MUZEUM I INSTYTUT ZOOLOGII
POLSKIEJ AKADEMII NAUK

FRAGMENTA FAUNISTICA

| Fragm. faun. | Warszawa, 22 XII 1997 | 40 | 14 | 191–198 |
|---|---|---|---|---|

Regina BAŃKOWSKA

# *Pipunculidae (Diptera)* of Puszcza Białowieska

**Abstract**. The paper contains a list of 21 *Pipunculidae* species collected in the most typical habitats of Puszcza Białowieska: pine forests, linden-oak-hornbeam forests, ash-alder carrs and wet riverside meadows. The dipterans were collected in tree canopies throughout the vegetative season with Moericke's pitfall traps and sweeping nets. The material contains 11 species of *Pipunculidae* new to Puszcza Białowieska.

**Key words**: *Pipunculidae, Diptera*, Puszcza Białowieska, north-eastern Poland

**Author's address**: Muzeum i Instytut Zoologii PAN, ul. Wilcza 64, 00-679 Warszawa, POLAND

## INTRODUCTION

The following paper is another of a series of studies investigating the dipterans of the Puszcza Białowieska forest. The dipteran family *Pipunculidae* has not been explored equally well in all regions of Poland. The most complete descriptions of the pipunculid fauna are available for the Mazovian region in the heart of the country, whereas the *Pipunculidae* of the eastern borderland are still largely unknown. The earliest record concerned with this area can be found in a paper by SACK (1925), who listed the species of *Pipunculus campestris* (LATR.) in his inventory including a number of families of *Diptera* found in Puszcza Białowieska. Later references to three other species of *Pipunculidae* registered in this area can be found in papers by BAŃKOWSKA (1972, 1973). The author's latest paper exploring this family of dipterans (BAŃKOWSKA 1995) encompassed but a part of the fauna (*Pipunculidae* of tree canopies) and was mostly concerned with the secondary succession of the fauna typical of the pine forest. The paper mentioned 9 species of *Pipunculidae* collected in tree canopies during the field study.

Apart from the above-mentioned studies of the fauna of the canopies of pines growing in Puszcza Białowieska, similar quantitative investigations were carried out in ash-alder carrs and linden-oak-hornbeam forests.

In pine canopies, study material was obtained with Moericke's pitfall traps hung high among tree branches on nylon threads. The traps were installed in early April, after snow cover had receded, and emptied at fortnightly intervals until ground frosts became stronger in late October or November.

In the *Peucedano-Pinetum* pine forest the field studies took place from 1986 to 1987 in Hajnówka Forest Inspectorate, divisions 538, 634 and 668. The traps were hung on pine trees (Fig. 1)

