

Inventory of Selected Groups of Invertebrates in Sedge and Reedbeds not Associated with Open Waters in Bulgaria

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Abstract: Inventory of selected groups of the invertebrate fauna in the EUNIS wetland habitat type D5 “Sedge and reedbeds normally without free-standing water” in Bulgaria was carried out. It included 47 localities throughout the country. The surveyed invertebrate groups included slugs and snails (Gastropoda), dragonflies (Odonata), grasshoppers (Orthoptera), true bugs (Heteroptera), ants (Formicidae), butterflies (Lepidoptera) and some coleopterans (Staphylinidae: Pselaphinae). Data on the visited localities, identified species and their conservation status are presented. In total, 316 species of 209 genera and 68 families were recorded. Fifty species were identified as potential indicator species for this wetland habitat type. The highest species richness (with more than 50 species) was observed in wetlands near Marino pole (Plovdiv District) and Karaisen (Veliko Tarnovo District).

Key words: Gastropoda, Odonata, Orthoptera, Heteroptera, Formicidae, Lepidoptera, Pselaphinae, wetland.

Introduction

According to the EUNIS Biodiversity Database, wetlands (mires, bogs and fens) are territories with water table at or above ground level for at least half of the year, dominated by natural hydrophilous or hygrophilous herbaceous vegetation (ROUG 2009). They are considered among the most vulnerable ecosystems. In Bulgaria, these habitats have restricted distribution due to the recent climate fluctuations and the anthropogenic impact in the last two centuries (GUSEV et al. 2017). Until the beginning of the 21st Century, wetlands and especially sedge and reedbeds were largely neglected by Bulgarian zoologists. Up to now, only three studies on the invertebrate fauna in sedge and reedbeds of Bulgaria have been reported. HORSÁK (2006) published two new species for the Bulgarian fauna collected in the course of an ecological study on fens: the snail *Euconulus praticola* (Reinhardt, 1883) and the mussel *Pisidium globulare* Clessin, 1873. HÁJEK et al. (2010) ranked

all known mire and spring complex according to the occurrence of rare and threaten plant and mollusc species. HORSÁK et al. (2011) studied the communities of molluscs in previously unexplored Bulgarian fens and determined the patterns of species richness along the gradient of mineral contents.

In this paper, we present the results of the first detailed faunistic survey of sedge and reedbeds outside Natura 2000 protected areas in Bulgaria carried out in the frames of the project “Mapping and assessing ecosystem services in wetlands in Bulgaria” (2016-2017).

Materials and Methods

Three EUNIS wetland habitats have been identified in Bulgaria outside Natura 2000 protected areas (GUSEV et al. 2017): D2 Valley mires, poor fens and transition mires; D4 Base-rich fens and calcareous

Table 1. Localities with codes and coordinates (by regions; ordered from North to South and West to East).

№	Locality, Region	Code	Coordinates	WEMA number	№	Locality, Region	Code	Coordinates	WEMA number
1	Septemvriitsi, Vidin	BH1	N43.78778° E22.97865°	510, 511	25	Zlatitsa, Sofia	CO3	N42.70656° E24.11208°	-
2	Tarnovtsi, Silistra	CC1	N43.99857° E26.72418°	528	26	Kostenets, Sofia	CO4	N42.29556° E23.81631°	142
3	Pishurka, Montana	M1	N43.64489° E23.25149°	484	27	Dyadovo, Sliven	CH1	N42.41818° E26.00285°	212
4	Vinishte, Montana	M2	N43.50839° E23.08684°	458	28	Lyubenets, Sliven	CH2	N42.36310° E25.96275°	179
5	Butan, Vratsa	BP1	N43.64337° E23.75668° N43.64482° E23.75137°	482, 483	29	Shishkovtsi, Kyustendil	KH1	N42.35555° E22.70717°	220
6	Borovan, Vratsa	BP2	N43.42616° E23.78874°	443	30	Rasovo, Kyustendil	KH2	N42.27011° E22.53561°	161
7	Nefela, Vratsa	BP3	N43.24778° E23.53361°	379	31	Granitsa, Kyustendil	KH3	N42.26542° E22.75254°	148
8	Knezha, Pleven	EH1	N43.453335° E24.09740°	456	32	Malo Selo, Kyustendil	KH4	N42.30533° E23.03866°	180
9	Deventsi, Pleven	EH2	N43.34700° E24.17406°	423	33	Pevtsite, Plovdiv	PB1	N42.68344° E24.65279°	288
10	Dermantsi, Lovech	OB1	N43.15031° E24.26632°	353	34	Marino Pole, Plovdiv	PB2	N42.59894° E24.86570°	262
11	Karaisen, Veliko Turnovo	BT1	N43.36358° E 25.33929° N43.37731° E25.35445° N43.38961° E25.35413°	424, 426, 436	35	Momino Selo, Plovdiv	PB3	N42.31210° E24.89589°	141
12	Pavlikeni, Veliko Turnovo	BT2	N43.26030° E25.28112°	372	36	Rakovski, Plovdiv	PB4	N42.28434° E25.00982°	124
13	Lesicheri, Veliko Turnovo	BT3	N43.20711° E25.41795°	362	37	Chalakovi, Plovdiv	PB5	N42.16529° E 25.04466°	068
14	Vodoley, Veliko Turnovo	BT4	N43.20656° E25.51872°	361	38	Botevo, Yambol	Y1	N42.37323° E26.37917° N42.37712° E26.37408°	181, 207
15	Elenovo, Targovishte	T1	N43.39892° E26.37763°	-	39	Yabalchevo, Burgas	A1	N42.80398° E27.23988°	311
16	Bistra, Targovishte	T2	N43.34441° E26.54538°	408	40	Aytos, Burgas	A2	N42.69870° E27.20887°	284
17	Vidritsa, Pernik	PK1	N42.74644° E22.86164°	310	41	Pomorie, Burgas	A3	N42.59410° E27.61143°	260
18	Viskyar, Pernik	PK2	N42.70204° E22.96010°	303	42	Bratovo, Burgas	A4	N42.51035° E27.30446° N42.50753° E27.31018° N42.50999° E27.33640°	248, 249, 250
19	Kosharevo, Pernik	PK3	N42.66142° E22.77129°	297	43	Dolno Ezerovo, Burgas	A5	N42.53097° E27.36753°	253
20	Bogdanov Dol, Pernik	PK4	N42.61821° E22.95585°	282	44	Cherni Vrah, Burgas	A6	N42.42747° E27.36069°	215, 216
21	Radina Cheshma, Pernik	PK5	N42.63045° E23.02525°	286	45	Dyulevo, Burgas	A7	N42.37630° E27.18110°	422
22	Klenovik, Pernik	PK6	N42.42266° E22.92667°	243	46	Mihnevo, Blagoevgrad	E1	N41.43453° E23.19942°	006
23	Slivnitsa, Sofia	CO1	N42.88196° E23.00990°	318	47	Harsovo, Blagoevgrad	E2	N41.46006° E23.37725°	008
24	Kostinbrod, Sofia	CO2	N42.82973° E23.20317°	315					



Fig. 2. Collecting by sweeping vegetation by entomological net.



