ANNALES
UNIVERSITATIS MARIAE CURIE-SKŁODOWSKA
LUBLIN – POLONIA
VOL. LX SECTIO C 2005

PAWEŁ BUCZYŃSKI*, WITOLD KOWALIK**

*Maria Curie-Skłodowska University, Department of Zoology, Akademicka 19,
20-033 Lublin, Poland
**University of Agriculture, Department of Zoology, Akademicka 13,
20-033 Lublin, Poland

Aquatic beetles (*Coleoptera*) in the collection of the Zoological Department of the University of Agriculture in Lublin

Wodne chrząszcze (*Coleoptera*) w zbiorach Katedry Zoologii Akademii Rolniczej w Lublinie

SUMMARY

The presented collection encompasses 3,095 specimens that were collected in nine faunistical regions of eastern and south-eastern Poland in the years 1949–1993 (mainly 1963–1980). The material has not been published so far. It includes 135 species from 10 families: *Gyrinidae* (7 spp.), *Haliplidae* (16 spp.), *Noteridae* (2 spp.), *Dytiscidae* (66 spp.), *Hydraenidae* (6 spp.), *Helophoridae* (8 spp.), *Hydrochidae* (2 spp.), *Spercheidae* (1 sp.), *Hydrophilidae* (23 spp.), and *Elmidae* (4 spp.). Forty-two species were recorded for the first time in one or more regions. All data are summarised in a table, and the records of the 18 most interesting species are described in detail. Faunistical, zoogeographical and ecological remarks are given.

STRESZCZENIE

Praca prezentuje zbiór liczący 3095 okazów, zebrany w dziewięciu regionach faunistycznych wschodniej i południowo-wschodniej Polski w latach 1949–1993 (głównie 1963–1980). Ten materiał nie był dotychczas publikowany. Obejmuje on 135 gatunków z 10 rodzin: *Gyrinidae* (7 gat.), *Haliplidae* (16 gat.), *Noteridae* (2 gat.), *Dytiscidae* (66 gat.), *Hydraenidae* (6 gat.), *Helophoridae* (8 gat.), *Hydrochidae* (2 gat.), *Spercheidae* (1 gat.), *Hydrophilidae* (23 gat.) i *Elmidae* (4 gat.). 42 gatunki podano po raz pierwszy z jednego lub więcej regionów. Wszystkie dane zestawiono w tabeli, szczegółowo omówiono 18 najbardziej interesujących gatunków. Przedstawiono uwagi faunistyczne, zoogeograficzne i ekologiczne.

Key words: aquatic beetles, *Coleoptera*, records, Poland.

INTRODUCTION

Until the 1990's, the eastern and south-eastern part of Poland belonged to poorly investigated areas with respect to the presence of aquatic beetles. The only exception was the Białowieża Primeval Forest, which for a long time has evoked the interest of coleopterologists (40, 44, 45). A relatively large number of data were available from the Roztocze which, however, concerns mainly the second decade of the 20th century (59, 60). In the Sandomierska Lowland, the object of the study was primarily the Niepołomice Forest situated on its western edge near Cracow (19, 20). Thus, despite a clear revival of the studies in recent years, the analyses of the fauna of the region still encounter difficulty in the form of lack of historical information.

The present study presents a collection of aquatic beetles created in the years 1949–1993. The material has not been published so far, except for 14 specimens mentioned by Buczyński and Kowalik (12). The information concerning this collection is a supplementation of the knowledge about the fauna of the region discussed. In addition, it contains numerous species which are interesting from the aspects of zoogeography and ecology.

MATERIAL AND METHODS

The analysed material was collected in the years 1949–1993 (mainly 1962–1980) during hydrobiological studies of the Zoological Department of University of Agriculture in Lublin. The beetles were sampled with a hydrobiological scoop, and in lakes and peatbog water bodies also with a dredge. In the City of Lublin, a light trap (quartz lamp) was also used. 3,095 specimens were collected. The material was preserved in 70% ethanol and is located in the authors' collections.

149 sampling sites were studied and listed below (Fig. 1). The regional division is given after the Catalogue of Polish fauna (19):

— Białowieża Primeval Forest (Puszcza Białowieska) — **1.** Białowieża, the year 1949, meadow ditch (UTM-square: FD94).

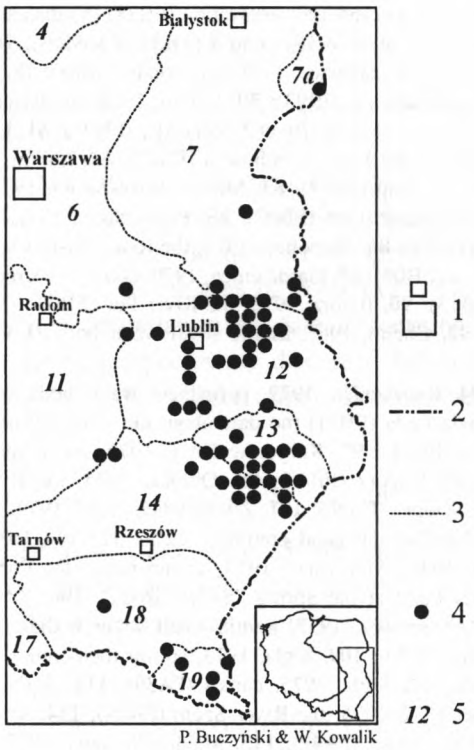
— Podlasie — **2.** Biała Podlaska, 1970–1972, the River Krzna (FC46); **3.** Biała Podlaska, 1967–1970, permanent and astatic small water bodies (FC46); **4.** Sidorki, 1975, the River Krzna (FC46); **5.** Koczergi, 1964, peat excavations (FC32); **6.** Parczew, 1956–1964, astatic small water bodies (FC32); **7.** Gródek, 1950, peat excavation (FC21); **8.** Głębokie, 1966, the Lake Kleszczów (FC30); **9.** Głębokie, 1963, astatic small water body near the Lake Kleszczów (FC30); **10.** Libiszów, 1956–1970, canals (FC40); **11.** Libiszów, 1963–1967, drainage ditch (FC40); **12.** Libiszów, 1968, the Lake Białe (FC40); **13.** Libiszów, 1963–1988, the Lake Czarne (FC40); **14.** Libiszów, 1955–1964, astatic small water bodies (FC40); **15.** Włodawa, 1974, the River Bug (FC71); **16.** Włodawa, 1967, astatic small water bodies (FC71); **17.** Okuninka, 1967, the Lake Glinki (FC70); **18.** Okuninka, 1967, the Lake Lipiniec (FC70); **19.** Stulno, 1968, the Lake Brudzieniec (FB89).