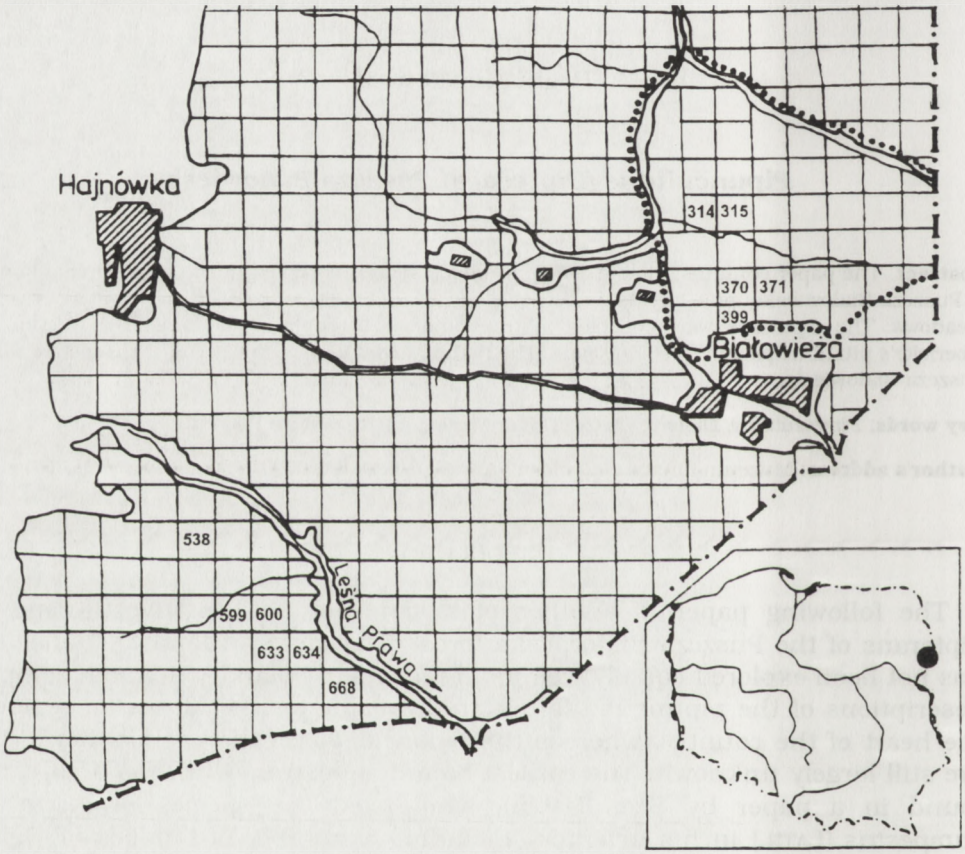


Fig. 1. Location of sampling areas in Puszcza Białowieska

In the linden-oak-hornbeam forest (*Tilio-Carpinetum*), material was collected in division 633 in the Starzyna district (Hajnówka Forest Inspectorate) in the years 1993, 1994 and 1996, with traps hung on oaks, hornbeams, maples and spruce trees.

Additional catches using sweeping nets and excavators were carried out in the Białowieża National Park, divisions 370, 371 and 399.

*Eudorylas zonatus* (ZETTERSTEDT, 1849)

A few representatives were collected in ground cover in the pine forest and the ash-alder carr.

A European species. Recorded from a number of regions in Poland (BAŃKOWSKA 1972, 1981, 1996).

*Dorylomorpha rufipes* (MEIGEN, 1824)

A few representatives were caught in the ground cover of the pine forest during May and June.

Europe. In Poland recorded from dry meadows and forest edges. LAUTERER (1981) has classified it as clearly thermophilous. No known host.

*Dorylomorpha xanthopus* (THOMSON, 1869)

One female caught in the grass in the pine forest at the end of July.

Widely distributed in the northern and central part of Holarctis. Rarely collected in Poland: recorded from the Pomeranian Region (KARL 1935), Silesia (BECKER 1897) and Mazovia (BAŃKOWSKA 1981, 1989). A known parasite of the leafhoppers *Psammotettix confinis* (DAHL.), *Diplocolenus abdominalis* (FABR.) and *Arthaldeus pascuellus* (FALL.) (ALBRECHT 1990).

*Tomosvaryella geniculata* (MEIGEN, 1834)

One specimen was caught in the pine forest at the end of May.

A European species. Quite frequently caught in Poland (BAŃKOWSKA 1972). Occurs from May to October. LAUTERER (1981) considers it a xerophilous species breeding two generations per year.

REFERENCES

ALBRECHT A. 1990. Revision, phylogeny and classification of the genus *Dorylomorpha* (Diptera, Pipunculidae). Acta Zool. Fennica, 188: 1–240.

BAŃKOWSKA R. 1972. Przegląd polskich gatunków z rodziny *Pipunculidae (Diptera)*. Fragm. faun., Warszawa, 18: 257–273.

BAŃKOWSKA R. 1973. *Pipunculidae (Diptera)*. In: "Klucze do oznaczania owadów Polski". XXVIII, 33. PWN, Warszawa, 52 pp.

BAŃKOWSKA R. 1982. *Pipunculidae (Diptera)* of Warsaw and Mazowia. Memorabilia Zool., 35: 85– 91.