Fig. 3. Collecting by suction trapping with handheld leaf blower (vacuum combo).



Fig. 4. Collecting by soil sampling.

The specimens studied are stored in the collections of the National Museum of Natural History – Sofia (dragonflies, beetles, true bugs) and the Institute of Biodiversity and Ecosystem Research (ants, snails and slugs).

Results

We identified 316 species of 209 genera and 68 families of the surveyed groups (Table 2). The inventory included the following groups: slugs and snails (Gastropoda), dragonflies (Odonata), grasshoppers (Orthoptera), true bugs (Hemiptera: Heteroptera), ants (Hymenoptera: Formicidae),



Fig. 5. *Podops curvidens* A. Costa, 1843 – female from zone PK5, Radina Cheshma, Pernik District. New record for the Bulgarian fauna.

some beetles (Coleoptera: Pselaphinae) and butterflies (Lepidoptera: Rhopalocera). Of these, 156 species (about a half) were registered in one zone only, largely due to the short time of the survey (only three months). One hundred nineteen species were registered from two to five zones, 32 species – in six to ten zones and nine species in more than ten zones. *Cochlicopa lubrica*, *Monacha* sp., *Helix lucorum*, *Zonitoides nitidus*, *Galba truncatula*, *Planorbis planorbis* (Gastropoda); *Chartoscirta elegantula*, *Cymus melanocephalus* (Hemiptera); *Trissemus atennatus* (Coleoptera, Pselaphinae); *Colias croceus*, *Lycaena dispar*, *Coenonympha pamphilus*, *Maniola jurtina* (Lepidoptera) occurred in a vast number of the surveyed areas. The highest species diversity was observed for the wetlands near Marino Pole (57 species) and Karaisen (55 species), followed by Pevtsite (46 species), Lyubenets (42 species), Malo Selo (40 species), Kostinbrod (39 species), Mihnevo (38 species) and Harsovo (37 species).

One new for the country species was discovered: *Podops curvidens* (Hemiptera, Pentatomidae), previously recorded from neighbouring Balkan countries (Fig. 5). In one of the zones, the invasive alien slug *Arion fasciatus* was found.

Among the species found, with higher conservation status were *Vertigo moulinsiana* (Mollusca), *Coenagrion ornatum* (Odonata), *Lycaena dispar*, *Euphydryas aurinia* (Lepidoptera) included in Habitats Directive 92/43/EEC (Annex II) and *Helix pomatia* (Annex V). The record of the rare species *V. moulinsiana* nearby Vinishte Village, Montana Region, was the first confirmed occurrence of this species in western Bulgaria. *Formica pratensis* (Hymenoptera, Formicidae) is included as NT (near threatened) in IUCN Red List of Threatened Species (IUCN SOCIAL INSECTS SPECIALIST GROUP 1996). Other species with conservation status (European Red Lists of IUCN) are the orthopteran *Paracinema tricolor* (see HOCHKIRCH et al. 2016) and the lepidop-

Table 2. Species list with localities and their conservation status.

№	Species	Localities by Code	Conservation status
	Gastropoda (terrestrial)		
	Carychiidae		
1.	<i>Carychium minimum</i> O. F. Müller, 1774	E2, KH3, PK6, PB2, PB1, PK3, BP3, M2, CO3	
2.	<i>Carychium tridentatum</i> (Risso, 1826)	CO2, BT2, BT1	
	Pupillidae		
3.	<i>Pupilla muscorum</i> (Linnaeus, 1758)	PK4, PK5, BP1	
	Vertiginidae		
4.	<i>Vertigo antivertigo</i> (Draparnaud, 1801)	KH3, KH4, PK6, PB2, PK2, CO2, OB1, M2, CO3	
5.	<i>Vertigo moulinsiana</i> (Dupuy, 1849)	M2	Habitats Directive 92/43/EEC (annex II); rare
6.	<i>Vertigo pusilla</i> O.F. Muller, 1774	BP3	rare
7.	<i>Vertigo pygmaea</i> (Draparnaud, 1801)	KH3, CH2, KH4, PB2, PB1, CO2, OB1, BT1, CO3	
8.	<i>Vertigo substriata</i> (Jeffreys, 1833)	KH4	
9.	<i>Vertigo</i> sp.	KH4, PK3	
10.	<i>Truncatellina</i> sp.	E1, PK4, BT2, A7	
	Valloniidae		
11.	<i>Vallonia costata</i> (O.F. Muller, 1774)	E1, KH3, KH4, PK5, PK3, PK2 (cf.), CO2, CO3	
12.	<i>Vallonia enniensis</i> (Gredler, 1856)	KH3, CH2 (cf.), PK5, PB1, M2, CO3	rare
13.	<i>Vallonia excentrica</i> Sterki, 1892	E2, PK5, PB1 (cf.), BT1 (cf.)	
14.	<i>Vallonia pulchella</i> (O.F. Muller, 1774)	KH4, PK3 (cf.), CO2, OB1, A7, BP1	
15.	<i>Vallonia</i> sp.	PK6, CO1, BT2, BT1	
16.	<i>Acanthinulla</i> sp.	BP3	
	Enidae		
17.	<i>Chondrula tridens</i> (O.F. Muller, 1774)	E1, E2, PK3 (cf.), BT2	
18.	<i>Chondrula</i> sp.	E1, PK4	
19.	<i>Zebrina detrita</i> (O.F. Muller, 1774)	BT1	
	Cochlicopidae		
20.	<i>Cochlicopa lubrica</i> (O.F. Muller, 1774)	KH3, KH4, PK6, PK5, PK3, CO2 (cf.), BT2, A7, M2, CO3	
21.	<i>Cochlicopa</i> cf. <i>nitens</i> (M. von Gallenstein, 1848)	PK5	rare
	Clausiliidae		
22.	<i>Bulgarica denticulata</i> (Olivier, 1801)	E1	
23.	<i>Bulgarica</i> sp.	E1	
	Succineidae		
24.	<i>Succinella oblonga</i> (Draparnaud, 1801)	E1, KH3, PB3, CH2, Y1, PB2, PB1, CO2, A7, BT1, BP1, CO3	
	Ferussaciidae		
25.	<i>Cecillioides</i> sp.	BT2	
	Punctidae		
26.	<i>Punctum pygmaeum</i> (Draparnaud, 1801) (cf.)	BP3	
	Arionidae		
27.	<i>Arion fasciatus</i> (Nilsson, 1823)	PK3	invasive species
	Euconulidae		
28.	<i>Euconulus alderi</i> J.E. Gray, 1840	CO3	rare
	Pristilomatidae		
29.	<i>Vitrea</i> sp.	BT2	
	Oxychilidae		
30.	<i>Mediterranea hydatina</i> (Rossmassler, 1838)	PK3	
31.	<i>Mediterranea</i> sp.	A7	
32.	<i>Nesovitrea</i> sp. (cf.)	CO1	
	Limacidae		
33.	<i>Limax conemenosi</i> O. Boettger, 1882	E1	Balkan endemic
	Agriolimacidae		
34.	<i>Deroceras</i> cf. <i>laeve</i> (O.F. Muller, 1774)	E1	
35.	<i>Deroceras</i> sp.	KH3, KH1	
	Bradybaenidae		
36.	<i>Fruticicola fruticum</i> (O.F. Muller, 1774)	PK6	
	Hygromiidae		
		PB3, CO3	

Table 2. Continuation.