— Mazowiecka Lowland (Nizina Mazowiecka) — **20.** Szczekarków, 1975, the River Wieprz (FC10); **21.** Kośmin, 1975, the River Wieprz (EC61); **22.** Kośmin, 1975, the old arm of the River Wieprz (permanent) (EC61).

— Małopolska Upland (Wyżyna Małopolska) — **23.** Krzcin, 1953, meadow ditch (EB40); **24.** Zastów Polanowski, 1953, small water body (EB68).

— Lubelska Upland (Wyżyna Lubelska) — **25.** Kernów, 1970, astatic small water body (FC10); **26.** Lubartów, 1963, ditch (FC10); **27.** Lubartów, 1956–1963, permanent and astatic small water bodies (FC10); **28.** Ostrów Lubelski, 1970, astatic small water body (FC20); **29.** Maśluchy, 1970–1973, the Lake Maśluchowskie (FC30); **30.** Maśluchy, 1973, astatic small water body (FC30); **31.** Ostrów Lubelski, 1963, the Lake Miejskie (FC20); **32.** Uścimów Stary, 1967, the Lake Białe (FC30); **33.** Uścimów Stary, 1967, the Lake Czarne (FC30); **34.** Uścimów Stary, the Lake Głębokie

Fig. 1. The distribution of sampling sites: 1 — larger cities; 2 — Polish state borders; 3 — borders of faunistical regions; 4 — UTM squares with sampling sites, 5 — the faunistical regions (*4* — Mazurskie Lake District, *6* — Mazowiecka Lowland, *7* — Podlasie, *7a* — Białowieża Primeval Forest, *11* — Małopolska Upland, *12* — Lubelska Upland, *13* — Roztocze, *14* — Sandomierska Basin, *17* — Beskid Zachodni Mountains, *18* — Beskid Wschodni Mountains, *19* — Bieszczady Mountains)



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(FC30) (no data about the sampling period); **35.** Jamniki, 1991, the Lake Moszne (FC40); **36.** Jamniki, 1992, peat excavation W of the Lake Moszne (FC40); **37.** Orzechów Stary, 1966, the Lake Skomielno (FC40); **38.** Orzechów Stary, 1970, astatic small water body (FC40); **39.** Zienki, 1966, the Lake Zienkowskie (FC40); **40.** Kolonia Wola Wereszczyńska, 1991, the Lake Długie (FC50); **41.** Wytyczno, 1991, the Lake Wytyckie (FC50); **42.** Krasne, 1967, the Lake Krzczeń (FB39); **43.** Krasne, 1989, the Lake Orzechówek (FB39); **44.** Krasne-Krzywe, 1980, the Lake Łukietek (FB39); **45.** Rogóźno, 1967 and 1991, the Lake Rogóźno (FB39); **46.** Rozkopaczew, 1967, the Lake Mytycze (FB29); **47.** Czarny Las, 1968, the Lake Ciesacin (FB49); **48.** Kaniwola, 1967–1971, the Lake Brzeziczno (FB49); **49.** Nadrybie, 1968, the Lake Nadrybie (FB49); **50.** Ostrów Nadrybski, 1991, the Lake Uściwierz (FB49); **51.** Rozpłucie-Grabów, 1968 and 1991, the Lake Bikcze (FB49); **52.** Rozpłucie-Grabów, 1970–1971, the Lake Piaseczno (FB49); **53.** Rozpłucie-Grabów, 1963–1972, astatic small water bodies (FB49); **54.** Rozpłucie-Grabów, 1975, peat bog near the Lake Piaseczno (FB49); **55.** Zawadówka, 1968, the Lake Karaśne (FB49); **56.** Sęków, 1966, small water bodies in the Bubnów Marsh (FB59); **57.** Sęków, 1991–1992, peat excavations in the Bubnów Marsh (FB59); **58.** Sumin, 1962, the Lake Sumin (FB59); **59.** Wereszczyn, 1966, the Lake Wereszczyńskie (FB59); **60.** Wiązowiec, 1967–1968, the Lake Płotycze (FB59); **61.** Głębokie, 1971–1973, the Lake

Głębokie (FB48); **62.** Kopina, 1967, astatic small water body (FB48); **63.** Malinówka (FB48), 1967, fish pond; **64.** Świerszczów, 1971, astatic small water body (FB58); **65.** Pniówno, 1967, the Lake Pniówno (FB68); **66.** Sawin, 1967, astatic small water body (FB68); **67.** Tarnów, 1967, astatic small water body (FB68); **68.** Tarnów, 1967, peat excavation (FB68); **69.** Wólka Kańska, 1956, peat excavation (FB57); **70.** Wola Korybutowa, 1967, astatic small water body (FB47); **71.** Kanie, 1966, peat excavation (FB46); **72.** Liszno, 1967, the Lake Liszno (FB46); **73.** Turowola, 1968, the Lake Turowolskie (FB38); **74.** Łęczna, peat excavation (FB38) (no data about the sampling period); **75.** Stróża (FB36) (no data about a locality and a period of studies); **76.** Trawniki, 1967, astatic small water body (FB36); **77.** Czesławice, 1958, fish ponds (EB88); **78.** Sulów, 1973, the old arm of the River Bystrzyca (permanent) (EB93); **79.** Lublin, 1963, the River Czechówka (FB07); **80.** Lublin, 1967–1972, fish ponds near the River Czechówka (FB07); **81.** Lublin, 1963, astatic small water bodies in the valley of the River Czechówka (FB07); **82.** Lublin, 1962–1969, valley of the River Czechówka — a light trap (FB07); **83.** Majdan Wrotkowski, 1972, drainage ditch (FB07); **84.** Zemborzyce, 1951, drainage ditch (FB07); **85.** Prawiedniki, 1972, the old arm of the River Bystrzyca (permanent) (FB06); **86.** Osmolice, 1973, the River Bystrzyca (FB06); **87.** Strzyżewice, 1973, the River Bystrzyca (FB05); **88.** Gardzienice, 1979, spring (reocrene) (FB26); **89.** Guzówka, 1972, the River Por (FB13); **90.** Batorz, 1972, the River Por (FB03); **91.** Wólka Batorska, 1972, the River Por (FB03); **92.** Chełm, 1967, astatic small water body (FB76); **93.** Izbica, 1975, the River Wieprz (FB53).

