Hoverflies in the Pripyatskij National Park in southern Belarus (Diptera, Syrphidae)

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Reemer, M. (2000): Hoverflies in the Pripyatskij National Park in southern Belarus (Diptera, Syrphidae). – Volucella 5, 139-147. Stuttgart

In early and late summer 1999, hoverflies were collected in the Pripyatskij National Park in southern Belarus. The Pripyat is a relatively undisturbed lowland river, accompanied by extensive marshes. So far, hardly anything has been published about the syrphid fauna of Belarus, so the presented data are of great faunistic interest. A total of 93 species was observed, of which 56 species were not reported before for the country. Special attention was paid to species associated with aquatic habitats. The results suggest that sites close to the river contain a smaller proportion of stenotopic wetland species than habitats outside the floodplains. Some interesting species are briefly discussed.

Zusammenfassung

Im Pripyat-Nationalpark im Süden Weißrusslands wurden im Früh- und Spätsommer 1999 Schwebfliegen gefangen. Der Pripyat ist ein vergleichsweise ungestörter Tieflandfluss, der von ausgedehnten Sümpfen umgeben ist. Die hier vorgelegten Daten sind von großem faunistischen Interesse, da bis jetzt fast nichts über die Schwebfliegenfauna Weißrusslands veröffentlicht worden ist. Insgesamt wurden 93 Arten gefunden, von denen 56 noch nicht aus diesem Land gemeldet waren. Besondere Aufmerksamkeit wurde den Arten gewidmet, die mit aquatischen Habitaten assoziiert sind. Die Ergebnisse lassen vermuten, dass flussnahe Stellen einen geringeren Anteil stenotoper Feuchtgebietsarten aufweisen als Flächen außerhalb der Überschwemmungszone. Einige bemerkenswerte Arten werden kurz besprochen.

Introduction

Hardly anything has been published on the syrphid fauna of the Republic of Belarus (Byelorussia). A few articles deal with the hoverflies of Belarus (Bankowska 1995, Shalapyenok & Jakovleva 1998), but so far no data have been published for other parts of the country. Peck (1988) recognizes Belarus (By) as a separate part of the Central European territories (CET) of the former USSR, but rarely (if ever) refers to the country in the species lists.

In 1999, hoverflies were collected in the vicinity of the Pripyat river in southern Belarus. Most of them were collected in the period 25 May - 7 June, and additional records were obtained between the 28th of August and the 6th of September. Special attention was paid to the species of aquatic habitats (i.e. *Platycheirus*, *Pyrophaena*, Chrysogasterini, *Sericomyia*, Eristalini). The undisturbed gradient from alluvial habitats to peat moor and forests, which is present in the Pripyatskij National Park, offers a good opportunity for examining the changes in hoverfly fauna along this gradient. Not enough data were collected to allow a comprehensive assessment of these changes, but an attempt is made to qualify them for the wetland species.

Collected specimens are preserved in the collection of the author.

The study area

The research was conducted in the Pripyatskij National Park around the villages Hvoyensk, Hlupin and Pererov, 15 to 20 km east of Turov, situated almost exactly between the larger cities Pinsk and Mazyr (fig. 1). The Pripyat is a lowland river with a length of approximately 760 km. The middle part of it flows through southern Belarus, but both its beginning and its ending are situated in the Ukraine. In the study area, the Pripyat has a width of 100 to 175 m.

The Pripyat is a river with undisturbed morphology and high water quality. Shipping is very limited, dams are absent and dikes have only been built at considerable distances from the river, leaving floodplains of up to five kilometres width. The river meanders freely through the landscape and in the floodplains there are many side-channels,

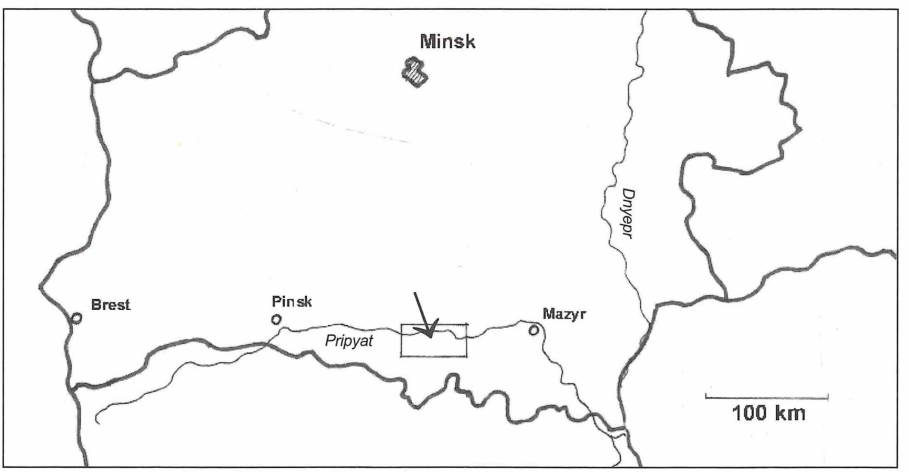

Fig. 1: Map of Byelorussia south of Minsk. The area of the Pripyatskij National Park is indicated by the arrow.

