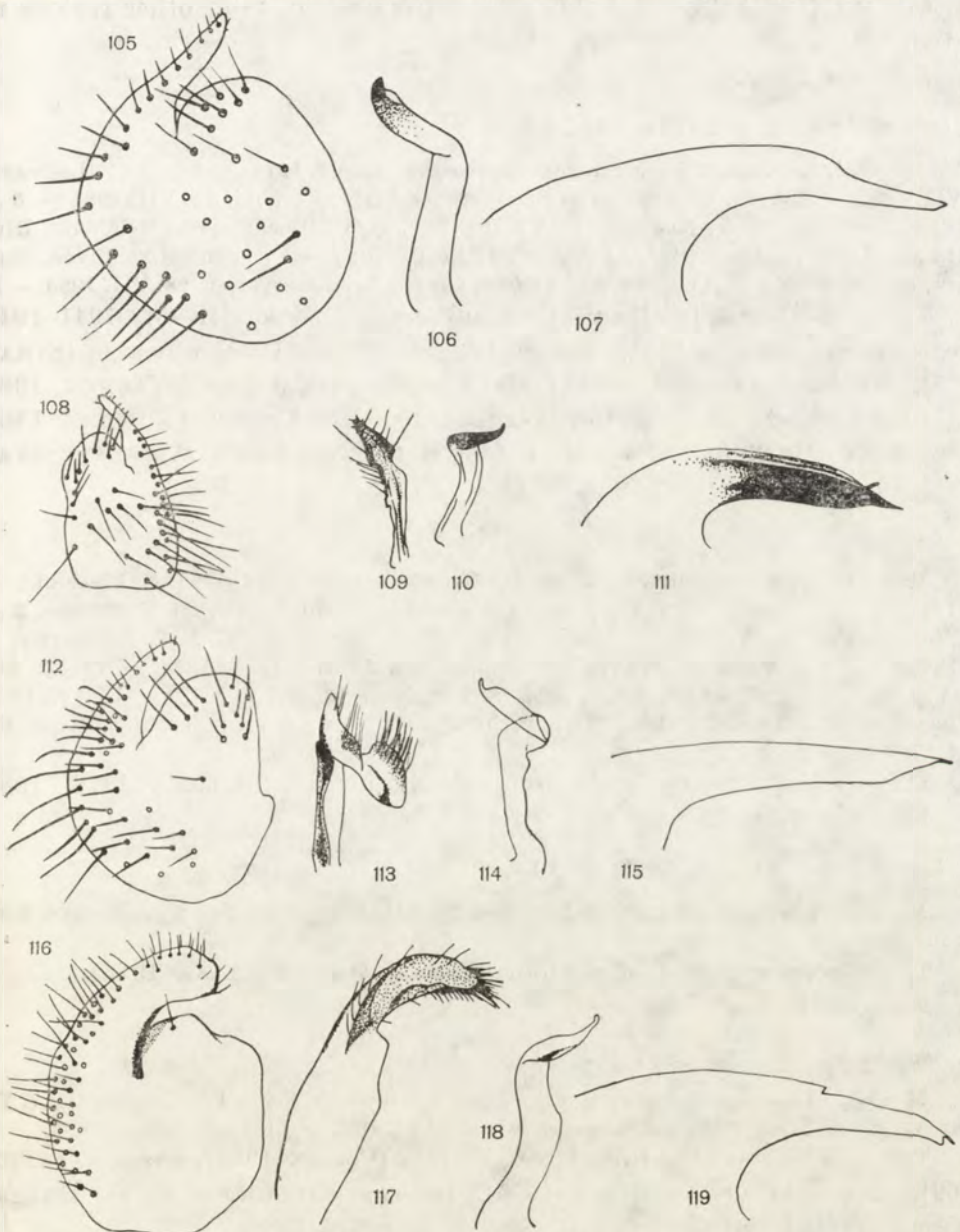


Fig. 105-119. 105-107 - *H. longivittata*, 108-111 - *H. manicata*, 112-115 - *H. apta*,
116-119 - *H. barbipes*. For explanations see figs. 34-37.

CHVÁLA (1981) described this species from Spain, from other regions not stated.

New for Poland.

H. lurida FALLÉN, 1816 (Fig.11, 74–77)

Material. Lubrzanka River, Zagnańsk-Gruszka, 22. VI. 1978 – 1 ♂, 2 ♀♀, Leszczyny, 7. VII. 1982 – 1 ♂, 16. VI. 1983 – 5 ♂♂; Warkocz River, Porąbki, 25. VII. 1981 – 5 ♂♂, 5 ♀♀; Kakonianka River, Kakonin, 16. VI. 1983 – 3 ♂♂; Affluent of the Belnianka River, Huta Stara, 15. VI. 1983 – 1 ♂, 1 ♀, Bieliny, 15. VI. 1983 – 1 ♂; Słupianka River, Słupia Stara, 16. VI. 1983 – 1 ♂; Czarna Woda River, Czarny Las Reservation, 28. VII. 1983 – 1 ♂.

The species occurs in Albania, Germany, Austria, Sweden (ENGEL 1941–1943), Great Britain (COLLIN 1961), France (TREHEN 1969), Czechoslovakia (STRAKA 1975), Hungary (WÉBER 1981a) and Germany (CASPER, WAGNER 1982).

In Poland noted from the neighbourhoods of Cracow (NOWICKI 1865), Nowy Sącz (GRZEGORZEK 1873), Przemyśl (BOBEK 1894), Warsaw (SZNABL 1881) and from West Pomerania (KARL 1935).

H. terriphylla STRAKA, 1976 (Fig.12, 78–81)

Material. Lubrzanka River, Zagnańsk-Gruszka, 18. V. 1978 – 1 ♂, Brzezinki, 20. V. 1977 – 1 ♂, 1 ♀, 19. V. 1978 – several dozens, male and female, 20. V. 1978 – 2 ♂♂, 1 ♀, Ameliówka, 19. V. 1978 – 25 ♂♂, 20 ♀♀, 23. V. 1978 – 3 ♂♂, 2 ♀♀, Leszczyny, 11. V. 1978 – 5 ♂♂, 2 ♀♀, 19. V. 1978 – 60 male and female, 13. V. 1978 – 13 ♂♂, 8 ♀♀, 19. V. 1983 – 1 ♂, Cedzyna, 19. V. 1977 – 1 ♂, Marzysz, 20. V. 1978 – 15 ♂♂, 10 ♀♀; Affluent of the Lubrzanka River, Wilków, 20. V. 1981 – 3 ♂♂, 4 ♀♀; Świślina River, Rzepin, 17. VI. 1983 – 1 ♂.

