

**New localities of Elmidae (Coleoptera: Byrrhoidea), with a revised checklist of species occurring in Poland**

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**ABSTRACT.** Seventeen species of elmid beetles have been unequivocally recorded from Poland. The paper presents new data on the distribution of 13 species of this family, among which *Esolus parallelepipodus* and *Riolus cupreus* have been proved to occur in the country. Altogether 227 localities are given, either from the authors' own observations or from materials gathered during the implementation of the programme "Monitoring of the ecological state of surface waters, studies and an assessment of the ecological state of rivers" coordinated by the Chief Inspectorate for Environmental Protection in Poland. The paper also includes a revised checklist of Elmidae occurring in Poland.

**KEY WORDS:** Coleoptera, Elmidae, checklist, new records, Poland.

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INTRODUCTION

The distribution of Elmidae in Poland is poorly known. Many, even generally common

species, have been reported only from single localities and regions, and Polish coleopterologists regard all elmids as rare species (BURAKOWSKI et al. 1983, WIĘŻŁAK 1986).

All the literature dealing with the Elmidae up till the 1980s was summarized in the *Catalogus Faunae Poloniae* (BURAKOWSKI et al. 1983), which is the fundamental work containing all the knowledge of the distribution of this family in Poland. Another important work is the identification key by WIĘŻŁAK (1986). After 1983, new faunistic data of this group can be found in 40 faunistic, ecological and hydrobiological publications. In most of them, Elmidae are just one of the families analysed in complex faunistic analyses of beetles from particular regions (e.g. FLEITUCH 1992, BUCZYŃSKI & KOWALIK 2004, 2005, NIJBOER et al. 2006, BUCZYŃSKI et al. 2009, BUCZYŃSKI & PRZEWOŻNY 2009, GREŃ 2009, JASKUŁA et al. 2010). Only 12 papers focus specifically on elmid beetles and their records from Poland (BABULA 1991, STANIEC 1997, BUCZYŃSKI & PAŁKA 2003, KALISIAK et al. 2003, KONWERSKI 2004, JASKUŁA et al. 2005, ROSSA 2005, RUTA 2005, JASKUŁA et al. 2008, JASKUŁA & PRZEWOŻNY 2009, PRZEWOŻNY et al. 2009, PRZEWOŻNY 2010). It is noteworthy that among the above number, five publications deal only with *Macronychus quadrituberculatus*, one with *M. quadrituberculatus* and *Potamophilus acuminatus*; another work focuses only on *Riolus subviolaceus*, one on *Elmis obscura*, and one on *Elmis aenea*. Only two papers examine three species: *Elmis maugetii*, *Limnius volckmari* and *Oulimnius tuberculatus*. Two more publications are in press, reporting localities of *Limnius volckmari* (BUCZYŃSKI & BUCZYŃSKA in press) and *Potamophilus acuminatus* (BUCZYŃSKI et al. in press a). One more comprehensive work analysing the fauna of the Bug valley, including new data on Elmidae, is also in press (BUCZYŃSKI et al. in press b). In summary, these 40 publications contain data on 12 of the 17 Elmidae species that have been unequivocally identified in Poland.

As seen from the above, knowledge of the distribution of elmid beetles in Poland is scant and, at best, patchy. Only a few areas have been studied and only a small number of specialists is interested in this family. Many species that are common and widespread in Europe have not been reported from their entire potential range in our country. The aim of the paper is to present new faunistic data and summarize current knowledge of the distribution of Elmidae in Poland.

#### Acknowledgements

The authors wish to thank Andrzej Lasoń, Edyta Buczyńska, Marek Miłkowski, Katarzyna Żuk and Zofia Gembarzewska as well as all employees of the Provincial Inspectorates for Environmental Protection. Special thanks are due to Dr. Rajmund Wiśniewski, of the National Foundation for Environmental Protection in Warsaw, for supplying us with the materials used in the present study. We would also like to convey our

thanks to Manfred Jäch for valuable information about the distribution of some species. We thank Michał Grabowski for translating this text into English.

#### MATERIALS AND METHODS

The analysed material comes from the authors' own collections and from the collections amassed by the employees of the Provincial Inspectorates for Environmental Protection within the programme coordinated by the Chief Inspectorate for Environmental Protection in Poland: "Monitoring of the ecological state of surface waters, studies and an assessment of the ecological state of rivers." The beetles were collected with various methods: hydrobiological net, Surber's net, and direct collection from submerged branches and stones. Altogether, 2230 individuals of elmid beetles were gathered from 227 localities (Fig. 1).



**Fig. 1** The records of Elmidae reported in the article. The dots show 10x10 km UTM squares.

During the above-mentioned programme by the Provincial Inspectorates for Environmental Protection the material was collected from 2007 to 2010. The samples came from 674 localities in Poland. Imagines of Elmidae were found in samples from 174 localities and larvae were found in samples from 244 further localities. All the material collected by the Provincial Inspectorates for Environmental Protection was identified by the first author and deposited in his collection.

The following abbreviations are used in the species list: AL – Andrzej Lasoń, CG – Czesław Greń, EB – Edyta Buczyńska, KŻ – Katarzyna Żuk, MM – Marek Miłkowski, MP – Marek Przewoźny, PB – Paweł Buczyński, RR – Rafał Ruta, ZG – Zofia Gembarzewska; WIOŚ – data from Provincial Inspectorates for Environmental Protection, WIOŚ 1 – inspectorate in Białystok, WIOŚ 2 – Bydgoszcz, WIOŚ 3 – Katowice, WIOŚ 4 – Kielce, WIOŚ 5 – Kraków, WIOŚ 6 – Lublin, WIOŚ 7 – Łódź, WIOŚ 8 – Olsztyn, WIOŚ 9 – Opole, WIOŚ 10 – Poznań, WIOŚ 11 – Rzeszów, WIOŚ 12 – Szczecin, WIOŚ 13 – Warszawa, WIOŚ 14 – Wrocław, WIOŚ 15 – Zielona Góra; l. – larvae, NP – national park, NR – nature reserve, res. – reservoir, R. – river, str. – stream, vic. – vicinity.

## RESULTS

We present new localities of 13 of the 17 elmid species unambiguously recorded from Poland, ordered according to their occurrence in the geographical regions listed in the Catalogus Faunae Poloniae (BURAKOWSKI et al. 1983).

### *Potamophilus acuminatus* (FABR.)

**Wielkopolska-Kujawy Lowland:** Skwierzyna (WU10), R. Obra, 22 V 2009, 2 l. (WIOŚ 15);  
**Western Beskid Mts.:** Skrzyńska (DA32), R. Krzyworzeka, 6 VI 2008, 2 l. (WIOŚ 5).

