

REGINA BAŃKOWSKA

*DOLICHOPODIDAE* (DIPTERA) OF MOIST MEADOWS ON THE  
MAZOVIAN LOWLAND

## ABSTRACT

This is an analysis of the *Dolichopodidae* fauna on semi-natural meadows on the Mazovian Lowland. Species composition of groups of *Diptera* examined, their numbers, dominance structure and seasonal fluctuations are discussed. Changes in communities of *Dolichopodidae* due to various forms of meadow utilization by man have been also observed.

## INTRODUCTION

The aim of the present paper on predatory *Diptera* of the family *Dolichopodidae* is not only a list of species caught on areas examined, but an attempt to explain to what extent particular species are associated with the type of the meadow examined and the role they play there. Also attempts have been made to explain the direction of changes in the structure of faunistic communities of *Dolichopodidae* depending on the degree of meadow utilization by man.

Up to now, quantitative studies on the *Diptera* of the family *Dolichopodidae* have not been conducted on meadows in Poland. Also very few papers have been published abroad on the subject and the material presented is usually fragmentary (Boness 1953). Undoubtedly the most detailed research on the subject has been conducted by Couturier (1970, 1973) in orchards of central France, covering also fragments of meadows.

In Poland four basic meadow areas have been investigated, which phytosociologically belong to the *Arrhenatheretum medioeuropaeum* association (Kotowska, Okołowicz 1989) of the Mazovian Lowland: at Klembów, Białoleka Dworska, Chylice and Zbroszki. These meadows differed mainly as to fertilization method and exploitation intensity of particular areas: from an intensively mowed meadow at Chylice through an extensive hay-growing-pasture one at Białoleka and Klem-

bów to pasture at Zbroszki (Bańkowska 1989). The material from the reserve "Cyganka" in the Kampinos Forest with a wet meadow, where vegetation of the order *Molimetalia* Koch prevailed, was also used for the purpose of comparison.

The material was sampled by means of a quantitative sweep-net (10 series of 25 sweeps each) in 7-day cycles during the entire vegetation season. On each meadow the studies were conducted for two years, in the case of Chylice — three years. For the latter additional methods of quantitative catches of *Dolichopodidae* were used, such as Moericke's yellow pan traps, Malaise traps, window traps or biocoenometers. Material thus obtained completed the species composition and was used as comparative material in the analysis of seasonal fluctuations of the *Diptera* examined.

On the whole, over 3.500 individuals of *Dolichopodidae* were collected.

## MATERIAL ANALYSIS

### SPECIES COMPOSITION AND NUMBERS

On meadows of the Mazovian Lowland 63 species of *Dolichopodidae* were distinguished, representing 10 genera. Fifty-six of these species were caught on moist meadows (Tab. 1). It is quite a number, considering that only 87 species are known from the whole area of Mazovia (Bańkowska 1982).

The number of species was the greatest on the Chylice meadow (Tab. 1), not because this area was an exceptionally rich one, but because several additional methods of catches were used, and also the investigations were conducted one year longer. These methods could not be used on other meadows for objective reasons. Thus the comparative analyses were based solely on sweep-net material taken parallelly on all surface areas.

The greatest abundance of species was recorded on the wet meadow in the reserve "Cyganka" in the Kampinos Forest — 28 species. On the meadow at Klembów in the direct neighbourhood of moist linden-oak-hornbeam forest 26 species were caught. The numbers of species caught on meadows at Białołęka and Chylice were intermediate. The least abundant was the pasture at Zbroszki. Only 13 species of *Dolichopodidae* (Fig. 1) were distinguished. The species abundance of these *Diptera* seemed to be conditioned by the vicinity of moist forest soil, where the larvae of the majority of species develop. Possibly an intensive exploitation of meadows, especially at Chylice and Zbroszki had a negative effect.

The relative abundance of *Dolichopodidae* was quite different on particular meadows and was not necessarily accompanied by species abundance (Fig. 1). The highest indices were recorded for the meadow at Klembów — 2.32 individuals per sweep-net sample. Rather a high abundance index for these predatory *Diptera* was recorded also at Białołęka — 1.94 and on the pasture at Zbroszki — 1.28.