oxbows and swamps, accompanied by a wide variety of vegetation types and alluvial forests. There is an undisturbed gradient from alluvial habitats to peat moors and forests, out of the river's influence. Probably, the Pripyat can serve as a reference for how the Western European rivers must have been before people started regulating and exploiting them (Moller Pillot 1997).

Tab. 1 gives the sample sites with a short description of the habitats and vegetation. The sites have been grouped into six clusters, according to the degree in which they are affected by the presence of the river. This was determined by their distance to the river, the vegetation and their hydrochemical properties (Nagorskaja et al. 1999).

Table 1: Clusters of the samplesites, with descriptions of habitat and vegetation. The clusters are arranged from largest (A) to smallest (F) degree of influence by the river.

Cluster	Description	n samplesites
A	Inner floodplains (near Hvoyensk and Pererov). Flooded plains on sandy soil with islands and spits of land, covered with grassy vegetation with *Ranunculus, Veronica, Taraxacum* and some *Salix, Populus* and *Alnus*. (Semi-)aquatic vegetation: *Alisma plantago-aquatica, Oenanthe aquatica, Carex acuta, Phragmites australis*. Flooded during several months in winter.	4
B	Wooded floodplains (near Hlupin). Higher parts of floodplains with hardwood alluvial forest, consisting mainly of *Quercus* and *Carpinus*. Dead wood is abundant. Shrubs and herbs: *Viburnum opulus, Rhamnus frangula, Salix, Ranunculus, Iris*. Some parts are rarely flooded.	2
C	Outer floodplains (near Hvoyensk and Pererov). Floodplains on sandy soil further from the river, on the other side of a dike. Vegetation comparable to cluster A. These sites are flooded during shorter periods than the sites in cluster A.	3
D	Swamps out of the floodplain (around Hvoyensk). Mesotrophic swamps, partly fed by riverwater and partly by ground water. Characteristic plants: *Stratiotes aloides, Equisetum fluviatile, Hottonia palustris, Carex rostrata, Menyanthes trifoliata, Iris pseudacorus*. The river only reaches these swamps when the water is very high.	8
E	A collection of habitats outside the river's influence (along an old railroad track south of Hvoyensk): woodland, grassland and marshy areas fed by ground water.	6
F	Bogs, peat-moor and boggy fens with *Betula, Sphagnum, Caltha palustris, Eriophorum vaginatum*, mainly surrounded by pine forest (10 km. south of Hvoyensk). No river-influence, only ground- and rain water. Oligo(meso)trophic.	2

Table 2: Species found per cluster of samplesites. For each species, the (estimated) number of observed specimens is given per site. x = present in unknown numbers.

	Species	A	B	C	D	E	F
1	*Xanthogramma pedissequum*	1			1		
2	*Episyrphus balteatus*	2	3	1	1	9	
3	*Syrphus ribesii*	8	1	2	5	3	
4	*S. vitripennis*	2					
5	*Epistrophe eligans*				2		
6	*E. nitidicollis*				2		
7	*Chrysotoxum festivum*	1			1	2	
8	*Dasysyrphus hilaris*					1	
10	*Eupeodes bucculatus*				1		
11	*E. corollae*	4		1	2	2	
12	*E. latifasciatus*	5	8	5	3	5	
13	*E. lundbecki*				1	2	
14	*E. luniger*	1			1		1
15	*Scaeva pyrastri*			1			
16	*Scaeva selenitica*					8	
17	*Sphaerophoria scripta*	9	7	26	x	7	
18	*S. taeniata*	2			5	1	
19	*Platycheirus albimanus*					2	
20	*P. angustatus*	1	1			2	
21	*P. clypeatus*	26	11	18	14	4	
22	*P. europaeus* [1]		1				
23	*P. fulviventris*	1	1	2			
24	*P. immarginatus*				1		
25	*P. perpallidus*	2	2	2	10	2	1
26	*P. occultus* [1]		1		3	1	
27	*P. peltatus* [2]		2	2	5	1	
28	*Pyrophaena granditarsa*	9	2	9	4		
29	*P. rosarum*	1		1	5	20	3
30	*Melanostoma mellinum*	9		1	9	x	1
31	*Melanostoma scalare*		1			2	
32	*Pipiza lugubris*					1	
33	*Pipizella viduata*	1			3	1	
34	*Trichopsomyia flavitarse*					1	
35	*Cheilosia albitarsis*				1	14	
36	*C. gigantea*				1		
37	*C. mutabilis*				1		
38	*C. pagana*				1		
39	*C. vernalis*				2		
40	*Rhingia campestris*					1	
41	*Melanogaster aerosa*				5	7	1
42	*Orthonevra intermedia*					1	4
43	*Neoascia podagrica*				3		
44	*N. tenur*				4	6	2
45	*Hammerschmidtia ferruginea*					1	
46	*Eumerus sogdianus / strigatus*	1		1			
47	*Microdon analis*	1	1		1	12	2
48	*M. mutabilis*					18	
49	*Volucella bombylans* var. *plumata*					1	

