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Butterflies and moths (*Lepidoptera*) in urban habitats: the moths of Warsaw
I. *Noctuidae, Pantheidae, Nolidae*

Abstract: 302 moth species of the families *Noctuidae, Pantheidae* and *Nolidae* have been recorded in Warsaw to date. Of these, in historical times were recorded 286 species (86 of them only then, including one – *M. acetosellae*, which can no longer be found in Poland). Most of these species are now regarded as very rare and occurring only locally in Central Europe (*e.g. I. calvaria, S. taenialis, C. pacta, P. moneta, P. cheiranthi, H. ononis, A. caliginosa, D. oo, T. ludifica*). Contemporary records list 212 species, most of which are widely distributed in Poland and classified as abundant (e.g. *D. trifolii, M. pallens, X. c-nigrum, A. exclamationis*). 7 species: *M. confusa, A. gamma, S. scutosa, H. peltigera, S. exigua, L. zollikoferi and A. ipsilon* are migrant visitors.

Key words: *Noctuidae, Pantheidae, Nolidae, Lepidoptera*, urban habitats, Warsaw

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INTRODUCTION

Studies of *Lepidoptera* from urban habitats have not been carried out in too many Polish towns. Warsaw is now the most extensively studied Polish town, with research carried out both in the city and in its suburbs, starting from the mid-19th century. As early as 1764–1798, during his expeditions K.H. Perthes, the court geographer of king Stanislaw August Poniatowski collected, among others, insects (*Coleoptera, Orthoptera* and *Lepidoptera*). Information about his collections, now available only in manuscript form or known from reports by other authors, is one of the earliest and very valuable, if fragmentary, accounts of the species composition of the city's fauna (ŚWIECIMSKI 1983). Nineteenth century data are also fragmentary, being limited to reports on the identification of individual species and concerned nearly entirely with the areas which then formed the environs of Warsaw (ROMANISZYN & SCHILLE 1929). It was only in the 20th century that more extensive studies of *Lepidoptera* populations were undertaken.

The beginning of the century saw the publication of a paper by SLASTSHEVSKY (1911) providing detailed information on the species make-up of *Macrolepidoptera* in Warsaw and some surrounding towns, such as Pyry, Pomiechówek, Milanówek and Rembertów. Some information may also be found in papers by Kreczmer and Kremky (KRECZMER 1910, 1911, KREMKY 1924). Patryn (PATRYN 1937, 1939, 1947) and Adamczewski (ADAMCZEWSKI 1936, 1937) carried out research in Warsaw's suburbs (Bielany, Grochów, Rembertów, Młociny) in the 1940's. After World War II, in the 40's and 50's, Adamczewski began systematic investigations on *Lepidoptera* inhabiting the city centre. He continued his research until 1980 but only published the results from the first few years of study (ADAMCZEWSKI 1947, 1949, 1950, 1951, 1962, 1964, 1966). *Lepidoptera*, and particularly noctuid moths, were also investigated in a comprehensive study of urban fauna carried out by the Institute of Zoology, PAS. That project looked at the species composition, origin and zoogeographical and ecological structure of the fauna of a big city, as exemplified by the fauna of Warsaw. The focus was on the entomofauna of urban green spaces (parks, green areas in residential districts and near roads in densely built-up areas). The results of these investigations provided a basis for the description of noctuid communities inhabiting different types of green spaces in the city – parks, residential districts and densely built-up areas (WINIARSKA 1982, 1986) and also in some suburban sites (WINIARSKA 1981) and natural linden-oak-hornbeam forests, which used to grow where most of the present-day Warsaw conurbation is situated (WINIARSKA 1990a). It was also possible to assess the effect of anthropogenic pressure on noctuid communities (WINIARSKA 1990b, 2001a). At present, investigations are only continued in the center of Warsaw (WINIARSKA1990b, 2001b).

The present paper is based on data from relevant literature, the collections of the Museum and Institute of Zoology, PAS and previously unpublished materials collected by Adamczewski in the years 1963–1980 and by Winiarska in the years 1976–1978 and 1998–2002 in the centre of Warsaw. It contains a list of species recorded in Warsaw from historical times until 2001 together with brief descriptions. It is the first of a series of papers being prepared at the moment and aiming to present the species composition of communities of individual families of *Lepidoptera* occurring in urban habitats. Together, these publications will form a basis for a comprehensive monograph presenting the process of settlement of urban habitats by *Lepidoptera* and changes that occur in communities of this insects under the influence of increasing anthropogenic pressure as the city develops.

The names and systematic arrangement of taxa at family level in Table 1 are based on the inventory of European *Lepidoptera* (KARLSHOLT, RAZOWSKI 1996) with some modifications based on the inventory of Danish *Lepidoptera* (KARLSHOLT, NIELSEN 1998), after BUSZKO, NOWACKI 2000. Two periods are distinguished (as in BUSZKO, NOWACKI 2000): early 19th century – 1960 (historical records) and since 1960 (contemporary records). Data on the abundance of individual species, their biology and distribution in Europe have been excerpted from FIBIGER 1990, 1993, 1997, NOWACKI 1998 oraz RONKAY G&L 1994, 1995, RONKAY, YELA and HREMBLAY 2001. In Poland – either STUDZIŃSKI 1979.

SPECIES COMPOSITION

302 species of the families *Noctuidae*, *Nolidae* and *Pantheidae* (until recently classified as one family – *Noctuidae*) have been recorded in Warsaw to date, representing about 61% of the total number of 493 species of these families reported from Poland (Table 1).

Tab.1. Checklist of *Noctuidae*, *Pantheidae* and *Nolidae* occurring in Warsaw and Mazovia (M - migratory species, WA – whole area of Poland, AWA – almost whole area of Poland, PP – part of Poland, R – rare; RepGl – glacial or postglacial relict, ReMts – occurs also as a relict species in mountains: the Sudeten MTS, the Tatra Mts, Thuringen Mts).