BAŃKOWSKA R. 1989. *Pipunculidae (Diptera)* of moist meadows on the Mazovian Lowland. Memorabilia Zool., 43: 349–351.

BAŃKOWSKA R. 1995. Secondery succession of the *Pipunculidae (Diptera)* fauna of the pine forests of Puszcza Białowieska. Fragm. faun., Warszawa, 38: 489–494.

BAŃKOWSKA R. 1996. *Pipunculidae (Diptera)* Kampinoskiego Parku Narodowego. Fragm. faun., Warszawa, 39: 161–167.

BECKER Th. 1897. Dipterologische Studien V. *Pipunculidae*. Berlin. ent. Z., 42: 25–100.

CHUDZICKA E. 1995. Changes in communities of leafhoppers *(Homoptera, Auchenorrhyncha)* during the succession in subcontinental pine forest *(Peucedano–Pinetum)* in Puszcza Białowieska. Fragm. faun., Warszawa, 38: 365–377.

COE R. L. 1966. *Pipunculidae*. In " Handbooks for the identification of British Insects". 10. London, 83 pp.

Białowieska are *Chalarus spurius* (FALL.), *Pipunculus campestris* LATR. and *Eurodylas fascipes* (ZETT.). These species were recorded from every type of habitat studied in Puszcza Białowieska (Tab. 1). They would first appear in May and were found throughout the summer until the end of September, or even mid-October. Thus, one might assume that these species breed two generations a year. JERVIS (1980) carried out an interesting study of the parasites of leaf-hoppers of the subfamily *Typhlocybinae*, including also species of the genus *Chalarus* WALKER, and found a close correlation between the life cycles of this group of leaf-hoppers (which he divided into one-generation- and two-generation-per-year species) and those of their parasites.

Table 1. Species composition of *Pipunculidae (Diptera)* on the Puszcza Białowieska. xxx– abundant, xx– numerous, x– scarce species.

| No | Species | Sites | | | |
|---|---|---|---|---|---|
| | | pine forest | linden-oak-hornbeam | carr | wet meadow |
| 1 | *Verrallia aucta* (FALL.) | | x | x | |
| 2 | *Verrallia villosa* (V.ROSER) | xxx | x | x | |
| 3 | *Chalarus fimbriatus* COE | x | | | |
| 4 | *Chalarus spurius* (FALL.) | x | xxx | xx | x |
| 5 | *Nephrocerus scutellatus* (MACQ.) | xxx | x | x | x |
| 6 | *Pipunculus campestris* LATR. | x | xx | x | x |
| 7 | *Pipunculus spinipes* MEIG. | x | x | | x |
| 8 | *Pipunculus thomsoni* BECK. | x | | x | x |
| 9 | *Pipunculus zugmayeriae* KOW. | x | | | |
| 10 | *Cephalops aeneus* (FALL.) | x | x | x | x |
| 11 | *Cephalops semifumosus* (KOW.) | x | | x | x |
| 12 | *Eudorylas fascipes* (ZETT.) | xx | xx | x | x |
| 13 | *Eudorylas fuscipes* (ZETT.) | | x | x | |
| 14 | *Eudorylas ruralis* (MEIG.) | x | | x | |
| 15 | *Eudorylas subfascipes* COLL. | xx | | | |
| 16 | *Eudorylas terminalis* (THOM.) | x | x | x | x |
| 17 | *Eudorylas zonatus* (ZETT.) | x | | x | |
| 18 | *Dorylomorpha rufipes* (MEIG.) | x | | | |
| 19 | *Dorylomorpha xanthopus* (THOM.) | | x | | |
| 20 | *Tomosvaryella geniculata* (MEIG.) | x | | | |
| 21 | *Tomosvaryella sylvatica* (MEIG.) | x | x | x | |

*Pipunculidae* (Fig. 2). Both species of *Pipunculidae* mentioned above were found to have a very short span of occurrence in Puszcza Białowieska: the flights of *Verrallia vilosa* occur only in June, while *Nephrocerus scutellatus* begins its flights in mid-May to disappear in mid-June. No representatives of those species were seen in the forests before or after this period. It is possible that in north-eastern Poland these dipterans produce only one generation during the year. LAUTERER (1981) has reported a similarly short flight period for *V. villosa* in Slovakia and Moravia, beginning in May and continuing until mid-June.