Found extremely rarely in Poland, the species has been reported from 10 regions: Pomeranian Lake District, Wielkopolska-Kujawy Lowland, Mazovian Lowland, Podlasie Lowland, Upper Silesia, Lower Silesia, Małopolska Upland, Lublin Upland, Western and Eastern Beskid Mts. In recent years recorded from eight new localities. All the information on the distribution of this species in Poland is summarized by BUCZYŃSKI et al. (in press a). Among the new localities given in that publication was the River Obra at Skwierzyna – in our study we found the very characteristic larvae of this species in the same locality.

### *Elmis aenea* (P.W.J. MÜLL.)

**Baltic Coast:** Łeba (XA67), 26 IV 2008, 1 ex., leg. ZG; R. Gowienica, confluence with Roztoka Odrzańska (VV74), 16 VI 2008, 1 ex. (WIOŚ 12); **Pomeranian Lake District:** Kępcice ad Słupsk (XA21), R. Wieprza, 23 V 2008, 5 exx., leg. ZG; Lubuń ad Słupsk (XA32), R. Słupia, 21 V 2008, 8

exx., leg. ZG; Łupawa (XA53), 26 IV 2008, 1 ex., leg. ZG; Czarna Dąbrówka ad Lębork (XA62), R. Łupawa, 25 IV 2008, 1 ex., leg. ZG; Bodzęcin (VV94), R. Stepnica, 6 VI 2008, 22 exx. (WIOŚ 12); Budziszowice (VV94), R. Gowienica, 6 VI 2008, 8 exx. (WIOŚ 12); Suchanówko (WV20), R. Reczyca, confluence with R. Ina, 28 V 2009, 1 ex. (WIOŚ 12); Darskowo (WV63), R. Kokna, 3 VI 2009, 1 ex. (WIOŚ 12); Byszyno ad Białogard (WV67), R. Parsęta, 23 V 2008, 22 exx., leg. ZG; Krępa Krajeńska vic. (WV70), “Nad Płociczną” NR, R. Płociczna, 27 V 2006, 14 exx., leg. RR; Doble ad Połczyn Zdrój (WV86), R. Wieprza, 24 V 2008, 12 exx., leg. ZG; below Lędyczek (XV23), R. Gwda, 2007, 1 ex. (WIOŚ 10); Przechlewo ad Człuchów (XV46), R. Brda, 20 V 2008, 31 exx., leg. ZG; Żukowo (XV85), R. Brda, 24 IV 2008, 5 exx., leg. ZG; Radlice (WU39), R. Wardynka, confluence with R. Stobnica, 27 V 2009, 4 exx. (WIOŚ 12); Międzybórz (WU59), R. Słopica, 4 VI 2009, 1 ex. (WIOŚ 12); **Masurian Lake District**: Zajączki (DE23), R. Gizela, 7 V 2009, 1 ex. (WIOŚ 8); Smolajny (DE65), R. Kirsna, 19 V 2008, 4 exx. (WIOŚ 8); Sędrowo (EE01), R. Wałpusza, 21 V 2009, 4 exx. (WIOŚ 8); Czerwony Dwór (EE79), R. Elk, Łażna Struga (Czarna Struga), 8 V 2008, 8 exx. (WIOŚ 8); Sobolewo (FE39), R. Czarna Hańcza, inflow to Lake Wigry, 10 X 2007, 2 exx. (WIOŚ 1); **Wielkopolska-Kujawy Lowland**: Biała (XU07), str., 2 V 2006, 8 exx., leg. RR; Złotoria (CD47), R. Struga Młyńska, 2007, 5 exx. (WIOŚ 2); **Upper Silesia**: Miotek (CB50), R. Mała Panew, above Kalety, 24 V 2007, 19 exx. (WIOŚ 3); R. Pagor, confluence with R. Przemsza (CA78), 7 VI 2008, 5 exx. (WIOŚ 3); **Kraków-Wieluń Upland**: Krzepice (CB44), R. Bieszczka, confluence with R. Liswarta, 10 IX 2008, 1 ex. (WIOŚ 3); Pradła (DB00), R. Krztynia, 13 IX 2009, 15 exx., leg. CG; Kromołów (CA99), R. Warta riv., 23 IX 2008, 2 exx. (WIOŚ 3); Dolina Będkowska (DA15), vic. “Dupa Słonia” rock, 21 V 2006, 2 exx., from a str., leg. RR; **Małopolska Upland**: Jamno (CB74), R. Struga, 20 VI 2008, 3 exx. (WIOŚ 3); Szczekociny (DB10), R. Pilica, 28 VI 2007, 22 exx. (WIOŚ 3); Tęgobórz (DB11), R. Krztynia, confluence with R. Pilica, 23 V 2008, 13 exx. (WIOŚ 3); **Western Beskid Mts.**: Wisła Głębcze (CA40), Głębocek str., 23 VII 2006, 2 exx., leg. CG; Wisła (CA40), Gahura str., 9 V 2009, 33 exx., 26 VII 2009, 34 exx., R. Wisła, 14 VIII 2009, 3 exx., R. Wisła after the dam, 5 IX 2009, 19 exx., leg. CG; Brenna (CA50), Węgierski str., 31 VIII 2008, 37 exx., Połczany str., 31 VIII 2008, 23 exx., leg. CG; Istebna (CV49), on rocks with mosses in R. Olza, 16 VI 2006, 4 exx., R. Olza, ca. 500 m asl, 19 VII 2006, 19 exx., 27 IX 2008, 1 ex., right tributary of R. Olza, between Bukowiec and Młoda Góra, 21 VII 2006, 11 exx., R. Olza, in mosses on rocks, 19 VII 2007, 1 ex., right inflow tributary of R. Olza, (number 4), 13 IV 2008, 11 exx., leg. CG; Wisła (CV59), R. Czarna Wisielka, 7 VIII 2010, 2 exx., leg. MP; R. Czarna Wisielka, (CV59), before the knickpoint near the lake, 27 VIII 2006, 3 exx., leg. CG; Milówka (CV69), Kameszniczanka str., 23 VIII 2008, 2 exx., leg. CG; **Nowy Targ Basin**: Nowy Targ (DV38), R. Kowaniec, 6 VII 2007, 1 ex. (WIOŚ 5).