No in Mazovia	No in Warsaw	Species	Period		Distribution		Notes
			up to 1960	from 1961 to 2000	in Poland	in Mazovia	
		Noctuidae					
		Acronictinae					
1	1	*Moma alpium* (Osb.)	+		WA	+	
2	–	*Acronicta alni* (L.)			WA	+	
3	2	*Acronicta cuspis* (Hbn.)	+		PP	+	
4	3	*Acronicta tridens* (Den.et Schiff.)	+		WA	+	
5	4	*Acronicta psi* (L.)	+	+	WA	+	
6	5	*Acronicta aceris* (L.)	+	+	WA	+	
7	6	*Acronicta leporina* (L.)	+	+	WA	+	
8	7	*Acronicta megacephala* (Den.et Schiff.)	+	+	WA	+	
9	8	*Acronicta strigosa* (Den.et Schiff.)	+		AWA	+	
10	9	*Acronicta menyanthidis* (Esp.)	+		PP	+	
11	10	*Acronicta auricoma* (Den.et Schiff.)	+		WA	+	
12	11	*Acronicta euphorbiae* (Den.et Schiff.)	+		PP	+	
13	12	*Acronicta rumicis* (L.)	+	+	WA	+	
14	13	*Craniophora ligustri* (Den.et Schiff.)	+		WA	+	
15	14	*Simyra nervosa* (Den.et Schiff.)	+		AWA	+	
16	15	*Simyra albovenosa* (Goeze)	+	+	WA	+	
		Bryophilinae					
17	16	*Cryphia fraudatricula* (Hbn.)	+	+	AWA	+	
18	17	*Cryphia algae* (F.)	+	+	PP	+	
		Herminiinae					
19	18	*Idia calvaria* (Den.et Schiff.)	+		PP, R	+	
20	–	*Simplicia rectalis* (Ev.)			PP	+	
21	19	*Trisateles emortualis* (Den.et Schiff.)	+	+	WA	+	
22	20	*Paracolax tristalis* (F.)	+		AWA	+	
23	–	*Macrochilo cribrumalis* (Hbn.)			PP	+	
24	21	*Herminia tarsicrinalis* (Knoch)		+	AWA	+	
25	22	*Herminia grisealis* (Den.et Schiff.)	+		WA	+	
26	23	*Polypogon tentacularia* (L.)	+		AWA	+	
27	24	*Pechipogo strigilata* (L.)	+	+	AWA	+	
28	25	*Zanclognatha lunalis* (Scop.)	+		PP	+	
29	26	*Zanclognatha tarsipennalis* Treit.	+	+	WA	+	

		Strepsimaninae					
30	27	*Hypenodes humidalis* DOUBL.		+	PP	+	
31	28	*Schrankia costaestrigalis* (STEPH.)	+		PP	+	
32	29	*Schrankia taenialis* (HBN.)	+		PP	+	
		Catocalinae					
33	30	*Catocala fraxini* (L.)	+	+	WA	+	
34	31	*Catocala sponsa* (L.)	+		WA	+	
35	32	*Catocala nupta* (L.)	+	+	WA	+	
36	33	*Catocala elocata* (ESP.)	+	+	AWA	+	
37	34	*Catocala promissa* (DEN.ET SCHIFF.)	+		AWA	+	
38	–	*Catocala electa* (VIEW.)			PP	+	
39	35	*Catocala pacta* (L.)	+		PP, R	+	
40	36	*Catocala fulminea* (SCOP.)	+	+	AWA	+	
41	37	*Minucia lunaris* (DEN.ET SCHIFF.)	+		AWA	+	
42	–	*Prodotis stolida* (F.)			PP	+	M
43	38	*Lygephila pastinum* (TREIT.)	+	+	AWA	+	
44	–	*Lygephila viciae* (HBN.)			PP	+	
45	39	*Lygephila craccae* (DEN.ET SCHIFF.)	+		PP	+	
46	40	*Catephia alchymista* (DEN.ET SCHIFF.)	+	+	PP	+	
47	41	*Tyta luctuosa* (DEN.ET SCHIFF.)	+	+	WA	+	
48	42	*Callistege mi* (CL.)	+		WA	+	
49	43	*Euclidia glyphica* (L.)	+		WA	+	
50	44	*Laspeyria flexula* (DEN.ET SCHIFF.)	+	+	WA	+	
		Calpinae					
51	45	*Scoliopteryx libatrix* (L.)	+	+	WA	+	
		Hypeninae					
52	46	*Hypena proboscidalis* (L.)	+	+	WA	+	
53	47	*Hypena rostralis* (L.)	+	+	WA	+	
54	48	*Hypena crassalis* (F.)	+		WA	+	
55	–	*Phytometra viridaria* (CL.)			WA	+	
56	49	*Rivula sericealis* (SCOP.)	+	+	WA	+	
57	50	*Parascotia fuliginaria* (L.)	+	+	WA	+	
58	51	*Colobochyla salicalis* (DEN.ET SCHIFF.)	+		WA	+	
		Plusiinae					
59	52	*Polychrysia moneta* (F.)	+		PP	+	
60	53	*Lamprotes c-aureum* (KNOCH)	+		PP	+	
61	54	*Diachrysia chrysitis* (L.)	+	+	WA	+	
62	55	*Macdunnoughia confusa* (STEPH.)	+	+	WA	+	M
63	56	*Plusia festucae* (L.)	+	+	WA	+	
64	–	*Plusia putnami* (GROTE)			AWA	+	
65	57	*Autographa gamma* (L.)	+	+	WA	+	M
66	58	*Autographa pulchrina* (HAW.)	+		WA	+	
67	–	*Autographa buraetica* (STAUDINGER)			PP	+	RepGl
68	–	*Autographa jota* (L.)			PP	+	
69	59	*Autographa bractea* (DEN. ET SCHIFF.)	+	+	PP	+	
70	60	*Plusidia cheiranthi* (TAUSCH.)	+		PP, R	+	
71	–	*Syngrapha ain* (HOCHEN.)			PP	+	
72	61	*Syngrapha interrogationis* (L.)	+		PP	+	