The species reported only from Czechoslovakia (STRAKA 1976, 1982).

New for Poland.

H. longirostris STRAKA, 1976 (Fig.13, 82–85)

Material. Pokrzywianka River, Jezioro, 23. VII. 1981 – 19 ♂♂, 2 ♀♀; Psarka River, Wzdół Hucisko, 17. VI. 1983 – 1 ♂.

The species reported only from Czechoslovakia (STRAKA 1976).

New for Poland.

H. monedula COLLIN, 1927 (Fig.14, 86–88)

Material. Lubrzanka River, Marzysz, 12. VI. 1980 – 3 ♂♂, 1 ♀, Leszczyny, 7. VII. 1982 – 3 ♂♂, 3 ♀♀; Warkocz River, Krajno, 5. VI. 1982 – 1 ♂.

The species reported from Great Britain (COLLIN 1961), France (TREHEN 1969), Czechoslovakia (STRAKA 1975), Ireland (CHANDLER 1978), Hungary (WÉBER 1981a) and Germany (CASPER, WAGNER 1982).

New for Poland.

H. nigrina (FALLÉN, 1806) (Fig.15, 89–92)

Material. Warkocz River, Porąbki, 25. VII. 1981 – 8 ♂♂, 15 ♀♀; Affluent of Pokrzywianka River from Święty Krzyż, 24. VII. 1981 – 1 ♂; Affluent of Belnianka River, Nowa Huta, 6. VII. 1982 – 1 ♂, 1 ♀; Affluent of Czarna Woda River, Czarny Las, 27. VII. 1983 – 3 ♂♂, 5 ♀♀; Czarna Woda River, Czarny Las

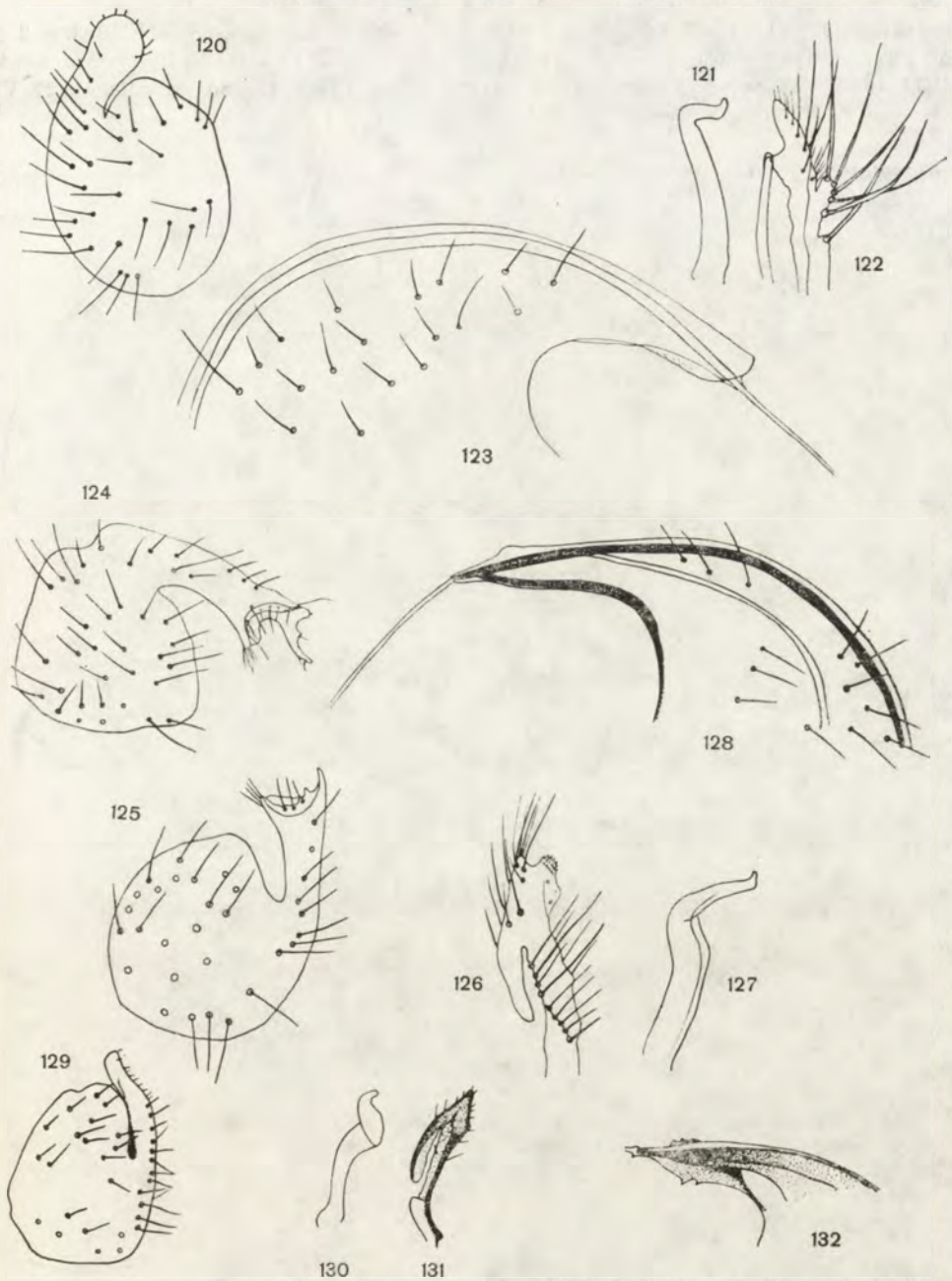


Fig. 120-132. 120-123 - *H. nadolna*; 124-128 - *H. mroga*: 124 - lamella (holotype), 125 - lamella (paratype); 129-132 - *H. chorica*. For explanations see figs 34-37.

Reservation, 28. VII. 1983 - 1 ♂, 2 ♀♀; Kakonianka River, Kakonin, 28. VII. 1983 - 2 ♂♂, 3 ♀♀; Psarka River, Stara Wieś, 29. VII. 1983 - 3 ♂♂, 2 ♀♀; Lubrzanka River, Ameliówka, 28. VII. 1983 - 2 ♂♂, 2 ♀♀; Affluent of Pokrzywianka River, Dębno (in village), 27. VII. 1983 - 1 ♀, Dębno (in wood), 27. VII. 1983 - 3 ♂♂, 1 ♀.