The species is widely distributed in Europe. It is found in 15 regions of Poland: Baltic Coast, Pomeranian Lake District, Wielkopolska-Kujawy Lowland, Mazovian Lowland, Upper and Lower Silesia, Kraków-Wieluń Upland, Małopolska Upland, Roztocze,

Sandomierz Lowland, Western and Eastern Sudetes Mts., Western and Eastern Beskid Mts., Bieszczady Mts. (BURAKOWSKI et al. 1983, NIJBOER et al. 2006, BUCZYŃSKI et al. 2009, RUTA 2009, JASKUŁA et al. 2010). Its locality from the River Bug in the Podlasie Lowland (BŁACHUTA & BŁACHUTA 2003) is doubtful, as the authors of further comprehensive field studies in that area (PRZEWOŻNY et al. 2006, BUCZYŃSKI et al. in press b), covering a 250 km long stretch of the river, have not found the species; that record must therefore be regarded as doubtful until new findings appear. The localities from the Baltic Coast were treated as doubtful in the Catalogus Faunae Poloniae (BURAKOWSKI et al. 1983) – the last records from this region were ca 80 years old, so our findings prove the presence of the species in that area. Records from the Upper Silesia are as old, coming from the 19<sup>th</sup> and early 20<sup>th</sup> centuries. The species is reported from the Masurian Lake District and the Nowy Targ Basin for the first time. So far, there have been no new records of this species from Lower Silesia (the last reports from the 19<sup>th</sup> c.), the Western and Eastern Sudetes Mts. (the last reports from the 19<sup>th</sup> and early 20<sup>th</sup> c.), and from the Eastern Beskid Mts. (the last reports from the early 20<sup>th</sup> c.) (BURAKOWSKI et al. 1983). Along with *E. maugetii* and *Limnius volckmari*, *E. aenea* is the most frequently found elm mid beetle in Poland. Its main area of distribution in the country includes the rivers in Pomerania and in southern Poland; most probably, the species does not occur or is very rare in central Poland.

#### *Elmis latreillei* BEDEL

**Western Sudetes Mts.:** Orlickie Mts., Zieleniec vic. (WR98), Bystrzyca Dusznicka, 15 IV 2007, 4 exx., leg. KŻ and RR; **Western Beskid Mts.:** Babia Góra (CV99), Klinowy Potok str., 16-20 IX 2002, 7 exx., leg. RR; Ochotnica Górna (DV48), Ochotnica, 19 V 2006, 1 ex., leg. PB; **Tatra Mts.:** Western Tatra Mts. (DV15), Chochołowska Valley, Potok Chochołowski str., 25 VI 2002, 1 ex., leg. MP; Wyżnia Chochołowska Valley (DV15), 1 VII 2003, 18 exx., leg. RR.

A central European, montane species, it has so far been reported from eight regions: Kraków-Wieluń Upland, Roztocze, Western and Eastern Sudetes Mts., Western Beskid Mts., Nowy Targ Basin, Tatra Mts., Bieszczady Mts. (BURAKOWSKI et al. 1983, BUCZYŃSKI & KOWALIK 2005). Recently recorded only once from Roztocze, in a small river of montane character (BUCZYŃSKI & KOWALIK 2005). Reported from the Western Sudetes Mts. ca 60 years ago and from the Tatra Mts. almost a century ago (BURAKOWSKI et al. 1983). Found some 40 years ago in the Western Beskids (PAWŁOWSKI 1967). It inhabits small, cold montane streams. The species is probably widespread in the Polish mountains, but is found only in very small numbers.

#### *Elmis maugetii maugetii* LATR.

**Baltic Coast:** R. Gowienica, confluence with R. Roztoka Odrzańska (VV74), 16 VI 2008, 3 exx.

(WIOŚ 12); Rekowice (VV87), R. Wołczenica, 12 VI 2008, 2 exx. (WIOŚ 12); **Pomeranian Lake District**: Rogóźno – Zamek (CE63), R. Gardęga, 2007, 1 ex. (WIOŚ 2); R. Krępa, confluence with R. Krąpiel (WV11), 23 VI 2009, 1 ex. (WIOŚ 12); Raduń ad Gryfice (WV17), R. Lubieszowa, 18 V 2009, 1 ex. (WIOŚ 12); R. Ina, below Recz (WV30), 28 V 2009, 1 ex. (WIOŚ 12); Namysłin (VU63), R. Myśla, 29 VI 2007, 7 exx. (WIOŚ 12); R. Tywa, before confluence with R. Odra (VU69), 25 VI 2007, 1 ex. (WIOŚ 12); R. Krzekna (VU89), inflow to Lake Będogoszcz, 27 VI 2007, 1 ex. (WIOŚ 12); R. Myśla, below Myślubórz (VU96), 26 V 2009, 1 ex. (WIOŚ 12); Bogdanka (WU58), R. Drawa, 5 VI 2009, 1 ex. (WIOŚ 12); Konstantynowo (XU59), R. Orla, 2007, 1 ex. (WIOŚ 10); **Masurian Lake District**: Poszeszupie stream gauge (FF32), R. Szeszupa, 13 V 2008, 14 exx., 24 VI 2009, 7 exx. (WIOŚ 1); Kotlewska Struga, below Grodziczno (DE11), 25 V 2009, 11 exx. (WIOŚ 8); R. Wólka, above confluence with R. Wel (DE11), 25 V 2009, 1 ex. (WIOŚ 8); Sędrowo (EE01), R. Wałpusza, 21 V 2009, 7 exx. (WIOŚ 8); Sobolewo (FE39), R. Czarna Hańcza, inflow to Lake Wigry, 13 V 2009, 6 exx. (WIOŚ 1); **Wielkopolska-Kujawy Lowland**: Białe Błota (CD46), R. Tażyna, 2008, 34 exx. (WIOŚ 2); Wołuszewo (CD46), R. Tażyna, confluence with R. Wisła, 2008, 3 exx. (WIOŚ 2); Kolonia Falborz (CD53), R. Bachorza, confluence with R. Zgłowiączka, 2008, 6 exx. (WIOŚ 2); Włocławek (CD63), R. Zgłowiączka, confluence with R. Wisła, 2008, 11 exx. (WIOŚ 2); Małyń (CC63), R. Pisa, 22 IV 2009, 2 exx. (WIOŚ 7); **Mazovian Lowland**: Gutarzewo (DD64), R. Łydynia, 13 V 2008, 1 ex. (WIOŚ 13); Popielżyn (DD72), R. Sona, 26 V 2008, 4 exx. (WIOŚ 13); Ruda Tarnowska (EC33), R. Promnik, 10 VI 2008, 1 ex. (WIOŚ 13); **Podlasie Lowland**: Sabie (ED81), R. Cetynia, 5 V 2009, 7 exx. (WIOŚ 13); **Lower Silesia**: R. Strzegomka, below Strzegom (WS94), 2007, 6 exx. (WIOŚ 14); R. Kaczawa, confluence with R. Odra (WS98), 2007, 1 ex. (WIOŚ 14); R. Bystrzyca, above Mietków res. (XS14), 12 V 2008, 1 ex. (WIOŚ 14); **Upper Silesia**: Czapple Stare (BB96), R. Stobrawa, 2 X 2008, 1 ex. (WIOŚ 9); Kokotek (CB30), R. Leśnica, confluence with R. Mała Panew, 30 V 2007, 1 ex. (WIOŚ 3); Miotek (CB50), R. Babieniczka, confluence with R. Mała Panew, 6 VI 2007, 4 exx. (WIOŚ 3); Ordon (CB70), R. Boży Stok, 19 IX 2008, 1 ex. (WIOŚ 3); Chałupki (CA03), R. Odra, 16 IX 2009, 1 ex. (WIOŚ 3); R. Olza, confluence with R. Odra (CA03), 23 V 2007, 1 ex. (WIOŚ 3); Toszecki brook, inflow to Lake Pławniowice (CA28), 24 VI 2008, 4 exx. (WIOŚ 3); R. Trzebyczka, confluence with R. Przemsza (CA78), 3 X 2008, 8 exx. (WIOŚ 3); Graboszyce (CA83), R. Wieprzówka, 5 VI 2008, 4 exx. (WIOŚ 5); Mętków (CA84), R. Płazanka, 2 VI 2008, 1 ex. (WIOŚ 5); **Kraków-Wieluń Upland**: Praszka (CB25), R. Proсна, 2008, 9 exx. (WIOŚ 9); Pradła (DB00), R. Krztynia, 13 IX 2009, 1 ex., leg CG; Kraków (DA24), R. Rudawa, 3 VI 2008, 2 exx. (WIOŚ 5); **Małopolska Upland**: Zawady (CB55), R. Liswarta, 21 VI 2007, 1 ex. (WIOŚ 3); Borowa (CB65), R. Biała Oksza, confluence with R. Liswarta, 9 IX 2008, 1 ex. (WIOŚ 3); R. Liswarta, Kule stream gauge (CB65), 20 VI 2007, 6 exx., 5 VI 2008, 3 exx. (WIOŚ 3); Trzebca (CB65), R. Kocinka, 16 VI 2008, 31 exx. (WIOŚ 3); Rzeki Małe (CB83), R. Warta, 19 VI 2008, 1 ex. (WIOŚ 3); Knieja (CB93), R. Wiercica, 22 V 2007, 7 exx. (WIOŚ 3); Koniecpol (DB02), R. Białka Lelowska, confluence with R. Pilica, 20 VI 2008, 1 ex. (WIOŚ 3); Maluszyn (DB14), R. Pilica, 29 V 2008, 34 exx. (WIOŚ 7); Borsowice (DB60), R. Brzeźnica, 15 VI 2007, 2 exx. (WIOŚ 4);