73	62	*Abrostola tripartita* (HUFN.)	+		WA	+	
74	63	*Abrostola triplasia* (L.)	+	+	WA	+	
		Acontiinae					
75	64	*Emmelia trabealis* (SCOP.)	+	+	WA	+	
76	65	*Acontia lucida* (HUFN.)	+		PP, R	+	
		Eustrotiinae					
77	66	*Protodeltote pygarga* (HUFN.)		+	WA	+	
78	–	*Deltote deceptoria* (SCOP.)			AWA	+	
79	67	*Deltote uncula* (Cl.)	+	+	WA	+	
80	68	*Deltote bankiana* (FABR.)	+	+	WA	+	
81	69	*Pseudeustrotia candidula* (DEN.ET SCHIFF.)	+	+	WA	+	
82	70	*Eublemma minutata* (F.)	+		PP	+	
		Cuculliinae					
83	–	*Cucullia scopariae* DORFM.			-	+	
84	71	*Cucullia fraudatrix* EV.	+	+	WA	+	
85	72	*Cucullia absinthii* (L.)	+		AWA	+	
86	73	*Cucullia argentea* (HUFN.)	+	+	PP	+	
87	74	*Cucullia artemisiae* (Hufn.)	+	+	WA	+	
88	–	*Cucullia xeranthemi* BSD.			-	+	
89	75	*Cucullia umbratica* (L.)	+	+	WA	+	
90	76	*Cucullia chamomillae* (DEN.ET SCHIFF.)	+	+	PP	+	
91	–	*Cucullia gnaphalii* (HBN.)			PP, R	+	
92	77	*Cucullia tanaceti* (DEN.ET SCHIFF.)	+	+	PP	+	
93	78	*Cucullia asteris* (DEN.ET SCHIFF.)	+		PP	+	
94	79	*Shargacucullia scrophulariae* (DEN.ET SCHIFF.)	+		PP	+	
95	80	*Shargacucullia thapsiphaga* (TREIT.)	+		PP	+	
96	81	*Shargacucullia lychnitis* (RAMB.)	+		PP	+	
97	82	*Shargacucullia verbasci* (L.)	+		AWA	+	
98	83	*Calophasia lunula* (HUFN)	+	+	WA	+	
		Amphipyrinae					
99	84	*Amphipyra pyramidea* (L.)	+	+	WA	+	
100	–	*Amphipyra berbera* RUNGS			AWA	+	
101	–	*Amphipyra perflua* (F.)			PP	+	
102	85	*Amphipyra livida* (DEN.ET.SCHIFF.)	+	+	PP	+	
103	86	*Amphipyra tragopoginis* (CL.)	+	+	WA	+	
		Psaphidinae					
104	87	*Asteroscopus sphinx* (HUFN.)	+		AWA	+	
105	88	*Brachionycha nubeculosa* (ESP.)	+		PP	+	
		Dilobinae					
106	89	*Diloba caeruleocephala* (L.)	+	+	WA	+	
		Stiriinae					
107	90	*Panemeria tenebrata* (SCOP.)	+		AWA	+	
		Heliothinae					
108	91	*Schinia scutosa* (DEN.ET SCHIFF.)	+	+	PP	+	M
109	92	*Heliothis viriplaca* (HUFN.)	+	+	WA	+	
110	93	*Heliothis ononis* (DEN.ET SCHIFF.)	+		PP, R	+	M
111	94	*Heliothis peltigera* (DEN.ET SCHIFF.)		+	PP	+	M
112	–	*Helicoverpa armigera* (HBN.)			PP	+	M

