

zpracovány ve spolupráci se specialisty-determinátory, budou pojednávat o jednotlivých druzích zjištěných na studovaných rašeliništích, včetně hodnocení jejich afinity k tomuto specifickému prostředí.

Předložená práce přináší kromě obecného úvodu do celé řešené problematiky popis použitých metod sběru a přehled získaného materiálu, stručné charakteristiky studovaných lokalit a faunisticko-ekologický rozbor na úrovni čeledí. Získané výsledky lze shrnout do těchto bodů:

(1) Studovaná rašeliniště náležejí ke třem různým typům, které se odlišují polohou, nadmořskou výškou, reliéfem, vývojem, klimatickými a vegetačními poměry. Tyto typy lze charakterizovat jako a) svahové prameniště smíšené (přechodové) rašeliniště — lokalita Skřitek, b) rozvodnicové vrchoviště — lokalita Rejvíz, c) hřebenové (sedlové) vrchoviště — lokality Keprník—Vozka, Malá Jezerná, Jezerník—Slatě, Milř, Sušina, Černá kupa.

(2) Materiál získaný na popsáných lokalitách (celkem 9 181 exemplářů) byl hodnocen na úrovni čeledí a to vzhledem k zastoupení jednotlivých čeledí ve vzorcích získaných různými metodami sběru a ve vzorcích z jednotlivých lokalit.

(3) Procentické zastoupení čeledí v nasmykaném materiálu se podstatně liší od vzorků získaných jinými metodami. Ve vzorcích sbíraných smykem převládají fytofágní čeledi (*Chloropidae*, *Drosophilidae* s převahou *Scaptomyza* spp. a *Agromyzidae*), zatímco v materiálu získaném na ekrementech, hniřících houbách, do zemních pastí nebo prosevem shnilých vegetabilii a rašeliničku, nápadně dominuje čeleď *Sphaeroceridae*. Vzorky ze zemních pastí obsahovaly poměrně vysoké procento čeledí *Drosophilidae* a *Heleomyzidae*.

(4) Srovnání procentického zastoupení čeledí na jednotlivých lokalitách (a to jednak v celkovém materiálu, jednak v materiálu získaném pouze smykáním), vedlo ke zjištění zřetelných rozdílů mezi faunami skupiny *Acalyptrata* na třech odlišných typech severomoravských rašelinišť (obr. 3, 4). Přestože byly rozdíly hodnoceny pouze na úrovni čeledí, ukázalo se, že zejména hřebenová vrchoviště se podstatně liší v tomto ohledu od rašelinišť nižších poloh (Skřitek, Rejvíz), pravděpodobně v důsledku rozdílů v klimatických a vegetačních poměrech (např. úplná absence rašelinných luk svazu *Caricion fuscae* u horských hřebenových vrchovišť).

(5) Horská hřebenová vrchoviště (Keprník—Vozka a podobná ložiska) mají mnohem chudší dipterofaunu, která vykazuje nízkou diversitu již na úrovni čeledí, kromě jiného také pro fytosociologickou stejnorodost a floristickou chudost vegetace.

(6) Dřívější výzkumy dipterofauny a zvláště skupiny *Acalyptrata* na středoevropských rašeliništích byly hodnoceny jako nedostatečné. Na druhé straně složení fauny *Acalyptrata* (podle čeledí), zaregistrované Krogerusem (1960) na rašeliništích v severní Evropě a Nelsonem (1971) v Anglii, se dosti podobá tomu, které bylo zjištěno na studovaných lokalitách.

162ček 1982 Gr. Koz. Paz. Opou (A) 31. A-11

ACALYPTERATE DIPTERA OF PEAT-BOGS IN NORTH MORAVIA (CZECHOSLOVAKIA)

Part 1. Introduction, localities under study and an evaluation at the family level

Introduction

The dipterous fauna of peat-bogs has been rarely studied, and mainly as a part of larger ecological or faunistic projects studying the fauna of moorland areas as a whole. It was recognized by previous authors that insects represent the most important component of the peat-bog fauna but *Diptera*, and particularly *Acalyptrata*, were not considered significant and characteristic enough for these peculiar biotopes to be used as a key-group, probably owing to their great mobility. Further, the majority of authors omitted these flies from consideration because they were unable to ensure the correct identification of the material obtained.

Virtually, almost all the phenomena and peculiarities of the insect fauna of peat-bogs (e.g. presence of glacial relics = boreoalpine species; exclusive confinement of some species, so called tyrphobionts to peat-bogs; insular effect in the development of the peat-bog fauna) occur also in the *Acalyptrates*. In this connection, it must be criticized the conclusion of Peus (1932) that there are only two tyrphobionts among *Acalyptrata* flies* occurring on peat-bogs. It is well known that many tyrphobiont species have very low population densities and are difficult to collect. Moreover, for recognition whether the species is tyrphobiont or not it is necessary to know its biology and distribution, and this was unknown in the majority of *Acalyptrates* before World War II. Despite our knowledge of the *Acalyptrates* (including their ecology) is more extensive now, we must be very careful in ascribing the affinity of particular species to peat-bog communities and classifying them according to scale used by Peus (1928, 1932) or that of Krogerus (1960).

The basic information about dipterous fauna of peat-bogs in Central Europe can be found in works of German authors published before World War II (Dahl 1912; Harnisch 1925; Peus 1928, 1932; Rabeler 1931; Pax 1937). More precise data are available from North Europe (Krogerus 1960) and England (Nelson 1971). Recently, British authors have started to publish results from their comprehensive studies on the ecology of moorland insects (Coulson & Whittaker 1978) some of them dealing also with *Diptera Brachycera* (Disney et al. 1981; Randall et al. 1981). These studies, together with the thorough work of Krogerus (1960), are of particular value for the present study.

In Czechoslovakia the insect fauna of peat-bogs has been mainly studied for selected orders. Only Pax's (1937) paper discussed invertebrates as a whole including some *Diptera* but the majority of published studies refer to groups other than *Diptera* (e.g. Schubert 1930, 1933; Roubal 1934; Gregor & Povolný 1947; Pelikán 1947, 1950; Brčák 1948, 1950; Obr 1949; Teyrovský 1949, 1950; Povolný & Gregor 1950; Miller 1951; Stehlík 1952; Moucha & Novák 1953; Perutík 1955; Povolný et al. 1965, 1968; Spitzer 1968, 1975, 1977, 1978; Spitzer & Novák

* These are *Limosina dahl* Duda and *L. longisetosa* Dahl (both *Sphaeroceridae* — see Peus 1932, p. 203); however, the latter species is not a tyrphobiont!

162ček 1982

1969; Turček 1970; Novák & Spitzer 1972; Pfeiffer 1976). Some of these papers deal with the insects of peat-bogs in North Moravia, particularly at Rejvíz but the *Diptera* were not investigated at all. However, there are data on several groups of *Diptera* occurring on peat-bogs in Czechoslovakia (reviewed by Kunst 1965), but the only paper on *Acalypterates* is that of Doskočil (1973) which refer to the occurrence of this group on peat-bog meadows in Krkonoše Mts. (North Bohemia). In addition, further scattered data can be found in various taxonomic, faunistic or ecological papers (e.g. Pešková 1978) — references to them will be given in the subsequent papers concerning the particular group and/or species.

The present study was undertaken to fulfill the gap in our knowledge of *Acalypterate* *Diptera* associated with peat-bog communities in North Moravian localities. Much data on the flies of Central European peat-bogs given by previous authors are erroneous and requires correction. Special attention was paid to the qualitative collection of flies and to specific identification of the collected material. Therefore several collecting methods (see below) were employed to obtain as wide species-composition as possible. The material was identified by specialists from Czechoslovakia and abroad. This paper forms the introductory part of a series of articles on *Acalypterate* *Diptera* from North Moravian moors. The subsequent parts will contain a survey of species of particular families with all obtained faunistic, zoogeographical and biological data. Thus, the present project should be considered a faunistic-ecological study on *Acalypterate* *Diptera* occurring on three different types (see below) of peat-bogs in North Moravia.

