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NOCTUIDS (*NOCTUIDAE, LEPIDOPTERA*) OF WARSAW AND MAZOVIA

ABSTRACT

In the Mazovian Lowland there are 309 noctuid species recorded, and in Warsaw 270 species, including 218 in the suburbs, 49 in parks, 22 in housing estates, and 90 species in the centre. More than 60% of the noctuid of Mazovia belong to Euro-Siberian species. Under the growing urban pressure, the proportion of species with large geographical ranges, particularly Holarctic, increases, and the proportion of European species drops. Urban green areas of Warsaw are inhabited by a larger proportion of pleophagous species, particularly associated with herbs, and also by a higher proportion of the species preferring open areas, as compared with Mazovia.

INTRODUCTION

The noctuids of Poland consist of about 500 species [14]. Romaniszyn [25] listed 432 species in the *Fauna of lepidopterans of Poland* issued in 1929, which is the only comprehensive work on the lepidopterans of Poland so far.

Noctuids are a rather well known group since many of them are plant pests in crop fields and forests, nevertheless, they have not been equally well studied in particular parts of Poland. Mazovia, for instance, is still waiting for a comprehensive analysis of noctuids, and most literature data on them were published before the war [1, 2, 16—18, 20, 22, 23, 25—27].

The present contribution is a part of the comprehensive study on the fauna of Warsaw. The objective of the study, area, and methods are described elesewhere [10, 19, 21, 29].

The purpose of the present paper is to determine the species composition of noctuids living in Warsaw under heavy urban pressure and to compare it with the fauna of the suburbs and Mazovia.

The analysis is based on the materials collected in 1974—1979 in different types of urban green areas (green in the centre of the town, in housing estates, and in parks), of the suburbs of Warsaw, and in Mazovia, that is, in a rural park at Młochów, in a manor park at Radziejowice, and in some sites of the Kampinos and Jaktorów forests.

Different methods of material collecting were used: Moericke's traps, Barber's traps, light trap, catching of visually observed insects, and raising of larvae.

All the species recorded are shown in Table 4. They are arranged in the taxonomic order proposed by Hruby [11]. The table includes only those literature data which specify the sites for particular species found in Mazovia. The species designated as "recorded from the whole Poland" are not considered here. The species collected from other sites in Warsaw than those listed above are in columen "Others" of Table 4.

I am grateful to Professor Dr. S. Adamczewski for his help in identification of all the noctuids representing the basic material of the present paper.

SPECIES COMPOSITION

In the Mazovian Lowland and in Warsaw there are 317 noctuid species recorded, which account for about 60% of all their species known from Poland (Tab. 4). Of this number, 180 species are taken only from the literature data, and 137 species have been recorded in the present study.

In Warsaw, 270 species have been recorded, or about 80% of the noctuid known from Mazovia. Of these species, as many as 201 are taken only from the literature data. This is related to the fact that from the time when most of the literature data were collected, thus mainly from the period preceding the war, great changes occurred in the structure of urban green areas as a result of the destruction and subsequent development of Warsaw. Three species recorded from Warsaw have not been found in any of the other sites in Mazovia.

In the centre of the town, 90 noctuid species, or about 35% of the noctuids known from Warsaw, have been recorded, in housing estates 22 species (about 10%), and in parks 49 species (about 20%).

In addition, 132 more species are known from the literature to occur in Warsaw but their site of collection is not precised (column "Others" in Tab. 4). In author's materials collected on additional sites in the town, 16 species have been recorded not found in urban green areas studied in more detail (column "Others" in Tab. 4).

Relatively large number of species recorded in the centre of Warsaw, which is almost completely deprived of the vegetation, is probably due to the fact that a light trap was used there to catch insects. This is the best method to collect noctuids, which can cover even large distances to reach the light.

In the suburbs of Warsaw, 218 species have been recorded (88 species from author's materials), of which 39 have not been recorded in urban areas. The noctuids of Białołęka, a suburban quarter of Warsaw, are characterized elsewhere [30].

In Mazovia, excluding Warsaw, 309 species have been recorded, of which 106 species in author's materials. Of the 106 species recorded from Mazovia, 71 have also been caught in Warsaw.

ZOOGEOGRAPHICAL ANALYSIS

Seven zoogeographical elements have been distinguished (Tab. 1). The proportion of these elements, estimated on the basis of the number of species, varied with increasing urban pressure.

In Mazovia, more than 60% of the noctuids were represented by Euro-Siberian species. The European species accounted for 20%. The species with wide geographical ranges, i.e., cosmopolitan, Holarctic and Palaearctic, contributed to a little more than 10% of the species living in this region, the Holarctic species being most numerous in this group.

In the suburbs also Euro-Siberian noctuids were represented by the highest number of species, accounting for more than 50% of all the species. As compared with Mazovia, the proportion of the species with large geographical ranges slightly increased (from about 13% in Mazovia to about 16%), while the proportion of European species decreased (from about 21% to 17%).

In urban green areas, i.e., in parks, housing estates and the centre of the town, the proportion of species with wide zoogeographical ranges increased to more than 20% (particularly that of Holarctic species), and the proportion of European species dropped, as compared with the suburbs and Mazovia. Here also the Euro-Siberian elements was represented by the highest number of species, accounting for more than 60% of all the species, though in parks the number of noctuid species was by about 10% smaller than in housing estates and in the centre of the town.