№	Species	Localities by Code	Conservation status
37.	<i>Monacha</i> sp.	E1, E2, KH3, KH4, KH1, PK4, PK5, PK3, CO2, OB1, BT2, BP3, A7, BT1	
38.	<i>Pseudotrichia rubiginosa</i> (Rossmassler, 1838)	PK6	rare
39.	<i>Xerolenta</i> cf. <i>obvia</i> (Menke, 1828)	KH1, PK5, PK2	
	Helicidae		
40.	<i>Cepaea vindobonensis</i> (C. Pfeiffer, 1828)	E1, E2, PK3, BT2, BT1	
41.	<i>Helix lucorum</i> Linnaeus, 1758	E1, E2, KH3, KH4, PK6, PK4, PK5, PK3, PK2, PK1, CO2	biological resource use
42.	<i>Helix pomatia</i> Linnaeus, 1758	PK3, PK1, BT2	biological resource use; Habitats Directive 92/43/ EEC (annex V)
	Gastrodontidae		
43.	<i>Zonitoides nitidus</i> (O.F. Muller, 1774)	E2, KH3, KH4, PK6, PB2, PK4, PB1, PK3, CO2, OB1, BT2, A7, M2, CO3	
	Gastropoda (freshwater)		
	Valvatidae		
44.	<i>Valvata piscinalis</i> (O.F. Muller, 1774)	CO2	
	Lymnaeidae		
45.	<i>Galba truncatula</i> (O.F. Muller, 1774)	KH3, PB3, CH2, KH4, PK6, PK5, PB1, PK2, CO2, OB1, BT1, M2, CO3	
46.	<i>Stagnicola</i> cf. <i>montenegrinus</i> Glöer and Pešić, 2009	PB3	
47.	<i>Stagnicola</i> sp.	CO2	
48.	<i>Radix</i> sp.	BP1	
	Physidae		
49.	<i>Aplexa hypnorum</i> (Linnaeus, 1758)	PK6	
50.	<i>Haitia acuta</i> (Draparnaud, 1805)	PB3, Y1, CO2, OB1, BT1, M2, BP1	
	Planorbiiidae	PB1, CO1, BP1	
51.	<i>Gyraulus crista</i> (Linnaeus, 1758)	PK5, BP1	
52.	<i>Gyraulus</i> sp.	PB3, CH2 (2 species), CO2, BP1	
53.	<i>Planorbarius corneus</i> (Linnaeus, 1758)	CO2	
54.	<i>Planorbis</i> cf. <i>atticus</i> Bourguignat, 1852	BP1	
55.	<i>Planorbis planorbis</i> (Linnaeus, 1758)	PB3, CH2, KH4, Y1, KH1, PK4, PK5, CO2, OB1, BP3, BT1, BP1	
56.	<i>Segmentina nitida</i> (O.F. Muller, 1774)	PB3, CO2, CO1, OB1, BP1	
	Bivalvia		
	Sphaeriidae	KH3, CH2, KH4, PK2, CO2, OB1, BP3, BT1	
	Odonata		
	Calopterygidae		
57.	<i>Calopteryx splendens</i> (Harris, 1782)	E1	
	Lestidae		
58.	<i>Lestes sponsa</i> (Hansemann, 1823)	KH1	
	Coenagrionidae		
59.	<i>Ischnura pumilio</i> (Charpentier, 1825)	CH1, CH2, PB2, E1	
60.	<i>Ischnura elegans</i> (Vander Linden, 1820)	PB2, PB5	
61.	<i>Enallagma cyathigerum</i> (Charpentier, 1840)	KH1, A4, PB3	
62.	<i>Coenagrion ornatum</i> (Selys, 1850)	A4	Habitats Directive 92/43/ EEC (annex II); European Red List of Dragonflies (NT)
63.	<i>Coenagrion puella</i> (Linnaeus, 1758)	KH1, PB2, PB5, E2	
64.	<i>Coenagrion pulchellum</i> (Linnaeus, 1758)	PB2	
65.	<i>Erythromma najas</i> (Hansemann, 1823)	BT1	
	Platycnemididae		
66.	<i>Platycnemis pennipes</i> (Pallas, 1771)	BT1, CH1, CH2, PB2, PB5, A4, E2	
	Aeshnidae		
67.	<i>Aeshna affinis</i> Vander Linden, 1823	CC1, A4	
68.	<i>Aeshna isoceles</i> (Müller, 1767)	A4	
69.	<i>Anax imperator</i> Leach, 1815	BT3, PB2, A4	

Table 2. Continuation.