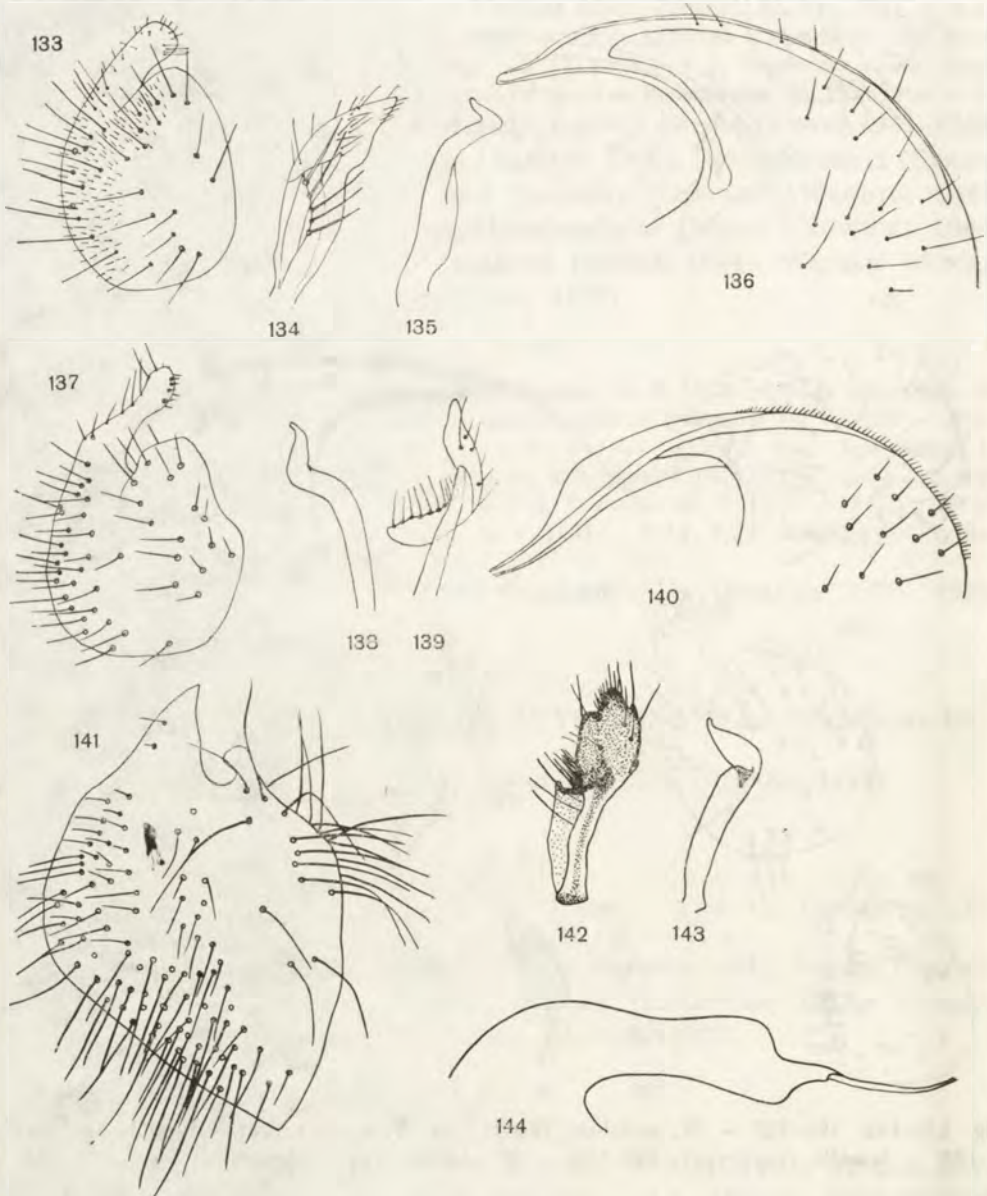


Fig. 133-144. 133-136 - *H. woodi*, 137-140 - *H. biseta*, 141-144 - *H. cilipes*. For explanations see figs. 34-37.

The species reported from Austria, Holland (ENGEL 1941-1943), Great Britain (COLLIN 1961), France (TREHEN 1969) and Czechoslovakia (STRAKA 1975).

In Poland noted from the neighbourhoods of Warsaw (SZNABL 1881), Nowy Sącz (GRZEGORZEK 1873), Pieniny (NOWICKI 1873) and Pomerania (KARL 1935).