Starachowice (EB05), R. Młynówka, 6 V 2008, 5 exx. (WIOŚ 4); Wola Pawłowska (EB55), R. Kamienna, 26 V 2007, 3 exx. (WIOŚ 4); **Świętokrzyskie Mts.**: R. Warkocz, Suków-Daleszyce road (DB82), 22 V 2007, 7 exx. (WIOŚ 4); **Lublin Upland**: Czerniejów (FB16), R. Czerniejówka, 5 VIII 2010, 9 exx., leg. EB; **Western Sudetes Mts.**: R. Złotnica, confluence with R. Bystrzyca (WS92), 25 V 2009, 2 exx. (WIOŚ 14); Makocice (XS00), R. Ścinawka, 2007, 2 exx. (WIOŚ 14); Krosnowice (XR18), R. Nysa Kłodzka, 8 V 2008, 43 exx. (WIOŚ 14); **Western Beskid Mts.**: R. Puńcówka confluence with R. Olza (CA21), 28 V 2008, 7 exx. (WIOŚ 3); R. Olza, above Stonawka (CA22), 19 VI 2007, 1 ex. (WIOŚ 3); Right bank of R. Młynówka Kiczycza, confluence with R. Mała Wisła (CA32), 12 VI 2007, 6 exx., 21 V 2009, 1 ex. (WIOŚ 3); R. Dobka, confluence with R. Mała Wisła (CA40), 30 V 2007, 26 exx. (WIOŚ 3); R. Kopydło, confluence with R. Mała Wisła (CA40), 28 V 2007, 15 exx. (WIOŚ 3); Ustroń (CA40), R. Wisła, 28 IV 2010, 1 ex., leg. CG; Wisła (CA40), R. Wisła, 14 VIII 2009, 24 exx., R. Wisła after the dam, 5 IX 2009, 8 exx., leg. CG; Wisła Głębcze (CA40), Głębczek str., 23 VII 2006, 1 ex., leg. CG; R. Bładnica, confluence with R. Mała Wisła (CA41), 6 VII 2007, 20 exx. (WIOŚ 3); R. Brennica, confluence with R. Mała Wisła (CA41), 9 V 2007, 6 exx., 12 V 2007, 10 exx. (WIOŚ 3); R. Mała Wisła (CA41), above confluence of R. Bładnica, 27 V 2008, 7 exx. (WIOŚ 3); R. Zlewaniec, confluence with R. Iłownica (CA42), 26 V 2008, 3 exx., 2009, 18 exx. (WIOŚ 3); Brenna (CA50), Węgierski str., 31 VIII 2008, 25 exx., Połczany str., 31 VIII 2008, 9 exx., R. Brennica, 28 IV 2010, 44 exx., leg. CG; R. Leśnianka, confluence with R. Soła (CA60), 13 VI 2007, 11 exx. (WIOŚ 3); R. Soła, inflow to Tresna res. (CA60), 15 V 2008, 2 exx. (WIOŚ 3); R. Trzebinka, confluence with R. Koszarawa (CA70), 15 VI 2007, 2 exx. (WIOŚ 3); Rzyki (CA82), R. Wieprzówka, 3 VI 2008, 1 ex. (WIOŚ 5); Zembrzyce (CA91), R. Paleczka, 21 IV 2009, 2 exx., R. Skawa, 7 V 2009, 3 exx. (WIOŚ 5); Wadowice (CA92), R. Kleczanka, 5 VI 2008, 2 exx. (WIOŚ 5); Białka (DA00), R. Skawica, 21 IV 2009, 3 exx. (WIOŚ 5); R. Gościbia, above water intake (DA11), 21 IV 2009, 5 exx. (WIOŚ 5); Czasław Myto (DA32), R. Krzyworzeka, 15 V 2008, 1 ex. (WIOŚ 5); Kunice (DA32), R. Niżowski Potok, 8 VI 2007, 7 exx. (WIOŚ 5); Skrzynka (DA32), R. Krzyworzeka, 6 VI 2008, 3 exx. (WIOŚ 5); Pierzchów (DA43), R. Królewski Potok, 18 VI 2007, 2 exx., 12 V 2008, 1 ex. (WIOŚ 5); Witkowice Górne (DA71), R. Łososina, 19 V 2009, 2 exx. (WIOŚ 5); Poręba Spytkowska (DA73), R. Uszwica, 27 V 2008, 3 exx. (WIOŚ 5); Jaworzynka (CV48), R. Czadeczka, 14 V 2008, 1 ex. (WIOŚ 3); Istebna (CV49), on moss-covered rocks in R. Olza, 16 VI 2006, 1 ex., R. Olza, altitude ca 500 m, 19 VII 2006, 1 ex., 19 VII 2007, 1 ex., 6 IX 2009, 17 exx., right tributary of R. Olza between Bukowiec and Młoda Góra, 21 VII 2006, 2 exx., R. Olza in mosses on rocks, 19 VII 2007, 4 exx., right tributary of R. Olza (number 4), 13 IV 2008, 1 ex., leg. CG; R. Olza, Wisła – Istebna bridge (CV49), 21 V 2007, 5 exx., 14 V 2008, 1 ex. (WIOŚ 3); R. Mała Wisła, Wisła Czarne res. (CV49), 9 V 2007, 1 ex. (WIOŚ 3); Wisła (CV59), R. Czarna Wisielka, 7 VIII 2010, 2 exx., leg. MP; R. Czarna Wisielka (CV59), before the knickpoint near the lake, 27 VIII 2006, 6 exx., leg. CG; R. Soła, above confluence with R. Rycerka (CV68), 10 V 2007, 17 exx. (WIOŚ 3); Cisiec (CV69), R. Soła, 27 IV 2010, 10 exx., leg. CG; Milówka (CV69), R. Kameszniczanka, 23 VIII 2008, 1 ex., R. Soła, 15 VIII 2009, 1 ex., leg. CG; Jordanów (DV19), R. Skawa, 7 V 2009, 4 exx.