Acknowledgements: I should like to express my gratitude to all who assisted in the identification of the material and provided me with valuable data and information. My special thanks are due to Mr. B. Beneš and Dr. J. Duda, CSc. (Silesian Museum, Opava), Dr. J. C. Coulson (University of Durham), Mr. B. R. Pitkin (British Museum Natural History/ London) and Ing. K. Spitzer, CSc. (Entomological Institute CSAV, Č. Budějovice) for their helpful comments.

Material and methods

The total material of *Acalypterate* *Diptera* for the present study includes 9181 specimens collected during four-year investigations (1977—1980) on peat-bogs in submountain to mountain areas of North Moravia. Altogether 9 localities (see below) were visited and the following methods were used to collect as wide a species spectrum as possible.

1) Sweeping over peat-bog meadow. This method was used in all the localities. Flies were swept on various phytosociological associations (see the localities under study) without nearer separation; also material swept on peat-mud along small lakes and pools is included. Because the attempt to collect flies quantitatively was not successful (owing to very changeable weather in the sites investigated causing the collecting occasionally impossible) the material was collected with the aim of obtaining a sample of about 200—300 specimens. Altogether 6744 specimens were obtained using this method.

2) Sifting moss and *Sphagnum*. This laborious method was successfully used only in the locality Skřítek. The moss-layer supports a small fly fauna, and only 133 specimens of *Acalypterates* were collected.

3) Sifting moss and decaying grass in and around runs of *Microtus agrestis*. Besides sifting the decaying matter mixed with excrement of vole *M. agrestis*, material was also collected from runs of burrows using a pouter (exhaustor). The method was employed at Skřítek and Rejvíz and 525 specimens were caught (no burrows of voles were found at other sites).

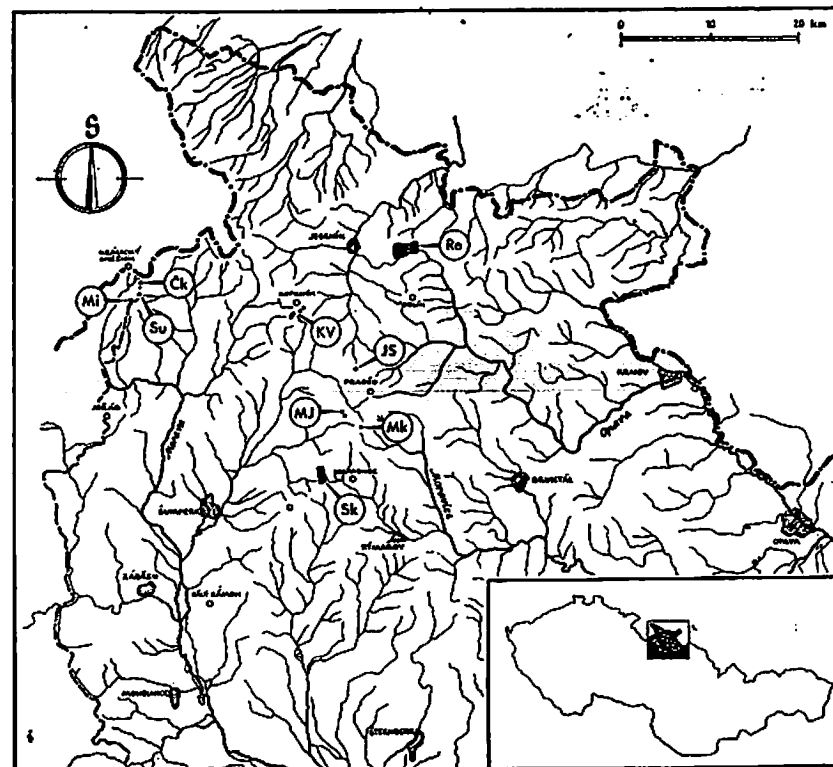
4) Collecting on excrements. The method was used in all the localities except for Sušina, Černá kupa and Malá kotlina. Specimens were collected by means of a pouter and by a net. The majority of the material was collected on red-deer excrement, the rest on human, fox, marten and horse excrement; altogether 1070 specimens were obtained.

5) Collection on decaying dung. The method was used in localities where a sufficient amount of the substrate was found, i.e. Skřítek and Rejvíz. Material was caught using a pouter and a net. Only 208 specimens were captured.

6) Soil traps. The method was employed for collecting epigeic and terricolous flies in the locality Skřítek. 15 traps (plastic conical vessels with a mouth of 80 mm in diameter) sunk up to the rim into soil were exposed uncovered and containing 8 % formalin. The traps were emptied in 2 week intervals. The majority of traps was placed in the open parts of the peat-bog but some of them also on the edges of the forest (*Piceetum sphagnetosum*). Altogether 501 specimens were collected during 1977—1978 investigations.

Localities under study

The *Acalypterate* fauna of peat-bogs was studied on 9 localities in Hrubý Ječnick Mts. and Krállický Sněžník Mts. (see map on Fig. 1). Only three largest peat-bogs, representing three different types of moor, were visited repeatedly and therefore are characterized in detail below; other localities were visited only once and are only briefly described. The localities were as follows:



Obr. 1 Rozmístění studovaných rašelinišť na severní Moravě.

Fig. 1 Distribution of peat-bogs studied in North Moravia. Abbreviations: Čk — Černá kupa, JS — Jezerník-Slatě, KV — Kepník-Vozka, MI — Milíř, MJ — Malá jezerná, Mk — Malá kotlina, Re — Rejvíz, Sk — Skřítek, Su — Sušina.

Type: Valleyside springy transient peat-bog

Topography: This second largest peat-bog in North Moravia lies in south part of the H. Jeseník Mts., in a saddle between Ztracené skály Mt. and Bílý kámen Mt. It is of an roughly oblong shape covering about 90.9 ha of very shallow basin east of the road Šumperk — Rýmařov at altitude about 820—870 m; maximum depth of peat is 5.9 m. A small nameless brook rises in north part of peat-bog and runs through it into south part where it empties into Podolský potok brook.

Climate: Annual mean precipitation 1000 mm, min. 60 mm (II), max. 120 mm (VII). Winters are long, with an average snow cover of about 118 days. Annual mean temperature 6.0°C, min. -3.2°C (I), max. 15.9°C (VII). First frost around 20. X., last about 5. V. Annual mean relative humidity 77 %, min. 66 % (V), max. 91 % (XII). Chemical analysis of the peat is given by D o h n a l et al. (1965); the pH is 4.00-6.65.

Vegetation: The vegetation of the locality was described by Š m a r d a (1950) and briefly characterized also by D o h n a l et al. (1965). The peat-bog is mainly in a regressive stage and covered by spruce forest (associations *Vaccinio-Piceetum*, *Piceetum hercynicum* but mostly *Piceetum sphagnetosum*). The central part along the brook is still open (see Fig. 5) similarly as are some parts of tundra appearance in northwest part of the peat-bog (Fig. 6). These open parts (relics of the original lagg, peat-bog meadows, springs places, overgrown pools) are characterized by highly diverse mosaic of vegetation composed of various *Sphagnum*, moss and herb species, from typical highmoorland representatives (*Sphagnum recurvum*, *S. rubellum*, *Eriophorum vaginatum*, *Oxycoccus quadripetalus*), through boggy species (*Sweetia perennis*, *Crepis paludosa*, *Aconitum napellus*) to species occurring on more dry places (*Molinia caerulea*, *Nardus stricta*, *Vaccinium vitis-idaea*). Sociologically, there is a rich mixture of overlapping associations; those covering the largest areas of open peat-bog places (see Fig. 5) are similar to *Caricion fuscae* (see Š m a r d a 1950:129). The presence of birch-trees (*Betula pubescens* var. *carpatica*) and big hummocks of *Polytrichum* spp., particularly in northwest areas of the locality (see Fig. 6) are also characteristic. In the south part there is a track of non-autochthonous pine (*Pinus mugo*) introduced by man on the edge of spruce forest.