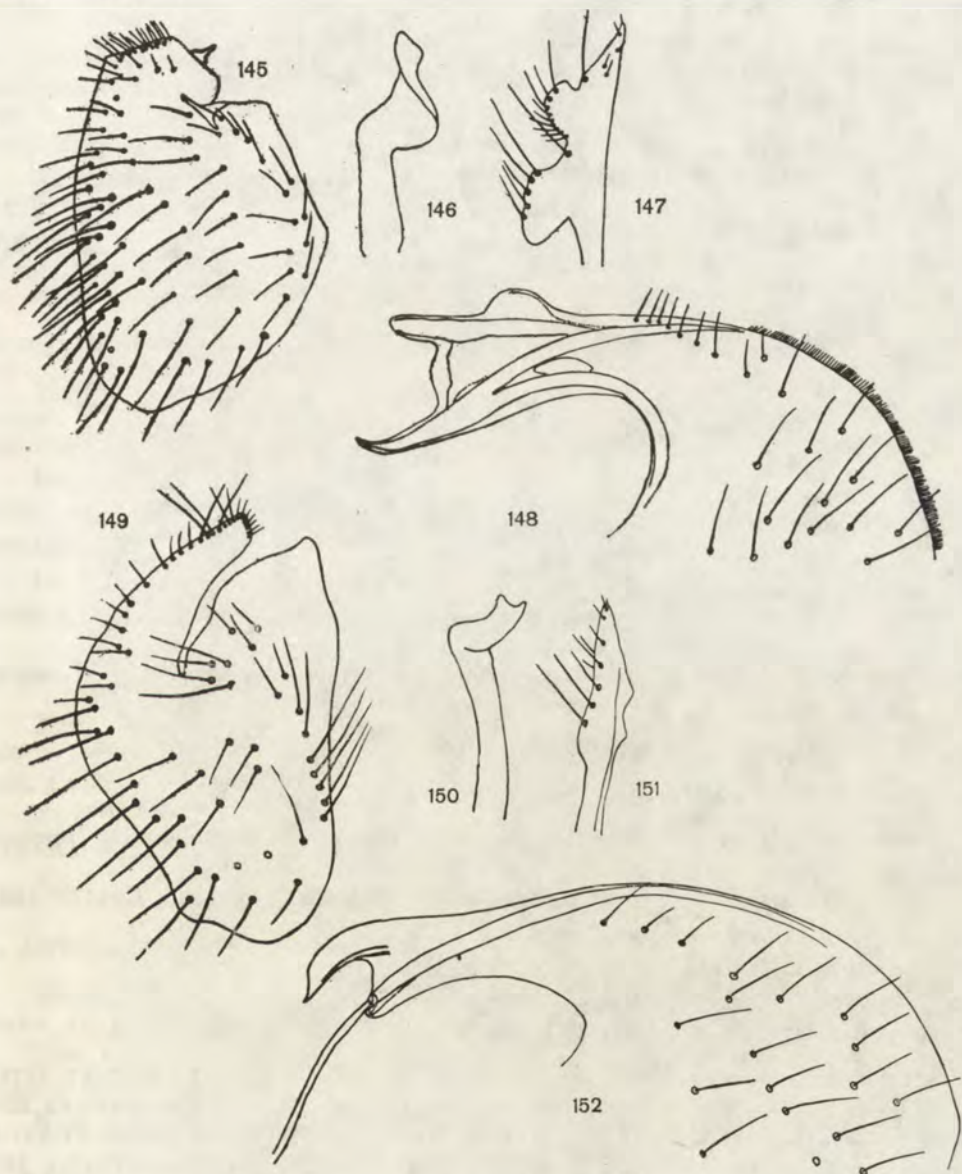


Fig. 145-152. 145-148 - *H. griseifrons*, 149-152 - *H. lasiochira*. For explanations see figs. 34-37.

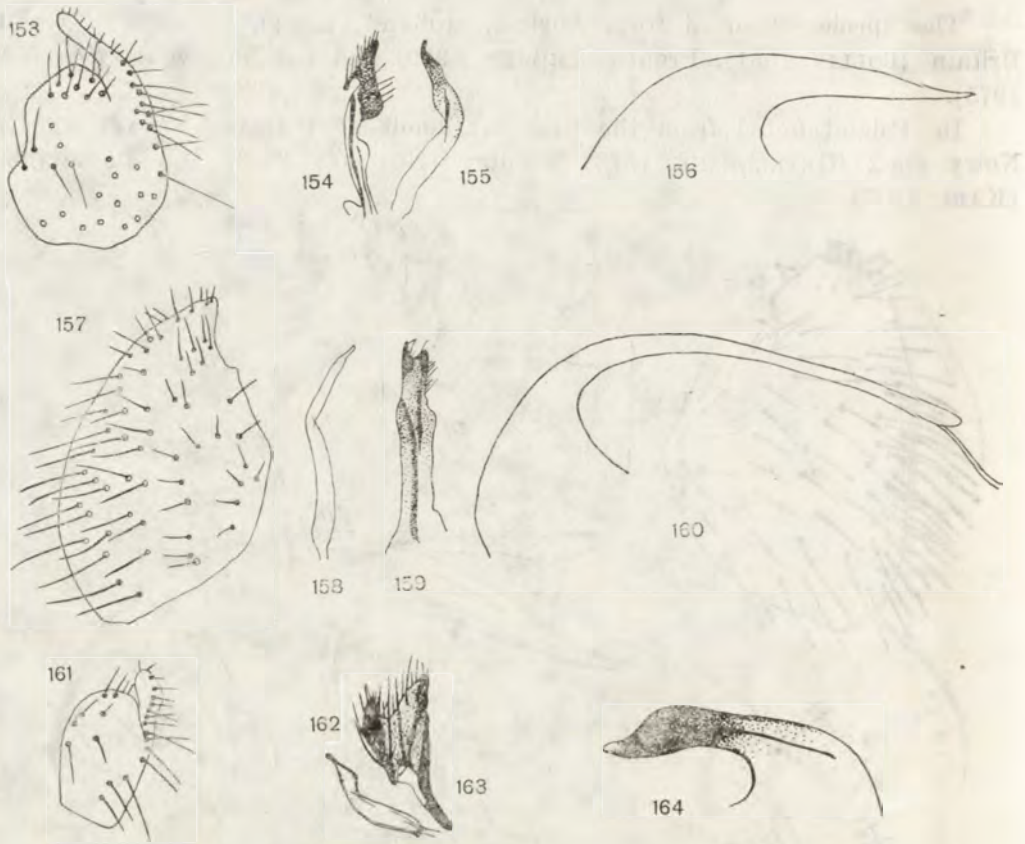


Fig. 153-164. 153-156 - *H. litorea*, 157-160 - *H. subcalinota*, 161-164 - *H. obscura*.
For explanations see figs. 34-37.

H. merula COLLIN, 1927 (Fig.16, 93-96)

Material. Affluent of Krasna River, northern part of the Świętokrzyskie Mountains, Szalas, 23. VII. 1981 - 1 ♂.

The species reported from Great Britain (ENGEL 1941-1943, COLLIN 1961), Hungary and Czechoslovakia (STRAKA 1975).

New for Poland.

H. subpollinosa COLLIN, 1927 (Fig.17, 97-100)

Material. Lubrzanka River, Ameliówka, 23. VI. 1978 - 3 ♂♂, 2 ♀♀, 17. VI. 1979 - 4 ♂♂, 8 ♀♀; Czarna Woda River, Lomno, 23. VII. 1981 - 1 ♂; Pokrzywianka River, Jeziorko, 23. VII. 1981 - 7 ♂♂; Psarka River, Wzdół Hucisko, 17. VI. 1983 - 11 ♂♂, 1 ♀.

Noted from Great Britain (COLLIN 1961), Czechoslovakia (STRAKA 1975, 1978) and Ireland (CHANDLER 1978).

New for Poland.

H. brevistyla COLLIN, 1927 (*H. pinetorum* STROBL) (Fig.18, 101-104)

Material. Lubrzanka River, Ameliówka, 19. V. 1978 - 1 ♂.

Noted from Great Britain (COLLIN 1961), Czechoslovakia (STRAKA 1975), Ireland (CHANDLER 1978), Hungary (WÉBER 1981a).

New for Poland.

H. longivittata ZETTERSTEDT, 1842 (Fig.19, 105-107)

Material. Bielnik (a forest clearing) near the top of Święty Krzyż, Łysogóry Mountains range in the Świętokrzyskie Mountains. From the bushes beside a small pond, 22. VI. 1978 - 1 ♂; Affluent of Belnianka River, Bieliny, 4. VI. 1982 - 3 ♂♂, 1 ♀; Belnianka River, Huta Stara, 3. VI. 1982 - 2 ♂♂.