(WIOŚ 5); Leluchów (DV96), R. Poprad, 3 IX 2008, 1 ex. (WIOŚ 5); Biała Wyżna (DV99), R. Pławianka, 29 VI 2007, 5 exx., 8 V 2008, 1 ex. (WIOŚ 5); **Nowy Targ Basin**: Jabłonka (DV08), R. Czarna Orawa, 2007, 11 exx., 10 IX 2008, 16 exx., 13 V 2009, 23 exx. (WIOŚ 5); **Eastern Beskid Mts.**: Lubaszowa (EA02), R. Biała Tarnowska, 30 V 2007, 4 exx. (WIOŚ 5); Topoliny (EA30), R. Ropa, 5 VI 2008, 2 exx. (WIOŚ 11); Godowa (EA52), R. Stobnica, 4 XI 2008, 1 ex. (WIOŚ 11); Rudawka Rymanowska (EV68), R. Wisłok, 2007, 1 ex. (WIOŚ 11); Besko (EV69), R. Wisłok, 2007, 1 ex. (WIOŚ 11); Beskid Niski Mts., Przybyszów vic. (EV77), 6-7 VII 2004, 5 exx., leg. RR; Tyrawa Solna (EV99), R. Tyrawka, 2007, 1 ex. (WIOŚ 11); **Bieszczady Mts.**: Mików (EV85), 30 VII 1999, 1 ex., leg. AL; Rajskie (FV06), R. San, 2007, 2 exx. (WIOŚ 11).

The species is widely distributed in the Western Palaearctic. Found in 16 regions of Poland: Baltic Coast, Pomeranian Lake District, Masurian Lake District, Wielkopolska-Kujawy Lowland, Mazovian Lowland, Upper and Lower Silesia, Kraków-Wieluń Upland, Małopolska Upland, Lublin Upland, Roztocze, Eastern and Western Sudetes Mts., Eastern and Western Beskid Mts., Bieszczady Mts. (BURAKOWSKI et al. 1983, KONWERSKI 2004, BUCZYŃSKI & PRZEWOŻNY 2006, JASKUŁA et al. 2010). Our data demonstrate the presence of the species on the Baltic Coast (last records from the mid-20<sup>th</sup> c.), in Lower Silesia (previous data from the 19<sup>th</sup> and early 20<sup>th</sup> c.), Western Sudetes Mts. (the last records from the 19<sup>th</sup> and early 20<sup>th</sup> c.) and in the Eastern Beskid Mts. (previous data from the early 20<sup>th</sup> c.). We report the species for the first time from the Podlasie Lowland, Świętokrzyskie Mts. and the Nowy Targ Basin. So far, the presence of the species has not been verified in Roztocze (data only from the early 20<sup>th</sup> c.) or in the Eastern Sudetes (data from the 19<sup>th</sup> and early 20<sup>th</sup> c.) (BURAKOWSKI et al. 1983). Along with *Elmis aenea* and *Limnius volckmari* it is the most frequently found elmid species in Poland. Common and abundant in rivers throughout the country.

#### *Elmis obscura* (P.W.J. MÜLL.)

**Pomeranian Lake District**: Budziszowice (VV94), R. Gowienica, 6 VI 2008, 1 ex. (WIOŚ 12); **Mazovian Lowland**: Borzomy (ED41), R. Osownica, 11 VI 2008, 2 exx. (WIOŚ 13); **Małopolska Upland**: Bzin (DB86), R. Kamienna, 12 V 2008, 1 ex. (WIOŚ 4); **Western Beskid Mts.**: Right bank of R. Młynówka Kiczycza, confluence with R. Mała Wisła (CA32), 12 VI 2007, 4 exx., 12 VI 2008, 5 exx. (WIOŚ 3); R. Skawinka above Skawina (DA13), 3 VI 2008, 1 ex. (WIOŚ 5); Poręba Spytkowska (DA73), R. Uszwica, 27 V 2008, 1 ex. (WIOŚ 5).

A European species, distributed mainly in Central Europe. In Poland, found extremely rarely in only 7 regions; the records can be regarded as historical: Masurian Lake District, Lower Silesia, Roztocze, Western and Eastern Sudetes, Nowy Targ Basin. Recently the species has been found in only one locality, at Lubaszowa near Tarnów in the Eastern Beskid Mts. (PRZEWOŻNY 2010). All the other data are ca 100 years old (BURAKOWSKI et

al. 1983).

We report the species for the first time from the Pomeranian Lake District, Mazovian Lowland, Małopolska Upland and Western Beskid Mts. The above findings suggest that the species is most probably widely distributed in our country. That it is rarely found may be a result of its peculiar lifestyle. The species is flightless, with very limited dispersal abilities; it may be thermophilic, inhabiting submerged deciduous tree roots in the hyporhithral and epipotamal zones of streams and rivers (BOUKAL et al. 2007).