Collecting: All the methods were used in collecting flies in the peat-bog at Skritek. Altogether 27 visits at 2 week intervals were made on this locality during 1977-1978, viz., 21. V., 8. VI., 21. VI., 6. VII., 19. VII., 3. VIII., 16. VIII., 30. VIII., 14. IX., 27. IX., 12. X., 25. X. 1977 and 6. IV., 27. IV., 11. V., 26. V., 8. VI., 23. VI., 13. VII., 27. VII., 10. VIII., 23. VIII., 6. IX.; 20. IX.; 4. X., 18. X., 1. XI. 1978. Sweeping was used in all cases (provided that it was not raining), also soil traps were emptied in the same intervals. Sifting *Sphagnum* and sifting decaying matter in runs of *Microtus agrestis* were undertaken in 4 week intervals; individual collecting was used only when the substrate (excrement, fungi) was found. A total of 3463 specimens were obtained (see Tab. 1).

(Pl. 2, 3, Flgs. 7—9)

Type: Watershed upland raised peat-bog

Topography: The largest Moravian peat-bog is situated in north part of the

Tab. 1 *Diptera Acalyptrata* rašelinišť sev. Moravy. Přehled řádů zjištěných na jednotlivých lokalitách. Zkratky lokality: Sk — Skřetět, Re — Rejtz, KV — Keprník—Vozka, MJ — Malá Jezová, JS — Jezerník—Slavě, Mk — Malá kotlina, Mi — Milfr, Su — Sušina, Čk — Černá kopa. Zkratky metod sběru: M — smyk na rašeliništi, E — na ekrementech, F — na smíleých houbách, S — prosev rašeliničku. B — prosev u nor *M. agrestis*, T — zemní past.

Tab. 1 *Acidylpterate* Diptera of peat-bogs in North Morevya. Survey of the families found at the study sites. Abbreviations of localities: Sk — Skritek, Re — Rejvz, KV — Koprnik-Vozka, MJ — Malá jezerná, JS — Jezerník-Slatá, Mk — Malá kotlina, MI — Muir, Su — Sušna, Čk — Černá kupa. Abbreviations of collecting methods: M — sweeping over peat-bog meadow, E — on ericetum, F — on decaying fungi, S — sifting sphagnum, B — sifting grass and moss in runs of *Microtus agrestis*, T — soil traps.

Locality		Sk										Re				KV		MJ		JS		Mk	Mi		Su	Ch	Total
Family/Method		M	E	F	S	B	T	M	E	F	B	M	E	M	E	M	E	M	E	M	E	M	M	M			
Acartophthalmidae		—	2	12	—	—	—	—	—	1	9	—	1	—	—	—	—	—	—	—	—	—	—	—	—		
Agromyzidae		151	1	—	—	—	2	184	—	—	—	1	63	—	25	—	—	—	—	—	—	—	—	9	3		
Anthomyiidae		95	—	—	—	—	—	178	—	—	—	14	—	—	—	—	—	—	—	—	—	—	—	—	—		
Asteliidae		4	—	—	—	5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
Carnidae		—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—		
Chamaemyiidae		15	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
Chloropidae		974	1	—	7	37	68	840	—	—	—	44	158	1	13	—	—	—	—	—	—	—	51	22	282		
Clusiidae		19	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
Diastatidae		19	2	—	—	—	4	19	—	—	2	—	1	—	—	—	—	—	—	—	—	—	—	—	—		
Drosophilidae		182	—	6	8	21	99	113	—	—	3	5	188	—	11	1	18	—	—	—	—	—	—	80	911		
Ephydriidae		172	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
Heleomyzidae		113	4	19	—	3	69	95	—	—	9	2	724	—	164	—	16	—	—	—	—	—	—	42	7		
Lauxaniidae		1	—	—	—	—	—	—	—	—	—	—	13	—	—	—	1	—	—	—	—	—	—	1	239		
Lonchaeidae		1	—	—	—	—	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	12		
Micropezidae		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2		
Opomyzidae		85	1	1	—	4	3	4	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	1	100		
Pallopteridae		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
Phlebotomidae		—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
Psilidae		43	1	—	—	—	3	7	—	—	—	—	6	—	—	—	—	—	—	—	—	—	—	—	—		
Scatomyzidae		18	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
Sepsidae		89	4	—	—	—	—	23	—	—	—	—	18	—	1	—	—	—	—	—	—	—	—	—	60		
Sphaeroceridae		148	334	103	92	209	234	270	11	—	2	18	508	282	2	1	2	—	—	—	—	9	2	6	41		
Tephritidae		24	—	—	—	—	—	131	—	—	—	53	2	—	17	89	35	63	30	42	101	41	23	288			
Total		2053	352	141	133	283	501	2039	198	67	242	—	1665	283	233	71	72	63	67	198	103	278	139	9	181		
									2546				1948		304		135	67	301			278	139	9	181		

Hrubý Jeseník Mts., about 300 m west of the village Rejvíz at altitude of 734–794 m. It is an elongate shape, somewhat in the middle constricted. It lies in a broad shallow basin and covers about 195 ha; its peat reaches a depth of 6.6 m. The peat-bog evolved from two nuclei, one of which is near the Malé mechové jezírko lake, the second near the Velké mechové jezírko lake. These two centres were eventually coalesced together, forming a single deposit with an internal lagg. Two brooks drain the peat-bog, Černá Opava brook running eastwardly and Vrchovištní potok brook running westwardly.

Climate: Annual mean precipitation 1029 mm, min. 45 mm (II), max. 142 mm (VII). Snow cover lasts for an average 100 days. Annual mean temperature 5.3°C, min. –4.2°C (I), max. 14.6°C (VII). First frost around 1. X., last about 28. IV. Annual mean relative humidity 82.5 %, min. 75 % (VII), max. 90 % (XII). Vegetation period is 125 days (17. V. – 19. IX.). Chemical analysis of the peat is given by Dohnal et al. (1965); the pH is 3.5–6.2.

Vegetation: The vegetation was described in detail by Šmarda (1948, 1950). The peat-bog is composed of two typical raised bogs belonging to the division *Sphagnion europaeum*, subdivision *Sphagnion continentale*, round Malé mechové jezírko and Velké mechové jezírko and by peat-bog meadows on the surrounding and internal lagg (division *Caricion fuscae*). In the area investigated (round Malé mechové jezírko) various associations of both these divisions occur. These include associations belonging to *Caricion fuscae* and associations transitional to *Sphagnion europaeum* in the lagg east of Malé mechové jezírko (the main study area — see Fig. 8), with dominant *Carex* spp., *Eriophorum angustifolium*, *E. vaginatum*, *Sphagnum recurvum* and birches (*Betula pubescens* var. *carpatica*) and associations belonging to *Sphagnion europaeum* in the pine-wood (*Pinus rotundata*) round the Malé mechové jezírko lake (Fig. 9). In some places, the pine-wood is dead and the moss and herb stratum is formed by *Sphagnum* spp. and *Eriophorum vaginatum* only (Fig. 7). The succession of the associations in *Sphagnion europaeum* was described by Šmarda (1950). The most characteristic plants of these associations are *Sphagnum cuspidatum*, *S. recurvum*, *S. medium*, *S. rubellum*, *Eriophorum vaginatum*, *Vaccinium uliginosum*, *Oxycoccus quadripetalus*, *Ledum palustre*, *Pinus rotundata* etc.

Collecting: Flies were collected by sweeping, sifting decaying grass and moss from runs of *Microtus agrestis* and collecting on excrement and on decaying fungi. The sifting of *Sphagnum* was not successful. Eight collecting visits were undertaken at this site: 22. VII. 1978; 13. VI., 18. VII., 12. IX. 1979 and 24. V., 10. VI., 14. VII., 19. VIII. 1980. A total of 2546 specimens of *Acalypterate* *Diptera* were taken (see Tab. 1).