Noted from Albania, Germany, Austria, northern Europe (ENGEL 1941-1943), Great Britain (COLLIN 1961), Czechoslovakia (STRAKA 1975) and Ireland (CHANDLER 1978).

New for Poland.

H. manicata MEIGEN, 1822 (Fig.20, 108-111)

Material. Lubrzanka River, Ameliówka, 21. VIII. 1980 - 3 ♂♂; Warkocz River, Porąbki, 25. VIII. 1981 - 1 ♂, 2 ♀♀; Pokrzywianka River, Jeziorko, 23. VII. 1981 - 1 ♂; Góra Chelmowa, in the woods over a surface of a small pool, 24. VII. 1981 - 2 ♂♂, 1 ♀.

Reported from Austria, Germany and northern Europe (ENGEL 1941-1943), Great Britain (COLLIN 1961), France (TREHEN 1969), Czechoslovakia (STRAKA 1975, 1978) and Ireland (CHANDLER 1978).

In Poland noted from the neighbourhoods of Nowy Sącz near Dunajec River (NOWICKI 1873) and near Gdańsk (CZWAŁINA 1893).

H. apta COLLIN, 1927 (Fig.21, 112-115)

Material. Lubrzanka River, Ameliówka, 16. VI. 1983 - 1 ♂, 1 ♀, Leszczyny, 13. VI. 1980 - 1 ♂, Cedzyna, 24. VI. 1978 - 3 ♂♂; Czarna Woda River, Łomno, 23. VII. 1981 - 2 ♂♂, 1 ♀.

Now known only from Great Britain (COLLIN 1961) and Czechoslovakia (STRAKA 1975).

New for Poland.

H. barbipes FREY, 1907 (Fig.22, 116-119)

Material. Lubrzanka River, Zagnańsk-Gruszka, 22. VI. 1978 - 12 ♂♂, 8 ♀♀, Ameliówka, 16. VI. 1983 - 1 ♂, Leszczyny, 13. VI. 1980 - 1 ♂.

The species occurs in the northern Europe (ENGEL 1941-1943), Great Britain (COLLIN 1961) and Czechoslovakia (STRAKA 1982b).

New for Poland.

H. nadolna sp. n. (Fig.23, 120-123)

Etymology. The name after the family village of my father.

Material. Holotype ♂; Poland, Świętokrzyskie Mountains, Psarka River, Świętomarz, 17. VI. 1983 — 1 ♂; Paratypes; Świślina River, Rzepin, 17. VI. 1983 — 2♂♂, Bronkowice, 17. VI. 1983 — 1 ♂; Affluent of the Belnianka River, Huta Stara, 15. VI. 1983 — 1♂. All specimens collected with an entomological net over the surface of rivers and on riverside plants.

Diagnosis ♂. *H. nadolna* sp. n. resembles *H. barbipes* FREY and *H. lasiochira* STROBL but differs from the latter mainly by the genital details. Moreover distinguished by the hair pattern on the first pair of legs. Except for the long and strong bristles as in *H. barbipes* the first tarsus joint of *H. nadolna* is also covered with an „undergrowth” of shorter, denser ones, more developed than in *H. barbipes*.

Description ♂. Head with frons, vertex, and occiput black, but occiput shining. Antennae brownish-black, flagellum as long as segment III. Palpi dark-brown with one long bristle beneath apex. Ocellar pair of bristles long and distinct. Occiput largely bare except for longer bristles on the sides.

Thorax brownish-black, pleurae lighter, scutum dark brown. Acrostichals and dorsocentrals fairly long, ending behind in one pair of longer prescutellar bristles, one humeral, one posthumeral, one supra-alar, one postalar, and a pair of scutellar bristles very long. Collar with the usual bristle on each side.

Abdomen brown with rather numerous brownish-black hairs of which the hind-marginal ones are longer. Belly slighter. Hypopygium large, mainly because of the compressed ventral lamella.

Legs brownish-black with a tendency for the front coxae and base of front femora to be brownish yellow. All femora well haired, but middle femora with a row 3–4 bristly hairs, hind femora with longer hairs in the basal part. Front tibiae armed above with 4–5 long bristles. Middle and hind tibiae short haired, but hind tibiae with a long preapical bristle. Basal joint of front tarsi very much enlarged and compressed, armed above with 8 long bristles, and with an “undergrowth” of dense, shorter hairs. Second and third joint of front tibia also with long bristles, but shorter than on the front joint. Other tarsi “normal”.

Wings distinctly brownish, squama smoky, stigma rather distinct, halteres brownish-black.

Length: body 3 mm, wing 2 mm.

H. mroga sp. n. (Fig. 24, 124–128)

Etymology. The name after the family village of my mother.

Material. Holotype ♂; Poland, Świętokrzyskie Mountains, Świślina River, Rzepin, 17. VI. 1983 — 1 ♂; Paratype; Psarka River, Świętomarz, 17. VI. 1983 — 1 ♂. All specimens collected with an entomological net over the surface of rivers and on riverside plants.

Diagnosis ♂. *H. mroga* sp. n. is very similar to *H. barbipes* FREY but distinguished first of all by the structure of genital details. Moreover the bristles on the first segment of tarsus are somewhat shorter and weaker than in the other species.

Description ♂. Head with frons, vertex and occiput black. Antenna brownish black, flagellum as long as segment III. Palpi brownish black, aech with two long bristles beneath. Ocellar bristles long, bristles on occiput also long and distinct.

Thorax brownish-black, pleurae of the same colour as tergum. Acrostichals and dorsocentrals fairly long, ending behind in two pairs of longer pre-scutellar bristles, a humeral, posthumeral one, supra-alar and postalar one, four scutellar bristles. Collar with a pair of bristles. Chaetotaxy very similar to *H. barbipes* FREY.

Abdomen brownish-black with rather numerous blackish hairs of which the hind-marginal ones are longer, belly lighter. Hypopygium very large, lamella with a characteristic incision. In the paratype, this incision is much slighter, perhaps it is not due to variability, but the general pattern of lamella rather precludes other species. Hypandrium somewhat similar to *H. barbipes* FREY, but in the upper part not smooth but with a clearly indicated protrusion.

Legs brownish-black, front coxae lighter. Middle and hind femora well haired. Front tibiae armed above with 4 very long bristles. Basal joint of front tarsi very much enlarged, armed above with 8 long bristles. Moreover this joint with shorter hairs, somewhat shorter than in *H. nadolna* sp. n. The bristles on the other joints of tarsus are also strong, but they become gradually weaker in comparison with the second joint of tarsus.