***Esolus angustatus* (P.W.J. MÜLL.)**

**Upper Silesia:** R. Olza, confluence with R. Odra (CA03), 23 V 2007, 1 ex. (WIOŚ 3); Graboszyce (CA83), R. Wieprzówka, 5 VI 2008, 1 ex. (WIOŚ 5); **Western Sudetes Mts.:** Orlickie Mts., Zieleniec vic. (WR98), Bystrzyca Dusznicka, 15 IV 2007, 1 ex., leg. KŽ and RR; Orlickie Mts., Zimne Wody (WR98), in a str., 15 IV 2007, 2 exx., leg. KŽ and RR; **Western Beskid Mts.:** R. Bobrówka, confluence with R. Olza (CA21), 18 V 2007, 1 ex. (WIOŚ 3); R. Puńcówka, confluence with R. Olza (CA21), 28 V 2008, 1 ex. (WIOŚ 3); R. Olza, above Stonawka (CA22), 19 VI 2007, 5 exx. (WIOŚ 3); R. Dobka, confluence with R. Mała Wisła (CA40), 30 V 2007, 11 exx. (WIOŚ 3); Wisła (CA40), Gahura str., 9 V 2009, 3 exx., leg. CG; R. Kopydło, confluence with R. Mała Wisła (CA40), 28 V 2007, 7 exx. (WIOŚ 3); R. Bładnica, confluence with R. Mała Wisła (CA41), 6 VII 2007, 1 ex. (WIOŚ 3); R. Brennica, confluence with R. Mała Wisła (CA41), 9 V 2007, 3 exx., 12 V 2007, 1 ex. (WIOŚ 3); R. Mała Wisła (CA41), above confluence with R. Bładnica, 27 V 2008, 5 exx. (WIOŚ 3); Brenna (CA50), R. Brennica, 28 IV 2010, 1 ex., leg. CG; R. Leśnianka, confluence with R. Soła (CA60), 13 VI 2007, 3 exx. (WIOŚ 3); R. Soła, inflow to Tresna res. (CA60), 15 V 2008, 7 exx., 18 V 2009, 25 exx. (WIOŚ 3); R. Koszarawa, confluence with R. Soła (CA70), 10 V 2007, 19 exx., 18 V 2009, 9 exx. (WIOŚ 3); R. Łękawka, inflow to Tresna res. (CA70), 14 V 2007, 2 exx. (WIOŚ 3); R. Trzebinka, confluence with R. Koszarawa (CA70), 15 VI 2007, 1 ex. (WIOŚ 3); Rzyki (CA82), R. Wieprzówka, 3 VI 2008, 1 ex. (WIOŚ 5); Zembrzyce (CA91), R. Paleczka, 21 IV 2009, 29 exx., R. Skawa, 7 V 2009, 25 exx. (WIOŚ 5); R. Skawa, below Świnna Poręba (CA92), 7 V 2009, 16 exx. (WIOŚ 5); R. Gościbia, above the water intake (DA11), 21 IV 2009, 3 exx. (WIOŚ 5); R. Raba, above Stróże (DA21), 21 IV 2009, 1 ex. (WIOŚ 5); Kunice (DA32), R. Niżowski Potok, 8 VI 2007, 1 ex. (WIOŚ 5); Skrzynka (DA32), R. Krzyworzeka, 6 VI 2008, 3 exx. (WIOŚ 5); Kurów (DA70), R. Dunajec, 27 V 2008, 1 ex. (WIOŚ 5); Witkowice Górne (DA71), R. Łososina, 19 V 2009, 7 exx. (WIOŚ 5); Jaworzynka (CV48), R. Czadeczką, 21 V 2007, 4 exx. (WIOŚ 3); Istebna (CV49), right tributary of R. Olza (number 4), 13 IV 2008, 2 exx., leg. CG; R. Olza, Wisła – Istebna bridge (CV49), 21 V 2007, 3 exx. (WIOŚ 3); R. Soła, above confluence with R. Rycerka (CV68), 10 V 2007, 10 exx., 15 V 2008, 7 exx. (WIOŚ 3); Cisiec (CV69), R. Soła, 27 IV 2010, 1 ex., leg. CG; Babia Góra (CV99), Klinowy Potok str., 16-20 IX 2002, 2 exx., leg. RR; Jordanów (DV19), R. Skawa, 7 V 2009, 6 exx. (WIOŚ 5); Biała Wyżna (DV99), R. Pławianka, 29 VI 2007, 4 exx. (WIOŚ 5); Grybów (DV99), R. Strzylawka, 29 V 2007, 1 ex. (WIOŚ 5); **Nowy Targ Basin:** Jabłonka (DV08), R. Czarna Orawa, 13 V 2009, 4 exx. (WIOŚ 5); **Eastern Beskid Mts.:** Lubaszowa (EA02),

R. Biała Tarnowska, 30 V 2007, 3 exx. (WIOŚ 5); Rudawka Rymanowska (EV68), R. Wisłok, 2007, 1 ex. (WIOŚ 11); Tyrawa Solna (EV99), R. Tyrawka, 2007, 1 ex. (WIOŚ 11); **Tatra Mts.:** Western Tatra Mts. (DV15), Chochołowska Valley, Potok Chochołowski str., 25 VI 2002, 1 ex., leg. MP.

A widely distributed, European montane species, which is found in 6 regions of Poland, 5 of which are mountainous (Western and Eastern Sudetes Mts., Western and Eastern Beskid Mts., Bieszczady Mts.), and in the Mazovian Lowland, which BURAKOWSKI et al. (1983) regard as a doubtful locality because of the species' ecological requirements. Most of the records stem from more than 50 years ago. Reported ca 40 years ago from the Western Beskid Mts. (PAWŁOWSKI 1967). We present the species as new for Upper Silesia, the Nowy Targ Basin and the Tatra Mts. The species is frequent in all the Polish mountain ranges, but only single specimens are usually collected.

***Esolus parallelepipedus* (P.W.J. MÜLL.)**

**Upper Silesia:** R. Olza, confluence with R. Odra (CA03), 23 V 2007, 1 ex. (WIOŚ 3); **Eastern Beskid Mts.:** Beskid Niski Mts., Tylawa (EV57), 3 VII 2007, 1 ex., under stones in a stream, leg. MM; **Nowy Targ Basin:** Jabłonka (DV08), R. Czarna Orawa, 2007, 1 ex. (WIOŚ 5).