50	*Sericomyia lappona*					2		
51	*S. silentis*		1	1	1	3		
52	*Xylota abiens*					2		
53	*X. coeruleiventris*[3]					6	2	
54	*X. florum*		1			3	1	
55	*X. ignava*					1		
56	*X. meigeniana*	1						
57	*X. segnis*					5	1	
58	*X. sylvarum*		2		1	2		
59	*Chalcosyrphus femoratus*				1			
60	*C. nemorum*		1	1	5	60	3	
61	*C. piger*					8		
62	*Brachypalpoides lentus*					2		
63	*Blera fallax*					4		
64	*Caliprobola speciosa*					1		
65	*Syritta pipiens*	4	3	15	x	x		
66	*Temnostoma apiforme*				1	2		
67	*T. bombylans*					5		
68	*T. vespiforme*		1			24		
69	*Helophilus hybridus*	5	3	1	x	x		
70	*H. pendulus*		1	2	7	x		
71	*H. trivittatus*	6	1	10	x	x	2	
72	*Anasimyia contracta*				1			
73	*A. interpuncta*	1		1	1	4		
74	*A. lineata*	1	15	4	x	110		
75	*A. lunulata*				1	2	5	
76	*A. transfuga*	1		1	2			
77	*Parhelophilus consimilis*		1		2	5	2	
78	*P. versicolor*				6		1	
79	*Mallota megilliformis*				1	1		
80	*M. tricolor*		2					
81	*Eristalis abusiva*	6	3	6	2	1		
82	*E. arbustorum*		4	2	6			
83	*E. cryptarum*						3	
84	*E. horticola*				5	3	2	
85	*E. interruptus*	1		2	2	4		
86	*E. intricaria*	3	2					
87	*E. pertinax*		7	10	1			
88	*E. picea* [4]				3	1		
89	*E. pseudorupium* [4]	2	1		1			
90	*E. tenax*	1	3		2			
91	*Eristalinus aeneus*	1						
92	*E. sepulchralis*	25	4	8	x	x		
93	*Myathropa florea*	2			3			
	Number of species	35	33	28	58	63	18	

[1]: identified using Speight & Goeldlin de Tiefenau (1990)
[2]: identified using Vockeroth (1990) and van Steenis & Goeldlin de Tiefenau (1998)
[3]: it is not yet clear whether the specimens concern the 'real' *X. coeruleiventris* or *X. jakutorum* Bagachanova, 1980 (see Mutin & Gilbert 1999)
[4]: identification based on the male genitalia, using Kanervo (1938). Collected females of *E. picea* / *E. pseudorupium* have not been identified.

Results

General notes

A total of 93 species was observed (tab. 2). Of the 93 observed species, 56 were not mentioned by Bankowska (1995) or Shalapyenok & Jakovleva (1998).

The total number of species is highest in cluster E. This is not surprising, considering the large variety of habitats in this cluster. Cluster E also contains the highest proportion of forest-dwelling species, especially those associated with dead wood. This is not surprising either, because a large area of the samplesites in this cluster was occupied by forest.

Cluster F contains a relatively low number of species, which is probably due to both its oligotrophic character and the short length of time collecting there.

It is remarkable that so few species with phytophagous larvae were found (five species of *Cheilosia*) and that they were almost restricted to cluster D, where they were present only in very low numbers. There is no obvious explanation for this. Possibly, the larvae and pupae of phytophagous species are not capable to survive flooding.

The Pripyat plains and their surroundings form a very interesting habitat for hoverflies. Some of the species found, are considered to be rare and threatened on a European level. Examples of these species are *Anasimyia lunulata, Mallota tricolor, M. megilliformis* and *Eristalis cryptarum*. A very interesting and valuable habitat is the hardwood alluvial forest. This habitat has rapidly disappeared from large parts of Europe during the 20th century, which may explain the rarity of some of the species occurring here (i.e. *Mallota tricolor*).