Peat-bog Keprník—Vozka (Pl. 3, 4, Figs. 10–12)

Type: Ridge raised peat-bog

Topography: There are three closely situated peat-bogs between Červená hora Mt., Keprník Mt. and Vozka Mt. of which only one, the second largest, was described by Dohnal et al. (1965). All three bogs are very similar to each other and are thus included in one locality. The largest peat-bog is situated on northwest slope of Vozka Mt. in the mountain spruce forest at altitude of about 1300 m and covers an area of about 10 ha. Its surface is flat but grooved with numerous pools and has two small lakes (see Fig. 11). The deposit investigated by Dohnal et al. (1965) is situated in a saddle between Červená hora Mt. and

Keprník Mt., near the meeting of ways called „Trojmezí“ at altitude of about 1250 m and covers an area of about 1.7 ha. Its relief is the same as in the largest bog but without lakes. The third bog is the smallest (about 0.5 ha) and lies in a shallow saddle between Trojmezí and Vozka Mt., between the two other bogs, at altitude of 1250 m. Springs occur in all these localities. Maximum depth of peat does not exceed 2.0 m.

Climate: Annual mean precipitation 1143 mm, min. 52 mm (IX), max. 149 mm (VII). The climate is very harsh and windy; snow lies for an average of 178 days, annual mean temperature is only 1.5°C, min. –7.6°C (I), max. 10.5°C (VII). Annual mean relative humidity unknown but the climate is generally very wet, and has 274 days with mist and 225 days with rainfall during a year. Vegetation period is only 92 days on the average (1. VI. – 31. VIII.). Chemical analysis of the peat is given by Dohnal et al. (1965); the mean pH is 3.7.

Vegetation: The vegetation of the locality was described by Klika & Šmarda (1946), Šmarda (1950) and briefly also by Dohnal et al. (1965). The open parts of the peat-bogs are surrounded by virgin mountain spruce forest (*Piceetum murtilletosum*); the open areas are dominated by the *Sphagneto-Caricetum pauciflorae* association but round the lakes and pools the *Caricetum limosae drepanocladetosum* association occurs. Hummocks are very characteristic (with *Vaccinium uliginosum*, *Empetrum hermaphroditicum* and *Eriophorum vaginatum*), as are hollows and pools (with *Carex limosa*, *Sphagnum recurvum*, *S. russovii*, *S. cuspidatum* and *Drepanocladus fluitans*, and other *Carex* spp. may occur). Near the spruce forest there are hummocks with *Polytrichum* spp., *Entodon schreberi* and *Vaccinium murtillus*, and tufts of *Molinia coerulea* are common near forest edges. The soruces (*Picea excelsa*) on the open parts are often dead or stunted and deformed (Fig. 12).

Collecting: Only sweep samples and collecting on red-deer excrement were employed in this locality. Sifting *Sphagnum* was not successful and no decaying fungi were found. Altogether 5 collecting visits were undertaken during 1979–1980: 15. VIII. 1979 and 6. VI., 23. VI., 6. VIII., 16. IX. 1980. A total of 1948 specimens were collected.

Peat-bog Malá Jezerná (Pl. 5, Fig. 13)

Type: Ridge raised peat-bog

Topography: Two small peat-bogs are situated in the saddle between Malá Jezerná Mt. and Velká Jezerná Mt. in H. Jeseník Mts. Together they cover about 1.0 ha of the shallow saddle-back at an altitude of about 1220 m. Their surface is flat and grooved by pools and hollows. In the more western deposit there is a larger pool. Several brooks rise in these bogs and run into Divoká Desná river and Merta brook. The maximum peat depth is unknown but these bogs are almost certainly very shallow as are other deposits of the same type.

Climate: The climate of the mountain ridge raised bogs is generally very harsh, and similar to those described for Keprník—Vozka.

Vegetation: Some floristical data for the locality can be found in the paper of Stehlík (1952). Sociologically the locality closely resembles that described for the peat-bog at Keprník—Vozka.

Collecting: One visit was made on 21. VI. 1978 and a sample of 304 specimens was collected by sweeping and catching on red-deer excrement.

Tab. 2 Zastoupení jednotlivých čeledí ve vzorcích získaných různými metodami sběru. Zkratky: M — smyk na rašeliníšti, E — na exkrementech, F — na shnilých houbách, S — prosev rašeliníku, B — prosev u nor *M. agrestis*, T — zemní past. Tab. 2 The proportion of particular families in samples obtained by various methods. Abbreviations: M — sweeping over peat-bog meadow, E — on excrement, F — on decaying fungi, S — sifting *Sphagnum*, B — sifting grass and moss in runs of *Microtus agrestis*, T — soil traps

Method	M		E		F		S		B		T	
Family	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Acartophthalmidae	1	0.01	3	0.28	21	10.10	—	—	1	0.19	2	0.40
Agromyzidae	435	8.45	1	0.09	—	—	—	—	19	3.62	—	—
Anthomyzidae	231	3.43	—	—	—	—	—	—	—	—	—	—
Astelidae	4	0.06	—	—	—	—	—	—	—	—	—	—
Carnidae	4	0.06	—	—	—	—	—	—	—	—	—	—
Chamaemyzidae	23	0.34	—	—	—	—	1	0.75	—	—	—	—
Chloropidae	2108	31.23	2	0.19	—	—	7	5.26	81	15.43	68	13.17
Clusiidae	1	0.01	—	—	—	—	—	—	—	—	—	—
Diastatidae	39	0.58	2	0.19	2	0.98	—	—	—	—	4	0.80
Drosophilidae	768	11.39	1	0.09	9	4.33	8	6.02	28	4.95	99	19.78
Ephydriidae	1264	18.74	—	—	—	—	24	18.05	5	0.95	15	2.99
Heleomyzidae	135	2.00	4	0.37	19	9.13	—	—	12	2.29	89	13.77
Lauxaniidae	11	0.16	—	—	—	—	—	—	—	—	1	0.20
Lonchaeidae	1	0.01	—	—	—	—	—	—	—	—	1	0.20
Micropezidae	1	0.01	—	—	—	—	—	—	—	—	—	—
Opomyzidae	90	1.35	1	0.09	1	0.48	—	—	5	0.95	3	0.60
Pallotteridae	1	0.01	—	—	—	—	—	—	—	—	—	—
Phyllitidae	1	0.01	2	0.19	—	—	—	—	—	—	—	—
Psilidae	56	0.83	1	0.09	—	—	—	—	—	—	—	—
Sciomyzidae	40	0.59	—	—	—	—	—	—	—	—	—	—
Sepsidae	378	5.60	18	1.88	—	—	—	—	—	—	3	0.60
Sphaeroceridae	998	14.77	1035	98.73	—	—	1	0.75	3	0.57	3	0.60
Tephritidae	158	2.34	—	—	158	75.00	92	69.17	373	71.05	234	46.71
Total	8744	100.00	1070	100.00	208	100.00	133	100.00	525	100.00	501	100.00

Peat-bog Jezerník—Slatě (Pl. 5, Fig. 14)

Type: Ridge raised peat-bog
Topography: A small peat-bog deposit situated east of Velký Jezerník Mt., about 800 m west of the chalet Švýčárna, cover about 0.6 ha at an altitude of 1260 m. The relief (Fig. 14) of the peat-bog is similar to Malá Jezerná but pools are less numerous.

Climate: Similar to that on Keprník—Vozka; no detailed data are available for the present locality.