— Roztocze — **94.** Radecznica, 1972, permanent water body near a spring (FB22); **95.** Radzięcin, the River Biała Łada (FB21) (no data about the sampling period); **96.** Szczebrzeszyn, 1974, the River Wieprz (FB31); **97.** Korytków Duży, 1972, the River Biała Łada (FB10); **98.** Bondyrz, 1972, the River Wieprz (FB40); **99.** Obrocz, 1975, the River Wieprz (FB40); **100.** Rudka, 1972, the River Wieprz (FB40); **101.** Zwierzyniec, 1972–1979, the River Wieprz (FB40); **102.** Zwierzyniec, 1973–1974, the pond complex "Echo" (FB40); **103.** Zwierzyniec, 1973, the Pond "Czarny" (FB40); **104.** Zwierzyniec, 1973, stream below the Pond "Czarny" (FB40); **105.** Krasnobród, 1978, water body at the Spring "Święty Roch"; **106.** Krasnobród, 1975, the River Wieprz (FB50); **107.** Niemirówek, 1957, astatic small water bodies (FB60); **108.** Kępa, 1951, astatic small water body (FB70); **109.** Sigła, 1973, spring (helocrene) (FA39); **110.** Sigła, 1975, the River Szum (FA39); **111.** Sigła, 1975, canals (FA39); **112.** Sigła, 1974, fish pond (FA39); **113.** Górecko Kościelne, 1972–1975, the River Szum (FA49); **114.** Józefów Roztoczański, 1972, dam reservoir of the River Szum (FA49); **115.** Majdan Sopocki, 1972, the River Sopot (FA59); **116.** Nowiny, 1972, spring in the valley of the River Sopot (FA59); **117.** Nowiny, 1972, the River Sopot (FA59); **118.** nature reserve "Czartowe Pole", 1973, the River Sopot (FA48); **119.** Rebizanty, 1972–1973, the River Tanew (FA58); **120.** Rebizanty, 1972, the Stream Jeleń (FA58); **121.** Susiec, 1972, the Stream Jeleń (FA58); **122.** Susiec, 1972, small stream (FA58); **123.** Kadłubiska, 1972–1974, permanent small forest water bodies (FA68); **124.** Lubycza Królewska, astatic small water body 1976, (FA78).

— Sandomierska Lowland (Nizina Sandomierska) — **125.** Tarnobrzeg, 1951, ditch (EB40); **126.** Biłgoraj, 1972–1974, the River Czarna Łada (FB20); **127.** Biłgoraj, 1974, astatic small water body (FB20); **128.** Harasiuki, 1974, the old arm of the River Tanew (permanent) (FA09); **129.** Aleksandrów, 1973, the River Szum (FA39); **130.** Aleksandrów, 1973–1977, fish pond (FA39); **131.** Markowicze, 1972, the River Tanew (FA28); **132.** Łukowa, 1972, the River Mucha (FA38); **133.** Osuchy, 1972, the River Tanew (FA38); **134.** Osuchy, 1972, the River Sopot (FA38); **135.** Szostaki, 1974–1979, the River Szum (FA38); **136.** Fryszarka, 1974, the River Sopot (FA48); **137.** Narol, 1972, the River Tanew (FA68); **138.** Babice, 1972, the River Lubienica (FA37); **139.** Stary Lubliniec, 1972, the River Wirowa (FA47); **140.** Zamch, 1972, the River Złota Nitka (FA47); **141.** Łowcza, 1972, the River Łówcza (FA67); **142.** Chotylubin, 1972, the River Bruścienka (FA66); **143.** Świdnica, 1972, the River Świdnica (FA66).

— Beskid Wschodni Mountains (Beskid Wschodni) — **144.** Iskrzynia, 1967, fish pond (EA40); **145.** Szczawne, 1973, the old arm of the River Osława (permanent) (EV87).

— Bieszczady Mountains (Bieszczady) — **146.** Stężnica, 1975, the River Stężnica (EV96); **147.** Lipie, 1974, the River Mszanka (FV26); **148.** Brzegi Górne, 1973, permanent small water bodies (FV15); **149.** the Mountain Meadow Wetlińska (Połonina Wetlińska), 1972, spring (limnocrene) (FV14).

RESULTS AND DISCUSSION

The collection analysed contains 135 species belonging to 10 families: *Gyrinidae* (7 spp.), *Haliplidae* (16 spp.), *Noteridae* (2 spp.), *Dytiscidae* (66 spp.), *Hydraenidae* (6 spp.), *Helophoridae* (8 spp.), *Hydrochidae* (2 spp.), *Spercheidae* (1 sp.), *Hydrophilidae* (23 spp.), and *Elmidae* (4 spp.). This is a large number, as it constitutes approx. 39% of the number of species from the families the presence of which was noted in the area of Poland (21, 47).

Table 1 presents the compilation of data concerning the entire material. Selected and most interesting species are discussed below (* material collected by hydrobiological methods, # in light traps). The numbers of study sites are written in bold.

Gyrinus (*Gyrinus*) *distinctus* Aubé, 1836

2: 13 November 1971 — 1 ex. *; **46**: 23 August 1967 — 1 ex.*.

Prefers rushes zone of mesotrophic lakes. Middle-Asian species. In Poland, found mainly in the northern part of the country, rare, known from 9 regions (17, 19, 25, 27, 30).

Gyrinus (*Gyrinus*) *paykulli* Ochs, 1927

1: 7 September 1949 — 2 ex.*; 1 April 1967 — 1 ex.*; **135**: 21 November 1974 — 1 ex.*.

Habitat requirements as in *G. distinctus*. Siberian species. In Poland, found in 10 regions, primarily lowlands, rare (19, 25, 27, 30, 54).