ECOLOGICAL ANALYSIS

HABITAT REQUIREMENTS

On the basis of the information given by Hruby [11], the noctuids recorded from the Mazovian Lowland have been classified into three groups (Tab. 2).

The first group consists of the species preferring open habitats. Hruby includes here the species associated with steppes, meadows and marshes. The second group is made up of the species inhabiting transitional areas between open habitats and forests, such as mid-field clumps of trees, roadside trees, orchards, small parks and gardens. Hruby classifies them as the species associated with forest-steppes. The third group includes the noctuids living in forests. Hruby classifies them as the species associated with deciduous and coniferous forests.

Table 1. Proportions of zoogeographical elements in *Noctuidae* of Warsaw and non-urban habitats of Mazovia (N—number of species)

Zoogeographical element	Mazovia		Warsaw									
			Suburbs		Urban green areas							
					Total		Parks		Housing estates		Town centre	
	N	%	N	%	N	%	N	%	N	%	N	%
Cosmopolitan	3	1.0	1	0.5	1	1.0	1	2.0	—	—	—	1.1
Holarctic	34	11.0	31	14.2	19	19.6	13	26.5	5	22.7	17	18.9
Palaearctic	4	1.3	3	1.4	—	—	—	—	—	—	—	—
Euro-Siberian	201	65.0	144	66.0	63	65.0	27	55.1	15	68.2	59	65.6
South-Euro-Siberian	1	0.3	1	0.5	—	—	—	—	—	—	—	—
Mediterranean	2	0.7	1	0.5	—	—	—	—	—	—	—	—
European	64	20.7	37	16.9	14	14.4	8	16.4	2	9.1	13	14.4

Table 2. Proportions of groups with different habitat preferences in *Noctuidae* of Warsaw and non-urban habitats of Mazovia (N—number of species)

Habitat preference	Mazovia		Warsaw									
			Suburbs		Urban green areas							
					Total		Parks		Housing estates		Town centre	
	N	%	N	%	N	%	N	%	N	%	N	%
Living												
in open habitats	131	42.7	95	43.6	53	54.6	24	49.0	9	40.9	50	55.6
in transitional habitats	102	33.0	72	33.0	29	29.9	18	36.7	9	40.9	27	30.0
in forest	76	24.3	51	23.4	15	15.5	7	14.3	4	18.2	13	14.4

Table 3. Proportions of trophic groups in *Noctuidae* of Warsaw and non-urban habitats of Mazovia (N—number of species)

Group	Mazovia		Warsaw									
			Suburbs		Urban green areas							
					Total		Parks		Housing estates		Town centre	
	N	%	N	%	N	%	N	%	N	%	N	%
Polyphages	28	9.1	22	10.1	9	9.3	6	12.2	2	9.1	9	10.0
Pleophages associated with herbs	157	50.8	122	56.0	60	61.8	31	63.3	16	72.7	57	63.2
Pleophages associated with trees and shrubs	24	7.7	18	8.2	3	3.1	2	4.1	1	4.6	3	3.4
Oligophages associated with herbs	37	12.0	19	8.7	7	7.2	1	2.0	—	—	6	6.7
Ooligophages associated with trees and shrubs	15	4.8	12	5.5	8	8.3	5	10.2	3	13.6	6	6.7
Monophages associated with herbs	25	8.1	17	7.8	8	8.3	4	8.2	—	—	7	7.8
Monophages associated with trees and shrubs	23	7.5	8	3.7	2	2.0	—	—	—	—	2	2.2

In Mazovia, the noctuid preferring open habitats are richest in species. They accounted for more than 40% of all the species. The species associated with transitional habitats accounted for more than 30%. The number of forest-dwelling species was 40% lower as compared with the species associated with open habitats.

In the suburbs of Warsaw, the proportions of the species preferring particular habitat types were almost not changed as compared with Mazovia. In urban green areas (parks, housing estates and the centre), however, the proportion of the species inhabiting open areas increased by about 10%, and the proportion of forest-dwelling species dropped by about 10%. The proportion of the species associated with transitional habitats decreased by only 3%. In urban parks there were more species preferring transitional habitats and less species associated with open habitats, as compared with the centre of the town, this being evidently related to the character of the vegetation.

FEEDING HABITS

Noctuids belong to phytophagous insects. Their caterpillars are biting exophytophages, and adults are melliphages. Only few species (about 7%) show no food preferences. Most larval noctuids, more than 60%, feed on above- and below-ground plant parts. A smaller group, consisting of 25% of the species, is represented by caterpillars feeding on trees and shrubs. Single species feed on cryptogamic plants.

In Mazovia, pleophagous noctuis are richest in species. They account for about 60% of the species living there. More than 85% of them are pleophages of herbaceous plants. Oligophagous and monophagous species account for only 15% of the noctuids of Mazovia, each (Tab. 3).

In the suburbs there is a slight increase in the proportion of pleophagous species, particularly those associated with herbaceous plants, as compared with Mazovia. The proportion of monophages, particularly associated with trees, drops, however.