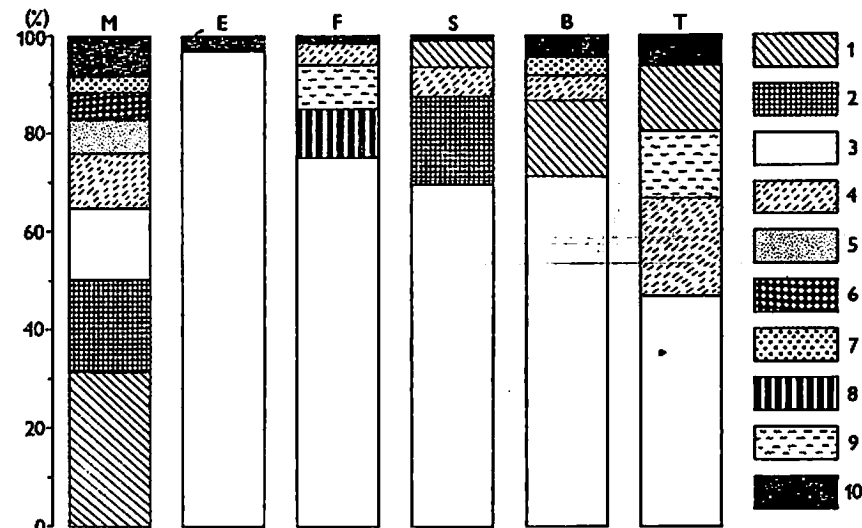
Vegetation: The vegetation is the same as that described for peat-bog at Keprník—Vozka by Š m a r d a (1950).

Collecting: One visit was made to this locality on 22. VI. 1978; only 135 specimens were taken by sweeping or collecting on red-deer excrement.

Peat-bog Malá kotlina

A minute, hitherto undescribed peat-bog deposit lies in the upper part of the Malá kotlina basin, east of Máj Mt. and Jelení hřbet Mt. at an altitude of about 1200 m. It covers only 0.1 ha and has a central shallow pool.

Collecting: One visit was made on 11. VI. 1977; only 67 specimens were caught by sweeping.



Obr. 2 Zastoupení jednotlivých čeledí ve vzorcích získaných různými metodami sběru. Zkratky metod: M — smyk na rašeliníšti, E — na exkrementech, F — na shnilých houbách, S — prosev rašeliníku, B — prosev trávy a mechu u nor hraboše *Microtus agrestis*, T — zemní past.

Fig. 2 Proportion of particular families in samples obtained by various collecting methods. Abbreviations of methods: M — sweeping over peat-bog meadow, E — on excrement, F — on decaying fungi, S — sifting *Sphagnum*, B — sifting grass and moss in runs of *Microtus agrestis*, T — soil traps. Families: 1 — *Chloropidae*, 2 — *Ephydriidae*, 3 — *Sphaeroceridae*, 4 — *Drosophilidae*, 5 — *Agromyzidae*, 6 — *Sepsidae*, 7 — *Anthomyzidae*, 8 — *Acartophthalmidae*, 9 — *Heleomyzidae*, 10 — remaining families.

Type: Ridge raised peat-bog

Topography: A small peat-bog covering less than 0.4 ha on small shallow saddle between Podbělka Mt., Sušina Mt. and Milř Mt. on the ridge Moravský hřeben of the Králícký Sněžník Mts. at an altitude of about 1280 m. Its surface is flat with two shallow pools.

Climate: The climate is wet and cold. Annual mean precipitation 1200 mm. The snow cover lies for an average 140 days and the annual mean temperature is only 2.0°C.

Vegetation: The vegetation of this and the two following localities was described in detail by Duda & Krkavec (1959). Only a few associations are developed, belonging to the division *Sphagnion europaeum*, the most important of which are *Sphagneto-Caricetum pauciflorae* and *Sphagneto-Eriophoretum vaginati*; along pools then *Caricetum limosae drepanocladetosum* occurs. Thus the phytosociology of this site resembles that of the ridge raised bogs in H. Jeseník Mts. (e.g. Keprník—Vozka) but *Sphagnum cuspidatum* is absent in associations surrounding pools and hollows.

Collecting: One visit was made on 24. VII. 1980 to this locality and a sample of 304 specimens was obtained by sweeping and by collecting on red-deer excrement.

Peat-bog Sušina
(Pl. 6, Fig. 16)

Type: Ridge raised peat-bog

Topography: A small peat-bog (about 0.5 ha) situated in a saddle between Sušina Mt. and Černá kupa Mt. on the ridge Moravský hřeben of the Králícký Sněžník Mts. at an altitude of 1250 m. The surface of the peat-bog possesses several pools (Fig. 16).

Climate: As in the last locality.

Vegetation: Similar to the last locality (for details see Duda & Krkavec 1959).

Collecting: One visit was made to this locality on 23. VII. 1980; only sweeping was used and 278 specimens were collected.

Peat-bog Černá kupa

Type: Ridge raised peat-bog

Topography: A very small deposit situated in a saddle-back between Černá kupa Mt. and Stříbrnická Mt. on the ridge Moravský hřeben of the Králícký Sněžník Mts. and at an altitude of 1211 m. It is completely surrounded by high spruce forest and covers about 0.2 ha. Its flat surface has some pools.

Climate: As in the above locality.

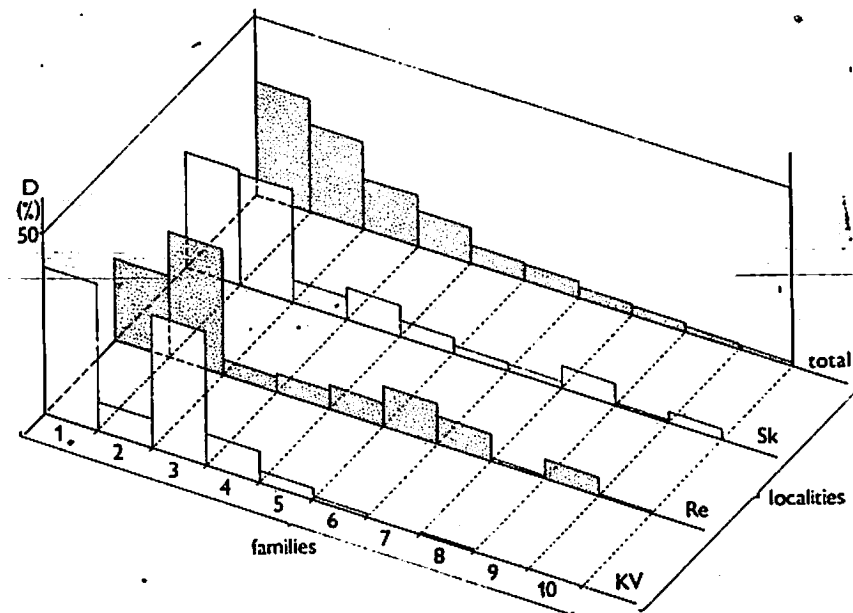
Vegetation: As described for the locality Milř but *Empetrum hermaphroditum* is absent from the *Sphagneto-Caricetum pauciflorae* association (for details see Duda & Krkavec 1959).

Collecting: One visit was made to this site on 23. VII. 1980 and only 139 specimens were collected by sweeping.

Evaluation at the family-level

Altogether 23 families of *Acalypterata* *Diptera* were found in the total material collected on peat-bogs under study (Tab. 1). Representatives of all these families were found in the material obtained by the sweeping method only (see Tab. 2) while the material collected by other methods (being usually less numerous) had fewer families. As mentioned in the introduction, special attention was paid to collect flies by methods other than sweeping to obtain saprophagous (coprophagous, phytosaprophagous and fungivorous) species which were usually very poorly represented in the sweep samples. However, at the family level there is little qualitative difference between sweeping and the other methods used, i.e. all the families found by other methods were also recognized among the sweep samples (Tab. 2). On the other hand, differences exist in the percentage representation of particular families in samples obtained by different sampling methods (Fig. 2).