Table 1. Species composition of *Dolichopodidae* fauna of the studied meadows on the Mazovian Lowland (xxx — dominants, xx — subdominants, x — accessory species)

No.	Locality	Cyganka	Klembów	Białoleka	Chylice	Zbroszki
	Species					
1	2	3	4	5	6	7
1	<i>Dolichopus acuticornis</i> Wied.				x	
2	<i>Dolichopus brevipennis</i> Meig.	xx	x	x	xxx	x
3	<i>Dolichopus campestris</i> Meig.				x	
4	<i>Dolichopus claviger</i> Stann.	x			x	
5	<i>Dolichopus latelimbatus</i> Macq.	x	x		x	
6	<i>Dolichopus linearis</i> Meig.	x				
7	<i>Dolichopus longicornis</i> Stann.		x		xxx	x
8	<i>Dolichopus nigricornis</i> Meig.	x				
9	<i>Dolichopus nitidus</i> Fall.	x		x	x	
10	<i>Dolichopus nubilus</i> Meig.				x	
11	<i>Dolichopus pectinitarsis</i> Stenh.	x				
12	<i>Dolichopus pennatus</i> Meig.	x				
13	<i>Dolichopus plumipes</i> (Scop.)	xxx	xxx	xx	xxx	xxx
14	<i>Dolichopus plumitarsis</i> Fall.	xxx	x			
15	<i>Dolichopus popularis</i> Wied.	xxx	x		x	
16	<i>Dolichopus simplex</i> Meig.		xxx			
17	<i>Dolichopus unguatus</i> (L.)	xxx	x	x	x	x
18	<i>Dolichopus urbanus</i> Meig.	x				
19	<i>Hercostomus aerosus</i> (Fall.)	xx	x	x	xx	x
20	<i>Hercostomus angustifrons</i> (Staeg.)	xx				
21	<i>Hercostomus bicolor</i> (Macq.)				x	
22	<i>Hercostomus celer</i> (Meig.)				x	
23	<i>Hercostomus chrysozygos</i> (Wied.)				x	
24	<i>Hercostomus metallicus</i> (Stann.)		x		x	
25	<i>Hercostomus nigriplantis</i> (Stann.)		x	x		
26	<i>Sciopus albifrons</i> (Meig.)		x	x	x	
27	<i>Sciopus lobipes</i> Meig.				x	
28	<i>Sciopus longulus</i> (Fall.)		x	xxx	xx	x
29	<i>Sciopus platypterus</i> (Fabr.)		x	x	x	
30	<i>Sciopus wiedemanni</i> (Fall.)			x	x	
31	<i>Chrysotimus concinnus</i> (Zett.)			x	x	
32	<i>Chrysotimus molliculus</i> (Fall.)			x	x	
33	<i>Xanthochlorus tenellus</i> (Wied.)	x		x		
34	<i>Neurogona quadrifasciata</i> (Fall.)			x		
35	<i>Medetera diadema</i> (L.)		x		x	
36	<i>Medetera jacula</i> Meig.		x		x	
37	<i>Medetera micacea</i> Loew			x		

1	2	3	4	5	6	7
38	<i>Medetera pallipes</i> Zett.				XX	X
39	<i>Medetera petrophila</i> Kow.		X	X	X	X
40	<i>Medetera plumbella</i> Meig.				X	
41	<i>Medetera tristis</i> Zett.				XX	
42	<i>Chrysotus cilipes</i> Meig.	XX	XXX	XXX	XXX	XXX
43	<i>Chrysotus femoratus</i> Zett.	XXX	XX	XXX	XXX	XX
44	<i>Chrysotus gramineus</i> (Fall.)	XX	XXX	XXX	XXX	XXX
45	<i>Chrysotus laesus</i> (Wied.)	X		XX	X	X
46	<i>Chrysotus neglectus</i> (Wied.)	X	XXX	XXX	XXX	X
47	<i>Sympycnus annulipes</i> (Meig.)		X		X	
48	<i>Porphyrops laticornis</i> (Fall.)				X	
49	<i>Porphyrops nasuta</i> (Fall.)				X	
50	<i>Porphyrops pectinata</i> Lw.				X	
51	<i>Thrypticus bellus</i> Lw.				X	
52	<i>Lamprochromus elegans</i> (Meig.)				X	
53	<i>Teuchophorus spinigerellus</i> (Zett.)				X	
54	<i>Achalcus flavicollis</i> (Meig.)	X	X		X	
55	<i>Bathycranium bicolorellum</i> (Zett.)				X	
56	<i>Argyra argentina</i> (Meig.)	X	X	X		
57	<i>Argyra diaphana</i> (Fabr.)				X	
58	<i>Campsicnemus dasygnemus</i> Lw.		X		X	
59	<i>Campsicnemus lumbatus</i> Lw.				X	
60	<i>Campsicnemus scambus</i> (Fall.)	X	X		XX	
61	<i>Xiphandrium quadrispinosum</i> Str.					
62	<i>Xiphandrium zetterstedti</i> Par.				X	
63	<i>Diaphorus oculus</i> (Fall.)	X				