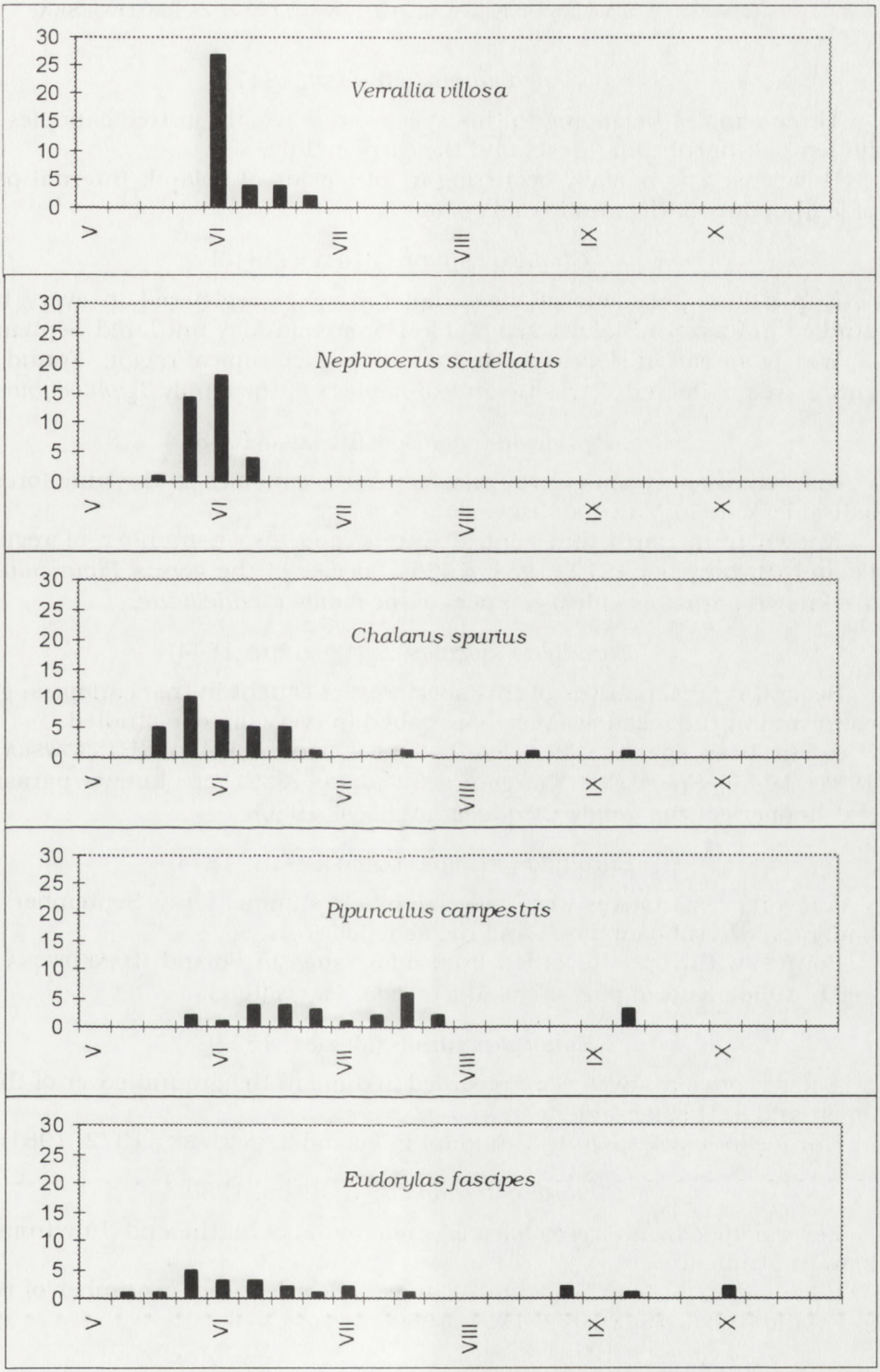


Fig. 2. Flight period of some *Pipunculidae* species

REVIEW OF SPECIES OF *PIPUNCULIDAE* NEW TO PUSZCZA BIAŁOWIESKA

*Verrallia aucta* (FALLÉN, 1817)

Three females belonging to this species were caught in tree canopies in the linden-oak-hornbeam forests and the carrs in July.