Wetland species and the influence of the river

The following genera are considered to be associated with aquatic habitats: *Platycheirus* (except *P. albimanus* & *P. peltatus*), *Pyrophaena*, *Melanogaster, Orthonevra, Neoascia, Sericomyia*, *Helophilus, Anasimyia, Parhelophilus, Eristalis, Eristalinus*. In table 3, these species are divided into a group of eurytopic species (occurring in a wide range of wetland habitats) and a group of stenotopic species (occuring in a narrow range of wetland habitats). This division is based on ecological and distributional records of the species in western Europe and on personal experience.

The following wetland species are considered as eurytopic: *Platycheirus angustatus, P. clypeatus, P. fulviventris, Pyrophaena granditarsa, P. rosarum, Neoascia podagrica, N. tenur, Helophilus hybridus, H. pendulus, H. trivittatus, Anasimyia lineata, Parhelophilus versicolor, Eristalis abusiva, E. arbustorum, E. horticola, E. intricaria, E. nemorum, E. tenax, Eristalinus sepulchralis*.

The following wetland species are considered as stenotopic: *Platycheirus europaeus, P. immarginatus, P. occultus, P. perpallidus, Melanogaster aerosa, Orthonevra intermedia, Sericomyia lappona, S. silentis, Anasimyia contracta, A.*

interpuncta, A. lunulata, A. transfuga, Parhelophilus consimilis, Eristalis cryptarum, E. picea, E. pseudorupium, Eristalinus aeneus.

Table 3 seems to indicate that the number of eurytopic wetland species is more or less stable along the described gradient, while the number (as well as the proportion) of stenotopic wetland species is about twice as high in the clusters outside the floodplains (clusters D, E and F).

A possible explanation for the lower proportion of stenotopic species close to the river might be found in the unstable and unpredictable hydro- and morphodynamics of alluvial habitats. A habitat like this, in which processes like flooding, erosion and sedimentation are common events, requires large adaptional capacities of the occurring species. This is especially true for the immature stages. The hypothesis that aquatic pollution is involved can be rejected, because the conducted hydrochemical measurements proved that the river is very clean (Nagorskaja et al. 2000).

Notes on some species

Platycheirus fulviventris, P. immarginatus and *P. perpallidus:* Most specimens of these three species were found at sites with *Carex acuta* or *C. rostrata.*

Blera fallax: This species is associated with conifer forest (Speight 1999). Three of the observed specimens were found near pine trees. One male, however, was seen in a deciduous forest without any pine trees, while hovering and resting near an old *Quercus* stump.

Mallota tricolor: Both males were collected near a half-dead, almost branchless *Quercus* tree of 15 tot 20 m. tall, situated near the water with no other trees nearby (only some small *Rhamnus frangula*). First, one male was seen hovering around the tree with its face towards the bark at 10 to 20 cm. distance, varying in heigth from 3 to 5 meters. About 15 minutes after this male was captured, another male showed up, displaying exactly the same behaviour. – *Mallota tricolor* is known from Poland,

	A	B	C	D	E	F
total number of wetland species	18	20	16	29	22	11
eurytopic wetland species	13	15	13	17	12	5
stenotopic wetland species	5	5	3	12	10	6
proportion of stenotopic species	28%	25%	19%	41%	45%	55%

Table 3: Distribution of eurytopic and stenotopic wetland species over de clusters of sample sites (explanation see text).

Lithuania, Latvia, Russia and Siberia eastward to the far east (Sakhalin), Turkey and China (Kuznetzov 1993, Peck 1988). Its occurrence in Germany is uncertain (Ssymank et al. 1999). If *M. tricolor* prefers hardwood alluvial forest as a habitat, this might explain why this species is absent from such large parts of Europe. This habitat has disappeared from many areas during the 20th century.

Eristalis picea and *E. pseudorupium*: *Eristalis picea* is a species from pools or streams in or near deciduous forests. According to Speight (1999), the species has a preference for alluvial soft- and hardwood forests. The observations in the Pripyat area support this view. The habitat preferences of *E. pseudorupium* are poorly known, mainly due to confusion with other species of the *picea* group. In the Pripyat area, *E. pseudorupium* was found closer to the river than *E. picea*, but regarding the low numbers, this might be a coincidence.

Acknowledgements

Special thanks go to Henk Moller Pillot for arranging the logistics for this project. I would like to thank K.-D.B. Dijkstra and Bram Koese for catching some of the hoverflies. Furthermore, I want to thank Lyuba Nagorskaja, Tanya Laenko, Vasili Veznovetz and Mischa Moroz from the Institute of Zoology N.A.S. in Minsk for their pleasant company.

The project was financially supported by the Uyttenboogaart-Eliasen Stichting and the Institute for Inland Water Management and Waste Water Treatment (RIZA) in the Netherlands.

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