A European, montane species, found in 6 regions of Poland: Lower and Upper Silesia, Western and Eastern Sudetes Mts., Western and Eastern Beskid Mts., but most of the data come from the 19<sup>th</sup> or early 20<sup>th</sup> c. (BURAKOWSKI et al. 1983). Our data definitely confirm the occurrence of this species in Poland. The species is recorded for the first time in the Nowy Targ Basin.

***Limnius perrisi perrisi* (DUF.)**

**Western Beskid Mts.:** Wisła (CA40), Gahura str., 9 V 2009, 1 ex., 26 VII 2009, 1 ex., leg. CG; Brenna (CA50), Węgiński str, 31 VIII 2008, 1 ex., leg. CG; Istebna (CV49), a puddle on a road, 20 VII 2006, 1 ex., Połomity Wielki str., 26 VII 2009, 1 ex., leg. CG; "Wisła" NR (CV59), R. Czarna Wisielka, 20 VII 2006, 1 ex., leg. CG; R. Czarna Wisielka (CV59), before the knickpoint near the lake, 27 VIII 2008, 1 ex., leg. CG; Barania Góra (CV59), R. Biała Wisielka, 7 VIII 2010, 2 exx., leg. MP; Wisła (CV59), R. Czarna Wisielka, 7 VIII 2010, 3 exx., leg. MP; Milówka (CV69), Kameszniczanka str., 23 VIII 2008, 1 ex., leg. CG; Babia Góra (CV99), Klinowy Potok str., 16-20 IX 2002, 1 ex., leg. RR; Ochotnica Górna (DV48), Potok Kudowski str., 19 V 2006, 1 ex., leg. PB; Ochotnica Górna-Groniówka (DV48), Duże Jaszczce str., 18 V 2006, 10 exx., leg. PB; Gorczański NP (DV48), str. – confluence with R. Forędówka, 20 V 2006, 2 exx., leg. PB.

A widespread European species, reported from only 6 regions of Poland: Roztocze, Eastern and Western Sudetes Mts., Western and Eastern Beskid Mts., Bieszczady Mts., mostly based on data from the 19<sup>th</sup> and early 20<sup>th</sup> c. (BURAKOWSKI et al. 1983). Recently

found only once in the R. Czarna Wiselka in the Western Beskid Mts. (GREŃ 2009). In Poland present only in the mountains.

***Limnius volckmari* (PANZ.)**

**Baltic Coast:** Rekowice (VV87), R. Wołczenica, 12 VI 2008, 1 ex. (WIOŚ 12); **Pomeranian Lake District:** Pęczino (WV11), R. Pęczinka, confluence with R. Krąpiel, 23 VI 2009, 1 ex. (WIOŚ 12); Krępa Krajeńska vic. (WV70), “Nad Płociczną” NR, R. Płociczna, 27 V 2006, 13 exx., leg. RR.; Namyślin (VU63), R. Myśla, 29 VI 2007, 1 ex. (WIOŚ 12); Sitnica (WU68), R. Drawa, 18 IX 2008, 1 ex., leg. ZG; **Masurian Lake District:** Poszeszupie stream gauge (FF32), R. Szeszupa, 13 V 2008, 1 ex., 24 VI 2009, 2 exx. (WIOŚ 1); Michnowce (FF40), R. Marycha, 24 VI 2009, 1 ex. (WIOŚ 1); R. Kotlewska Struga, below Grodziczn (DE11), 25 V 2009, 7 exx. (WIOŚ 8); R. Struga Koniuszyn above its inflow to Lake Omulew (DE62), 5 V 2009, 1 ex. (WIOŚ 8); R. Dejna (Dajna) (EE18), outflow from Lake Dejnowo, 3 X 2007, 2 exx. (WIOŚ 8); Czerwony Dwór (EE79), R. Elk, Łażna Struga (Czarna Struga), 8 V 2008, 5 exx. (WIOŚ 8); Zawady Elckie (EE87), R. Elk, 8 X 2007, 1 ex. (WIOŚ 8); Sobolewo (FE39), R. Czarna Hańcza, inflow to Lake Wigry, 13 V 2009, 1 ex. (WIOŚ 1); **Wielkopolska-Kujawy Lowland:** Gorzów Wielkopolski (WU14), R. Kłodawka, 2007, 1 ex. (WIOŚ 15); Białe Błota (CD46), R. Tążyna, 2008, 2 exx. (WIOŚ 2); Wołuszewo (CD46), R. Tążyna, confluence with R. Wisła, 2008, 1 ex. (WIOŚ 2); Kolonia Falborz (CD53), R. Bachorza, confluence with R. Zgłowiączka, 2008, 1 ex. (WIOŚ 2); **Podlasie Lowland:** Kłoda Duża (FC56), R. Lutnia, 11 VI 2007, 1 ex. (WIOŚ 6); **Upper Silesia:** Miotek (CB50), R. Mała Panew, above Kalety, 24 V 2007, 5 exx. (WIOŚ 3); **Kraków-Wieluń Upland:** Pradła (DB00), R. Krztynia, 13 IX 2009, 1 ex., leg. CG; **Małopolska Upland:** Maluszyn (DB14), R. Pilica, 29 V 2008, 1 ex. (WIOŚ 7); R. Grabówka, confluence with R. Biała Nida (DB42), 24 V 2007, 1 ex. (WIOŚ 4); Faniślawiczki (DB53), R. Wierna Rzeka (Łososina), 2007, 1 ex. (WIOŚ 4); **Świętokrzyskie Mts.:** R. Warkocz, Suków-Daleszyce road (DB82), 22 V 2007, 1 ex. (WIOŚ 4); **Lublin Upland:** Pliszczyn (FB18), R. Ciemięga, 27 IV 2009, 1 ex. (WIOŚ 6); **Sandomierz Lowland:** Momoty Dolne (FB00), R. Branew, 27 V 2008, 5 exx. (WIOŚ 6); **Western Sudetes Mts.:** Makocice (XS00), R. Ścinawka, 2007, 1 ex. (WIOŚ 14); Krosnowice (XR18), R. Nysa Kłodzka, 8 V 2008, 1 ex. (WIOŚ 14); **Western Beskid Mts.:** R. Kopydło, confluence with R. Mała Wisła (CA40), 28 V 2007, 2 exx. (WIOŚ 3); R. Zlewaniec, confluence with R. Iłownica (CA42), 2009, 2 exx. (WIOŚ 3); Brenna (CA50), R. Brennica, 28 IV 2010, 1 ex., leg. CG; Białka (DA00), R. Skawica, 21 IV 2009, 1 ex. (WIOŚ 5); R. Gościbia, above the water intake (DA11), 21 IV 2009, 3 exx. (WIOŚ 5); R. Soła, above the confluence with R. Rycerka (CV68), 10 V 2007, 1 ex., 15 V 2008, 1 ex. (WIOŚ 3); Milówka (CV69), Kameszniczanka stream, 23 VIII 2008, 1 ex., leg. CG; Leluchów (DV96), R. Poprad, 3 IX 2008, 1 ex. (WIOŚ 5); Muszyna (DV96), R. Szczawnik, confluence with R. Poprad, 15 V 2008, 1 ex. (WIOŚ 5); Biała Wyżna (DV99), R. Pławianka, 29 VI 2007, 2 exx. (WIOŚ 5); **Nowy Targ Basin:** Jabłonka (DV08), R. Czarna Orawa, 2007, 3 exx., 10 IX 2008, 1 ex. (WIOŚ 5); Nowy Targ (DV38), R. Kowaniec, 6 VII 2007, 1 ex. (WIOŚ 5); **Eastern Beskid Mts.:** Topoliny (EA30), R. Ropa, 5 VI 2008, 1 ex. (WIOŚ 11); Beskid