Holarctis. Sporadically occurring in all regions of Poland. Internal parasite of leafhoppers of the family *Cercopidae*.

*Chalarus spurius* (FALLÉN, 1816)

Numerous specimens of these dipterans were registered in every habitat studied in Puszcza Białowieska (Table 1) from mid-May until mid-September.

Widely spread in Holarctis, Orient and the Neotropical region. Found in the entire area of Poland. Parasitic on leaf-hoppers of the family *Typhlocybinae*.

*Pipunculus thomsoni* (BECKER, 1898)

Individual specimens were collected in tree canopies in the pine forest and ash-alder carr in May and June.

Known from north and central Europe and also a number of regions in Poland (BAŃKOWSKA 1972, 1981, 1996). Species of the genus *Pipunculus* LATR are known parasites of leaf-hoppers of the family *Cicadellidae*.

*Eurodylas fascipes* (ZETTERSTEDT, 1844)

Several representatives of this species were caught in tree canopies, ground cover and in the meadow (May–September) in every biotope studied.

A European species. Recorded from a few parts of Poland (BAŃKOWSKA 1973, 1981, 1996). Species of the genus *Eurodylas* ACZÉL are known parasites of leaf-hoppers of the family *Cicadellidae* (JERVIS 1980).

*Eurodylas fuscipes* (ZETTERSTEDT, 1844)

A few representatives were collected in late summer (July–September) in the linden-oak-hornbeam forest and the ash-alder carr.

Found in Europe. Recorded from many sites in Poland (BAŃKOWSKA 1972, 1981, 1996). Known parasite of *Macrosteles laevis* (RIB.).

*Eudorylas ruralis* (MEIGEN, 1824)

A few representatives were recorded in June in the ground cover of the pine forest and in the ash-alder carr.

European species. Quite abundant in Poland (BAŃKOWSKA 1972, 1981)

*Eudorylas terminalis* (THOMSON, 1869)

Several specimens were collected from mid-May till the end July from every biotope studied.

Widely distributed throughout Europe. Recorded from a number of regions in Poland (BAŃKOWSKA 1972, 1981, 1989).

*Eudorylas zonatus* (ZETTERSTEDT, 1849)

A few representatives were collected in ground cover in the pine forest and the ash-alder carr.

A European species. Recorded from a number of regions in Poland (BAŃKOWSKA 1972, 1981, 1996).

*Dorylomorpha rufipes* (MEIGEN, 1824)

A few representatives were caught in the ground cover of the pine forest during May and June.

Europe. In Poland recorded from dry meadows and forest edges. LAUTERER (1981) has classified it as clearly thermophilous. No known host.

*Dorylomorpha xanthopus* (THOMSON, 1869)

One female caught in the grass in the pine forest at the end of July.

Widely distributed in the northern and central part of Holarctis. Rarely collected in Poland: recorded from the Pomeranian Region (KARL 1935), Silesia (BECKER 1897) and Mazovia (BAŃKOWSKA 1981, 1989). A known parasite of the leafhoppers *Psammotettix confinis* (DAHL.), *Diplocolenus abdominalis* (FABR.) and *Arthaldeus pascuellus* (FALL.) (ALBRECHT 1990).

*Tomosvaryella geniculata* (MEIGEN, 1834)

One specimen was caught in the pine forest at the end of May.

A European species. Quite frequently caught in Poland (BAŃKOWSKA 1972). Occurs from May to October. LAUTERER (1981) considers it a xerophilous species breeding two generations per year.