Wings distinctly brownish, squama brownish, well fringed, stigma distinct, halteres brown.

Length: body 2,5 mm, wing 2 mm.

H. chorica FALLEN, 1816 (Fig. 25)

Except for *H. maura*, the most common species of the genus *Hilara* MG., on the research area. Occurs often in large numbers from mid June till late July on almost all localities. The species common in the whole Europe (ENGEL 1941–1943), stated from Great Britain (COLLIN 1961), Hungary (WÉBER 1963), France (TREHEN 1969), Czechoslovakia (STRAKA 1975, 1978, 1982) and Ireland (CHANDLER 1978).

In Poland noted from the neighbourhoods of Nowy Sącz (NOWICKI 1873), Warsaw (SZNABL 1881), Przemyśl (BOBEK 1894), also from Pomerania (CZWAŁINA 1893, RÜBSAAMEN 1901, KARL 1935) and from saline habitats near Inowrocław (SZADZIEWSKI 1983).

H. woodi COLLIN, 1927 (Fig. 26, 133–136)

Material. Pokrzywianka River, Jeziorko, 23. VII. 1981 – 89 ♂♂, 60 ♀♀, Serwis, 24. VII. 1981 – 1 ♀; Psarka River, Bodzentyn, 23. VII. 1981 – 17 ♂♂, 10 ♀♀; Wzdół Hucisko, 17. VI. 1983 – 3 ♀♀, Stara Wieś, 29. VII. 1983 – 1 ♀; Koprzywianka River, Baranówek, 24. VII. 1981 – 6 ♂♂, 7 ♀♀; Świślina River, Rzepin, 29. VII. 1983 – 1 ♂; Słupianka River, Słupia Stara, 27. VII. 1983 – 2 ♂♂.

Reported from Great Britain (COLLIN 1961) and Czechoslovakia (STRAKA 1975).

New for Poland.

H. biseta COLLIN, 1927 (Fig. 27, 137–140)

Material. Pokrzywianka River, Jeziorko, 23. VII. 1981 – 9 ♂♂, 2 ♀♀; Psarka River, Bodzentyn, 23. VII. 1981 – 3 ♂♂, 1 ♀, Stara Wieś, 29. VII. 1983 – 1 ♂.

Reported from Great Britain (COLLIN 1961), Czechoslovakia (STRAKA 1975, 1982).

New for Poland.

H. sanctaerucis NIESIOŁOWSKI, 1983

Material. Lubrzanka River, Ameliówka, 23. VI. 1978 – 1 ♂, 13. VI. 1980 – 4 ♂♂; Czarna Woda River, Czarny Las Reservation, 16 VI. 1983 – 1 ♂, 1 ♀; Affluent of Belnianka River, Huta Koszary, 15. VI. 1983 – 1 ♂, 2 ♀♀.

The species described from Świętokrzyskie Mountains (NIESIOŁOWSKI 1983), found also by me 3. VI. 1983 on the Grabia River in Zimne Wody near Łask, in the southern region of the Łódź Highland. Up to now not reported from other countries.

H. cilipes MEIGEN, 1822 (Fig. 28, 141–144)

Material. Lubrzanka River, Ameliówka, 13. VI. 1980 – 1 ♂, 1 ♀, 16. VI. 1983 – 2 ♂♂, 1 ♀, Leszczyny, 23. VI. 1978 – 1 ♂; Affluent of Belnianka River, Huta Stara, 15. VI. 1983 – 19 ♂♂, 25 ♀♀.

Occurs in the central and northern Europe (ENGEL 1941–1943), Hungary (WÉBER 1963), Czechoslovakia (STRAKA 1981a).

In Poland noted from the Tatra Mountains only (NOWICKI 1867, 1873).

H. griseifrons COLLIN, 1927 (Fig. 29, 145–148)

Material. Warkocz River, Porąbki, 25. VII. 1981 – 1 ♂, Krajno, 28. VII. 1983 – 1 ♂, 4 ♀♀; Psarka River, Świętomarz, 17. VI. 1983 – 1 ♂; Świślina River, Bronkowice, 29. VII. 1983 – 1 ♂.

Reported from Great Britain (COLLIN 1961), France (TREHEN 1969) and Czechoslovakia (STRAKA 1981b).

New for Poland.

H. lasiochira STROBL, 1892 (Fig. 30, 149–152)

Material. Koprzywianka River, Iwaniska, 25. VI. 1981 – 1 ♂; Psarka River, Świętomarz, 17. VI. 1983 – 2 ♂♂; Świślina River, Rzepin, 17. VI. 1983 – 1 ♂, Bronkowice, 17. VI. 1983 – 1 ♂; Warkocz River, Krajno, 28. VII. 1983 – 2 ♂♂, 1 ♀.

The species known from Yugoslavia, Austria, Germany and Czechoslovakia (STRAKA 1981b).

New for Poland.

H. litorea FALLEN, 1816 (Fig. 31, 153–156)

Material. Lubrzanka River, Ameliówka, 21. VIII. 1980 – 1 ♂; Czarna Woda River, Czarny Las Reservation, 30. VIII. 1983 – 2 ♂♂, 1 ♀.

The species occurs in the whole Europe (ENGEL 1941–1943), Great Britain (COLLIN 1961), Czechoslovakia (STRAKA 1975, 1978) and Germany (CASPER, WAGNER 1982).

In Poland noted from the neighbourhoods of Nowy Sącz (NOWICKI 1873) and Pomerania (RÜBSAAMEN 1901, KARL 1935).

H. subcalinota STRAKA, 1976 (Fig. 32, 157–160)

Material. Lubrzanka River, Ameliówka, 19. V. 1978 — 3 ♂♂, Leszczyny, 19. V. 1978 — 1 ♂; Affluent of Belnianka River, Huta Szklana, 18. V. 1983 — 1 ♂, 1 ♀; Small stream in the village of Święta Katarzyna near the railway embankment, 19. V. 1983 — 2 ♂♂, 2 ♀♀; Affluent of Pokrzywianka River, Dębno (in forest), 18. V. 1983 — 3 ♂♂; Kakonianka River, Kakonin, 19. V. 1983 — 2 ♂♂.

Reported from Czechoslovakia (STRAKA 1976) and Germany (CASPER, WAGNER 1982).

New for Poland.

H. canescens ZETTERSTEDT, 1849 (*H. litorea* var. *canescens* ZETT.)

Material. Lubrzanka River, Ameliówka, 23. VI. 1978 — 3 ♂♂, 1 ♀, 23. VI. 1978 — 40 male and female, 24. VI. 1978 — 2 ♂♂, 16. VI. 1983 — 1 ♂, 1 ♀, Leszczyny, 23. VI. 1978 — 5 ♂♂, 3 ♀♀.