113	95	*Pyrrhia umbra* (HUFN.)	+	+	WA	+	
114	–	*Periphanes delphinii* (L.)			PPR	+	
		Hadeninae					
115	96	*Elaphria venustula* (HBN.)	+	+	WA	+	
116	–	*Acosmetia caliginosa* (HBN.)			PPR	+	
117	97	*Caradrina morpheus* (HUFN.)	+	+	WA	+	
118	98	*Paradrina selini* (BSD.)	+	+	AWA	+	
119	99	*Paradrina clavipalpis* (SCOP.)	+	+	WA	+	
120	100	*Hoplodrina octogenaria* (GOEZE)	+	+	WA	+	
121	101	*Hoplodrina blanda* (DEN.ET SCHIFF.)	+	+	WA	+	
122	102	*Hoplodrina respersa* (DEN. ET SCHIFF.)		+			
123	103	*Hoplodrina ambigua* (DEN.ET SCHIFF.)	+	+	WA	+	
124	104	*Charanyca trigrammica* (HUFN.)	+	+	WA	+	
125	105	*Spodoptera exigua* (HBN.)		+	PP	+	M
126	106	*Chilodes maritima* (TAUSCH.)	+	+	PP	+	
127	–	*Athetis furvula* (HBN.)			PPR	+	
128	107	*Athetis pallustris* (HBN.)		+	PP	+	
129	108	*Dipterygia scabriuscula* (L.)	+	+	WA	+	
130	109	*Rusina ferruginea* (ESP.)	+	+	WA	+	
131	–	*Mormo maura* (L.)			PP	+	
132	110	*Thalpophila matura* (HUFN.)	+	+	WA	+	
133	111	*Trachea atriplicis* (L.)	+	+	WA	+	
134	112	*Euplexia lucipara* (L.)	+	+	WA	+	
135	113	*Phlogophora meticulosa* (L.)	+	+	WA	+	
136	114	*Hyppa rectilinea* (ESP.)	+	+	WA	+	
137	–	*Xylomoia graminea* (GRAES.)			PP	+	
138	115	*Actinotia polyodon* (CL.)	+		WA	+	
139	–	*Chloantha hyperici* (DEN.ET SCHIFF.)			PPR	+	
140	116	*Callopistria juventina* (STOLL)	+		AWA	+	
141	–	*Eucarta virgo* (TREIT.)			PP	+	
142	117	*Ipimorpha retusa* (L.)	+		WA	+	
143	118	*Ipimorpha subtusa* (DEN.ET SCHIFF.)	+	+	WA	+	
144	119	*Enargia paleacea* (ESP.)	+	+	WA	+	
145	120	*Parastichtis suspecta* (HBN.)	+	+	AWA	+	
146	121	*Parastichtis ypsillon* (DEN.ET SCHIFF.)	+	+	AWA	+	
147	122	*Mesogona acetosellae* (DEN.ET SCHIFF.)	+		–	+	
148	123	*Mesogona oxalina* (HBN.)	+	+	PP	+	
149	124	*Dicycla oo* (L.)	+		PPR	+	
150	125	*Cosmia affinis* (L.)	+	+	AWA	+	
151	126	*Cosmia pyralina* (DEN.ET SCHIFF.)	+	+	WA	+	
152	127	*Cosmia trapezina* (L.)	+	+	WA	+	
153	–	*Atethmia ambusta* (DEN.ET SCHIFF.)			PP	+	
154	128	*Xanthia togata* (ESP.)	+	+	WA	+	
155	129	*Xanthia icteritia* (HUFN.)	+	+	WA	+	
156	130	*Xanthia gilvago* (DEN.ET SCHIFF.)	+	+	PP	+	
157	131	*Xanthia ocellaris* (BKH.)	+	+	PP	+	
158	132	*Xanthia citrago* (L.)	+	+	PP	+	
159	133	*Agrochola lychnidis* (DEN.ET SCHIFF.)		+	PP	+	

160	134	*Agrochola circellaris* (HUFN.)	+	+	WA	+	
161	135	*Agrochola lota* (Cl.)	+	+	WA	+	
162	136	*Agrochola macilenta* (HBN.)	+	+	WA	+	
163	137	*Agrochola helvola* (L.)	+		WA	+	
164	138	*Agrochola litura* (L.)	+	+	WA	+	
165	–	*Spudaea ruticilla* (ESP.)			PPR	+	
166	139	*Eupsilia transversa* (HUFN.)	+	+	WA	+	
167	140	*Jodia croceago* (DEN.ET SCHIFF.)	+		PP	+	
168	141	*Conistra vaccinii* (L.)	+	+	WA	+	
169	142	*Conistra ligula* (ESP.)	+	+	PP	+	
170	143	*Conistra rubiginosa* (SCOP.)	+	+	AWA	+	
171	144	*Conistra rubiginea* (DEN.ET SCHIFF.)	+		WA	+	
172	145	*Conistra erythrocephala* (DEN.ET SCHIFF.)	+	+	PP	+	
173	146	*Lithomoia solidaginis* (HBN.)	+		AWA	+	
174	147	*Lithophane socia* (HUFN.)	+	+	WA	+	
175	148	*Lithophane ornitopus* (HUFN.)	+	+	AWA	+	
176	149	*Lithophane furcifera* (HUFN.)	+	+	WA	+	
177	150	*Lithophane lamda* (F.)	+		PP	+	
178	–	*Lithophane consocia* (BKH.)			PP	+	
179	151	*Xylena vetusta* (HBN.)	+	+	WA	+	
180	152	*Xylena exoleta* (L.)	+	+	AWA	+	
181	153	*Allophyes oxyacanthae* (L.)	+		WA	+	
182	154	*Dichonia aprilina* (L.)	+		AWA	+	
183	155	*Dryobotes eremita* (F.)	+		PP	+	
184	156	*Antitype chi* (L.)	+		PP	+	
185	157	*Ammoconia ceacimacula* (DEN.ET SCHIFF.)	+		WA	+	
186	–	*Polymixis polymita* (L.)			PPR	+	
187	158	*Blepharita satura* (DEN.ET SCHIFF.)	+	+	WA	+	
188	–	*Blepharita amica* (TREIT.)			PP	+	
189	–	*Mniotype adusta* (ESP.)			WA	+	
190	159	*Apamea monoglypha* (HUFN.)	+	+	WA	+	
191	160	*Apamea lithoxylaea* (DEN.ET SCHIFF.)	+	+	AWA	+	
192	161	*Apamea sublustris* (ESP.)	+		AWA	+	
193	162	*Apamea crenata* (HUFN.)	+	+	WA	+	
194	163	*Apamea lateritia* (HUFN.)	+	+	WA	+	
195	164	*Apamea furva* (DEN.ET SCHIFF.)	+	+	PP	+	
196	165	*Apamea oblonga* (HAW.)	+	+	PP	+	
197	166	*Apamea remissa* (HBN.)	+	+	WA	+	
198	167	*Apamea unanimis* (HBN.)	+	+	AWA	+	
199	168	*Apamea anceps* (DEN.ET SCHIFF.)	+	+	WA	+	
200	169	*Apamea sordens* (HUFN.)	+	+	WA	+	
201	170	*Apamea scolopacina* (ESP.)	+		WA	+	
202	171	*Apamea ophiogramma* (ESP.)	+	+	WA	+	
203	172	*Eremobia pabulatricula* (BRAHM)	+	+	PP	+	
204	173	*Oligia strigilis* (L.)	+	+	WA	+	
205	–	*Oligia versicolor* (BKH.)			PP	+	
206	174	*Oligia latruncula* (DEN.ET SCHIFF.)	+	+	WA	+	
207	175	*Oligia fasciuncula* (HAW.)		+	AWA	+	