In urban green areas, pleophages are represented by the highest number of species. Their proportion in parks increased by about 10% as compared with Mazovia. The proportion of monophagous species was reduced by half, and monophages associated with trees have not been recorded from parks at and housing estates at all. The proportion of oligophages living on trees and shrubs increased three times in the town (mostly in housing estates), while the proportion of oligophages living on herbaceous plants decreased (also in housing estates), as compared with Mazovia.

The proportion of polyphagous species was similar in Mazovia and in all types of urban green areas in Warsaw.

CONCLUSIONS

1. From the Mazovian Lowland, 317 noctuid species have been recorded, or 60% of the species known from Poland. From Warsaw 270 species have been recorded, or 80% of the species known from Mazovia.

2. The proportion of the species with wide zoogeographical ranges, particularly Holarctic, increases and that of European species decreases with growing urban pressure. All the study habitats are predominated by the Euro-Siberian species, accounting for more than 60% of the noctuids living there.

3. The proportion of the species preferring open habitats is higher, and the proportion of forest-dwelling species is lower in Warsaw, as compared with Mazovia.

4. The proportion of pleophagous species, particularly pleophages of herbaceous plants, increases and that of monophagous species decreases with growing urban pressure.

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Table 4. Check-list of *Noctuidae* (*Lepitoptera*) species occurring in Warsaw and Mazovia

No.	○ — literature data ● — proved literature data + — unpublished data ? — doubtful information Species	Mazovia	*Warsaw*				
			Parks	Green areas in housing estates	Town centre	Other sampling areas	
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1	*Euxoa obelisca* (Schiff. et Den.)	○	—	—	—	—	○
2	*Euxoa tritici* (L.)	○	●	—	—	●	○
3	*Euxoa nigricans* (L.)	○	●	—	—	○	—
4	*Euxoa cursoria* (Hufn.)	○	○	—	—	—	○
5	*Scotia cinerea* (Schiff. et Den.)	○	—	—	—	—	—
6	*Scotia vestigialis* (Hufn.)	○	○	—	—	—	○
7	*Scotia segetum* (Schiff. et Den.)	●	●	+	—	●	○
8	*Scotia clavis* (Hufn.)	○	○	—	—	—	○
9	*Scotia exclamationis* (L.)	●	●	+	+	●	○
10	*Scotia puta* (Hbn.)	?	—	—	—	—	—
11	*Scotia ipsilon* (Hufn.)	●	●	+	—	●	○
12	*Scotia crassa* (Hbn.)	○	○	—	—	—	○
13	*Ogygia signifera* (Schiff. et Den.)	○	○	—	—	—	—
14	*Ochropleura praecox* (L.)	○	○	—	—	○	○
15	*Ochropleura plecta* (L.)	○	○	—	—	○	○
16	*Parexarnis fugax* (Tr.)	○	—	—	—	—	—
17	*Rhyacia simulans* (Hufn.)	○	○	—	+	●	○
18	*Noctua pronuba* L.	●	●	+	+	●	○
19	*Noctua orbona* (Hufn.)	●	●	—	—	—	○
20	*Noctua comes* (Hbn.)	○	—	—	—	—	—
21	*Noctua fimbriata* Schreber	●	○	—	—	—	—
22	*Noctua janthina* (Schiff. et Den.)	○	●	—	—	—	—
23	*Spaelotis ravida* (Schiff. et Den.)	○	●	—	—	○	—
24	*Opigena polygona* (Schiff. et Den.)	○	—	—	—	—	—
25	*Graphiphora augur* (Fabr.)	●	○	—	—	—	—
26	*Eugraphe sigma* (Schiff. et Den.)	○	○	—	—	—	○
27	*Lycophotia porphyrea* (Schiff. et Den.)	●	○	—	—	—	○
28	*Peridroma saucia* (Hbn.)	○	—	—	—	—	○
29	*Diarsia mendica* (Fabr.)	○	●	—	—	—	—
30	*Diarsia dahlii* (Hbn.)	○	—	—	—	—	—
31	*Diarsia brunnea* (Schiff. et Den.)	●	●	—	—	—	—
32	*Diarsia rubi* (Vw.)	○	○	+	—	—	○
33	*Amathes c-nigrum* (L.)	●	●	●	—	●	+
34	*Amathes ditrapezium* (Schiff. et Den.)	○	—	—	—	○	○
35	*Amathes triangulum* (Hufn.)	●	●	—	—	—	○
36	*Amathes ashworthii* (Doubl.)	○	○	—	—	—	○
37	*Amathes baja* (Schiff. et Den.)	●	—	—	—	—	—
38	*Amathes collina* (Bsd.)	○	—	—	—	—	—
39	*Amathes xanthographa* (Schiff. et Den.)	●	●	—	—	—	●
40	*Naenia typica* (L.)	●	○	—	—	—	—
41	*Eurois occulta* (L.)	●	●	—	—	—	—