Reported from Austria, Switzerland (STROBL 1892), Germany (ENGEL 1941–1943), Great Britain (COLLIN 1961), Hungary (WÉBER 1963), Czechoslovakia (STRAKA 1975).

In Poland noted from West Pomerania only (KARL 1935).

H. thoracica MACQUART, 1827 (*H. flava* SCHIN., *H. ferruginea* von ROSER)

Material. Lubrzanka River, Ameliówka, 13. VI. 1980 — 1 ♂; Słupianka River, Słupia Stara, 16. VI. 1983 — 1 ♀; Czarny Las Reservation, in the wood, 18. VII. 1983 — 1 ♂.

The species reported from Albania, Austria (ENGEL 1941–1943), Great Britain (COLLIN 1961), Hungary (WÉBER 1963), Czechoslovakia (STRAKA 1975, 1978), Ireland (CHANDLER 1978) and Germany (CASPER, WAGNER 1982).

In Poland noted from West Pomerania only (KARL 1935).

H. cingulata DAHLBOM, 1850

Material. Lubrzanka River, Brzezinki, 12. VI. 1980 — 1 ♂, Ameliówka, 16. VI. 1983 — 1 ♂, 1 ♀, Cedzyna, 24. VI. 1978 — 1 ♂, 1 ♀, 13. VI. 1980 — 2 ♂♂; Psarka River, Wzdół Hucisko, 17. VI. 1983 — 1 ♂.

The species stated from Holland, Austria, Germany (ENGEL 1941–1943), Great Britain (COLLIN 1961) and Czechoslovakia (STRAKA 1975, 1978).

Noted in the northern Poland from the neighbourhoods of Gdańsk (CZWAŁINA 1893) and Szczecin (KARL 1935).

H. obscura MEIGEN, 1822 (Fig. 33, 161–164)

Material. Lubrzanka River, Ameliówka, 21. VIII. 1980 — 5 ♂♂, 6 ♀♀, 30. VIII. 1983 — 1 ♂, 1 ♀, Leszczyny, 3. VI. 1982 — 1 ♂, 16. VI. 1982 — 2 ♂♂, 3 ♀♀; Czarna Woda River, Łomno, 23. VII. 1983 — 1 ♂, Grabków, 23. VII. 1981 — 1 ♂; Affluent of Belnianka River, Huta Stara, 15. VI. 1983 — 2 ♀♀, 27. VII. 1983 — 13 ♂♂, 3 ♀♀.

The species reported from Great Britain (COLLIN 1961) and Czechoslovakia (STRAKA 1975).

New for Poland.

Results

Although in the genus *Hilara* the preimaginal stages develop in the ground, the imagines are associated with water. Often they aggregate above the water surface forming sometimes enormous swarms. These flights depend on the atmospheric conditions, temperature and air humidity. The optimum values of these factors vary for different species (especially as far as copulation is concerned) (TREHEN 1971). Males catch small (2–3 mm) objects above the water surface: insects (mainly *Homoptera* larvae and imagines of *Chironomidae*) pollen, or plants debris and form „balloons” with a secretion of special glands. Females are presented with these objects in the final part of the nuptial flight (TREHEN 1971). This is accompanied by copulation. The empidids flying over the water surface, in turn, are the prey of various predators and play some (perhaps significant under specific conditions) role in the functioning of water biocenoses, due to their association with water. Therefore the presentation of informations concerning the genus *Hilara* Mg. in a paper devoted to the stream fauna seems worthwhile.

In the Świętokrzyskie Mts, 40 species of the genus *Hilara* were found what proves a rather thorough penetration of the investigated area. For comparison it may be noted that about 100 species of this genus are known from Czechoslovakia, the country in Europe, where the fauna of *Diptera* is most thoroughly known, while over 60 species were reported from Great Britain. Three new species described from the Świętokrzyskie Mts are worth notice: *H. sanctaerucis*, *H. nadolna* and *H. mroga*. *H. sanctaerucis* was also found by the author in the Łódź Highland.

Most of the *Hilara* species occurring in the Świętokrzyskie Mts have been noted from many countries of Europe, evidencing their broad distribution. *H. recedens*, *H. apta*, *H. biseta* were noted up to now only from the British Isles and Czechoslovakia, this, however may be due to the relatively scrupulous knowledge of empidids of those two countries. The species: *H. terriphylla*, *H. longirostris* *H. subcalinota* have been described relatively recently (STRAKA 1976) from Czechoslovakia and the localities in the Świętokrzyskie Mts are the first ones outside Czechoslovakia. *H. veticata* known from Spain is perhaps a mediterranean element. Central European species are: *H. lasiochira* and *H. cilipes*. The northern line of occurrence of the latter runs through the northern Poland and Germany.

The distribution of species of the genus *Hilara* over the area of Świętokrzyskie Mts is worth notice. Only a few species were found on the



● *H. maura* ▲ *H. chorica* ■ *H. interstincta* ○ *H. lurida*

Fig. 165. The species occurring in the whole area of investigations.



● *H. nigrina* ▲ *H. beckeri* ■ *H. manicata* ● *H. subcalinda* ◐ *H. obscura* ○ *H. terriphylla* △ *H. apta* □ *H. fuscipes* + *H. cingulata*

Fig. 166. Diverse occurrence of some species of genus *Hilara* Mg. in the Świętokrzyskie Mountains.



Fig. 167. Occurrence of the species of genus *Hilara* Mg. described from the Świętokrzyskie Mountains.