Haliplus (*Haliplus*) *furcatus* Seidlitz, 1887

6: 21 April 1964 — 1 ex.*

Prefers slowly running waters. Middle-Asian species. In Poland, relatively widely distributed (known from 10 regions), however, occurring rarely and locally (19, 27, 43, 45).

Haliplus (*Liaphlus*) *variegatus* Sturm, 1834

48: 13 April 1967 — 1 ex.*

Table 1. Aquatic beetles in the collection of Zoological Department of University of Agriculture in Lublin. Localities like in "Material and methods". A–J — the numbers of specimens collected (A — springs, B — rivers and streams, C — ditches and canals, D — lakes, E — fish ponds, F — small permanent water bodies, G — small astatic water bodies, H — peat bog water bodies, I — material collected in light traps, J — no data about a biotope). Σ — the total number of specimens. Species recorded for the first time from: [a] Podlasie, [b] Białowieża Primeval Forest, [c] Mazowiecka Lowland, [d] Małopolska Upland, [e] Lubelska Upland, [f] Roztocze, [g] Sandomierska Lowland, [h] Beskid Wschodni Mountains, [i] Bieszczady Mountains

Family, species	Localities	A	B	C	D	E	F	G	H	I	J	Σ
1	2	3	4	5	6	7	8	9	10	11	12	13
Gyrinidae												
1. *Gyrinus aeratus* Steph.[g]	2, 5, 40, 134	—	40	—	27	—	—	—	4	—	—	71
2. *G. distinctus* Aubé[b]	2, 46	—	1	—	1	—	—	—	—	—	—	2
3. *G. marinus* Gyll.	2, 4, 5, 25, 40, 47, 66, 71–73, 80, 82, 83, 85, 89, 110, 113, 114, 118, 126, 138	—	232	5	24	2	2	6	14	1	—	286
4. *G. minutus* Fabr.	2, 17, 25, 48, 59, 60, 62, 100, 113, 114, 120, 132	—	7	—	29	1	—	2	—	—	—	39
5. *G. natator* (L.)	2, 5, 11, 26, 40, 48, 60, 65, 68, 72	—	30	45	6	—	—	—	2	—	—	83
6. *G. paykulli* Ochs[b e g]	1, 80, 135	—	1	2	—	1	—	—	—	—	—	4
7. *Orectochilus villosus* (O. F. Müll.)	131	—	1	—	—	—	—	—	—	—	—	1
Haliplidae												
8. *Peltodytes caesus* (Duftschm.)[f]	115	—	1	—	—	—	—	—	—	—	—	1
9. *Brychius elevatus* (Panz.)	27, 86, 87, 90, 91, 95, 96, 100, 101, 117, 119	—	103	—	—	—	—	1	—	—	—	104
10. *Haliplus confinis* Steph.[i]	12, 13, 45, 86, 112, 148	—	1	—	12	2	6	—	—	—	—	21
11. *H. flavicollis* Sturm[d]	24, 27, 44, 49, 65, 81, 86, 106, 138	—	8	—	3	—	2	1	—	—	—	14

Continued Table 1.

1	2	3	4	5	6	7	8	9	10	11	12	13
12. *H. fluviatilis* Aubé[g]	3, 5, 13, 14, 20, 21, 28, 32, 33, 44, 48, 53, 55, 61, 71, 79–81, 86, 90–94, 96, 105, 106, 111, 112, 115, 127, 128, 130, 140, 142	—	78	3	8	54	3	14	3	—	—	163
13. *H. fulvus* (Fabr.)[e]	11, 14, 29, 50, 67	—	—	1	4	1	—	1	—	—	—	7
14. *H. furcatus* Seidl.	6	—	—	—	—	—	—	1	—	—	—	1
15. *H. heydeni* Wehncke	5, 16, 48, 80, 81, 112	—	—	—	1	2	—	4	1	—	—	8
16. *H. immaculatus* Gerh.[f g]	32, 115, 130	—	1	—	1	6	—	—	—	—	—	8
17. *H. laminatus* Schall.	86, 145	—	2	—	—	—	1	—	—	—	—	3
18. *H. lineatocollis* Marsh.[f]	86, 94, 112, 115	—	5	—	—	7	2	—	—	—	—	14
19. *H. obliquus* (Fabr.)[g]	29, 45, 59, 80, 81, 90, 91, 96, 133	—	15	—	3	1	—	1	—	—	—	20
20. *H. ruficollis* (De G.)	45, 60, 63, 78, 81, 85, 90, 112, 130	—	1	—	2	7	4	1	—	—	—	15
21. *H. variegatus* Sturm[e]	48	—	—	—	1	—	—	—	—	—	—	1
22. *H. varius* Nic.[e f]	35, 86, 115	—	12	—	1	—	—	—	—	—	—	13
23. *H. wehnckei* Gerh.[a f g]	11, 73, 80, 91, 93, 111, 115, 130	—	2	1	1	16	1	—	—	—	—	21
Noteridae												
24. *Noterus clavicornis* (De G.)	13, 16, 21, 26, 31, 43, 65, 68, 80, 81, 123	—	1	1	19	13	1	3	1	—	—	39
25. *N. crassicornis* (O. F. Müll.)[h]	5–11, 17, 18, 21, 25, 27, 29–31, 33, 37, 43–45, 48, 51, 53, 56–61, 63, 65, 68–0, 80, 81, 86, 90, 92, 93, 112, 123, 124, 127, 41, 142, 144	—	11	8	247	93	12	56	19	—	—	446
Dytiscidae												
26. *Copelatus haemorrhoidalis* (Fabr.)	3, 5, 6, 16, 27, 60, 82	—	—	—	1	1	4	1	—	1	—	8
27. *Hydrovatus cuspidatus* (Kunze)[e]	50	—	—	—	2	—	—	—	—	—	—	2

Continued Table 1.