№	Species	Localities by Code	Conservation status
70.	<i>Anax parthenope</i> (Selys, 1839)	A4	
	Gomphidae		
71.	<i>Onychogomphus forcipatus</i> (Linnaeus, 1758)	E1	CORINE
	Libellulidae		
72.	<i>Libellula quadrimaculata</i> Linnaeus, 1758	CC1	
73.	<i>Libellula depressa</i> Linnaeus, 1758	BP3, CO1, PB2	
74.	<i>Orthetrum cancellatum</i> (Linnaeus, 1758)	CO4, PB3, PB5	
75.	<i>Orthetrum brunneum</i> (Fonscolombe, 1837)	CH1, CH2, E1	
76.	<i>Orthetrum albistylum</i> (Selys, 1848)	PB3	
77.	<i>Crocothemis erythraea</i> (Brullé, 1832)	A4	
78.	<i>Sympetrum striolatum</i> (Charpentier, 1840)	CH1, CH2, A4	
79.	<i>Sympetrum meridionale</i> (Selys, 1841)	PB2, A4	
80.	<i>Sympetrum sanguineum</i> (Müller, 1764)	EH1, CO1, PB2, PB3	
	Orthoptera		
	Tettigoniidae		
81.	<i>Roeseliana roeseli</i> (Hagenbach, 1822)	BT1	
82.	<i>Pachytrachis gracilis</i> (Brunner von Wattenwyl, 1861)	BT2	
83.	<i>Tettigonia viridissima</i> Linnaeus, 1758	BT2	
84.	<i>Ruspolia nitidula</i> (Scopoli, 1786)	M2, BT1	
85.	<i>Conocephalus fuscus</i> (Fabricius, 1793)	M2, BT1, BT2	
86.	<i>Conocephalus hastatus</i> (Charpentier, 1825)	M2	
87.	<i>Phaneroptera nana</i> Fieber, 1853	M2, BT2	
88.	<i>Tylopsis lilifolia</i> (Fabricius, 1793)	BT1, BT2	
89.	<i>Poecilimon fussii</i> Brunner von Wattenwyl, 1878	BT1	
	Gryllidae		
90.	<i>Pteronemobius heydenii</i> (Fischer, 1853)	M2, BP1	
91.	<i>Oecanthus pellucens</i> (Scopoli, 1763)	M2, BT2	
	Tridactylidae		
92.	<i>Xya pfaendleri</i> Harz, 1970	BP1	
	Tetrigidae		
93.	<i>Tetrix bolivari</i> Saulcy, 1901	BP1	
	Acrididae		
94.	<i>Pezotettix giornae</i> (Rossi, 1794)	BT1	
95.	<i>Acrida ungarica</i> (Herbst, 1786)	BT1	
96.	<i>Aiolopus strepens</i> (Latreille, 1804)	BT1	
97.	<i>Paracinema tricolor bisignata</i> (Charpentier, 1825)	BT1	European Red List of Orthoptera (NT)
98.	<i>Chrysochraon dispar dispar</i> (Germar, 1834)	M2, BT1	
99.	<i>Omocestus rufipes</i> (Zetterstedt, 1821)	BP1	
100.	<i>Euchorthippus declivus</i> (Brisout de Barneville, 1848)	BT1	
101.	<i>Pseudochorthippus parallelus</i> (Zetterstedt, 1821)	BT1	
102.	<i>Chorthippus dichrous</i> (Eversmann, 1859)	BT1	
103.	<i>Chorthippus loratus</i> (Fischer de Waldheim, 1846)	BP1	
	Hemiptera		
	Ceratocombidae		
104.	<i>Ceratocombus</i> (s.str.) <i>coleopratus</i> (Zetterstedt, 1819)	PB1, PK6	rare
	Corixidae		
105.	<i>Corixa punctata</i> (Illiger, 1807)	BT4	
106.	<i>Hesperocorixa linnaei</i> (Fieber, 1848)	CO1	
107.	<i>Sigara</i> (<i>Pseudovermicorixa</i>) <i>nigrolineata</i> (Fieber, 1848)	BT1, PB1	
108.	<i>Sigara</i> (<i>Retrocorixa</i>) <i>limitata</i> (Fieber, 1848)	BT4, PB3	
109.	<i>Sigara</i> (<i>Subsigara</i>) <i>falleni</i> (Fieber, 1848)	BT4	
110.	<i>Sigara</i> (<i>Vermicorixa</i>) <i>lateralis</i> (Leach, 1817)	BT1, BT4, PB3, PB5	

Table 2. Continuation.

№	Species	Localities by Code	Conservation status
	Micronectidae		
111.	<i>Micronecta (Dichaetonecta) scholtzi</i> (Fieber, 1860)	PB3	
	Nepidae		
112.	<i>Nepa cinerea</i> Linnaeus, 1758	PB1, PB3, BT3	
	Naucoridae		
113.	<i>Ilyocoris cimicoides</i> (Linnaeus, 1758)	BT3, BT4, CO1	
	Notonectidae		
114.	<i>Notonecta</i> (s.str.) <i>glauca</i> Linnaeus, 1758	PB3, CO1	
115.	<i>Notonecta</i> (s.str.) <i>viridis</i> Delcourt, 1909	CO4	
	Pleidae		
116.	<i>Plea minutissima</i> Leach, 1817	BP1, BT3, BT4, M1, PB1	
	Hebridae		
117.	<i>Hebrus</i> (s.str.) <i>pusillus</i> (Fallén, 1807)	BP1, CO1, CO2, M1, OB1, CH2, PB1, Y1	
118.	<i>Hebrus (Hebrusella) ruficeps</i> Thomson, 1871	CO1, CO3, BT1, M1, T2, PK6, PB1, Y1	
	Veliidae		
119.	<i>Microvelia (Picaultia) pygmaea</i> (Dufour, 1833)	CO2, M1, OB1	
120.	<i>Microvelia</i> (s.str.) <i>reticulata</i> (Burmeister, 1835)	M1	
	Gerridae		
121.	<i>Gerris</i> (s.str.) <i>lacustris</i> (Linnaeus, 1758)	PB1	
122.	<i>Gerris</i> (s.str.) <i>thoracicus</i> Schummel, 1832	PB3	
	Saldidae		
123.	<i>Chartoscirta cincta</i> (Herrich-Schäffer, 1841)	CO1, M1, T2, CH2, PK5	
124.	<i>Chartoscirta cocksii</i> (Curtis, 1835)	BP1, PB1, PB2, CH2	
125.	<i>Chartoscirta elegantula</i> (Fallén, 1807)	KH1, CO1, CO2, CO3, PB2, BT1, PK4, PK5, PK6, M1, OB1, CH2	
126.	<i>Saldula pallipes</i> (Fabricius, 1794)	BP1	
127.	<i>Saldula saltatoria</i> (Linnaeus, 1758)	PK2	
	Tingidae		
128.	<i>Agramma</i> (s.str.) <i>atricapillum</i> (Spinola, 1837)	BP1, PB1, PB5, BT1, M1, OB1, CH1, CH2, Y1	
129.	<i>Agramma</i> (s.str.) <i>confusum</i> (Puton, 1879)	KH1, CO1, CO2, PB1, PB2, PK4, OB1	
130.	<i>Agramma</i> (s.str.) <i>laetum</i> (Fallén, 1807)	BT1, CO2, CO3, KH4, PK5, E1, CH1, CH2, Y1	
131.	<i>Dictyla lupuli</i> (Herrich-Schäffer, 1837)	CO2, PB2, PK2, PK3	
	Miridae		
132.	<i>Dicyphus</i> (s.str.) <i>epilobii</i> Reuter, 1883	M2	
133.	<i>Deraeocoris</i> (s.str.) <i>ruber</i> (Linnaeus, 1758)	PK2	
134.	<i>Deraeocoris</i> (s.str.) <i>scutellaris</i> (Fabricius, 1794)	CO2	
135.	<i>Adelphocoris lineolatus</i> (Goeze, 1778)	BP1, CH2	
136.	<i>Adelphocoris seticornis</i> (Fabricius, 1775)	PK5	
137.	<i>Adelphocoris ticinensis</i> (Meyer-Dür, 1843)	M2	
138.	<i>Apolygus spinolae</i> (Meyer-Dür, 1841)	PK2, PK4, PK6	
139.	<i>Capsus ater</i> (Linnaeus, 1758)	PK5	
140.	<i>Lygus pratensis</i> (Linnaeus, 1758)	BT1, CH2	
141.	<i>Lygus</i> sp.	CO1, PK5	
142.	<i>Polymerus (Poeciloscytus) unifasciatus</i> (Fabricius, 1794)	CO3	
143.	<i>Leptopterna dolabrata</i> (Linnaeus, 1758)	KH4, PK5	
144.	<i>Myrmecoris gracilis</i> (R.F. Sahlberg, 1848)	PK5	rare
145.	<i>Notostira elongata</i> (Geoffroy, 1785)	KH4, PK3	
146.	<i>Stenodema (Brachystira) calcarata</i> (Fallén, 1807)	PB1, PB2, PB5, CH1, PK3, PK5	
147.	<i>Stenodema</i> (s.str.) <i>laevigata</i> (Linnaeus, 1758)	PK6	
148.	<i>Halticus luteicollis</i> (Panzer, 1804)	PK6	
149.	<i>Melanotrichus flavosparsus</i> (C.R. Sahlberg, 1841)	BT1	
150.	<i>Pilophorus confusus</i> (Kirschbaum, 1856)	CO2	
151.	<i>Pilophorus</i> sp.	PB2, BT1	
152.	<i>Hallodapus montandoni</i> Reuter, 1895	CO1, CO3, CH1	rare