REFERENCES

ALBRECHT A. 1990. Revision, phylogeny and classification of the genus *Dorylomorpha* (Diptera, Pipunculidae). Acta Zool. Fennica, 188: 1–240.

BAŃKOWSKA R. 1972. Przegląd polskich gatunków z rodziny *Pipunculidae (Diptera)*. Fragm. faun., Warszawa, 18: 257–273.

BAŃKOWSKA R. 1973. *Pipunculidae (Diptera)*. In: "Klucze do oznaczania owadów Polski". XXVIII, 33. PWN, Warszawa, 52 pp.

BAŃKOWSKA R. 1982. *Pipunculidae (Diptera)* of Warsaw and Mazowia. Memorabilia Zool., 35: 85– 91.

BAŃKOWSKA R. 1989. *Pipunculidae (Diptera)* of moist meadows on the Mazovian Lowland. Memorabilia Zool., 43: 349–351.

BAŃKOWSKA R. 1995. Secondery succession of the *Pipunculidae (Diptera)* fauna of the pine forests of Puszcza Białowieska. Fragm. faun., Warszawa, 38: 489–494.

BAŃKOWSKA R. 1996. *Pipunculidae (Diptera)* Kampinoskiego Parku Narodowego. Fragm. faun., Warszawa, 39: 161–167.

BECKER Th. 1897. Dipterologische Studien V. *Pipunculidae*. Berlin. ent. Z., 42: 25–100.

CHUDZICKA E. 1995. Changes in communities of leafhoppers *(Homoptera, Auchenorrhyncha)* during the succession in subcontinental pine forest *(Peucedano–Pinetum)* in Puszcza Białowieska. Fragm. faun., Warszawa, 38: 365–377.

COE R. L. 1966. *Pipunculidae*. In " Handbooks for the identification of British Insects". 10. London, 83 pp.

DEMPEWOLF M., Dunk K. 1996. A new Eudorylas species from Southern and Western *Germany (Diptera, Pipunculidae)*. Studia dipterologica, 3: 93–96.

JERVIS M. A. 1980. Ecological studies on the parasite complex associated with typhlocybine leafhoppers *(Homoptera, Cicadellidae)*. Ecological Entomology, 5: 123–136.

KARL O. 1935. Die Fliegenfauna Pommerns. *Diptera, Brachycera*. Stettin. ent. Ztg.,96: 106–159.

LAUTERER P. 1981. Contribution to the knowledge of the family *Pipunculidae* of Czechoslovakia *(Diptera)*. Cas.morav. Mus., Brno, 66: 123–150.

SACK P. 1925. Die Zweiflugler des Urwaldes von Białowies. Abh. bayer. Akad. Wiss., Suppl., Munchen, 5: 259–277.

TANASIJTSHUK V. N. 1988. Pipunculidae. In: "Catalogue of Palaearctic Diptera". 8, Budapest, 230–245 pp.

WALOFF N., Jervis M. A. 1987. Communities of Parasitoids Associated with Leafhoppers and Planthoppers in Europe. Advances in Ecological Research, London, 17: 281–402.

---

STRESZCZENIE

[Tytuł: *Pipunculidae (Diptera)* Puszczy Białowieskiej]

Niniejsze opracowanie jest wynikiem badań faunistycznych nad muchówkami występującymi na terenie Puszczy Białowieskiej. Badania te były prowadzone w ciągu ostatnich 10 lat na terenie Białowieskiego Parku Narodowego i w jego otulinie w Nadleśnictwie Hajnówka. Do połowu owadów w koronach drzew używano pułapek Moerick`a, a na łące i w runi leśnej stosowano siatkę i czerpak entomologiczny. Materiał zbierano w borze sosnowym, grądzie, łęgu jesionowo-olszowym i na wilgotnych łąkach łęgowych.

W zebranym materiale wyróżniono 21 gatunków *Pipunculidae*, z których 11 nie było dotychczas notowanych z Puszczy Białowieskiej.

---

Redaktor pracy – dr J. Wytwer