1	2	3	4	5	6	7	8	9	10	11	12	13
28. *Bidessus unistriatus* (Schrank)[e]	11, 22, 56, 114, 124	—	1	3	—	—	1	3	1	—	—	9
29. *Hydroglyphus pusillus* (Fabr.)	7, 9, 16, 25, 27, 29, 30, 43, 48, 53, 54, 60, 70, 71, 80, 81, 89, 92, 102, 111, 125	—	1	10	7	3	—	52	7	—	—	80
30. *Hygrotus decoratus* (Gyll.)	36, 54, 85, 124, 127	—	—	—	—	—	1	24	15	—	—	40
31. *H. impressopunctatus* (Schall.)[g]	3, 6, 16, 22, 26–28, 38, 48, 54, 59, 62, 70, 80–82, 86, 124, 125	—	1	8	4	2	10	57	5	3	—	92
32. *H. inaequalis* (Fabr.)	2, 3, 11, 16, 22, 25, 27, 28, 30, 33, 43, 52–54, 56, 57, 60, 67, 70, 76, 80, 81, 86, 92, 130	—	2	12	14	7	11	83	8	—	—	137
33. *H. versicolor* (Schall.)	11, 13, 16	—	—	1	1	—		—	5	—	—	7
34. *Hyphydrus ovatus* (L.)	2, 10, 11, 14, 17, 48, 55, 57, 86, 106, 125, 128	—	4	—	4	25	1	1	1	—	—	36
35. *Hydroporus angustatus* Sturm[g]	76, 80, 81, 124, 127	—	—	—	—	1	—	5	—	—	—	6
36. *H. elongatulus* Sturm[e]	66, 92	—	—	—	—	—	—	2	—	—	—	2
37. *H. erythrocephalus* (L.)	7, 11, 26, 28, 53, 60, 62, 81, 82, 124	—	—	3	3	—	—	5	1	—	12	
38. *H. ferrugineus* Steph.[c]	22, 27, 136	—	2	—	—	—	1	1	—	—	—	4
39. *H. incognitus* Sharp[g]	5, 11, 16, 22, 28, 36, 112, 119, 124, 125	—	1	2	—	1	1	3	10	—	—	18
40. *H. obscurus* Sturm[e]	7, 11, 14, 16, 27, 36, 53, 127	—	—	1	—	1	—	7	5	—	—	14
41. *H. palustris* (L.)	26, 112	—	—	1	—	1	—	—	—	—	—	2
42. *H. planus* (Fabr.)	80	—	—	—	—	2	—	—	—	—	—	2
43. *H. pubescens* (Gyll.)[a]	16	—	—	—	—	—	—	1	—	—	—	1
44. *H. rufifrons* (Duftschm.)	66, 121	—	1	—	—	—	—	6	—	—	—	7
45. *H. tristis* (Payk.)	17, 28, 111, 127	—	—	1	2	—	—	2	—	—	—	5

Continued Table 1.

1	2	3	4	5	6	7	8	9	10	11	12	13
46. *Porhydrus lineatus* (Fabr.)	1, 2, 5, 11, 14, 16, 24, 25, 28, 41, 43, 48, 53, 56, 59, 60, 66, 67, 73, 80, 81, 83, 85, 92, 102, 104, 112, 128, 130, 140	—	5	9	43	15	2	12	5	—	—	91
47. *Graptodytes bilineatus* (Sturm)[a]	16, 53, 62, 67, 69, 92, 124, 127	—	—	—	—	—	—	10	1	—	—	11
48. *G. granularis* (L.)[e]	53	—	—	—	—	—	—	1	—	—	—	1
49. *G. pictus* (Fabr.)	27, 63, 64, 67, 93, 102, 128, 129	—	2	—	—	4	1	5	—	—	—	12
50. *Suphrodytes dorsalis* (Fabr.)	5	—	—	—	—	—	—	—	1	—	—	1
51. *Scarodytes halensis* (Fabr.)	93, 115	—	2	—	—	—	—	—	—	—	—	2
52. *Platambus maculatus* (L.)[a f]	2, 10, 87, 96–98, 101, 112, 118, 119, 122, 126, 129, 130, 133, 136–138, 143	—	71	1	—	9	—	—	—	—	—	81
53. *Agabus bipustulatus* (L.)	109, 149	2	—	—	—	—	—	—	—	—	—	2
54. *A. didymus* (Oliv.)	132, 143	—	2	—	—	—	—	—	—	—	—	2
55. *A. labiatus* (Brahm.)[f]	117	—	2	—	—	—	—	—	—	—	—	2
56. *A. melanarius* Aubé [f]	109	1	—	—	—	—	—	—	—	—	—	1
57. *A. neglectus* Er.[a]	16, 38	—	—	—	—	—	—	2	—	—	—	2
58. *A. paludosus* (Fabr.)	88, 102, 103, 109, 121	6	1	—	—	5	—	—	—	—	—	12
59. *A. uliginosus* (L.)[e]	9, 16, 28	—	—	—	—	—	—	3	—	—	—	3
60. *A. undulatus* (Schrank)	5, 14, 48, 80, 130	—	—	—	1	2	—	—	2	—	—	5
61. *Ilybius aenescens* Thoms.	82	—	—	—	—	—	—	—	—	3	—	3
62. *I. ater* (De G.)	83, 102	—	—	1	—	1	—	—	—	—	—	2
63. *I. fenestratus* (Fabr.)	34, 42	—	—	—	2	—	—	—	—	—	—	2
64. *I. fuliginosus* (Fabr.)	81, 82, 101, 105, 111, 143	—	5	1	—	—	—	1	—	6	—	13
65. *I. similis* (Thoms.)	70	—	—	—	—	—	—	1	—	—	—	1

Continued Table 1.