Table 2. Continuation.

№	Species	Localities by Code	Conservation status
153.	<i>Omphalonotus quadriguttatus</i> (Kirschbaum, 1856)	KH1, CO1	rare
154.	<i>Oncotylus</i> (s.str.) <i>viridiflavus</i> (Goeze, 1778)	PK5	
155.	<i>Orthonotus rufifrons</i> (Fallén, 1807)	PK6	
	Nabidae		
156.	<i>Nabis</i> (<i>Nabis</i>) <i>pseudoferus</i> Remane, 1949	KH1, CO2, PB2, CH1	
157.	<i>Nabis</i> sp.	PB1, PB5, PK3, PK5, PK6, BT1, T2	
	Anthocoridae		
158.	<i>Orius</i> (<i>Orius</i>) <i>niger</i> (Wolff, 1811)	KH1, BT1, CH2, M2, PK3	
159.	<i>Orius</i> sp.	BP1	
	Lygaeidae		
160.	<i>Nysius graminicola</i> (Kolenati, 1845)		
	Oxycarenidae		
161.	<i>Oxycarenus</i> (<i>Euoxycarenus</i>) <i>pallens</i> (Herrich-Schäffer, 1850)	PB5	
	Blissidae		
162.	<i>Dimorphopterus blissoides</i> (Baerensprung, 1859)	E2	
163.	<i>Dimorphopterus spinolae</i> (Signoret, 1857)	CO1	
164.	<i>Ischnodemus sabuleti</i> (Fallén, 1826)	KH1, KH4, CO2, PB2, BT1, OB1, Y1	
	Cymidae		
165.	<i>Cymus clavicularis</i> (Fallén, 1807)	BP1	
166.	<i>Cymus glandicolor</i> Hahn, 1832	CO1, CO2, BT1, E1, PK4, PK5, KH3, CH1, Y1	
167.	<i>Cymus melanocephalus</i> Fieber, 1861	KH1, CO1, CO2, PB1, PB2, BT1, KH4, PK4, PK5, PK6, T2, OB1, Y1	
	Geocoridae		
168.	<i>Geocoris</i> (s.str.) <i>arenarius</i> (Jakovlev, 1867)	CH1	
169.	<i>Geocoris</i> (s.str.) <i>megacephalus</i> (Rossi, 1790)	CH2	
170.	<i>Geocoris</i> (<i>Piocoris</i>) <i>erythrocephalus</i> (Lepeletier & Serville, 1825)	CH2	
171.	<i>Henestaris halophilus</i> (Burmeister, 1835)	Y1	
	Heterogastridae		
172.	<i>Heterogaster urticae</i> (Fabricius, 1775)	PK6	
	Rhyparochromidae		
173.	<i>Tropistethus holosericus</i> (Scholtz, 1846)	PB2	
174.	<i>Scolopostethus affinis</i> (Schilling, 1829)	CO2, BT1	
175.	<i>Scolopostethus puberulus</i> Horváth, 1887	KH4, PB2, BT1, OB1, CO3	
176.	<i>Scolopostethus thomsoni</i> Reuter, 1875	KH3, PK2, PK3, PK6	
177.	<i>Pterotmetus staphyliniformis</i> (Schilling, 1829)	PK3	
178.	<i>Paromius gracilis</i> (Rambur, 1839)	BP1	
179.	<i>Paraparomius leptopoides</i> (Baerensprung, 1859)	M2, PB5	
180.	<i>Plinthinus</i> (<i>Plinthisomus</i>) <i>pusillus</i> (Scholtz, 1847)	KH1	
181.	<i>Beosus maritimus</i> (Scopoli, 1763)	BT1, BT2, T2, CH1, CH2	
182.	<i>Beosus quadripunctatus</i> (Müller, 1766)	PB2, PB5, BT1, BT2, T2	
183.	<i>Beosus</i> sp.	CO2	
184.	<i>Peritrechus geniculatus</i> (Hahn, 1832)	CO2, OB1	
185.	<i>Peritrechus gracilicornis</i> Puton, 1877	PB1, PB2, BT1, OB1, CH1	
186.	<i>Peritrechus nubilis</i> (Fallén, 1807)	M1, CH2, Y1	
187.	<i>Acompus rufipes</i> (Wolff, 1804)	PK3	
188.	<i>Parapiesma quadratum</i> (Fieber, 1844)	BT1	
	Berytidae		
189.	<i>Berytinus</i> (s.str.) <i>clavipes</i> (Fabricius, 1775)	PK5	
190.	<i>Berytinus</i> (s.str.) <i>minor</i> (Herrich-Schäffer, 1835)	CO1	
191.	<i>Berytinus</i> (<i>Lizinus</i>) <i>consimilis</i> (Horváth, 1885)	KH3	
192.	<i>Metacanthus</i> (<i>Cardopostethus</i>) <i>annulosus</i> (Fieber, 1859)	CO2	

Table 2. Continuation.