However, it was much lower on a wet meadow in the reserve "Cyganka" — 0.82, probably due to small numbers of other insects on this area. Such a regularity can be frequently observed on areas not much changed by man's management. The lowest abundance of *Dolichopodidae* was recorded on the meadow at Chylice — 0.68 individuals per sample. This was probably due to intensive exploitation of the meadow, frequent mowing, and high NPK fertilization. These two factors affect negatively the numbers of *Dolichopodidae*, mowing limits the food base (small insects in grass), fertilization makes the development of the larvae in meadow soil more difficult.

Sörensen's formula has been used to analyse the similarity of species composition of *Dolichopodidae*. The results are shown in a diagram (Fig. 2). The similarity of species composition of *Dolichopodidae* of moist meadows is great (43–63%). The lowest similarity is shown for the fauna of wet meadow in the reserve "Cyganka".

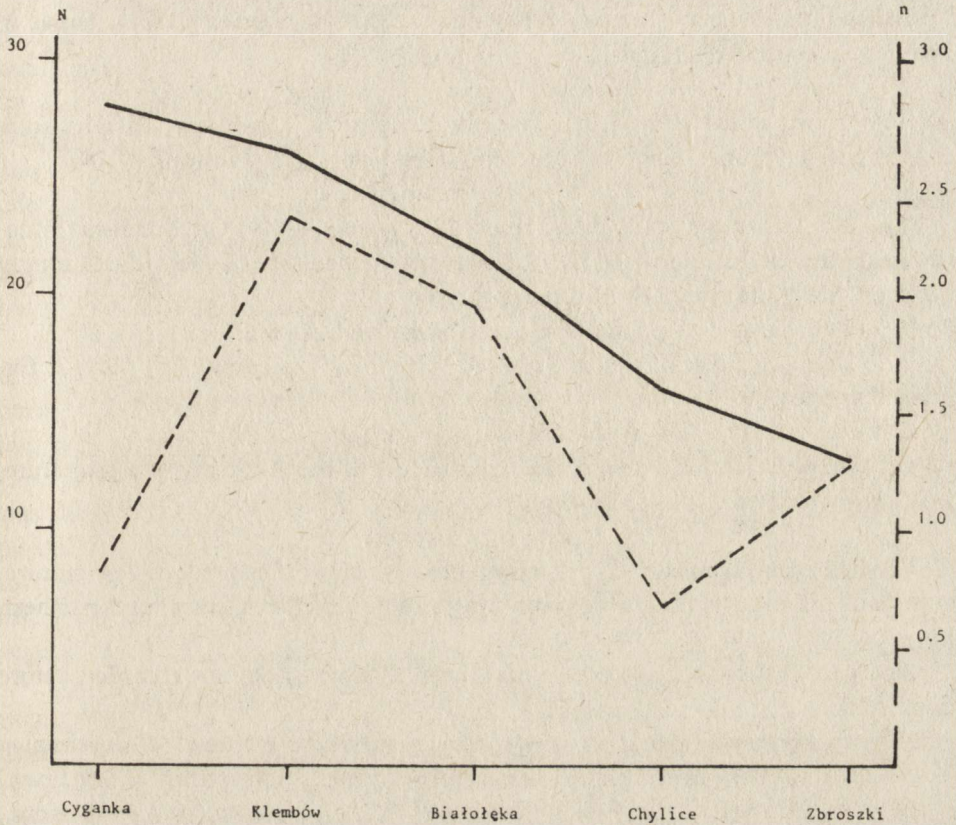


Fig. 1. Number of species and relative abundance of *Dolichopodidae* on particular Mazovian meadows: N — number of species (solid line), n — index of abundance (broken line)

	Klembów	Chylice	Białołęka	Zbroszki	Cyganka
Klembów	/	59	58	56	41
Chylice	59	/	49	43	31
Białołęka	58	49	/	63	36
Zbroszki	56	43	63	/	34
Cyganka	41	31	36	34	/

Fig. 2. Diagram of species composition similarity of *Dolichopodidae* of meadows examined [after Sørensen]

Among the *Diptera* caught, some new species to *Dolichopodidae* fauna in Poland have been distinguished:

*Dolichopus pectinitarsis* Stenh.