208	176	*Mesoligia furuncula* (DEN.ET SCHIFF.)	+	+	WA	+	
209	177	*Mesapamea secalis* (L.)	+	+	WA	+	
210	–	*Photedes minima* (HAW.)			AWA	+	
211	–	*Eremobia ochroleuca* (DEN.ET SCHIFF.)			PP	+	
212	178	*Luperina testacea* (DEN.ET SCHIFF.)	+	+	WA	+	
213	179	*Luperina zollikoferi* (FR.)		+	PP	+	M
214	180	*Rhizedra lutosa* (HBN.)	+	+	WA	+	
215	181	*Amphipoea oculea* (L.)	+	+	WA	+	
216	182	*Amphipoea fucosa* (FR.)	+	+	WA	+	
217	183	*Amphipoea lucens* (FR.)		+			
218	184	*Hydraecia micacea* (ESP.)	+	+	WA	+	
219	185	*Gortyna flavago* (DEN.ET SCHIFF.)	+	+	WA	+	
220	186	*Calamia tridens* (HUFN.)	+	+	WA	+	
221	–	*Staurophora celsia* (L.)			PP	+	
222	187	*Celaena haworthii* (CURT.)		+	PP	+	
223	188	*Celaena leucostigma* (HBN.)	+	+	WA	+	
224	189	*Nonagria typhae* (THNBG.)	+	+	WA	+	
225	190	*Archanara geminipuncta* (HAW.)	+	+	AWA	+	
226	–	*Archanara dissoluta* (TREIT.)			PP	+	
227	191	*Archanara sparganii* (ESP.)	+	+	WA	+	
228	192	*Archanara algae* (ESP.)	+	+	PP	+	
229	193	*Sedina buettneri* (HERING)		+	PP	+	
230	194	*Chortodes fluxa* (HBN.)	+	+	WA	+	
231	195	*Chortodes pygmina* (HAW.)		+	WA	+	
232	196	*Discestra trifolii* (HUFN.)	+	+	WA	+	
233	197	*Anarta myrtilii* (L.)	+		WA	+	
232	–	*Anarta cordigera* (THNBG)			PP	+	ReMts
235	198	*Lacanobia w-latinum* (HUFN.)	+	+	WA	+	
236	199	*Lacanobia aliena* (HBN)	+		PP	+	
237	200	*Lacanobia splendens* (HBN.)	+		AWA	+	
238	201	*Lacanobia oleracea* (L.)	+	+	WA	+	
239	202	*Lacanobia thalassina* (HUFN.)	+	+	WA	+	
240	203	*Lacanobia contigua* (DEN.ET SCHIFF.)	+		WA	+	
241	204	*Lacanobia suasa* (DEN.ET SCHIFF.)	+	+	WA	+	
242	205	*Hada plebeja* (L.)	+	+	WA	+	
243	206	*Hecatera dysodea* (DEN.ET SCHIFF.)	+	+	PP	+	
244	207	*Hecatera bicolorata* (HUFN.)	+	+	PP	+	
245	208	*Hadena bicruris* (HUFN.)	+	+	WA	+	
246	–	*Hadena luteago* (DEN.ET SCHIFF.)			PP	+	
247	209	*Hadena compta* (DEN.ET SCHIFF.)	+		AWA	+	
248	210	*Hadena confusa* (HUFN.)	+	+	PP	+	
249	211	*Hadena albimacula* (BKH.)	+		PP	+	
250	–	*Hadena filigrama* (ESP.)			PP	+	
251	212	*Hadena rivularis* (FR.)	+	+	WA	+	
252	213	*Hadena perplexa* (DEN.ET SCHIFF.)	+	+	PP	+	
253	214	*Hadena irregularis* (HUFN.)	+		PP	+	
254	215	*Sideridis albicolon* (HBN.)	+	+	PP	+	
255	216	*Heliophobus reticulata* (GOEZE)	+	+	WA	+	