1	2	3	4	5	6	7	8
42	*Anaplectoides prasina* (Schiff. et Den.)	●	○	—	—	—	—
43	*Cerastis rubricosa* (Schiff. et Den.)	○	—	—	—	—	○
44	*Cerastis leucographa* (Schiff. et Den.)	○	—	—	—	—	—
45	*Mesogona acetosellae* (Schiff. et Den.)	○	—	—	—	—	○
46	*Mesogona oxalina* (Hbn.)	○	○	—	—	—	○
47	*Anarta myrtilli* (L.)	○	○	—	—	—	○
48	*Anarta cordigera* (Thnbg.)	○	—	—	—	—	—
49	*Discestra trifolii* (Hufn.)	●	●	+	—	●	●
50	*Sideridis albicolon* (Hbn.)	○	●	—	—	○	○
51	*Heliophobus reticulata* (Goeze)	○	○	—	—	○	—
52	*Polia bombycina* (Hufn.)	○	○	—	—	—	○
53	*Polia hepatica* (Cl.)	○	○	—	—	—	○
54	*Polia nebulosa* (Hufn.)	●	●	—	—	+	○
55	*Pachetra sagittigera* (Hufn.)	○	—	—	—	—	○
56	*Mamestra brassicae* (L.)	●	●	+	+	●	○
57	*Mamestra persicariae* (L.)	●	●	+	—	●	●
58	*Mamestra contigua* (Schiff. et Den.)	●	○	—	—	—	○
59	*Mamestra w-latinum* (Hufn.)	●	●	—	—	—	○
60	*Mamestra thalassina* (Hufn.)	●	●	+	—	+	○
61	*Mamestra suasa* (Schiff. et Den.)	●	●	+	—	●	○
62	*Mamestra splendens* (Hbn.)	●	—	—	—	—	○
63	*Mamestra oleracea* (L.)	●	●	+	+	●	●
64	*Mamestra aliena* (Hbn.)	○	○	—	—	—	○
65	*Mamestra pisi* (L).	○	○	—	—	—	○
66	*Mamestra glauca* (Hbn.)	○	—	—	—	—	—
67	*Mamestra bicolorata* (Hufn.)	○	—	—	—	—	○
68	*Mamestra dysodea* (Schiff. et Den.)	○	—	—	—	○	○
69	*Hadena rivularis* (Fabr.)	○	○	—	—	—	—
70	*Hadena lepida* (Esp.)	○	—	—	—	—	○
71	*Hadena irregularis* (Hufn.)	○	—	—	—	—	○
72	*Hadena filigramma* (Esp.)	○	—	—	—	—	—
73	*Hadena albimacula* (Bkh.)	○	—	—	—	—	○
74	*Hadena compta* (Schiff. et Den.)	○	—	—	—	○	○
75	*Hadena confusa* (Hufn.)	○	—	—	—	—	—
76	*Hadena bicruris* (Hufn.)	○	—	—	—	—	○
77	*Lasionycta nana* (Hufn.)	●	○	—	—	—	○
78	*Cerapteryx graminis* (L.)	○	○	—	—	—	—
79	*Tholera decimalis* (Poda)	○	○	—	—	—	○
80	*Tholera cespitis* (Schiff. et Den.)	○	○	—	—	—	—
81	*Panolis flammea* (Schiff. et Den.)	○	○	—	—	—	○
82	*Xylomyges conspicillaris* (L.)	○	—	—	—	—	—
83	*Orthosia cruda* (Schiff. et Den.)	●	○	—	—	—	○
84	*Orthosia miniosa* (Schiff. et Den.)	○	○	—	—	—	○
85	*Orthosia opima* (Hbn.)	○	○	—	—	—	—
86	*Orthosia populi* (Ström.)	●	—	—	—	—	○
87	*Orthosia gracilis* (Schiff. et Den.)	○	●	—	—	—	○
88	*Orthosia stabilis* (Schiff. et Den.)	●	○	—	—	—	○
89	*Orthosia incerta* (Hufn.)	●	○	—	—	—	○
90	*Orthosia munda* (Schiff. et Den.)	●	-	—	—	—	○
91	*Orthosia gothica* (L.)	○	○	—	—	—	○