The Kampinos National Park: reserve "Cyganka", meadow, 2 individuals caught in May-June. Known from central and northern Europe.

*Porphyrops pectinata* Loew

The Kampinos National Park: reserve "Cyganka", 1 ♂; Chylice near Jaktorów, experimental meadow of the Academy of Agriculture, 4 individuals caught between May and July. A European species.

*Xiphandrium quadrispinosum* Strobl

The Kampinos National Park: reserve "Cyganka", meadow, 1 ♂, May. A European species.

*Xiphandrium zetterstedti* Par.

Chylice near Jaktorów; experimental meadow of the Academy of Agriculture, 1 ♂, caught in June. Whole Europe.

*Medetera tristis* Zett.

Chylice near Jaktorów: experimental meadow of the Academy of Agriculture, numerous individuals caught between May and September. Central and northern Europe.

Apart from these species others have been distinguished, not recorded before from Mazovia:

*Argyra argentina* (Meig.), *Campsicnemus dasyncnemus* Loew, *Bathycranium bicolorellum* (Zett.), *Teuchophorus spinigerellus* (Zett.), *Thrypticus bellus* Loew, *Porphyrops nasuta* (Fall.), *Achalcus flavicollis* (Meig.), *Medetera petrophila* Kow., *Sciopus lobipes* Meig., *Sciopus widemanni* (Fall.), *Hercostomus celer* (Meig.), *H. bicolor* (Macq.), *H. metallicus* (Stann.), *H. angustifrons* (Staeg.), *Dolichopus popularis* Wied., *D. urbanus* Meig., *Lamprochromus elegans* (Meig.).

#### DOMINANCE STRUCTURE OF COMMUNITIES

*Dolichopodidae* colonize both open and forested areas, they are found in grass, herb layer, on shrubs and high in tree crowns. It is rather difficult to determine which groups of species are strictly associated with forest areas, and which prefer open areas, because these *Diptera* are very mobile and change places fast, depending on the existing local conditions. However, some *Dolichopodidae*, especially the smaller ones, prefer to remain in grass or in the herb layer. This is mainly the case of genus *Chrysotus* Meig., the species of which are caught abundantly on meadows, and some representatives of genera: *Dolichopus* Latr. (*D. plumipes*, *D. longicornis*, *D. popularis*) and *Sciopus* Zell. (*S. longulus*, *S. platypterus*). The majority of *Dolichopodidae* species come onto meadows in search of prey periodically from the nearest shelter-belts and moist areas, where their larvae develop. An intensively cultivated and utilized meadow does not provide very favourable conditions for the development of the majority of *Dolichopodidae* larvae.

The dominance structure of *Dolichopodidae* communities of moist meadows is rather similar. Species of the genus *Chrysotus* dominate there (Fig. 3). The main dominant is *Ch. cilipes*, which only on the pasture at Zbroszki is substituted by *Ch. gramineus*. A slightly different dominance structure is observed on the Białołęka meadow, i.e., the shade-demanding *Sciopus longulus* is a distinct dominant there, whereas species of the genus *Chrysotus* are subdominants. Very distinctly different is the structural pattern of *Dolichopodidae* community of the wet meadow in "Cyganka" reserve as compared to communities on moist meadows. A number of species of the genus *Dolichopus* dominate (Fig. 3), which do not occur on moist meadows or occur in very small numbers.

For better presentation of the role of *Dolichopodidae*, which are the main fauna of moist meadows, 7 dominant species have been selected, their percentage on particular meadows summed up (Fig. 4). These were: *Dolichopus plumipes*, *Sciopus longulus*, *Chrysotus cilipes*, *Chr. gramineus*, *Chr. femoratus*, *Chr. neglectus* and *Chr. laesus*. On four moist meadows examined the percentage of dominant species was quite even, fluctuating between 76 and 88%. Only in "Cyganka" was the percentage of these species on the wet meadow low — 26%. It seems that the increasing percentage of dominant *Dolichopodidae* species is directly affected by intensive management and indirectly — by poorer species composition of meadow vegetation.

The degree of similarity of the *Dolichopodidae* dominance on meadows examined has been based on Renkonen's index (Fig. 5). The results confirm the distinct character of *Dolichopodidae* community on wet meadow in "Cyganka" as compared to moist meadows. The dominance was the most similar for communities of *Dolichopodidae* on Chylice and Klembów meadows, and Chylice and Zbroszki meadows.