256	217	*Melanchra persicariae* (L.)	+	+	WA	+	
257	218	*Melanchra pisi* (L.)	+	+	WA	+	
258	219	*Mamestra brassicae* (L.)	+	+	WA	+	
259	220	*Papestra biren* (GOEZE)	+		PP	+	
260	221	*Polia bombycina* (HUFN.)	+		WA	+	
261	222	*Polia hepatica* (Cl.)	+		PP	+	
262	223	*Polia nebulosa* (HUFN.)	+	+	WA	+	
263	224	*Mythimna turca* (L.)	+	+	WA	+	
264	225	*Mythimna conigera* (DEN.ET SCHIFF.)	+	+	WA	+	
265	226	*Mythimna ferrago* (F.)	+	+	WA	+	
266	227	*Mythimna albipuncta* (DEN.ET SCHIFF.)	+	+	WA	+	
267	228	*Mythimna pudorina* (DEN.ET SCHIFF.)	+	+	WA	+	
268	229	*Mythimna straminea* (TREIT.)		+	PP	+	
269	230	*Mythimna impura* (HBN.)	+	+	WA	+	
270	231	*Mythimna pallens* (L.)	+	+	WA	+	
271	232	*Mythimna obsoleta* (HBN.)	+	+	AWA	+	
272	233	*Mythimna comma* (L.)	+		WA	+	
273	234	*Mythimna flammea* (CURT.)	+		PP	+	
274	235	*Mythimna l-album* (L.)	+	+	WA	+	
275	236	*Orthosia incerta* (HUFN.)	+	+	WA	+	
276	237	*Orthosia gothica* (L.)	+	+	WA	+	
277	238	*Orthosia cruda* (DEN.ET SCHIFF.)	+	+	WA	+	
278	239	*Orthosia miniosa* (DEN.ET SCHIFF.)	+	+	PP	+	
279	240	*Orthosia opima* (HBN.)	+		PP	+	
280	241	*Orthosia populeti* (F.)	+	+	WA	+	
281	242	*Orthosia cerasi* (F.)	+	+	WA	+	
282	243	*Orthosia gracilis* (DEN.ET SCHIFF.)	+	+	WA	+	
283	244	*Orthosia munda* (DEN.ET SCHIFF.)	+	+	WA	+	
284	245	*Panolis flammea* (DEN.ET SCHIFF.)	+	+	WA	+	
285	246	*Egira conspicillaris* (L.)	+	+	AWA	+	
286	–	*Hyssia cavernosa* (EV.)			PP	+	
287	247	*Cerapteryx graminis* (L.)	+	+	WA	+	
288	248	*Tholera caespitis* (DEN.ET SCHIFF.)	+	+	WA	+	
289	249	*Tholera decimalis* (PODA)	+	+	WA	+	
290	250	*Pachetra sagittigera* (HUFN.)	+		PP	+	
		Noctuinae					
291	251	*Axylia putris* (L.)	+	+	WA	+	
292	252	*Ochropleura plecta* (L.)	+	+	WA	+	
293	253	*Diarsia mendica* (F.)	+	+	WA	+	
294	–	*Diarsia dahlii* (HBN.)			PP	+	
295	254	*Diarsia brunnea* (DEN.ET SCHIFF.)	+	+	WA	+	
296	255	*Diarsia rubi* (VIEW.)	+	+	WA	+	
297	256	*Noctua pronuba* L.	+	+	WA	+	
298	257	*Noctua orbona* (HUFN.)	+	+	WA	+	
299	–	*Noctua interposita* (HBN.)			PP	+	
300	258	*Noctua comes* HBN.	+		PP	+	
301	259	*Noctua fimbriata* (SCHREB.)	+	+	WA	+	
302	260	*Noctua janthina* (DEN.ET SCHIFF.)	+	+	AWA	+	

303	–	*Noctua janthe* (BKH.)			PP	+	
304	261	*Lycophotia porphyrea* (DEN.ET SCHIFF.)	+	+	WA	+	
305	262	*Rhyacia simulans* (HUFN.)	+	+	WA	+	
306	263	*Eurois occulta* (L.)	+	+	WA	+	
307	264	*Spaelotis ravida* (DEN.ET SCHIFF.)	+	+	AWA	+	
308	–	*Spaelotis clandestina* (HARR.)			PP	+	
309	265	*Opigena polygona* (DEN.ET SCHIFF.)		+	WA	+	
310	266	*Graphiphora augur* (F.)	+	+	WA	+	
311	267	*Xestia c-nigrum* (L.)	+	+	WA	+	
312	268	*Xestia ditrapezium* (DEN.ET SCHIFF.)	+		WA	+	
313	269	*Xestia triangulum* (HUFN.)	+	+	WA	+	
314	270	*Xestia ashworthii* (DOUBL.)	+		PP	+	
315	271	*Xestia baja* (DEN.ET SCHIFF.)	+	+	WA	+	
316	–	*Xestia castanea* (ESP.)			PP	+	
317	–	*Xestia sexstrigata* (HAW.)			PP	+	
318	272	*Xestia xanthographa* (DEN.ET SCHIFF.)	+	+	WA	+	
319	273	*Eugraphe sigma* (DEN.ET SCHIFF.)	+		AWA	+	
320	274	*Cerastis rubricosa* (DEN.ET SCHIFF.)	+	+	WA	+	
321	–	*Cerastis leucographa* (DEN.ET SCHIFF.)			WA	+	
322	275	*Naenia typica* (L.)	+	+	WA	+	
323	276	*Anaplectoides prasina* (DEN.ET SCHIFF.)	+	+	WA	+	
324	–	*Cryptocala chardinyi* (BSD.)			PP	+	
325	277	*Peridroma saucia* (HBN.)	+		PP	+	M
326	–	*Parexarnis fugax* (TREIT.)			PP	+	
327	278	*Actebia praecox* (L.)	+		WA	+	
328	279	*Euxoa nigricans* (L.)	+	+	AWA	+	
329	280	*Euxoa tritici* (L.)	+	+	WA	+	
330	281	*Euxoa obelisca* (DEN.ET SCHIFF.)	+	+	PP	+	
331	282	*Euxoa cursoria* (HUFN.)	+		PP	+	
332	283	*Yigoga signifera* (DEN.ET SCHIFF.)	+		PP	+	
333	284	*Agrotis crassa* (HBN.)	+		PP	+	
334	285	*Agrotis ipsilon* (HUFN.)	+	+	WA	+	M
335	286	*Agrotis exclamationis* (HBN.)	+	+	WA	+	
336	287	*Agrotis clavis* (HUFN.)	+	+	WA	+	
337	288	*Agrotis segetum* (DEN.ET SCHIFF.)	+	+	WA	+	
338	289	*Agrotis vestigialis* (HUFN.)	+	+	WA	+	
339	290	*Agrotis cinerea* (DEN.ET SCHIFF.)	+		AWA	+	
		Pantheidae					
340	291	*Panthea coenobita* (ESP.)	+		WA	+	
341	–	*Trichosea ludifica* (L.)			PPR	+	
342	292	*Colocasia coryli* (L.)	+	+	WA	+	
		Nolidae					
		Nolinae					
343	293	*Meganola togatulalis* (HBN.)	+		PP	+	
344	294	*Meganola albula* (DEN.ET SCHIFF.)	+		PP	+	
345	295	*Nola cucullatella* (L.)	+		AWA	+	
346	296	*Nola confusalis* (H.-S.)	+		AWA	+	
347	–	*Nola cicatricalis* (TREIT.)			PP	+	