1	2	3	4	5	6	7	8
92	*Mythimna turca* (L.)	●	●	—	—	—	○
93	*Mythimna conigera* (Schiff. et Den.)	○	●	+	—	○	—
94	*Mythimna ferrago* (Fabr.)	●	●	—	—	—	●
95	*Mythimna albipuncta* (Schiff. et Den.)	●	●	+	—	●	●
96	*Mythimna pudorina* (Schiff. et Den.)	○	○	—	—	—	○
97	*Mythimna straminea* (Tr.)	+	—	—	—	—	—
98	*Mythimna impura* (Hbn.)	○	○	—	—	—	○
99	*Mythimna pallens* (L.)	●	●	+	—	●	○
100	*Mythimna l-album* (L.)	○	●	+	+	●	○
101	*Leucania obsoleta* (Hbn.)	○	○	—	—	○	
102	*Leucania comma* (L.)	○	○	—	—	○	○
103	*Meliana flammea* (Curt.)	—	○	—	—	—	○
104	*Cucullia scopariae* Dorf.	○	—	—	—	—	—
105	*Cucullia absinthii* (L.)	○	—	—	—	—	○
106	*Cucullia fraudatrix* Ev.	○	○	—	—	○	—
107	*Cucullia argentea* (Hufn.)	○	—	—	—	—	○
108	*Cucullia artemisiae* (Hufn.)	○	○	—	—	○	—
109	*Cucullia chamomilliae* (Schiff. et Den.)	○	—	—	—	—	○
110	*Cucullia umbratica* (L.)	●	●	—	—	—	○
111	*Cucullia tanaceti* (Schiff. et Den.)	○	○	—	—	—	○
112	*Cucullia asteris* (Schiff. et Den.)	—	○	—	—	—	—
113	*Cucullia xeranthemi* Bsd.	○	—	—	—	—	—
114	*Cucullia gnaphalii* (Hbn.)	○	—	—	—	—	—
115	*Cucullia lychnitis* Rbr.	○	○	—	—	—	—
116	*Cucullia scrophulariae* (Schiff. et Den.)	○	—	—	—	—	○
117	*Cucullia verbasci* (L.)	○	○	—	—	—	—
118	*Cucullia thapsiphaga* Tr.	○	—	—	—	—	○
119	*Calophasia lunula* (Hufn.)	○	○	—	—	—	○
120	*Brachionycha sphinx* (Hufn.)	○	○	—	—	—	○
121	*Brachionycha nubeculosa* (Esp.)	○	—	—	—	—	○
122	*Lithomoia solidaginis* (Hbn.)	○	—	—	—	—	○
123	*Lithophane socia* (Hufn.)	○	●	—	—	—	○
124	*Lithophane ornitopus* (Hufn.)	○	—	—	—	—	○
125	*Lithophane lamda* (Fabr.)	○	○	—	—	—	○
126	*Lithophane furcifera* (Hufn.)	●	○	—	—	○	○
127	*Xylena vetusta* (Hbn.)	○	○	—	—	○	○
128	*Xylena exoleta* (L.)	○	○	—	—	○	○
129	*Allophyes oxyacanthae* (L.)	○	○	—	—	—	—
130	*Griposia aprilina* (L.)	●	○	—	—	+	○
131	*Dryobotodes protea* (Schiff. et Den.)	○	—	—	—	—	○
132	*Blepharita satura* (Schiff. et Den.)	●	○	—	—	—	—
133	*Blepharita adusta* (Esp.)	○	○	—	—	—	—
134	*Blepharita amica* (Tr.)	○	—	—	—	—	—
135	*Polymixis polymita* (L.)	○	—	—	—	—	—
136	*Antitype chi* (L.)	○	○	—	—	—	○
137	*Ammoconia caecimacula* (Schiff. et Den.)	○	●	—	—	—	○
138	*Eupsilia transversa* (Hufn.)	○	●	+	—	○	●
139	*Xanthia croceago* (Schiff. et Den.)	○	○	—	—	—	○
140	*Conistra erythrocephala* (Schiff. et Den.)	○	—	—	—	—	○
141	*Conistra rubiginosa* (Scop.)	○	○	—	—	○	○
142	*Conistra vaccinii* (L.)	●	●	—	—	○	○

1	2	3	4	5	6	7	8
143	*Conistra ligula* (Esp.)	○	○	—	—	—	—
144	*Dasycampa rubiginea* (Schiff. et Den.)	○	○	—	—	—	○
145	*Agrochola circellaris* (Hufn.)	●	●	+	—	●	●
146	*Agrochola lota* (Cl.)	○	○	—	—	—	○
147	*Agrochola macilenta* (Hbn.)	—	—	—	—	○	—
148	*Agrochola helvola* (L.)	○	○	—	—	—	○
149	*Agrochola litura* (L.)	○	●	—	—	—	○
150	*Agrochola lychnidis* (Schiff. et Den.)	○	—	—	—	—	—
151	*Parastichtis suspecta* (Hbn.)	○	—	—	—	—	○
152	*Spudea ruticilla* (Esp.)	○	—	—	—	—	—
153	*Atethmia ambusta* (Schiff. et Den.)	○	—	—	—	—	—
154	*Cirrhia lutea* (Ström.)	○	○	—	—	—	—
155	*Cirrhia fulvago* (Cl.)	○	●	—	—	—	○
156	*Cirrhia gilvago* (Schiff. et Den.)	○	●	+	—	○	○
157	*Cirrhia ocellaris* (Bkh.)	○	—	—	—	—	○
158	*Cirrhia citrago* (L.)	●	—	—	—	—	—
159	*Craniophora ligustri* (Schiff. et Den.)	○	○	—	—	—	—
160	*Apatele strigosa* (Schiff. et Den.)	○	○	—	—	—	○
161	*Apatele rumicis* (L.)	●	●	—	—	●	○
162	*Apatele psi* (L.)	●	●	+	+	●	●
163	*Apatele tridens* (Schiff. et Den.)	○	○	—	—	—	○
164	*Apatele cuspis* (Hbn.)	○	—	—	—	—	○
165	*Apatele menyanthidis* (Vw.)	○	○	—	—	—	○
166	*Apatele aceris* (L.)	●	●	+	—	●	○
167	*Apatele auricoma* (Schiff. et Den.)	○	○	—	—	—	—
168	*Apatele megacephala* (Schiff. et Den.)	●	●	+	—	○	○
169	*Apatele euphorbiae* (Schiff. et Den.)	○	○	—	—	—	○
170	*Apatele leporina* (L.)	●	●	—	—	—	○
171	*Dasechaeta alpium* (Osob.)	●	●	—	—	—	—
172	*Simyra albovenosa* (Goeze)	○	○	—	—	—	○
173	*Simyra nervosa* (Schiff. et Den.)	○	○	—	—	—	○
174	*Cryphia fraudatricula* (Hbn.)	●	—	—	—	—	○
175	*Cryphia algae* (Fabr.)	○	+	—	—	○	○
176	*Amphipyra pyramidea* (L.)	●	●	+	—	+	○
177	*Amphipyra perflua* (Fabr.)	○	—	—	—	—	—
178	*Amphipyra livida* (Schiff. et Den.)	○	○	—	—	○	○
179	*Amphipyra tragopogonis* (Cl.)	●	●	—	○	●	○
180	*Mormo maura* (L.)	○	—	—	—	—	—
181	*Talpophila matura* (Hufn.)	●	●	—	—	—	—
182	*Rusina tenebrosa* (Hbn.)	●	●	—	—	—	○
183	*Dipterygia scabriuscula* (L.)	●	●	+	—	—	○
184	*Euplexia lucipara* (L.)	●	●	—	—	○	○
185	*Apamea monoglypha* (Hufn.)	●	●	+	+	●	●
186	*Apamea lithoxylea* (Schiff. et Den.)	●	●	—	+	●	—
187	*Apamea sublustris* (Esp.)	●	○	—	—	—	○
188	*Apamea crenata* (Hufn.)	●	—	—	—	—	○
189	*Apamea characterea* (Hbn.)	+	—	—	—	—	—
190	*Apamea lateritia* (Hufn.)	●	○	+	—	○	○
191	*Apamea furva* (Schiff. et Den.)	○	●	—	—	—	○
192	*Apamea oblonga* (Haw.)	●	○	—	—	—	○
193	*Apamea remissa* (Hbn.)	●	●	—	—	+	○