Further analysis of structural relations in communities of *Dolichopodidae* on meadows allowed to determine the coefficient of constancy (C) for particular species. It may be a criterion of the relation between this species with the biocoenosis examined. According to Tischlers scale three constant species were obtained for Chylice and Klembów meadows: *Dolichopus plumipes* (50%), *Chrysotus cilipes* (54–62%), and *Chr. gramineus* (50–62%). On Białołęka and Zbroszki meadows only *Chr. gramineus* was a constant species (58–75%). Approximate results have been obtained by Couturier (1973), who investigated *Dolichopodidae* fauna in an orchard and meadow in central France, where also species of the genus *Chrysotus* Meig., in consequence of their large abundance, are of basic significance in biocoenotic control of small insects in grass.

#### ZOOGEOGRAPHICAL ANALYSIS

Studies on *Dolichopodidae* fauna of moist meadows in Mazovia, from the point of zoogeographical differentiation, allowed to distinguish five elements: Holarctic, Palearctic, Eurosiberian, European and South-Eurosiberian. On moist meadows

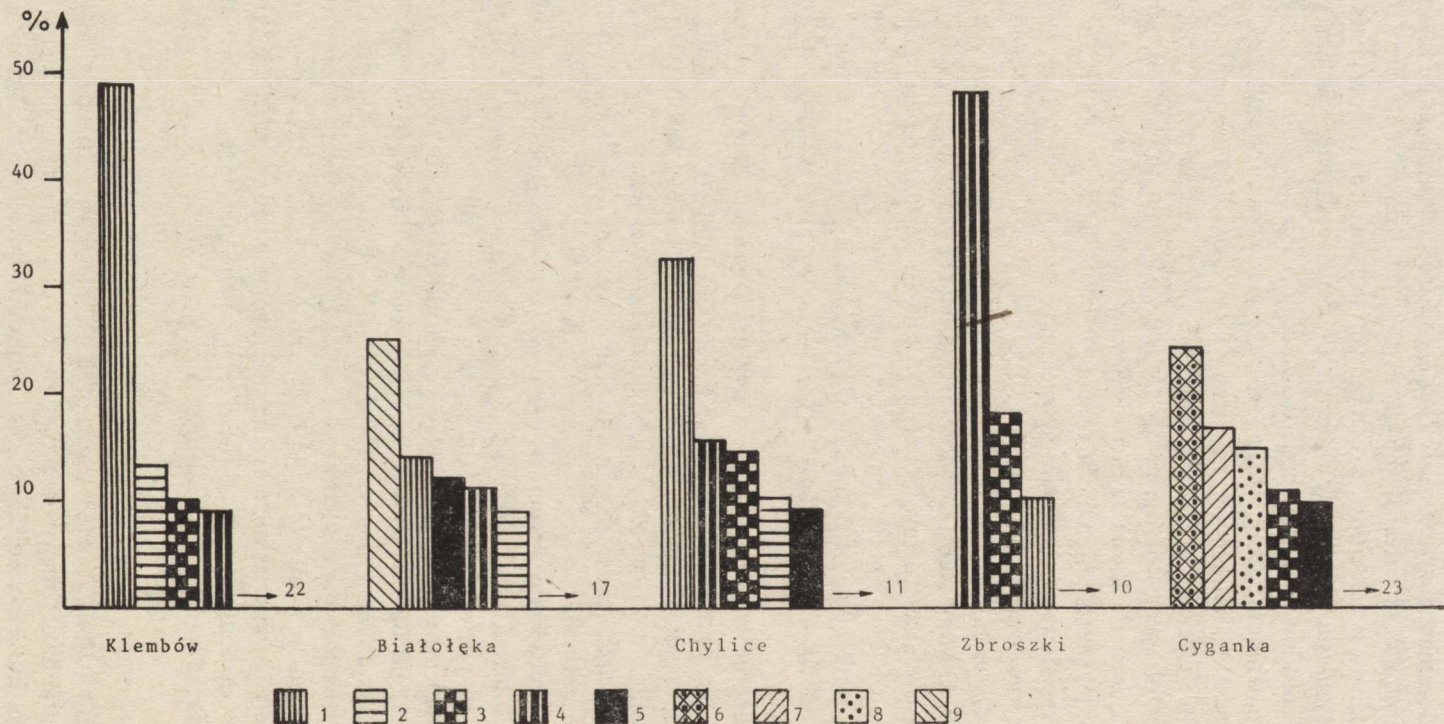


Fig. 3. Dominance structure of *Dolichopodidae* communities on particular meadows: 1 — *Chrysotus cilipes*; 2 — *Chr. neglectus*; 3 — *Dolichopus plumipes*; 4 — *Chr. gramineus*; 5 — *Chr. femoratus*; 6 — *D. popularis*; 7 — *D. planitarsis*; 8 — *D. unguatus*; 9 — *Sciopus longulus*