348	–	*Nola aerugula* (HBN.)			PP	+	
349	–	*Nola cristatula* (HBN.)			PP	+	
		Chloephorinae					
350	297	*Nycteola revayana* (SCOP.)	+	+	AWA	+	
351	298	*Nycteola degenerana* (HBN.)	+		PP	+	
352	–	*Nycteola asiatica* (KRUL.)			PP	+	
353	–	*Nycteola siculana* (FUCHS)			PP	+	
354	299	*Bena bicolorana* (FUESSLY)	+	+	WA	+	
355	300	*Pseudoips prasinana* (L.)	+	+	AWA	+	
356	301	*Earias clorana* (L.)	+	+	WA	+	
357	302	*Earias vernana* (F.)	+	+	PP	+	

HISTORICAL RECORDS

From 286 species recorded in historical times 86 (about 30%) are not mentioned in contemporary papers. This group comprises species that have disappeared from Poland and those which can still be found in this country but have not been recorded in the Warsaw conurbation since 1960.

One species – *Mesogona acetosellae* no longer occur in Poland. It occurs locally in the southern part of Central Europe, sometimes quite abundantly. It is xerophilous and associated with oak forests. The larvae feed on *Quercus ssp., Crataegus ssp., Salix ssp., Populus ssp.* and *Prunus spinosa*. It was very rare in Poland also according to historical records (ROMANISZYN, SCHILLE 1929).

A number of previously recorded species that can still be found in some parts of Poland but are classified as rare have probably also been absent from Warsaw and its environs in more recent times. This group includes *Idia calvaria, Schrankia taenialis, Catocala pacta, Polychrysia moneta, Plusidia cheranthii, Heliothis ononis, Acosmetia caliginosa, Dicycla oo, Trichosea ludifica* and others. These species represent a variety of habitat preferences and are usually only sporadically found in this part of Europe.

I. calvaria has been known from the southern part of Central Europe and from Southern Europe. It is rare and local in occurrence. It is associated with moist broad-leaved forests and mixed forests. The larvae feed on decayed or withered tree and shrub leaves. *S. taenialis* is rare and local in Central Europe, associated with arid open-area habitats, such as the steppe and sandy grassy areas. The larvae feed on *Calluna* ssp. and *Thymus* ssp. *C. pacta* is a boreal species associated with moist areas. The larvae feed on Salix ssp. *P. moneta* is very rare in Central Europe and is associated with open areas adjoining forests as well as meadows and gardens. The larvae feed on *Thalictrum* ssp. and *Aquilega* ssp. *Plusidia cheranthii* is associated with arid open-area habitats such as the steppe and warm slopes. The larvae feed on *Aquilega vulgaris* and *Thalictrum* ssp. *Heliothis ononis* is a migrant species which is recorded only occasionally in Poland and Germany. It is xerophilous and associated with arid steppe-like open-area habitats. The larvae feed on herbaceous plants. *Acosmetia caliginosa* is hygrophilous and regarded as local, though sometimes quite abundant in Central Europe. The larvae feed on *Serratula tinctoria. Dicycla oo* occurs in oak forests and its

larvae feed on *Quercus* ssp. *T. ludifica* is an Euro-Asian boreal-montane species. In Central Europe it has only been reported from mountainous areas. It inhabits forests and the larvae feed on *Sorbus aucuparia*.

The occurrence of *Euxoa obelisca* and *Autographa bractea* in downtown Warsaw in recent times is confirmed by their presence in the collections of Adamczewski (unpublished data).

E. obelisca occurs in all parts of Central Europe and is quite abundant at some locations. It is associated with grassy open-area habitats. Its larvae feed on herbaceous plants. It has been found in a number of regions in Poland.

A. bractea also can be found throughout Central Europe and is sometimes quite abundant, especially in mountainous regions. It is associated with open-area habitats in forests, such as meadows and clearings. The larvae feed on herbaceous plants. It has been recorded all around Poland.

CONTEMPORARY RECORDS

Warsaw supports a number of noctuid species. The 212 species recorded in Warsaw in recent times represent about 43% of the species in this group of *Lepidoptera* found in Poland (Tab. 1). This numerous group includes both species common to Poland and regarded as abundant everywhere (also including some pests of crops and forests), associated with particular habitats (open-area and forest, arid as well as moist), and species that fly to Poland from the south of Europe as well as those rare species that are only sporadically reported from Poland and have special habitat preferences.

Species common to Warsaw include, among others, *Discestra trifolii*, *Mythimna pallens*, *Xestia c-nigrum* and *Agrotis exclamationis*. *D. trifolii* and *X.c-nigrum* are eurytopic species that occur also in anthropogenic habitats. Their larvae feed on herbaceous plants. *M. pallens* is associated with various open-area habitats, the larvae feeding on grasses. *A. exclamationis* is a eurytope associated with open-area habitats. Its larvae feed on different plants.

The group of migrants consists of 7 species: *Macdunnoughia confusa*, *Autographa gamma*, *Schinia scutosa*, *Heliothis peltigera*, *Spodoptera exigua*, *Luperina zollikoferi*, and *Agrotis ipsilon* Some of them, such as *A. gamma* or *A. ipsilon*, occur abundantly around the country, while others, such as *L.zollikoferi* are regarded as rare and local.