1	2	3	4	5	6	7	8
194	*Apamea unanimis* (Hbn.)	○	—	—	—	—	○
195	*Apamea anceps* (Schiff. et Den.)	●	●	—	—	—	○
196	*Apamea sordens* (Hufn.)	●	●	+	—	○	○
197	*Apamea scolopacina* (Esp.)	●	○	—	—	—	—
198	*Apamea pabulatricula* (Brahm)	●	—	—	—	—	○
199	*Mesapamea secalis* (L.)	●	●	+	—	○	●
200	*Oligia ophiogramma* (Esp.)	●	—	—	—	—	○
201	*Oligia strigilis* (L.)	●	●	—	+	●	●
202	*Oligia latruncula* (Schiff. et Den.)	●	●	—	—	—	—
203	*Miana furuncula* (Schiff. et Den.)	●	●	—	—	●	○
204	*Eremobia ochroleuca* (Schiff. et Den.)	○	—	—	—	—	—
205	*Calamia tridens* (Hufn.)	○	○	—	—	+	○
206	*Calotaenia celsia* (L.)	○	—	—	—	—	—
207	*Luperina testacea* (Schiff. et Den.)	○	○	●	—	●	—
208	*Amphipoea oculea* (L.)	●	○	—	—	—	○
209	*Amphipoea fucosa* (Frr.)	●	●	+	+	●	—
210	*Celaena leucostigma* (Hbn.)	●	●	+	—	●	●
211	*Gortyna flavago* (Schiff. et Den.)	○	○	—	—	—	○
212	*Hydraecia micacea* (Esp.)	○	○	—	—	—	—
213	*Trachea atriplicis* (L.)	●	●	+	+	●	○
214	*Phlogophora meticulosa* (L.)	○	○	—	—	○	○
215	*Callopistria juventina* (Cr.)	○	○	—	—	—	○
216	*Hyppa rectilinea* (Esp.)	●	○	—	+	—	—
217	*Actinotia polyodon* (Cl.)	○	○	—	—	—	—
218	*Actinotia hyperici* (Schiff. et Den.)	○	—	—	—	—	—
219	*Caradrina morpheus* (Hufn.)	●	●	+	+	●	●
220	*Caradrina selini* Bsd.	●	○	—	—	—	○
221	*Caradrina clavipalpis* (Scop.)	●	●	+	●	●	○
222	*Hoplodrina alsines* (Brahm)	●	●	+	—	○	○
223	*Hoplodrina blanda* (Schiff. et Den.)	●	●	—	—	—	○
224	*Hoplodrina ambigua* (F.)	●	●	+	—	●	○
225	*Acosmetia caliginosa* (Hbn.)	○	—	—	—	—	—
226	*Ipimorpha retusa* (L.)	○	○	—	—	—	—
227	*Ipimorpha subtusa* (Schiff. et Den.)	●	—	—	—	○	○
228	*Meristis trigrammica* (Hufn.)	●	●	—	—	—	○
229	*Cosmia pyralina* (Schiff. et Den.)	○	●	—	—	—	○
230	*Cosmia affinis* (L.)	○	+	+	—	—	○
231	*Cosmia trapezina* (L.)	●	●	+	+	○	●
232	*Dicycla oo* (L.)	○	—	—	—	—	○
233	*Enargia paleacea* (Esp.)	●	●	—	—	—	○
234	*Enargia ypsillon* (Schiff. et Den.)	●	●	—	—	○	—
235	*Rhizedra lutosa* (Hbn.)	○	—	—	—	●	○
236	*Arenostola pygmina* (Haw.)	○	—	—	—	—	—
237	*Arenostola fluxa* (Hbn.)	○	○	—	—	—	○
238	*Nonargia typhae* (Thnbg.)	○	—	○	—	—	—
239	*Archanara geminipuncta* (Haw.)	○	—	+	—	—	○
240	*Archanara sparganii* (Esp.)	○	○	—	—	—	—
241	*Archanara algae* (Esp.)	—	●	—	—	—	○
242	*Chilodes maritima* (Tausch.)	—	○	—	—	—	—
243	*Hapalotis venustula* (Hbn.)	○	○	—	—	—	○