The predominate families collected by sweeping are mostly those with phytophagous species (*Chloropidae* 31.23 %, *Drosophilidae* with predominating *Scaptomyza* spp. 11.39 %, *Agromyzidae* 6.45 %, *Anthomyzidae* 3.43 %) than families with the majority of saprophagous species (*Ephydriidae* 18.74 %, *Sphaeroceridae* 14.77 %, *Sepsidae* 5.60 %). In samples obtained by other methods there is



Obr. 3 Srovnání zastoupení jednotlivých čeledí v celkovém materiálu získaném na různých lokalitách.
Fig. 3 Proportion of particular families in the total sample obtained at various sites. Abbreviations of sites: Sk — Skřítek, Re — Rejvíz, KV — Keprník—Vozka. Families: 1 — *Sphaeroceridae*, 2 — *Chloropidae*, 3 — *Ephydriidae*, 4 — *Drosophilidae*, 5 — *Agromyzidae*, 6 — *Sepsidae*, 7 — *Anthomyzidae*, 8 — *Heleomyzidae*, 9 — *Tephritidae*, 10 — *Opomyzidae*.

a striking predominance of *Sphaeroceridae* which is understandable in the case of samples collected on excrement (*Sphaeroceridae* 96.73 %) but this family also predominates in samples taken on decaying fungi (75 %), by sifting *Sphagnum* (69.17 %), by sifting decaying matter from runs of *Microtus agrestis* (71.05 %) and also in the soil trap material (46.71 %). The soil trap samples are particularly interesting in having comparatively high proportion of *Drosophilidae* (19.76 %) and *Heleomyzidae* (13.77 %).

The representation of the *Acalypterate* families in particular localities showed distinct differences (see Tab. 3, 4 and Figs. 3, 4). In Tab. 3 the percentage of the families is calculated from the total collected material (all methods used) and for the graphical comparison (Fig. 3) only three most thoroughly investigated localities selected. The marked differences between particular localities apparently depend on the type of the peat-bog and its vegetation; the most striking difference is the low proportion of *Chloropidae* at the Keprník—Vozka locality combined with the high proportion of *Ephydriidae*. Peat-bogs at Rejvíz and Skřítek seem to be more similar to each other (probably owing to presence of peat-bog meadows of division *Caricion fuscae* which are absent in mountain ridge raised bogs) but differs in the proportion of *Sepsidae*, *Anthomyzidae*, *Heleomyzidae*, *Opomyzidae* and *Tephritidae* in particular.

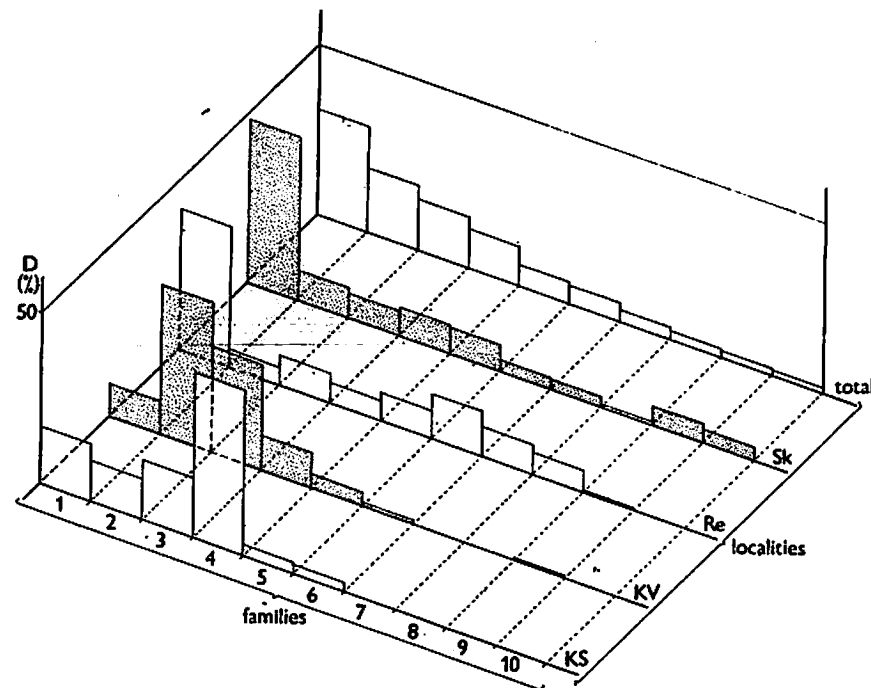
These differences become more apparent when the comparison is restricted to the sweep samples, see Tab. 4, Fig. 4. The peat-bogs in the Králický Sněžník Mts. (Milíř, Sušina, Černá kupa) are included as a single unit in this comparison and the differences between these bogs and the other peat-bogs examined are very extensive (cf. the high proportion of *Drosophilidae* — 48.13 % — in K. Sněžník localities), but it should be noted that this may be due to the material from K. Sněžník Mts. being collected only at the end of July whilst in the other localities it originates from much longer period. It is apparent that the mountain ridge raised bogs (Keprník—Vozka, K. Sněžník) have a much poorer dipterous fauna than the floristically richer peat-bogs in lower altitudes (localities Skřítek and Rejvíz), see Fig. 4. Indeed, the *Acalypterate* fauna of the lower altitude peat-bogs show a much greater diversity at the family level (cf. the approximately the same percentage representation of the families 2—8 in Rejvíz and 2—7, 9, 10 in Skřítek — see Fig. 4).

Discussion

When comparing the family-composition of the material obtained in peat-bogs in North Moravia with that recorded by previous authors from other Central European peat-bogs (Harnisch 1925; Rabeler 1931; Peus 1928, 1932) there is at first sight a very striking disproportion in number of recorded families. While the latter authors mention only 8—10 families of *Acalypterate* Diptera the present investigations discover more than twice that number (23 families). Naturally, most of the families which are abundant on peat-bogs (*Chloropidae*, *Ephydriidae*, *Sphaeroceridae*, *Agromyzidae*, *Sepsidae*) were recorded by these authors although sometimes by incomprehensible small numbers of specimens; e.g. Harnisch (1925) recorded only 4 specimens of *Sphaeroceridae* and 2 each of *Sepsidae* and *Agromyzidae*; similarly Rabeler (1931) found only 16 specimens of *Chloropidae*, 6 of *Ephydriidae* and no *Agromyzidae* and Peus (1928) took only 16 specimens of *Chloropidae*. Some families belonging to dominant groups in our material (*Drosophilidae*, *Anthomyzidae*) were not recorded by them at all (Harnisch 1925; Rabeler 1931). The above information, together with ge-

nerally small number of collected specimens, clearly demonstrate that the collecting of insects made by older authors from peat-bogs were insufficient.

This conclusion is supported by comparing the number of families found in the present study with those recorded in thorough recent studies of Krogerus (1960) from North Europe and Nelson (1971) from England. These authors recorded almost all of the families (Krogerus 1960: 20 families, 18 of them identical; Nelson 1971: 18 families, 16 identical) as I found on peat-bogs in North Moravia; the differences pertain to mostly recedent and subcedent groups represented on peat-bogs by species penetrating from the surrounding biotopes (*Asteiidae*, *Clusiidae*, *Dryomyzidae*, *Lauxaniidae*, *Lonchaeidae*, *Otitidae*, *Piophilidae*). The agreement in the family-composition of *Acalypterate* Diptera in peat-bogs in North Moravia and those from North Europe and England is remarkable considering the differences between bogs investigated by Krogerus (1960), Nelson (1971) and myself. Of course, decisive and essential differences will be surely found when the localities are compared at the species-level. This problem is to be considered in the last, concluding part of the series of papers on *Acalypterates* of peat-bogs in North Moravian localities and when all families are precisely examined.



Obr. 4 Srovnání zastoupení jednotlivých čeledí v nasmykaném materiálu z různých lokalit.

Fig. 4 Proportion of particular families in sweep samples from various sites. Abbreviations of sites as in Tab. 4. Families: 1 — *Chloropidae*, 2 — *Ephydriidae*, 3 — *Sphaeroceridae*, 4 — *Drosophilidae*, 5 — *Agromyzidae*, 6 — *Sepsidae*, 7 — *Anthomyzidae*, 8 — *Tephritidae*, 9 — *Heleomyzidae*, 10 — *Opomyzidae*.