1	2	3	4	5	6	7	8	9	10	11	12	13
66. *I. subaeneus* (Er.)	26, 80, 82	—	—	2	—	1	—	—	—	1	—	4
67. *Rhantus bistriatus* (Bergstr.)	27, 81	—	—	—	—	—	1	6	—	—	—	7
68. *R. exsoletus* (Forst.)	38	—	—	—	—	—	—	1	—	—	—	1
69. *R. incognitus* R. Scholz	79	—	1	—	—	—	—	—	—	—	—	1
70. *R. latitans* Sharp	14, 16, 27, 28, 43, 60, 64, 70, 80–82, 126, 129	—	2	1	3	3	—	16	—	1	—	26
71. *R. notaticollis* (Aubé)	26, 80	—	—	1	—	1	—	—	—	—	—	2
72. *R. notatus* (Fabr.)	27, 66, 81, 82	—	—	—	—	—	—	22	—	4	—	26
73. *R. suturalis* (Mac L.)	2, 6, 11, 16, 26, 27, 43, 66, 80–82, 109, 125, 128, 135, 136	1	4	4	1	9	2	17	—	3	—	41
74. *R. suturellus* (Harr.)	81	—	—	—	—	—	—	2	—	—	—	2
75. *Colymbetes fuscus* (L.)	80	—	—	—	—	1	—	—	—	—	—	1
76. *C. striatus* (L.)	1, 10	—	—	2	—	—	—	—	—	—	—	2
77. *Laccophilus hyalinus* (De G.) [f]	2, 3, 15, 16, 20, 21, 34, 38, 48, 59, 62, 70, 80, 81, 92, 101, 102, 125, 126, 148	—	24	2	6	10	6	28	—	—	—	76
78. *L. minutus* (L.)	52, 64, 66, 148	—	—	—	1	—	3	5	—	—	—	9
79. *L. ponticus* (Sharp)	3, 11, 80, 93, 130, 133	—	2	8	—	3	—	1	—	—	—	14
80. *Hydaticus modestus* (Sharp)	27, 66	—	—	—	—	—	1	1	—	—	—	2
81. *H. transversalis* (Pontopp.)	16, 68	—	—	—	—	—	—	3	—	—	—	3
82. *Graphoderus austriacus* (Sturm)[a]	6, 26, 52, 74, 123	—	—	1	1	—	1	1	2	—	—	6
83. *G. bilineatus* (De G.)[e]	57	—	—	—	—	—	—	—	1	—	—	1
84. *G. cinereus* (L.)	6, 16, 57, 81	—	—	—	—	—	—	14	1	—	—	15
85. *G. zonatus* (Hoppe)	11, 16, 70	—	—	1	—	—	—	7	—	—	—	8

Continued Table 1.

1	2	3	4	5	6	7	8	9	10	11	12	13
86. *Acilius canaliculatus* (Nic.)	48, 71, 77, 80, 106, 128, 129	—	5	—	2	10	1	—	1	—	—	19
87. *A. sulcatus* (L.)	5, 26, 48, 57, 66, 102	—	—	1	1	—	1	1	3	—	—	7
88. *Dytiscus circumcinctus* (Ahr.)[e g]	13, 60, 66, 135	—	1	—	2	—	—	1	—	—	—	4
89. *D. marginalis* L.	4, 16, 19, 62, 99, 102, 119	—	6	—	1	2	—	2	—	—	—	11
90. *D. semisulcatus* O. F. Müll.[a e]	8, 19, 72	—	—	—	4	—	—	—	—	—	—	4
91. *Cybister laterimarginalis* (De G.)	18	—	—	—	1	—	—	—	—	—	—	1
Hydraenidae												
92. *Hydraena hungarica* Rey	146	—	1	—	—	—	—	—	—	—	—	1
93. *H. palustris* Er.[g]	135, 142	—	4	—	—	—	—	—	—	—	—	4
94. *Limnebius atomus* (Duftschm.)[e f]	7, 26, 27, 59, 64, 107	—	—	6	1	—	—	3	1	—	—	11
95. *L. papposus* Muls.	16, 27	—	—	—	—	—	2	1	—	—	—	3
96. *L. parvulus* (Herbst)[f]	27, 81, 111	—	—	—	—	—	—	6	—	—	—	6
97. *L. truncatellus* (Thunb.)	64, 83	—	—	1	—	—	—	1	—	—	—	2
Helophoridae												
98. *Helophorus brevipalpis* Bedel	16, 75, 79–81	—	1	—	—	1	3	—	—	—	2	7
99. *H. flavipes* Fabr.[a]	11	—	—	1	—	—	—	—	—	—	—	1
100. *H. grandis* Il..	26, 80, 81	—	—	1	—	1	—	2	—	—	—	4
101. *H. granularis* (L.)	7, 26, 27, 80–82, 85, 108	—	—	1	—	1	1	15	6	1	—	25
102. *H. griseus* Herbst	7, 16, 26, 81, 108	—	—	26	—	—	—	15	1	—	—	42
103. *H. longitarsis* Woll.	81	—	—	—	—	—	—	1	—	—	—	1
104. *H. minutus* Fabr.	26	—	—	2	—	—	—	—	—	—	—	2

Continued Table 1.

1	2	3	4	5	6	7	8	9	10	11	12	13
105. *H. nubilus* Fabr.[i]	148	—	—	—	—	—	2	—	—	—	—	2
Hydrochidae												
106. *Hydrochus brevis* (Herbst)[a]	3, 6, 8, 11, 80, 144	—	—	1	1	2	3	2	—	—	—	9
107. *H. carinatus* Germ.[e]	3, 53, 64, 83	—	—	1	—	—	1	2	—	—	—	4
Spercheidae												
108. *Spercheus emarginatus* (Schall.)[e]	48	—	—	—	1	—	—	—	—	—	—	1
Hydrophilidae												
109. *Berosus luridus* (L.)	6, 9, 11, 14, 16, 25–28, 38, 43, 48, 53, 60, 62–64, 66, 70, 71, 80, 81, 94, 142	—	1	5	6	5	2	61	1	—	—	81
110. *B. signaticollis* (Charp.)	3, 6, 16, 25, 28, 38, 78, 81, 124	—	—	—	—	—	2	13	—	—	—	15
111. *B. spinosus* Stev.	30, 80, 82	—	—	—	—	1	—	1	—	2	—	4
112. *Chaetarthria seminulum* (Herbst)	81	—	—	—	—	—	—	1	—	—	—	1
113. *Anacaena limbata* (Fabr.)	3, 53, 80, 91, 94, 112, 116, 118, 138, 147	1	6	—	—	6	3	3	—	—	—	19
114. *A. lutescens* (Steph.)	6, 22, 25, 26, 36, 80, 83, 86, 107, 112, 113, 136, 142	—	10	31	—	6	1	3	1	—	—	42
115. *Laccobius alutaceus* (Thoms.)	26, 79	—	1	1	—	—	—	—	—	—	—	2
116. *L. minutus* (L.)	13, 14, 20, 21, 26, 27, 32, 43, 54, 57, 70, 80, 81, 86, 112, 124, 130	—	7	1	10	12	1	4	5	—	—	40
117. *Helochares obscurus* (O. F. Müll.)	6, 7, 9, 14, 25, 27, 28, 53, 58, 63, 64, 80, 81, 84, 126, 130	—	1	1	1	12	1	25	1	—	—	42
118. *Enochrus affinis* (Thunb.)[g]	5, 6, 11, 25–28, 53, 80–82, 87, 91, 94, 112, 125	—	1	7	—	26	1	27	1	5	—	68

Continued Table 1.