№	Species	Localities by Code	Conservation status
193.	<i>Metacanthus</i> (s.str.) <i>meridionalis</i> (A. Costa, 1843)	BT1, M2, PK4	
	Rhopalidae		
194.	<i>Liorhyssus hyalinus</i> (Fabricius, 1794)	BT1	
195.	<i>Myrmus miriformis</i> (Fallén, 1807)	CH1, PK5	
196.	<i>Rhopalus</i> (<i>Aeschyntelus</i>) <i>maculatus</i> (Fieber, 1837)	OB1	
197.	<i>Rhopalus</i> (s.str.) <i>subrufus</i> (Gmelin, 1790)	CH2	
	Alydidae		
198.	<i>Alydus calcaratus</i> (Linnaeus, 1758)	CO1	
	Coreidae		
199.	<i>Coreus marginatus</i> (Linnaeus, 1758)	PK6	
200.	<i>Ceraleptus lividus</i> Stein, 1858	PB1	
	Cydnidae		
201.	<i>Legnotus picipes</i> (Fallén, 1807)	PK3	
202.	<i>Ochetostethus balcanicus</i> Wagner, 1940	CH1	
	Thyreocoridae		
203.	<i>Thyreocoris fulvipennis</i> (Dallas, 1851)	BT2	
	Pentatomidae		
204.	<i>Podops</i> (<i>Opocrates</i>) <i>curvidens</i> A. Costa, 1843	CO2, PK2, PK5	
205.	<i>Podops</i> (<i>Opocrates</i>) <i>rectidens</i> Horváth, 1883	BT1, E2, CH1, Y1	
206.	<i>Podops</i> (s.str.) <i>inunctus</i> (Fabricius, 1775)	BT1	
207.	<i>Podops</i> sp.	KH1, BT1, PK4, CO3	
208.	<i>Sciocoris</i> (<i>Aposciocoris</i>) <i>macrocephalus</i> Fieber, 1851	CO2	
209.	<i>Eysarcoris aeneus</i> (Scopoli, 1763)	BT1	
210.	<i>Eysarcoris ventralis</i> (Westwood, 1837)	PB5, E1, CH1	
211.	<i>Zicrona caerulea</i> (Linnaeus, 1758)	PB1, PK6	
	Coleoptera		
	Pselaphinae (Staphylinidae)		
212.	<i>Trimium caucasicum</i> Kolenati, 1846	E2	
213.	<i>Batrisodes buqueti</i> (Aubé, 1833)	KH4	
214.	<i>Brachygluta balcanica</i> (Saulcy, 1878)	M2, PK6	rare
215.	<i>Brachygluta helferi longispina</i> (Reitter, 1884)	PK4, Y1	
216.	<i>Brachygluta paludosa</i> (Peyron, 1858)	Y1	rare
217.	<i>Brachygluta</i> sp.	CH2	
218.	<i>Fagniezia impressa</i> Panzer, 1805	PK6, CO1	
219.	<i>Trissemus atennatus serricornis</i> (Shmidt-Göbel, 1838)	M2, OB1, BT1, T2, CO3, KH3, PB1, PB2, PB5, E2,	
220.	<i>Rybaxis longicornis</i> (Leach, 1817)	PK4, PK6, CO2, CH2, Y1	
221.	<i>Bryaxis carinula</i> (Rey, 1888)	M2	rare
222.	<i>Bythinus leonhardinus</i> Reitter, 1882	M2, KH3	Balkan endemic
223.	<i>Bythinus securiger</i> Reichenbach, 1816	M2	rare
224.	<i>Tychus dalmatinus</i> (Reitter, 1880)	CO1	
225.	<i>Tychus niger</i> (Paykull, 1800)	PK4	
226.	<i>Tychus</i> spp.	M2, CO2, KH4, Y1	
227.	<i>Pselaphus heisei</i> Herbst, 1792	PK3, PB5, Y1	
228.	<i>Pselaphus caucasicus</i> Motschulsky, 1845	E2	
229.	<i>Claviger</i> (<i>Clavifer</i>) <i>handmanni</i> Wasmann, 1898	PK3	
	Lepidoptera		
	Hesperiidae		
230.	<i>Carcharodus alceae</i> (Esper, [1780])	PB1, A2, A5, A6, E1	
231.	<i>Erynnis tages</i> (Linnaeus, 1758)	A1, E2	
232.	<i>Pyrgus malvae</i> (Linnaeus, 1758)	PB1, PB2	
233.	<i>Spialia orbifer</i> (Hübner, [1823])	PB2	
234.	<i>Thymelicus acteon</i> (Rottemburg, 1775)	KH4	European Red List of Butterflies (NT); EU Red Book
235.	<i>Thymelicus lineola</i> (Ochsenheimer, 1808)	A1	

Table 2. Continuation.