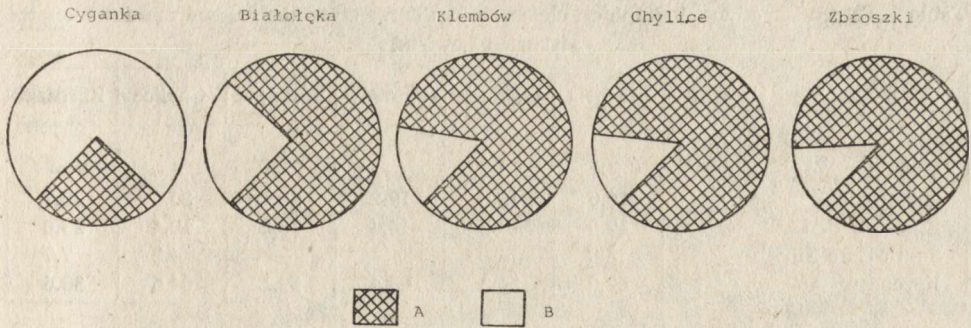


Fig. 4. Percentage of seven dominant species on moist meadows examined (A — dominant species, B — others)

	Klembów	Chylice	Białołęka	Zbroszki	Cyganka
Klembów		66	27	42	22
Chylice	66		40	53	26
Białołęka	27	40		29	16
Zbroszki	42	53	29		25
Cyganka	22	26	16	25	

Fig. 5. Diagram of the similarity of *Dolichopodidae* dominance on the examined meadows determined by Renkonen's index

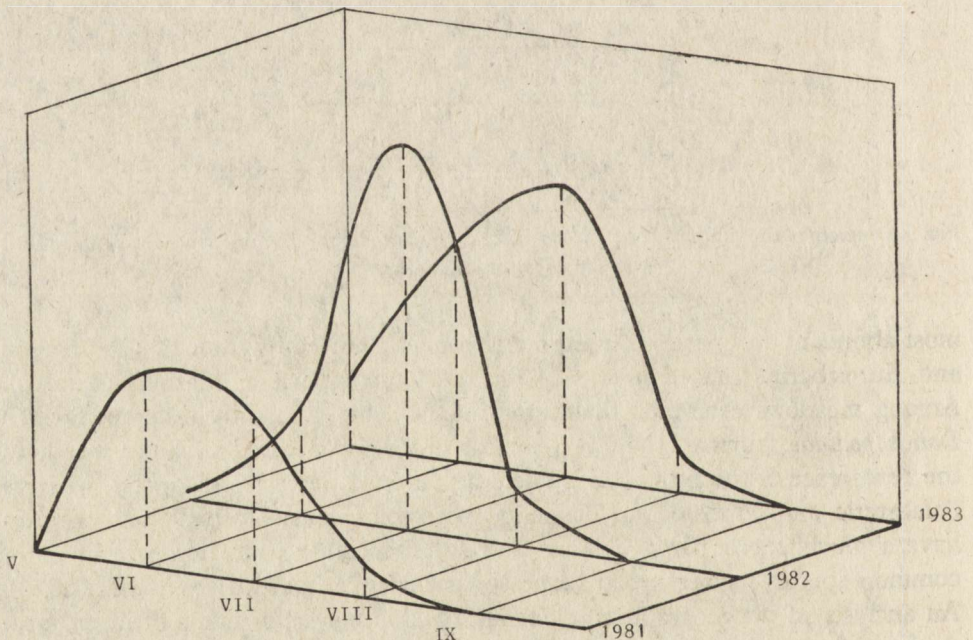
most abundant are species of a European range, followed by those of a Palearctic and Eurosiberian one, similarly as for the fauna of whole Mazovia (Tab. 2). Among meadows examined the system of elements is slightly different for the *Dolichopodidae* fauna of the Zbroszki pasture. As compared to other meadows the percentage of the European element at Zbroszki decreases distinctly, whereas Palearctic and Eurosiberian elements increase. Intensively exploited pastures have a much poorer *Diptera* fauna and simultaneously a greater percentage of common species having broad ranges of occurrence (Bańkowska 1971, 1976). An analysis of zoogeographical elements of *Dolichopodidae* fauna of moist meadows confirms this opinion, indicating at the same time that the effect of human pressure is the strongest on the Zbroszki pasture.