1	2	3	4	5	6	7	8	9	10	11	12	13
119. *E. bicolor* (Fabr.)	82	—	—	—	—	—	—	—	—	1	—	1
120. *E. coarctatus* (Gredl.)[g]	7, 9, 59, 76, 80, 82, 87, 131	—	2	—	2	9	—	10	8	2	—	33
121. *E. melanocephalus* (Oliv.) [g]	5, 7, 26, 27, 39, 45, 82, 84, 114, 130	—	1	5	2	1	—	4	2	3	—	18
122. *E. ochropterus* (Marsh.)	9, 25, 59, 78, 81, 82, 94, 116	1	—	—	1	—	2	9	—	4	—	17
123. *E. quadripunctatus* (Herbst)	53, 82	—	—	—	—	—	—	1	—	2	—	3
124. *E. testaceus* (Fabr.)	26, 27	—	—	1	—	—	—	1	—	—	—	2
125. *Cymbiodyta marginella* (Fabr.)	75	—	—	—	—	—	—	—	—	—	1	1
126. *Hydrobius fuscipes* (L.)	16, 25–28, 36, 75, 76, 81, 82, 116, 125, 127, 136	1	1	11	—	—	—	28	2	17	2	62
127. *Hydrochara caraboides* (L.)	3, 5, 6, 14, 16, 23, 26, 27, 53, 62, 73, 81, 84	—	—	10	1	—	4	13	1	—	—	29
128. *Cercyon bifenestratus* Küst.	82	—	—	—	—	—	—	—	—	8	—	8
129. *C. marinus* Thoms.	82	—	—	—	—	—	—	—	—	28	—	28
130. *C. quisquilius* (L.)	82	—	—	—	—	—	—	—	—	6	—	6
131. *C. unipunctatus* (L.)	82	—	—	—	—	—	—	—	—	2	—	2
Elmidae												
132. *Elmis aenea* (Müll.)	115	—	3	—	—	—	—	—	—	—	—	3
133. *E. latreillei* (Bedel)[f]	117, 120	—	4	—	—	—	—	—	—	—	—	4
134. *Oulimnius tuberculatus* (Müll.)[f g]	100, 120, 126, 134, 135, 139	—	17	—	—	—	—	—	—	—	—	17
135. *Limnius volckmari* (Panz.)[g i]	117, 136, 147	—	3	—	—	—	—	—	—	—	—	3
—	Σ	13	765	256	523	409	112	764	144	104	5	3095

Tyrphophile, inhabits peatbog waters, as well as clean water lakes and ponds; related with charophytes. West-Palaearctic species. In Poland, relatively widely settled (reported from 12 regions), however, noted rarely and in small numbers (14, 19, 27).

Haliplus (*Haliplidus*) *varius* Nicolai, 1822

35: 11 October 1991 — 1 ex.*; **86**: 9 May 1973 — 10 ex.*; **115**: 15 July 1972 — 2 ex.*.

Connected with small ponds of stagnant water. Fenoscandian species. In Poland, known from few study sites: the Baltic Coastland, Mazowiecka Lowland, Upper Silesian Region and the Beskid Wschodni Mts (19, 27).

Hydrovatus cuspidatus (Kunze, 1818)

50: 21 May 1991 — 1 ex.*.

Inhabits stagnant waters of abundant vegetation. Tyrrenian Species. In Poland, very rare, known from few study sites in 6 regions of the lowland part of the country (19, 27).

Hydroporus elongatulus Sturm, 1835

66: 13 April 1967 — 1 ex.*; **92**: 13 April 1967 — 1 ex.*.

Acidophilous, prefers peatbogs, is also collected in larger stagnant waters and in slow-current streams. Siberian species. In Poland, widely distributed, known from 15 regions but very rarely collected, especially in recent years (14, 19, 27, 30, 37, 54).

Agabus (*Gaurodytes*) *melanarius* Aubé, 1837

109: 8 November 1973 — 1 ex.*.

Inhabits small cold water ponds, usually inner-forest, with poorly developed vegetation. Hercynian species. In Poland, known from 9 regions, mainly in the mountains and foothills, apart from which is very rare (19, 25, 27).

Rhantus incognitus R. Scholz, 1927

79: 5 May 1963 — 1 ex.*.

Inhabits rivers and canals, usually inner-forest or flowing near forest, sporadically observed also in reservoirs of river floodplain and in lakes. A species of poorly recognized area of occurrence, known from Baltic countries, Poland (*locus typicus:* Susz), western Belarus and the Ukraine, as well as the Czech Republic and Slovakia. Very rare, in Poland reported only from the Mazurian Lake District,

Białowieża Primeval Forest and Lubelska Upland (8, 48). The River Czechówka in Lublin is already the fifth site known in the Lubelska Upland (8, 15).

Dytiscus semisulcatus O. F. Müller, 1776

8: 7 June 1966 — 1 ex.*; **19**: 28 May 1968 — 2 ex.*; **72**: 18 May 1967 — 1 ex.*.

Inhabits stagnant and slow-current waters, often with muddy bottom, especially in forests and peatbogs. Pontian species. In Poland, known from 9 regions, especially lowlands, rare (19, 27).

Hydraena (*Hydraena*) *hungarica* Rey, 1884

146: September 1975 — 1 ex.*.

Inhabits running waters and flowing reservoirs. Central-European species. In Poland, very rare, so far known from 3 sites in the Bieszczady Mts and in Ojcowski National Park (26, 29, 36).

Helophorus (*Rhopalhelophorus*) *longitarsis* Wollaston, 1864

81: 15 May 1963 — 1 ex.*.

A beetle of poorly recognized biology, in Poland collected until today in small and silted small stagnant water ponds, in a river and in a helocrene. European species. In Poland, known only from the Baltic Coastland, Lower Silesia, Krakowsko-Wieluńska Upland and Lubelska Upland (16, 19, 26).