21.	<i>H. brevistyla</i>	XXXX																	
22.	<i>H. longivittata</i>			XXXX	XXXX	XXXX													
23.	<i>H. manicata</i>									XXXX	XXXX	XXXX	XXXX						
24.	<i>H. apta</i>				XXXX	XXXX	XXXX	XXXX	XXXX	XXXX									
25.	<i>H. barbipes</i>				XXXX	XXXX	XXXX	XXXX											
26.	<i>H. nadolna</i>				XXXX														
27.	<i>H. mroga</i>				XXXX														
28.	<i>H. chorica</i>	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX									
29.	<i>H. woodi</i>			XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX									
30.	<i>H. biseta</i>									XXXX									
31.	<i>H. sanctaerucis</i>			XXXX	XXXX														
32.	<i>H. cilipes</i>			XXXX	XXXX	XXXX													
33.	<i>H. griseifrons</i>				XXXX	XXXX	XXXX	XXXX	XXXX	XXXX									
34.	<i>H. lasiochira</i>				XXXX	XXXX	XXXX	XXXX	XXXX	XXXX									
35.	<i>H. litorca</i>																XXXX	XXXX	
36.	<i>H. subcalinota</i>	XXXX																	
37.	<i>H. canescens</i>			XXXX	XXXX														
38.	<i>H. thoracica</i>			XXXX	XXXX	XXXX	XXXX	XXXX											
39.	<i>H. cingulata</i>			XXXX	XXXX	XXXX													
40.	<i>H. obscura</i>																		XXXX

numerous localities distributed roughly evenly over the whole territory studied. Except for the most common and numerous *H. maura* and *H. choricæ* also these include *H. interstincta* and *H. lurida* (Fig.165). In spite of thorough investigations only single specimens of the remaining species were found, or they were encountered only on a few localities, so rendering the considerations about distribution untenable.

Also some correlation between the distribution of the investigated *Diptera* and environmental conditions can be observed. In the more mountainous regions of the Świętokrzyskie Mts, higher, forested and with extreme microclimate, mainly over the streams running from the slopes of Łysogóry, on the territory of the Świętokrzyski National Park, live: *H. nigrina*, *H. beckeri*, *H. manicata*, *H. subcalinota* and *H. obscura* (Fig.166).

In lower, lowland, rather forest-free regions, over the rivers flowing through meadows and agricultural fields, *H. terriphylla*, *H. apta*, *H. fuscipes*, *H. cingulata* were found. The species: *H. nadolna*, *H. griseifrons*, *H. lasiochira* occur both in the highlands and in the lowland regions but they are scarce throughout the investigated area.

Moreover, *H. woodi* is worth notice, as it was found neither in the basin of Lubrzanka River, nor in the whole western part of the Świętokrzyskie Mts, but occurs in large numbers in their eastern part, on the Świślina and Psarka rivers.

Diptera of the genus *Hilara* occur in the Świętokrzyskie Mts from May to late August, and occasionally also in September (Tab.I). They are most abundant in May and in June when they form most numerous swarms above water; then their number declines.

The distribution of the species described from the Świętokrzyskie Mts is given on Fig.167.

Generally, the *Diptera* studied (empidids) appear in the Świętokrzyskie Mts later than in Czechoslovakia (STRAKA 1975, 1981a, 1981b), Great Britain (COLLIN 1961) and France (TREHEN 1969, 1971) what is understandable and can be ascribed to the climate differences. The time differences and shifts in the range of occurrence are usually 2-3 weeks with respect to France, and similarly to Czechoslovakia. Such comparisons must take into account the fact, that the knowledge of European *Empididae* is still very limited.

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STRESZCZENIE

[Tytuł: Muchówki z rodzaju *Hilara* MEIGEN (*Empididae*, *Brachycera*) występujące w Górach Świętokrzyskich]

Zbierając w latach 1977–1983 *Empididae* w Górach Świętokrzyskich, autor złowił około 6000 osobników z rodzaju *Hilara*, należących do 40 gatunków. Opisane zostały dwa gatunki nowe dla nauki: *H. nadolna* sp. n. i *H. mroga* sp. n. Stwierdzono występowanie 20 gatunków nowych dla Polski, z których na szczególną uwagę zasługują: *H. veletica*, *H. subcalinota*, *H. biseta*, *H. apta*, *H. longirostris*, *H. woodi*, znane dotychczas z nielicznych stanowisk.

Muchówki z rodzaju *Hilara* są na obszarze Gór Świętokrzyskich rozmieszczone niejednorodnie. Kilka zaledwie gatunków — *H. maura*, *H. chorica*, *H. interstincta* i *H. lurida* — stwierdzonych zostało na wielu stanowiskach, rozsianych mniej więcej równomiernie na całym terenie.

W wyższych, bardziej górskich, zalesionych i o ostrzejszym mikroklimacie siedliskach, głównie nad potokami spływającymi ze stoków Łysogór na terenie Świętokrzyskiego Parku Narodowego żyją: *H. nigrina*, *H. beckeri*, *H. manicata*, *H. subcalinotlla* i *H. obscura*.

W niższych, bezleśnych raczej regionach, nad rzekami płynącymi przez łąki i pola spotykano: *H. terriphylla*, *H. apta* i *H. fuscipes*.

Badane *Empididae* występują w Górach Świętokrzyskich od maja do końca sierpnia, a wyjątkowo (*H. hirta*) także we wrześniu (tab. I).

Generalnie, muchówki z rodzaju *Hilara* pojawiają się w Górach Świętokrzyskich o około 2 tygodnie później niż w Czechosłowacji, Francji i Anglii, co jest zrozumiałe i wynika z różnic klimatycznych.

[Заглавие: Двукрылые из рода *Hilara* MEIGEN (*Empididae*, *Brachycera*), встречающиеся в Свентокшиских горах]

Собирая в 1977–1983 годах в Свентокшиских горах материалы *Empididae*, автор нашел около 6000 особей из рода *Hilara*, принадлежащих к около 40 видам. Описаны два новых для науки вида: *H. nadolna* sp. n. и *H. mroga* sp. n. Констатировано 20 видов, новых для фауны Польши, из которых на особое внимание заслуживают: *H. veletica*, *H. subcalinota*, *H. biseta*, *H. apta*, *H. longirostris*, *H. woodi*, известные до настоящего времени из немногочисленных местонахождений.

Двукрылые из рода *Hilara* размещены на территории Свентокшиских гор не равномерно. Лишь несколько видов — *H. maura*, *H. chorica*, *H. interstincta* и *H. lurida* — были констатированы на многих местонахождениях, разбросанных более менее равномерно по всей территории.

В выше лежащих и лесистых биотопах, с более острым микроклиматом, лежащих главным образом вдоль потоков, сплывающих по склонам Лысицы на территории Свентокшиского национального парка, живут: *H. nigrina*, *H. beckeri*, *H. manicata*, *H. subcalinota* и *H. obscura*.

В более низких, лишенных лесного покрова регионах, вдоль рек протекающих среди лугов и полей встречались: *H. terriphylla*, *H. apta* и *H. fuscipes*.

Исследованные *Empididae* встречаются в Свентокшиских горах с мая до конца августа, как исключение (*H. hirta*) также в сентябре (табл. I).

В общем, двукрылые из рода *Hilara* появляются весной в Свентокшиских горах на около 2 недель позже чем в Чехословакии, Франции и Англии, что объясняется различиями в климатических условиях.