Table 2. Percentage of zoogeographical elements in the fauna of the studied meadows on the Mazovian Lowland

Zoogeographical element	Mazovia	Cyganka	Klembów	Białoleka	Chylice	Zbroszki
Holarctic	2.0	3.5	—	—	—	—
Palaearctic	16.0	18.0	19.2	22.7	20.8	30.7
Euro-Siberian	12.0	14.2	14.4	18.2	10.4	23.0
South-Euro-Siberian	8.0	—	—	—	4.2	7.7
European	62.0	64.3	66.4	59.1	64.6	38.6

## SEASONAL FLUCTUATIONS

The majority of *Dolichopodidae* species appear on meadows early in spring, in April and at the beginning of May, depending on weather in a given year. The highest *Dolichopodidae* numbers are in the second half of June and in July (Fig. 6). The fluctuations of *Dolichopodidae* flights observed in three successive years on the Chylice meadow show a considerable regularity. Only in 1981 the curve showing the numbers peak was distinctly lower and slightly displaced. This was undoubtedly caused by a very cold and rainy summer that year. Couturier (1970) has also presented similar results. The highest numbers of *Dolichopo-*

Fig. 6. Seasonal *Dolichopodidae* dynamics on the example of Chylice meadow in three consecutive years

*didae* in France are also at the turn of June. On moist Mazovia meadows the numbers of *Dolichopodidae* decrease distinctly in August, and only single individuals occur in September and October. The species of *Dolichopodidae* occurring the latest on meadows are: *Chrysotus laesus*, *Chr. gramineus* and *Campsicnemus scambus*, which is caught even in November.

#### CONCLUSIONS

The *Dolichopodidae* fauna on moist Mazovia meadows has rather a uniform species composition and a very similar dominance structure. Typical species occurring abundantly on moist meadows are the representatives of the genus *Chrysotus* Meig. and *Dolichopus plumipes*, *D. longicornis*, *Sciopus platypterus* and *S. longulus* (Figs 3, 4). These *Diptera* are closely connected with grasslands and their larvae develop in fertile meadow soil. Couturier (1970) has stated that larvae of some species of the genus *Dolichopus* and *Sciopus platypterus* may develop even in parched soil. Other species, which develop in moist forest soil or in the vicinity of water bodies, also fly on the meadows in search of food, thus enriching the meadow fauna.

*Dolichopodidae* occur on meadows since early spring to late autumn — even in November. The intensity of imago flight during the season increases in the middle of June and in July giving a single-peak curve (Fig. 6).

Quite high numbers of *Dolichopodidae* on moist meadows (up to 2.32 individuals per sweep-net sample) indicate that this group of *Diptera* is a significant one in the control of meadow zoocoenoses, and besides *Empididae*, is one of the most important groups of predatory insects.

The *Dolichopodidae* fauna of moist meadows shows some differentiation depending on the degree of intensity of meadow utilization by man. This is manifested mainly in poorer species composition, smaller numbers of these *Diptera* and greater percentage of common forms having broad geographical ranges. This is proved by results obtained at Chylice and Zbroszki (Fig. 3). As compared with *Dolichopodidae* fauna of wet, little utilized by man meadow in the reserve "Cy-ganka", the fauna of moist meadows has a distinct character — different dominance structure system and differences in species composition of the community.

Polska Akademia Nauk  
Instytut Zoologii  
ul. Wilcza 64, 00-679 Warszawa

## REFERENCES

- Bańkowska R. 1971. *Syrphidae* (Diptera) Bieszczadów. *Fragm. Faun. Warszawa*, 17: 401–476.
- Bańkowska R. 1976. *Syrphidae* (Diptera) Pienin. *Fragm. Faun. Warszawa*, 21: 51–94.
- Bańkowska R. 1982. *Dolichopodidae* (Diptera) of Warsaw and Mazovia. In: Species composition and origin of the fauna of Warsaw. Part 2. *Memorabilia Zool.*, 35: 33–45.
- Bańkowska R. 1989. Study area and methods of material collecting on moist meadows on the Mazovian Lowland. *Memorabilia Zool.*, 43: 7–15.
- Boness M. 1953. Die Fauna der Wiesen unter besonderer Berücksichtigung der Mahd. *Z. Morphol. Ökol.*, 42: 255–277.
- Couturier G. 1970. Contribution a la connaissance des *Dolichopodidae* (Diptera) du Bassin Parisien. *Ann. Soc. Entomol. Fr.*, 6: 467–473.
- Couturier G. 1973. Étude écologique et biocenotique du peuplement d'insectes dans un verger „naturel”. *Travaux de L'O. R. S. T. O. M.*, 22: 96.
- Kotowska J., Okołowicz M. 1989. Geobotanic characteristic of meadow research sites on the Mazovian Lowland. *Memorabilia Zool.*, 43: 17–30.
- Vaillant F. 1978. *Dolichopodidae*. In: *Limnofauna Europaea*, pp. 470–474.