Helophorus (*Empleurus*) *nubilus* Fabricius, 1776

148: 17 May 1973 — 2 ex.*.

Stagnophile. Eurosiberian species. Widely distributed in Poland, known from 14 regions but rarely noted (1, 19, 26, 49).

Spercheus emarginatus (Schaller, 1783)

48: 13 April 1967 — 1 ex.*.

Inhabits fertile stagnant and slow-current waters, where it lives in the roots of plants. Eurosiberian species. In Poland, in many regions but in small numbers and dispersed (14, 16, 19, 23, 25, 26, 54).

Berosus (*Enoplurus*) *spinosus* (Steven, 1808)

30: 1 June 1973 — 1 ex.#; **80**: 11 June 1968 — 1 ex.#; **82**: 28 June 1968 — 1 ex.#, 8 July 1968 — 1 ex.#.

In different parts of its distribution area halophile or halobiont. Eurasian species. In Poland, mainly in seaside regions, apart from these regions it is present in small numbers and greatly dispersed (13, 19, 26, 28, 31).

Enochrus (*Lumetus*) *bicolor* (Fabricius, 1792)

82: 3 July 1962 — 1 ex.#.

Halophile. Eurasian species. In Poland, settled similar to *Berosus spinosus* (14, 15, 19, 26).

Elmis aenea (Ph. Müller, 1806)

115: 27 May 1972 — 3 ex.*.

The beetle connected with running waters of mountain and upland areas. South-European species. In Poland, known from a relatively small number of sites in the south of the country (total 8 regions) and from several doubtful observations in the Baltic Coastland and Pomorskie Lake District (20, 61).

Elmis latreillei (Bedel, 1878)

117: 27 May 1972 — 2 ex.*; **120**: 21 April 1972 — 2 ex.*.

Habitat requirements similar to *E. aenea*, coldphilous beetle. Eurasian species. In Poland, known only from 8 regions in the south of the country (20, 30, 61).

From 2 to 114 beetle species come from individual regions (Tab. 1); 51 species are new to one or more regions: 4 for Podlasie Region, 1 for Białowieża Primeval Forest, 1 for the Mazowsze Lowland, 1 for the Małopolska Lowland, 9 for the Lubelska Upland, 13 for Roztocze, 16 for the Sandomierska Lowland, 1 for the Beskid Wschodni Mts and 3 for the Bieszczady Mts (19–21, and later publications with data about the regions: 2, 3, 5–17 [1], 24, 26, 27, 33, 34, 38–40, 42–45, 52, 55–57, 61) (Tab. 1). Among the above-mentioned species, rare species are dominant, known in Poland from few regions or reported from few sites. A part of them, however, are common taxa which occur in large numbers, such as: *Haliplus fluviatilis*, *Noterus crassicornis*, *Hygrotus impressopunctatus*, *Platambus maculatus*, *Limnebius parvulus*, *Oulimnius tuberculatus*. The fact that these species have not been recorded until today results from still incomplete knowledge about the beetle fauna in parts of the regions, or the small interest until recently of faunists in some families, especially *Hydraenidae* and *Elmidae*.

Due to the way of creation of the collection — while engaged in other studies, with a small number of samples taken at individual study sites — it is difficult

[1] *Helophorus* (*Eutrichelophorus*) micans Faldermann, 1835 published as a species new for the fauna of Poland (7) has been revised as H. (*Helophorus*) *aequalis* Thomson, 1868 (53).

to conduct a typical ecological analysis. It is possible, however, to indicate the specific features of some regions, especially those where more comprehensive material had been collected. Thus, lowland regions and the Lubelska Upland are characterised by a clearly larger percentage of stagnophilic elements, whereas foothill and mountain regions, as well as the Roztocze — rheophilic elements, such as: *Brychius elevatus*, *Hydraena hungarica* and species of *Elmidae* family, which are noted only in these regions. The upland-mountain character of the beetle fauna of flowing waters in Roztocze correlates with the results of studies of other aquatic invertebrates of the region (41).

Podlasie and Roztocze are characterised by a high percentage of species connected with peatbog waters. This is also clearly observed in the material from the Lubelska Upland. However, this results mainly from the fact that in the classification according to regions in the Catalogue of Polish Fauna (19), this region covers, among others, a part of the Polesie — a separate geographical macroregion characterised by a large number of peatbogs (4, 22, 32).

The observations of halophiles are interesting: *Berosus spinosus* and *Enochrus bicolor*. Galewski (27) questions the majority of observations of halophiles from inland parts of Poland. Their correctness, however, is confirmed by numerous later reports — from the Lublin District (13, 34), as well as from other regions (e. g. 5, 28, 39, 46, 51). Admittedly, a part of these reports are based on collecting in light traps, and therefore may be documenting migrations of these species. It seems evident, however, that at least some individual beetles originate from permanent, autochthonous populations in fresh waters.

A part of the presented materials is a substantial supplementation of knowledge of fauna in protected regions. The following study sites are located in national parks: 35, 36, 40, 55–57 — the Poleski NP; 99, 102–104 — the Roztoczański NP; 148, 149 — the Bieszczadzki NP. Study site no. 1 is probably situated in the Białowieski National Park, but due to the lack of a precise location on the label this cannot be stated with complete certainty. Many of the species reported have not been noted to date in these parks (14, 52, 59). A part of the material was also collected in existing and planned nature reserves: "Peatbog at the Czarne Lake" (site 13), "Brudzieniec" (19), "Łukietek Lake" (44), "Brzeziczno Lake" (48), "Czartowe Pole" (118), and "Szumy" (119). Even if these data are only of an historical character, they are important as comparative material for later studies. For similar reasons, data are interesting from many not protected areas, which now come within urban areas (waters of the city of Lublin) or are degraded (e.g. some peatbogs and lakes in Polesie).

Nine species are on the Polish red list of animals threatened with extinction (50): *Brychius elevatus* (LC category), *Haliplus furcatus* (VU category), *H. variegatus* (NT), *H. varius* (EN), *Hydroporus elongatulus* (VU), *Rhantus incognitus*

(EN), *Spercheus emarginatus* (CR), *Enochrus bicolor* (EN), *Hydraena hungarica* (EN). In addition, one protected species was collected: *Graphoderus bilineatus* (58).

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