Conclusions

(1) In the first part of the studies on *Acalypterata* Diptera of peat-bogs in North Moravia, the localities under study have been described. They belong to three different types of peat-bogs and are distinguished by their position, altitude, relief, development, climate and vegetation.

(2) The material collected on the sites examined (9 181 specimens) is evaluated at the family-level regarding the representation of families in samples obtained by various collecting methods and in samples from particular localities.

(3) The percentage of specimens belonging to different families in the sweep material differs from that obtained by other methods. In the sweep samples the families with phytophagous species predominate (*Chloropidae*, *Drosophilidae* with the majority of *Scaptomyza* spp. and *Agromyzidae*) while in the samples collected on excrement, decaying fungi, by soil traps or sifting from decaying vegetation the *Sphaeroceridae* predominates. The soil trap samples contain comparatively high proportion of *Drosophilidae* and *Heleomyzidae*.

Popisy k fotografiím — Explanation of plates

Foto: J. Roháček

Tab. 1: obr. 5—6 Rašeliniště Skřítek. 5 — otevřená část rašeliniště s rašelinnými loukami — hlavní výzkumná plocha; 6 — charakteristické břízy a bulty ploníku v severozápadní části lokality.

Pl. 1: Figs. 5—6 The peat-bog at Skřítek. 5 — open part of the site with peat-bog meadows — the main study area; 6 — characteristic birches and *Polytrichum* hummocks in northwest part of the locality.

Tab. 2: obr. 7—8 Rašeliniště Rejvíz. 7 — odumřelý blatkový porost s podrostem suchopýru (*Eriophorum vaginatum*) a rašeliniště (*Sphagnum* spp.) u Malého mechového jezírka; 8 — lag východně od Malého mechového jezírka — hlavní výzkumná plocha.

Pl. 2: Figs. 7—8 The peat-bog at Rejvíz. 7 — dead pine forest (*Pinus rotundata*) with undergrowth of *Eriophorum vaginatum* and *Sphagnum* spp. near Malé mechové jezírko lake; 8 — lag east of the Malé mechové jezírko lake — the main study area.

Tab. 3: obr. 9 Rašeliniště Rejvíz — břeh Malého mechového jezírka se starým porostem borovice blatky. Obr. 10 Rašeliniště Keprník—Vozka — celkový pohled na lokalitu s tůňkami a okolním smrkovým porostem.

Pl. 3: Fig. 9 The peat-bog at Rejvíz — shore of the Malé mechové jezírko lake with old pine forest (*Pinus rotundata*). Fig. 10 The peat-bog at Keprník—Vozka — a general view on the site with pools and surrounding spruce forest.

Tab. 4: obr. 11—12 Rašeliniště Keprník—Vozka. 11 — mělké jezírko na největším rašeliništi; 12 — odumřelé smrky na otevřeném rašeliništi.

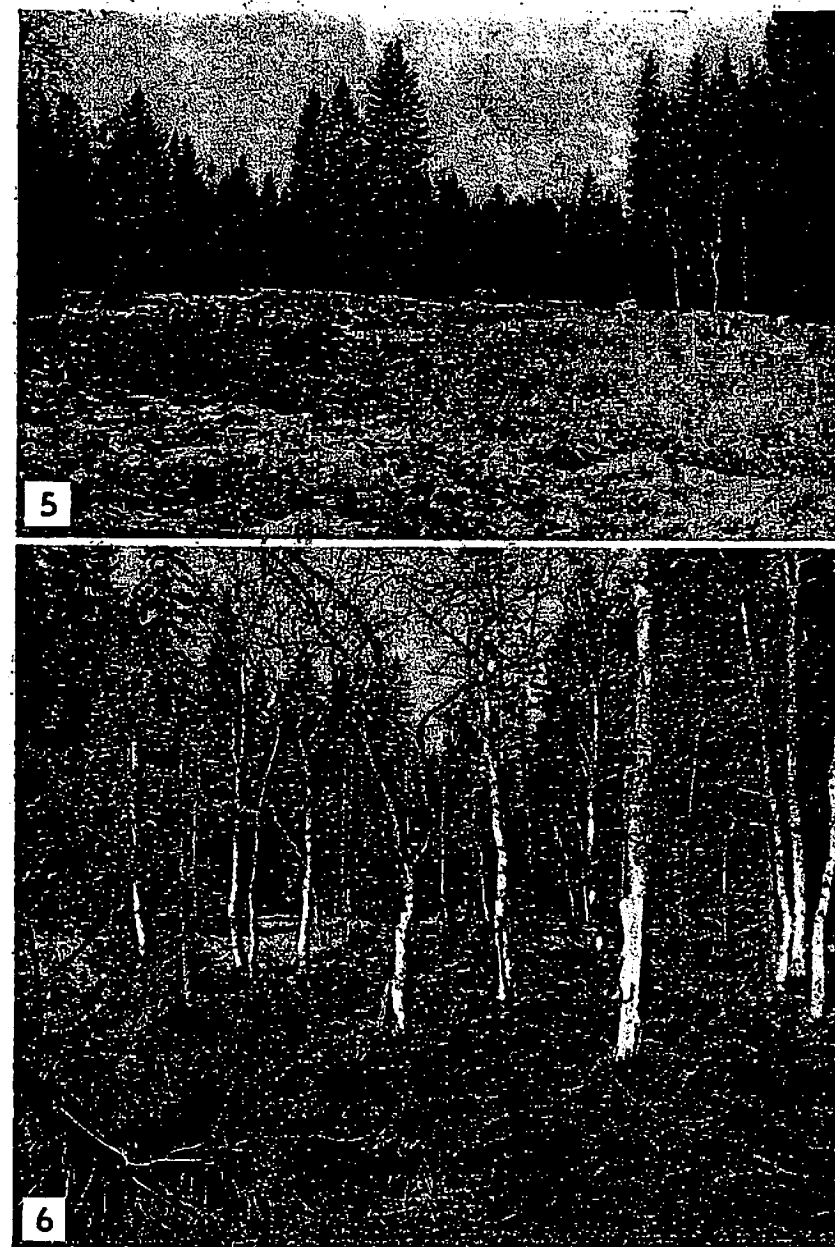
Pl. 4: Figs. 11—12 The peat-bog at Keprník—Vozka. 11 — a shallow lake in the largest peat-bog of the site; 12 — dead spruces in the open part of the locality.

Tab. 5: obr. 13 Rašeliniště Malá Jezerná — tůňky v severní části lokality. Obr. 14 Rašeliniště Jezerník—Slatě — detail s kvetoucím suchopýřem pocívatým (*Eriophorum vaginatum*).

Pl. 5: Fig. 13 The peat-bog at Malá Jezerná — pools in northern part of the site. Fig. 14 The peat-bog Jezerník—Slatě — detail with flowering *Eriophorum vaginatum*.

Tab. 6: obr. 15 Rašeliniště Milíř — celkový pohled na lokalitu. Obr. 16 Rašeliniště Sušina — celkový pohled na lokalitu; v popředí typické tůňky (šlenky).

Pl. 6: Fig. 15 The peat-bog at Milíř — a general view on the site. Fig. 16 The peat-bog at Sušina — a general view on the site with characteristic pools in the foreground.





Tab. 3 Absolutní a relativní (procentické) zastoupení čeledí v celkovém materiálu z jednotlivých lokalit. Zkratky lokalit jako u tab. 1.
Tab. 3 Absolute and relative (percentage) occurrence of families in all of the material obtained at particular localities. Abbreviations of the localities as in Tab. 1.