## DOLICHOPODIDAE (DIPTERA) ŁĄK ŚWIEŻYCH NIZINY MAZOWIECKIEJ

## STRESZCZENIE

Praca zawiera analizę fauny *Dolichopodidae* łąk świeżych Niziny Mazowieckiej. Do badań wyznaczono 4 łąki różniące się głównie sposobem nawożenia i sposobem użytkowania, intensywnie koszoną łąkę w Chylicach, ekstensywnie użytkowane łąki kośno-pastwiskowe w Klembowie i Białoleńce, oraz pastwisko w Zbroszkach. Dla celów porównawczych badano także faunę zebraną na łące wilgotnej w rezerwacie „Cyganka” na terenie Puszczy Kampinoskiej. Podstawową metodą połowu było czerpakowanie entomologiczne, co 7 dni od wczesnej wiosny do jesieni w ciągu 2 lat na każdej powierzchni. Tylko w Chylicach zastosowano metody uzupełniające.

W złowionym materiale wyróżniono 63 gatunki, z czego 56 występuje na łąkach świeżych Mazowsza (tabl. 1).

Wśród analizowanego materiału znaleziono pięć gatunków nowych dla fauny kraju, są to: *Dolichopus pectimatarsis* Stenh., *Porphyrops pectinata* Löw, *Xiphandrium quadrispinosum* Strobl, *X. zetterstedti* Par. i *Medetera tristis* Zett. oraz 17 nowych dla fauny Mazowsza.

Fauna *Dolichopodidae* występująca na łąkach świeżych Mazowsza charakteryzuje się dość jednolitym składem gatunkowym oraz dużym podobieństwem struktury dominacyjnej. Typowymi dla łąk świeżych gatunkami, występującymi w dużych liczebnościach, są przedstawiciele rodzaju *Chrysotus* Meig. oraz *Dolichopus plumipes*, *D. longicornis*, *Sciopus platypterus* i *S. longulus* (rys. 3, 4).

*Dolichopodidae* występują na łąkach od wczesnej wiosny do późnej jesieni — nawet jeszcze w listopadzie. W ciągu sezonu intensywność lotu imago potęguje się w połowie czerwca i w lipcu, dając jednoszczytową krzywą (rys. 6).

Dość duża liczebność *Dolichopodidae* na łąkach świeżych (dochodząca do 2,32 osobnika na próbę czerpakową) wskazuje, że są one grupą muchówek odgrywającą dużą rolę w samoregulacji zoocenozy łąkowych i obok *Empididae* plasują się w czołówce wśród owadów drapieżnych.

Fauna *Dolichopodidae* łąk świeżych wykazuje pewne zróżnicowanie w zależności od stopnia intensywności użytkowania łąk przez człowieka. Przejawia się to głównie w zubożeniu składu

gatunkowego, zmniejszeniu liczebności oraz w powiększeniu udziału procentowego form pospolitych o szerokich zasięgach geograficznych (rys. 3). W porównaniu do fauny *Dolichopodidae* łąki wilgotnej, mało użytkowanej przez człowieka w rezerwacie „Cyganka” — fauna łąk świeżych wykazuje dużą odrębność, przejawiającą się w odmiennym układzie struktury dominacyjnej oraz różnicach składu gatunkowego zgrupowania.

## DOLICHOPODIDAE (DIPTERA) СВЕЖИХ ЛУГОВ МАЗОВЕЦКОЙ НИЗМЕННОСТИ

### РЕЗЮМЕ

В работе дается анализ фауны *Dolichopodidae* населяющих полуприродные используемые луга Мазовецкой низменности. Обсужден видовой состав сообществ исследованных мух, их численность, структура доминации и сезонная динамика. Прослежены также изменения, происходящие в сообществах *Dolichopodidae* под влиянием различных форм использования лугов в хозяйственной деятельности человека.