1	2	3	4	5	6	7	8
244	*Panemeria tenebrata* (Scop.)	○	○	—	—	—	○
245	*Chloridea viriplaca* (Hufn.)	○	○	—	—	—	—
246	*Chloridea ononis* (Schiff. et Den.)	○	○	—	—	—	○
247	*Chloridea armigera* (Hbn.)	○	—	—	—	—	—
248	*Chloridea scutosa* (Schiff. et Den.)	○	○	—	—	○	○
249	*Pyrrhia umbra* (Hufn.)	○	+	+	+	○	○
250	*Periphanes delphinii* (L.)	○	—	—	—	—	—
251	*Axylia putris* (L.)	●	●	+	—	●	○
252	*Porphyrinia noctualis* (Hbn.)	○	○	—	—	—	○
253	*Jaspidia deceptoria* (Scop.)	○	—	—	—	—	—
254	*Jaspidia pygarga* (Hufn.)	○	○	—	—	—	—
255	*Eustrotia uncula* (Cl.)	○	○	—	—	—	○
256	*Eustrotia olivana* (Schiff. et Den.)	○	○	—	—	—	—
257	*Eustrotia candidula* (Schiff. et Den.)	○	○	—	—	○	—
258	*Emmelia trabealis* (Scop.)	○	○	—	—	○	○
259	*Acontia lucida* (Hufn.)	○	○	—	—	○	○
260	*Acontia luctuosa* (Schiff. et Den.)	○	○	—	—	+	○
261	*Nycteola revayana* (Scop.)	—	—	—	—	—	○
262	*Earias chlorana* (L.)	○	—	—	—	—	○
263	*Earias vernana* (Hbn.)	—	—	—	—	—	○
264	*Bena prasinana* (L.)	●	—	—	—	—	○
265	*Pseudoips bicolorana* (Fuessl.)	●	—	—	—	—	○
266	*Panthea coenobita* (Esp.)	○	○	—	—	—	○
267	*Moma ludifica* (L.)	○	—	—	—	—	—
268	*Colocasia coryli* (L.)	○	○	—	—	—	○
269	*Syngrapha interrogationis* (L.)	—	○	—	—	—	—
270	*Syngrapha ain* (Hochenw.)	○	—	—	—	—	—
271	*Plusidia cheiranthi* (Tausch.)	○	—	—	—	—	○
272	*Chrysaspidia festucae* (L.)	○	●	—	—	○	○
273	*Chrysaspidia bractea* (Schiff. et Den.)	—	○	—	—	—	—
274	*Autographa pulchrina* (Haw.)	○	○	—	—	—	○
275	*Autographa confusa* (Steph.)	●	○	+	—	●	○
276	*Autographa gamma* (L.)	●	●	●	+	●	○
277	*Chrysoptera c-aureum* (Knoch.)	○	—	—	—	—	○
278	*Polychrysia moneta* (Fabr.)	○	○	—	—	—	—
279	*Plusia chrysitis* (L.)	○	●	+	—	○	○
280	*Abrostola triplasia* (L.)	●	●	+	—	○	○
281	*Abrostola trigemina* Werneb.	○	—	—	—	—	○
282	*Mormonia sponsa* (L.)	●	—	—	—	—	○
283	*Catocala fraxini* (L.)	●	○	—	—	○	○
284	*Catocala nupta* (L.)	●	●	+	+	+	○
285	*Catocala elocata* (Esp.)	○	●	+	+	○	○
286	*Catocala electa* (Bkh.)	○	—	—	—	—	—
287	*Catocala promissa* (Schiff. et Den.)	●	—	—	—	—	○
288	*Catocala pacta* (L.)	○	—	—	—	—	○
289	*Ephesia fulminea* (Scop.)	●	—	—	+	—	—
290	*Minucia lunaris* (Schiff. et Den.)	●	○	—	—	—	○
291	*Callistege mi* (Cl.)	○	○	—	—	—	○
292	*Ectypa glyphica* (L.)	●	○	—	—	—	○
293	*Scolipteryx libatrix* (L.)	●	●	+	—	○	○
294	*Lygephila pastinum* (Tr.)	○	—	—	—	—	○