№	Species	Localities by Code	Conservation status
236.	<i>Thymelicus sylvestris</i> (Poda, 1761)	T1, KH4	
237.	<i>Ochlodes sylvanus</i> (Esper, [1779])	KH4, A1, A2, E1	
	Papilionidae		
238.	<i>Papilio machaon</i> Linnaeus, 1758	BP3, T1, CH1, CH2, A4, A5	
239.	<i>Iphiclides podalirius</i> (Linnaeus, 1758)	CC1, PB1, PB2, A5	
240.	<i>Zerynthia cerisy</i> (Godart, [1824])	KH4, E2	European Red List of Butterflies (NT)
	Pieridae		
241.	<i>Leptidea sinapis</i> (Linnaeus, 1758)	CC1, T1, PB2, A4	
242.	<i>Aporia crataegi</i> (Linnaeus, 1758)	BH1, KH4, A2, E2	
243.	<i>Pieris rapae</i> (Linnaeus, 1758)	CH1, CH2, PB1, PB2, PB5, E2	
244.	<i>Pieris napi</i> (Linnaeus, 1758)	PB1, PB2, A4, E1	
245.	<i>Pieris brassicae</i> (Linnaeus, 1758)	KH4, PB1, A4, E2	
246.	<i>Pontia edusa</i> (Fabricius, 1777)	A5	
247.	<i>Colias croceus</i> (Geoffroy in Fourcroy, 1785)	CO3, CH1, CH2, KH4, PB1, PB2, PB5, A6, E1, E2	
248.	<i>Colias hyale</i> (Linnaeus, 1758)	CC1	
249.	<i>Colias alfacariensis</i> Ribbe, 1905	PB1	
250.	<i>Gonepteryx rhamni</i> (Linnaeus, 1758)	BP3	
	Lycaenidae		
251.	<i>Satyrium acaciae</i> (Fabricius, 1787)	PB2	
252.	<i>Lycaena phlaeas</i> (Linnaeus, 1761)	T1, PB2, E1, E2	
253.	<i>Lycaena dispar</i> ([Haworth], 1802)	T1, CO3, CH1, CH2, KH4, PB1, PB2, PB5, A2, A4	Habitats Directive 92/43/EEC (annex II); Bern Convention
254.	<i>Lycaena virgaureae</i> (Linnaeus, 1758)	A1	
255.	<i>Lycaena alciphron</i> (Rottemburg, 1775)	BP3	European Red List of Butterflies (LC)
256.	<i>Lycaena thersamon</i> (Esper, [1784])	CC1, A1, A6	
257.	<i>Lycaena tityrus</i> (Poda, 1761)	CO3, PB2, A5, A6, E1	
258.	<i>Lampides boeticus</i> (Linnaeus, 1767)	CH1, CH2, PB5	
259.	<i>Leptotes pirithous</i> (Linnaeus, 1767)	CC1, T1, CO3, CH1, CH2, PB1, PB2, PB5, A2	
260.	<i>Everes alcetas</i> (Hoffmannsegg, 1804)	CH2	
261.	<i>Everes argiades</i> (Pallas, 1771)	BP3, PB1, A4	
262.	<i>Everes decoloratus</i> (Staudinger, 1886)	T1	European Red List of Butterflies (NT)
263.	<i>Cupido minimus</i> (Fuessly, 1775)	CC1	
264.	<i>Celastrina argiolus</i> (Linnaeus, 1758)	CO3, CH1, CH2, PB1, PB2, E1, E2	
265.	<i>Pseudophilotes vicrama</i> (Moore, 1865)	PB2	European Red List of Butterflies (NT)
266.	<i>Plebejus argus</i> (Linnaeus, 1758)	KH4, PB1, A6	
267.	<i>Plebejus idas</i> (Linnaeus, 1761)	A1	
268.	<i>Plebejus argyrognomon</i> (Bergsträsser, [1779])	BH1, CO3, CH1, CH2	EU Red Book
269.	<i>Aricia agestis</i> ([Denis & Schiffmüller], 1775)	CH1, CH2, PB1, PB2, E1	
270.	<i>Polyommatus amandus</i> (Schneider, [1792])	CC1	
271.	<i>Polyommatus icarus</i> (Rottemburg, 1775)	CC1, BP3, CH1, CH2, PB2, A2, A4, E1	
272.	<i>Lysandra coridon</i> (Poda, 1761)	CC1	
	Nymphalidae		
273.	<i>Pararge aegeria</i> (Linnaeus, 1758)	BP3	
274.	<i>Lasiommata maera</i> (Linnaeus, 1758)	A5	
275.	<i>Coenonympha arcania</i> (Linnaeus, 1761)	CC1, PB2	
276.	<i>Coenonympha pamphilus</i> (Linnaeus, 1758)	CC1, BP3, CH1, CH2, KH4, PB1, PB2, PB5, A4, A5, E1, E2	
277.	<i>Pyronia tithonus</i> (Linnaeus, 1767)	CC1, PB1, PB2	
278.	<i>Maniola jurtina</i> (Linnaeus, 1758)	CC1, BP3, CO3, KH4, PB1, PB2, A4, A5, A6, E1, E2	
279.	<i>Aphantopus hyperantus</i> (Linnaeus, 1758)	PB2	
280.	<i>Arethusana arethusa</i> ([Denis & Schiffmüller], 1775)	A1	

Table 2. Continuation.

№	Species	Localities by Code	Conservation status
281.	<i>Melanargia galathea</i> (Linnaeus, 1758)	BP3, PB2	
282.	<i>Limnitis reducta</i> Staudinger, 1901	PB2	
283.	<i>Araschnia levana</i> (Linnaeus, 1758)	CO3, PB2	
284.	<i>Vanessa atalanta</i> (Linnaeus, 1758)	BH1, CC1, A6	
285.	<i>Vanessa cardui</i> (Linnaeus, 1758)	CO3, CH1, CH2, PB1, PB5, A2, A5, E1	
286.	<i>Polygonia c-album</i> (Linnaeus, 1758)	BH1, CO3, PB2, A1, E1, E2	
287.	<i>Inachis io</i> (Linnaeus, 1758)	PB1, E1, E2	
288.	<i>Argynnis paphia</i> (Linnaeus, 1758)	PB2	
289.	<i>Brenthis daphne</i> (Bergsträsser, 1780)	BH1	
290.	<i>Issoria lathonia</i> (Linnaeus, 1758)	BH1, A1, A5, A6, E2	
291.	<i>Melitaea phoebe</i> ([Denis & Schiffermüller], 1775)	CH1, CH2, KH4, PB2, PB5	
292.	<i>Melitaea arduinna</i> (Esper, [1783])	BH1	
293.	<i>Melitaea didyma</i> (Esper, [1778])	PB1, E1	
294.	<i>Melitaea trivia</i> ([Denis & Schiffermüller], 1775)	BP3, KH4, PB5, E1, E2	CORINE; European Red List of Butterflies (LC)
295.	<i>Melitaea athalia</i> (Rottemburg, 1775)	PB2	
296.	<i>Euphydryas aurinia</i> (Rottemburg, 1775)	A4	Habitats Directive 92/43/EEC (annex II); Bern Convention; CORINE
	Hymenoptera		
	Formicidae		
297.	<i>Ponera coarctata</i> (Latreille, 1802)	E1, KH4, M2	
298.	<i>Myrmica ruginodis</i> Nylander, 1846	E1, PK2	
299.	<i>Myrmica sabuleti</i> Meinert, 1861	E2	
300.	<i>Myrmica scabrinodis</i> Nylander, 1846	KH1	
301.	<i>Myrmica</i> spp.	E1, KH4, KH3, PB2, PB1, PK3, CO1	
302.	<i>Temnothorax</i> sp.	E2, PK3, BT2	
303.	<i>Tetramorium</i> sp.	E2, CH2, KH3, KH1, PK4, PK5, BT1, BP1	
304.	<i>Creumatogaster schmidti</i> (Mayr, 1853)	KH4	
305.	<i>Myrmecina graminicola</i> (Latreille, 1802)	E2, M2	
306.	<i>Tapinoma erraticum</i> (Latreille, 1798)	KH1	
307.	<i>Plagiolepis taurica</i> Santschi, 1920	BT2	
308.	<i>Camponotus aethiops</i> (Latreille, 1798)	E2	
309.	<i>Camponotus piceus</i> (Leach, 1825)	E2, PB5	
310.	<i>Lasius niger</i> (Linnaeus, 1758)	E2, PB5, KH3, KH4, PK3, M2, CO3	
311.	<i>Lasius brunneus</i> (Latreille, 1798)	KH4	
312.	<i>Lasius alienus</i> (Foerster, 1850)	PK4	
313.	<i>Lasius flavus</i> (Fabricius, 1782)	CO1, CO3	
314.	<i>Formica cunicularia</i> Latreille, 1798	E2	
315.	<i>Formica cinerea</i> Mayr, 1853	PK5	
316.	<i>Formica pratensis</i> Retzius, 1783	PK4, BT2	IUCN Red List (NT)

terans *Thymelicus acteon*, *Zerynthia cerisy*, *Lycaena alciphron*, *Everes decoloratus* and *Pseudophilotes vicrama* (see VAN SWAAY et al. 2010).