A. confusa is a Euro-Asian species recorded all over Europe and always abundant. It is mainly found in open-area habitats and its larvae feed on different plants. *A. gamma* is a Euro-Asian species abundant throughout Europe and reported from many habitats, including anthropogenic ones. The larvae are polyphagous. *S. scutosa* is a Holarctic species occurring locally but sometimes quite abundant. It is xerophilous and is associated with open-area habitats. The larvae feed on *Artemisia spp.* and *Chenopodium spp. H. peltigera* is found locally in Central Europe, but it can be quite abundant. This xerophilous species is associated with the steppe and forest-steppe habitats, the larvae feeding on herbaceous plants. *S. exigua* occurs in open-area habitats, including anthropogenic ones. The larvae feed on different herbaceous plant species. *L. zollikoferi* is

a Siberian species, rare and occurring locally in Central Europe. The larvae feed on grasses. *A. ipsilon* is a eurytopic species, occurring abundantly across the whole of Central Europe. It is known mainly from open-area habitats, including anthropogenic ones. The larvae feed on herbaceous plants.

The group of species occurring sporadically in Warsaw is quite large. It includes noctuids with various environmental preferences, with some really rare species, not only in Warsaw but generally in Poland. Among the species in this group are: *Xanthia gilvago* and *Conistra ligula.*

X. gilvago is associated with forests. The larvae feed on *Ulmus spp. C. ligula* is another forest species. Its larvae feed on *Crataegus spp., Prunus spp., Carpinus spp., Rumex spp.* and *Taraxacum spp.*

SUMMARY

Urban environments are penetrated by most species of noctuid moths. The moths migrate here from suburban areas looking for food or to make a stopover on their journey (migrant species such as *A. ipsilon*, *A. gamma*), attracted by the warmth and strong light that can be seen at a considerable distance during the night. While the presence of many species is probably accidental (e.g. *H. reticulata*) and does not last long, some species find favourable conditions in the city and settle down there for a time or permanently. These species either complete their developmental cycle and winter in the city or come there regularly when the host plants for their caterpillars come out. Species of the latter group complete some phases of the developmental cycle (or the entire cycle if the species has several generations during one year) but do not winter in the city (the migratory species *A. gamma*, which is quite often found in the city, can serve as an example). Species permanently living in the city are connected with houses (e.g. *P. clavipalpis*), ruderal areas (e.g. *M. pallens*, *A. exclamationis*) and some species of big town trees (e.g. *A. aceris*). Expansive indigenous species of usually wide geographical distribution and insignificant environmental preferences (e.g. *Discestra trifolii, Mythimna pallens, Xestia c-nigrum)* are constantly present in the city. They form the core of the fauna of man-made green areas (WINIARSKA 1986, 1990b, 2001a). Rare and less environmentally resilient species recorded in the city are associated with faunal refugia and can only accidentally be found in man-made green spaces (WINIARSKA 1986).

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STRESZCZENIE

[Tytuł: Motyle (*Lepidoptera*)w środowisku miejskim, na przykładzie Warszawy. I. *Noctuidae, Pantheidae, Nolidae*]

Badania nad motylami występującymi w środowiskach zurbanizowanych prowadzono w niewielu miastach polskich. Do najlepiej zbadanych pod tym względem należy Warszawa, (miasto i otaczające go tereny podmiejskie). Niniejsze opracowanie powstało na podstawie danych z piśmiennictwa, danych ze zbiorów Muzeum i Instytutu Zoologii PAN i dotychczas nieopublikowanych materiałów Adamczewskiego z lat 1963–1980 i Winiarskiej z lat 1976–1978 i 1998–2002 ze śródmieścia Warszawy. Zawiera ono wykaz i krótką charakterystykę gatunków stwierdzonych na terenie tego miasta od czasów historycznych do 2001 roku.

W Warszawie stwierdzono 302 gatunki z rodzin: *Noctuidae, Pantheidae* i *Nolidae*. W czasach historycznych występowało 286 gatunków. 86 z nich nie stwierdzono w czasach współczesnych (1 – *M. acetosellae* już nie występuje w Polsce). Są to zazwyczaj gatunki zaliczane obecnie do bardzo rzadkich i występujących lokalnie w Europie Środkowej (np. *I. calvaria, S. taenialis, C. pacta, C. alchymista, P. moneta, P. cheranthii, H. ononis, A. caliginosa, D. oo, T. ludifica*). W czasach współczesnych stwierdzono 212 gatunków. Większość z nich to jest szeroko rozsiedlona w Polsce i zaliczana do licznych (np. *D. trifolii, M. pallens, X. c-nigrum, A. exclamationis*). 7 gatunków (*M. confusa, A. gamma, S. scutosa,, H. peltigera, S. exigua, L. zollikoferi, i A. ipsilon)* należy do migrantów. Środowisko miejskie penetruje większość gatunków sówek. Przylatują tu z obszarów podmiejskich, poszukując pokarmu lub zatrzymują się podczas wędrówek (jak *A. ipsilon, A. gamma*). Obecność wielu gatunków jest przypadkowa i nie trwa długo. Jednak niektórym warunki środowiskowe miasta umożliwiają jego czasowe lub stałe zasiedlenie (np. *P. clavipalpis, M. pallens, A. aceris*). Przechodzą tu pełen cykl rozwojowy i zimują lub zalatują systematycznie w okresie pojawiania się roślin żywicielskich gąsienic i przechodzą tu część cyklu rozwojowego lub cały cykl, ale nie zimują (np. *A. gamma*). Stałym elementem fauny miejskiej są ekspansywne gatunki rodzime o na ogół szerokich zasięgach zoogeograficznych i niewielkich wymaganiach środowiskowych (np. *D. trifolii, M. pallens, X. c-nigrum*).