1	2	3	4	5	6	7	8
295	*Lygephila viciae* (Hbn.)	○	—	—	—	—	—
296	*Lygephila craccae* (Schiff. et Den.)	●	—	—	—	—	—
297	*Catephia alchymista* (Schiff. et Den.)	○	○	—	—	—	○
298	*Laspeyria flexula* (Schiff. et Den.)	○	○	—	—	—	○
299	*Colobochyla salicalis* (Schiff. et Den.)	○	○	—	—	—	○
300	*Parascotia fuliginaria* (L.)	○	—	—	—	—	—
301	*Epizeuxis calvaria* (Fabr.)	○	—	—	—	—	○
302	*Phytometra viridaria* (Cl.)	○	—	—	—	—	—
303	*Rivula sericealis* (Scop.)	○	○	—	—	○	○
304	*Simplicia rectalis* (Ev.)	○	—	—	—	—	—
305	*Herminia barbalis* (Cl.)	○	○	—	—	—	—
306	*Macrochilo tentacularis* (L.)	○	○	—	—	—	—
307	*Zanclognatha tarsipennalis* (Tr.)	○	—	—	—	—	○
308	*Zanclognatha lunalis* (Scop.)	○	—	—	—	—	○
309	*Zanclognatha tarsicrinalis* (Knoch)	○	—	—	—	—	—
310	*Zanclognatha grisealis* (Schiff. et Den.)	○	○	—	—	—	○
311	*Trisateles emortualis* (Schiff. et Den.)	○	○	—	—	—	○
312	*Paracolax glaucinalis* (Schiff. et Den.)	○	○	—	—	—	○
313	*Schrankia taenialis* (Hbn.)	○	—	—	—	—	○
314	*Schrankia costaestrigalis* (Steph.)	○	—	—	—	○	○
315	*Bomolocha crassalis* (Fabr.)	○	○	—	—	—	—
316	*Hypena rostralis* (L.)	○	○	—	—	—	○
317	*Hypena proboscidalis* (L.)	●	●	—	—	—	○

SÓWKI (*NOCTUIDAE, LEPIDOPTERA*) WARSZAWY I MAZOWSZA

STRESZCZENIE

Niniejsza praca stanowi próbę podsumowania danych dotyczących fauny sówek Warszawy i Mazowsza.

Ustalono, na podstawie piśmiennictwa i materiałów własnych, skład gatunkowy *Noctuidae* na Mazowszu, w suburbiach i zieleni miejskiej Warszawy, przy czym dokładniej badano faunę parków, zieleni osiedlowej i centrum miasta.

Materiały własne pochodzą z lat 1974—1979, przy czym większość okazów zbierano przy pomocy pułapek Moerickego. Piśmiennictwo dotyczące sówek Warszawy i Mazowsza pochodzi głównie z okresu przedwojennego.

Na całej Nizinie Mazowieckiej stwierdzono 309 gatunków *Noctuidae*, czyli około 60% fauny Polski. W Warszawie stwierdzono 270 gatunków, z czego w suburbiach 218 gatunków, w parkach 49 gatunków, w osiedlach 22 gatunki i w centrum 90 gatunków (Tab. 4).

Gatunki stwierdzone dla Mazowsza zaliczono do 7 elementów zoogeograficznych, przy czym najwięcej jest gatunków eurosyberyjskich, które stanowią ponad 60% fauny Mazowsza. W miarę wzrostu stopnia zurbanizowania terenu zwiększa się udział procentowy gatunków o szerokich zasięgach zoogeograficznych, szczególnie holarktycznych, a maleje udział gatunków europejskich.

Analizując powiązania poszczególnych gatunków ze środowiskiem wykazano, że najliczniej reprezentowane są gatunki terenów otwartych, przy czym ich udział rośnie w miarę wzrostu stopnia zurbanizowania terenu, a maleje udział gatunków leśnych. Udział gatunków preferujących tereny przejściowe właściwie się nie zmienia, z wyjątkiem osiedli, gdzie nieznacznie rośnie.

W faunie zieleni miejskiej, w porównaniu z fauną Mazowsza, wzrasta udział gatunków pleofagicznych, zwłaszcza pleofagów ziół i traw, a maleje udział gatunków monofagicznych i oligofagów roślin zielnych.

NOCTUIDAE (*LEPIDOPTERA*) ВАРШАВЫ И МАЗОВИИ

РЕЗЮМЕ

В Мазовии констатировано 309 видов *Noctuidae*, в Варшаве — 270, из которых 218 видов в субурбиях, 49 в парках, 22 в жилых районах и 90 видов в центре города. Свыше 60% фауны *Noctuidae* составляют европейско-сибирские виды, причем под влиянием роста урбанизационного пресса повышается количество видов с широким географическим ареалом (особенно голарктических), а снижается количество европейских видов. В варшавской городской зелени по сравнению с Мазовией, повышается процентное содержание плеофагов (особенно плеофагов травянистых растений) и видов, предпочитающих открытые территории.

ERRATUM

In volume 36 headings of the following tables have been printed erroneously: Table 1, p. 43 and Table 4, p. 193. Here are the correct headings:

Table 1. Proportions of species beloging to various families of *Proctotrupoidea* occuring in Warsaw (N—number of species)

Family	Warsaw											
	Total		Suburbs		Urban gree areas							
					Total		Parks		Housing estates		Town centre	
	N	%	N	%	N	%	N	%	N	%	N	%

Table 4. Check-list of *Noctuidae (Lepidoptera)* species occuring in Warsaw and Mazovia

No.	○—literature data ●—proved literature data +—unpublished data ?—doubtful information Species	Mazovia	Warsaw				
			Suburban areas	Parks	Green areas in housing estates	Town centre	Other samples areas
1	2	3	4	5	6	7	8