According to our results, the hygrophilic species of invertebrates associated with hygrophyte plant associations form an indicator complex. The composition of this complex depended on microhabitat characteristics such as the type of water body, microclimate (e.g., altitude, rock type, etc.), plant associations and coverage. For some of the phytophagous indicator species, the main food plants are given because of the habitat requirements of the latter, directly related to the characteristics of the wetlands of type D5. Typical species for the indicator complex are presented in Table 3.

Discussion

The water use and management are frequently connected with change in the natural water regime and thus with change of habitat structure, biodiversity and decreased value of ecosystem services. Vast areas of wetlands in Bulgaria have been drained in the past (WOOD et al. 2000). In addition, currently the regime of many rivers in the country is subjected to modification connected with construction of small water power plants, as well as with diverting water for irrigation. Hence, large share of communities of hygrophilous species has been affected by extensive loss and fragmentation of their habitats. Importance of wetlands has recently been recog-

Table 3. Wetland (D5 type) indicators with foodplant notes for some phytophagous species.

№	Species	Notes	№	Species	Notes
	Gastropoda (terrestrial)				
	Vertiginidae				
1.	<i>Vertigo antiverigo</i> (Draparnaud, 1801)		25.	<i>Myrmecoris gracilis</i> (R.F. Sahlberg, 1848)	
2.	<i>Vertigo moulinsiana</i> (Dupuy, 1849)		26.	<i>Hallodapus montandoni</i> Reuter, 1895	
3.	<i>Vertigo pusilla</i> O.F. Muller, 1774		27.	<i>Omphalonotus quadriguttatus</i> (Kirschbaum, 1856)	
4.	<i>Vallonia enniensis</i> (Gredler, 1856)			Blissidae	
	Succineidae		28.	<i>Dimorphopterus blissoides</i> (Baerensprung, 1859)	<i>Phragmites</i>
5.	<i>Succinella oblonga</i> (Draparnaud, 1801)		29.	<i>Dimorphopterus spinolae</i> (Signoret, 1857)	<i>Calamagrostis</i>
	Euconulidae		30.	<i>Ischnodemus sabuleti</i> (Fallén, 1826)	Cyperaceae, Juncaceae, Typhaceae, Poaceae
6.	<i>Euconulus alderi</i> J.E. Gray, 1840			Cymidae	
	Gastrodontiidae		31.	<i>Cymus glandicolor</i> Hahn, 1832	<i>Juncus</i> , <i>Carex</i> , <i>Scirpus</i>
7.	<i>Zonitoides nitidus</i> (O.F. Muller, 1774)		32.	<i>Cymus melanocephalus</i> Fieber, 1861	<i>Juncus</i> , <i>Carex</i>
	Orthoptera			Rhyparochromidae	
8.	<i>Roeseliana roeseli</i> (Hagenbach, 1822)		33.	<i>Scolopostethus puberulus</i> Horváth, 1887	
9.	<i>Ruspolia nitidula</i> (Scopoli, 1786)		34.	<i>Scolopostethus thomsoni</i> Reuter, 1875	<i>Mentha</i>
10.	<i>Conocephalus fuscus</i> (Fabricius, 1793)		35.	<i>Paraparomius leptopoides</i> (Baerensprung, 1859)	
11.	<i>Pteronemobius heydenii</i> (Fischer, 1853)		36.	<i>Peritrechus geniculatus</i> (Hahn, 1832)	
12.	<i>Xya pfaendleri</i> (Harz, 1970)		37.	<i>Peritrechus gracilicornis</i> Puton, 1877	
13.	<i>Tetrix bolivari</i> Saulcy, 1901		38.	<i>Peritrechus nubilus</i> (Fallén, 1807)	
14.	<i>Chrysochraon dispar dispar</i> (Germar, 1834)			Berytidae	
	Hemiptera: Heteroptera		39.	<i>Metacanthus</i> (s.str.) <i>meridionalis</i> (A. Costa, 1843)	<i>Epilobium</i>
	Hebridae			Pentatomidae	
15.	<i>Hebrus</i> (s.str.) <i>pusillus</i> (Fallén, 1807)		40.	<i>Podops</i> (<i>Opocrates</i>) <i>curvidens</i> A. Costa, 1843	<i>Juncus</i>
16.	<i>Hebrus</i> (<i>Hebrusella</i>) <i>ruficeps</i> Thomson, 1871		41.	<i>Podops</i> (<i>Opocrates</i>) <i>rectidens</i> Horváth, 1883	<i>Juncus</i>
	Saldidae		42.	<i>Podops</i> (s.str.) <i>inunctus</i> (Fabricius, 1775)	
17.	<i>Chartoscirta cincta</i> (Herrich-Schäffer, 1841)		43.	<i>Podops</i> sp.	<i>Juncus</i> , <i>Carex</i>
18.	<i>Chartoscirta cocksii</i> (Curtis, 1835)			Lepidoptera	
19.	<i>Chartoscirta elegantula</i> (Fallén, 1807)			Lycaenidae	
	Tingidae		44.	<i>Lycaena dispar</i> ([Haworth], 1802)	<i>Rumex</i>
20.	<i>Agramma</i> (s.str.) <i>atricapillum</i> (Spinola, 1837)	<i>Juncus</i> , <i>Carex</i> , <i>Scirpus</i> , <i>Schoenoplectus lacustris</i> , <i>Bolboschoenus maritimus</i> , <i>Typha</i>	45.	<i>Plebejus argyrognomon</i> (Bergsträsser, [1779])	
21.	<i>Agramma</i> (s.str.) <i>confusum</i> (Puton, 1879)	<i>Juncus</i> , <i>Carex</i>		Hymenoptera	
22.	<i>Agramma</i> (s.str.) <i>laetum</i> (Fallén, 1807)	<i>Juncus</i> , <i>Carex</i> , <i>Scirpus</i>		Formicidae	
	Miridae		46.	<i>Myrmica ruginodis</i> Nylander, 1846	
23.	<i>Dicyphus</i> (s.str.) <i>epilobii</i> Reuter, 1883	<i>Epilobium</i>	47.	<i>Myrmica scabrinodis</i> Nylander, 1846	
24.	<i>Apolygus spinolae</i> (Meyer-Dür, 1841)	<i>Epilobium</i>	48.	<i>Myrmica scabrinodis</i> Nylander, 1846	
			49.	<i>Lasius flavus</i> (Fabricius, 1782)	

nized in Bulgaria as an ecosystem service and new studies in this field are highly desired and needed. Based on the present study, we conclude that assessment of threatened status and the studies on the species distribution and richness in the wetlands of Bulgaria may be a good source of information about the ecosystem condition and, therefore, may be used for monitoring and assessment of the quality of the ecosystem services provided.

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