Locality	Sk		Re		KV		MJ		JS	
Family	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
<i>Acartophthalmidae</i>	14	0.40	10	0.39	1	0.05	—	—	—	—
<i>Agromyzidae</i>	154	4.45	165	6.48	63	3.23	25	8.22	9	6.67
<i>Anthomyzidae</i>	60	1.73	190	7.48	—	—	—	—	—	—
<i>Astelidae</i>	4	0.12	—	—	—	—	—	—	—	—
<i>Carnidae</i>	—	—	1	0.04	2	0.10	—	—	—	—
<i>Chamaemyzidae</i>	16	0.46	8	0.24	—	—	—	—	2	1.48
<i>Chloropidae</i>	1 085	31.33	884	34.72	159	8.18	13	4.28	9	6.67
<i>Clusidae</i>	1	0.03	—	—	—	—	—	—	—	—
<i>Diasatidae</i>	25	0.72	21	0.82	1	0.05	—	—	—	—
<i>Drosophilidae</i>	296	8.55	121	4.75	168	8.62	12	3.95	18	13.33
<i>Ephydriidae</i>	214	6.18	97	3.81	724	37.17	164	53.95	16	11.85
<i>Heleomyzidae</i>	208	6.01	16	0.63	13	0.67	—	—	1	0.74
<i>Lauxanidae</i>	2	0.06	8	0.31	1	0.05	—	—	—	—
<i>Lonchaeidae</i>	2	0.06	—	—	—	—	—	—	—	—
<i>Micropezidae</i>	—	—	1	0.04	—	—	—	—	—	—
<i>Opomyzidae</i>	94	2.71	5	0.20	—	—	—	—	—	—
<i>Pallopteridae</i>	—	—	1	0.04	—	—	—	—	—	—
<i>Plophillidae</i>	2	0.06	1	0.04	—	—	—	—	—	—
<i>Psilidae</i>	47	1.36	7	0.27	6	0.31	—	—	—	—
<i>Scatomyzidae</i>	17	0.49	23	0.90	—	—	1	0.33	—	—
<i>Sepsidae</i>	78	2.25	283	11.12	18	0.92	3	0.99	2	1.48
<i>Sphaeroceridae</i>	1 120	32.34	575	22.58	790	40.57	88	28.29	78	57.78
<i>Tephritidae</i>	24	0.69	131	5.15	2	0.10	—	—	—	—
Total	3 463	100.00	2 546	100.00	1 948	100.00	304	100.00	135	100.00

Locality	Mk		Mi		Su		Čk		Total	
Family	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
<i>Acartophthalmidae</i>	—	—	—	—	—	—	—	—	25	0.27
<i>Agromyzidae</i>	5	7.46	6	1.99	9	3.24	3	2.16	439	4.78
<i>Anthomyzidae</i>	—	—	—	—	—	—	—	—	250	2.72
<i>Astelidae</i>	—	—	—	—	—	—	—	—	4	0.04
<i>Carnidae</i>	—	—	—	—	1	0.36	—	—	4	0.04
<i>Chamaemyzidae</i>	—	—	—	—	—	—	—	—	24	0.26
<i>Chloropidae</i>	10	14.93	29	9.63	51	18.35	22	15.83	2 262	24.84
<i>Clusidae</i>	—	—	—	—	—	—	—	—	1	0.01
<i>Diasatidae</i>	—	—	—	—	—	—	—	—	47	0.51
<i>Drosophilidae</i>	—	—	90	29.96	128	45.32	80	57.55	911	9.92
<i>Ephydriidae</i>	22	32.84	22	7.31	42	15.11	7	5.04	1 308	14.25
<i>Heleomyzidae</i>	—	—	—	—	—	—	1	0.72	239	2.60
<i>Lauxanidae</i>	—	—	—	—	1	0.36	—	—	12	0.13
<i>Lonchaeidae</i>	—	—	—	—	—	—	—	—	2	0.02
<i>Micropezidae</i>	—	—	—	—	—	—	—	—	1	0.01
<i>Opomyzidae</i>	—	—	—	—	—	—	1	0.72	100	1.09
<i>Pallopteridae</i>	—	—	—	—	—	—	—	—	1	0.01
<i>Plophillidae</i>	—	—	—	—	—	—	—	—	3	0.03
<i>Psilidae</i>	—	—	—	—	—	—	—	—	60	0.65
<i>Scatomyzidae</i>	—	—	—	—	—	—	—	—	41	0.45
<i>Sepsidae</i>	—	—	11	3.65	6	2.16	2	1.44	403	4.39
<i>Sphaeroceridae</i>	30	44.77	143	47.51	41	14.75	23	16.55	2 686	31.43
<i>Tephritidae</i>	—	—	—	—	1	0.36	—	—	158	1.72
Total	67	100.00	301	100.00	278	100.00	139	100.00	9 161	100.00

12 Tab. 4 Absolutní a relativní (procentické) zastoupení čeledí v nasmykaném materiálu z jednotlivých lokalit. Zkratky lokalit: Sk — Skřítek, Re — Rejvíz, KV — Keprník—Vozka, KS — lokality na K. Sněžníku (= Mi+Su+Čk), R — ostatní lokality.

Tab. 4 Absolute and relative (percentage) occurrence of families in the sweep samples from the study sites. Abbreviations of localities: Sk — Skřítek, Re — Rejvíz, KV — Keprník—Vozka, KS — localities in K. Sněžník Mts. (= Mi+Su+Čk), R — remaining localities.

Locality	Sk		Re		KV		KS		R		Total	
Family	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
<i>Acartophthalmidae</i>	—	—	—	—	1	0.08	—	—	—	—	1	0.01
<i>Agromyzidae</i>	151	7.36	184	8.04	83	3.78	18	2.93	39	—	435	8.45
<i>Anthomyzidae</i>	55	2.68	176	8.63	—	—	—	—	—	—	231	3.43
<i>Astelidae</i>	4	0.19	—	—	—	—	—	—	—	—	4	0.08
<i>Carnidae</i>	—	—	1	0.05	2	0.12	1	0.16	—	—	4	0.08
<i>Chamaemyidae</i>	15	0.73	8	0.29	—	—	—	—	2	—	23	0.34
<i>Chloropidae</i>	974	47.44	840	41.20	158	9.46	102	16.59	32	—	2 108	31.23
<i>Clusiidae</i>	1	0.05	—	—	—	—	—	—	—	—	1	0.01
<i>Diastatidae</i>	19	0.93	19	0.93	1	0.06	—	—	—	—	39	0.58
<i>Drosophilidae</i>	182	7.89	113	5.54	188	10.09	288	48.13	29	—	768	11.39
<i>Ephydriidae</i>	172	8.38	95	4.68	724	43.48	71	11.55	202	—	1 264	18.74
<i>Heteomyzidae</i>	113	5.50	7	0.34	13	0.78	1	0.16	1	—	135	2.00
<i>Lauxaniidae</i>	1	0.05	8	0.39	1	0.06	1	0.16	—	—	11	0.16
<i>Lonchaeidae</i>	1	0.05	—	—	—	—	—	—	—	—	1	0.01
<i>Micropezidae</i>	—	—	1	0.05	—	—	—	—	—	—	1	0.01
<i>Opomyzidae</i>	85	4.14	4	0.20	—	—	1	0.16	—	—	90	1.33
<i>Pallopteridae</i>	—	—	1	0.05	—	—	—	—	—	—	1	0.01
<i>Plaphilidae</i>	—	—	1	0.05	—	—	—	—	—	—	1	0.01
<i>Psilidae</i>	43	2.09	7	0.34	6	0.30	—	—	—	—	56	0.83
<i>Sciomyzidae</i>	18	0.78	23	1.13	—	—	—	—	1	—	40	0.59
<i>Sepsidae</i>	89	3.38	270	13.24	18	1.08	17	2.76	4	—	378	5.80
<i>Sphaeroceridae</i>	148	7.21	172	8.44	508	30.51	108	17.24	62	—	993	14.77
<i>Tephritidae</i>	24	1.17	131	6.42	2	0.12	1	0.16	—	—	158	2.34
Total	2 053	100.00	2 039	100.00	1 885	100.00	615	100.00	372	—	8 744	100.00