Niski, Przybyszów vic. (EV77), 6-7 VII 2004, 1 ex., leg. RR; Tyrawa Solna (EV99), R. Tyrawka, 2007, 1 ex. (WIOŚ 11); **Bieszczady Mts.**: Rajskie (FV06), R. San, 2007, 1 ex. (WIOŚ 11).

A Western Palearctic species. In Poland reported from 14 regions: Baltic Coast, Pomeranian Lake District, Masurian Lake District, Wielkopolska-Kujawy Lowland, Mazovian Lowland, Małopolska Upland, Lublin Upland, Roztocze, Sandomierz Lowland, Western and Eastern Sudetes Mts., Western and Eastern Beskid Mts., Bieszczady Mts. In contrast to the previous species, it inhabits flowing waters in both the lowlands and the mountains (BURAKOWSKI et al. 1983, BUCZYŃSKI & KOWALIK 2005, JASKUŁA et al. 2010, BUCZYŃSKI & BUCZYŃSKA in press). Along with *E. aenea* and *E. maugetii* it is the most frequently found elmid species in Poland. We report it for the first time from the Podlasie Lowland, Upper Silesia, the Kraków-Wieluń Upland, the Świętokrzyskie Mts. and the Nowy Targ Basin.

#### ***Oulimnius tuberculatus tuberculatus* (P.W.J. MÜLL.)**

**Baltic Coast:** R. Głownica, confluence with R. Roztoka Odrzańska (VV74), 16 VI 2008, 2 exx. (WIOŚ 12); R. Świniec, inflow to Zalew Kamieński (VV88), 19 VI 2008, 1 ex. (WIOŚ 12); Ugory (VV98), R. Wolcza, 13 VI 2008, 4 exx. (WIOŚ 12); **Pomeranian Lake District:** R. Ina, below Goleniów (VV83), 28 VI 2007, 6 exx. (WIOŚ 12); Budziszowice (VV94), R. Gowienica, 6 VI 2008, 7 exx. (WIOŚ 12); Pężino (WV11), R. Pężinka, confluence with R. Krąpiel, 23 VI 2009, 1 ex. (WIOŚ 12); Rurzyca (XV10) ad Wrzosa, 3 V 2006, 6 exx., leg. RR; Skórka vic. (XU29), R. Głomia, 1 V 2007, 1 ex., leg. RR; **Masurian Lake District:** Stygajny (DF30), R. Wąsza, 4 VI 2008, 5 exx. (WIOŚ 8); Poszeszupie stream gauge (FF32), R. Szeszupa, 13 V 2008, 1 ex. (WIOŚ 1); Michnowce (FF40), R. Marycha, 24 VI 2009, 1 ex. (WIOŚ 1); Sędrowo (EE01), R. Wałpusza, 21 V 2009, 4 exx. (WIOŚ 8); Guzianka lock (EE34), inflow from Lake Nidzkie, 1 VI 2009, 1 ex. (WIOŚ 8); Czerwony Dwór (EE79), R. Ełk, Łażna Struga (Czarna Struga), 8 V 2008, 1 ex. (WIOŚ 8); Budziska (ED08), R. Orzyc, 20 V 2009, 6 exx. (WIOŚ 13); **Wielkopolska-Kujawy Lowland:** Kolonia Falborz (CD53), R. Bachorza, confluence with R. Zgłowiączka, 2008, 2 exx. (WIOŚ 2); Włocławek (CD63), R. Zgłowiączka, confluence with R. Wisła, 2008, 1 ex. (WIOŚ 2); **Mazovian Lowland:** Gutarzewo (DD64), R. Łydynia, 13 V 2008, 2 exx. (WIOŚ 13); Popielżyn (DD72), R. Sona, 26 V 2008, 35 exx. (WIOŚ 13); Dobrzankowo (DD96), R. Morawka, 2008, 2 exx. (WIOŚ 13); Borzymy (ED41), R. Osownica, 11 VI 2008, 1 ex. (WIOŚ 13); Łowicz (DC27), R. Zwierzyniec, 2007, 5 exx. (WIOŚ 7); Żabieniec (EC06), R. Czarna, 30 V 2008, 1 ex. (WIOŚ 13); Wiązowna (EC17), R. Mienia, 17 IX 2008, 11 exx. (WIOŚ 13); **Podlasie Lowland:** Sabie (ED81), R. Cetynia, 5 V 2009, 7 exx. (WIOŚ 13); Strzała (EC88), R. Liwiec, Borki Siedleckie-Strzała road, 28 V 2009, 2 exx. (WIOŚ 13); Borki (FC03), R. Bystrzyca, 13 VI 2007, 1 ex. (WIOŚ 6); Wyhalew (FC42), Wieprz-Krzna canal, 19 VI 2007, 1 ex. (WIOŚ 6); Kłoda Duża (FC56), R. Lutnia, 11 VI 2007, 1 ex. (WIOŚ 6); **Lower Silesia:** R. Kaczawa, confluence with R. Odra (WS98), 2007, 1 ex. (WIOŚ 14); **Upper Silesia:** R. Potok

Jeżowski, confluence with R. Liswarta – north of Panoszew (CB33), 15 IX 2008, 6 exx. (WIOŚ 3); Starokrzepice (CB34), R. Liswarta, below Łomnica, 19 VI 2007, 27 exx. (WIOŚ 3); Miotek (CB50), R. Mała Panew, above Kalety, 24 V 2007, 9 exx. (WIOŚ 3); R. Potok Toszecki, inflow to Lake Pławniowice (CA28), 24 VI 2008, 14 exx. (WIOŚ 3); Niezdara (CA59), R. Brynica, above Kozłowa Góra res., 27 VI 2007, 12 exx., 29 V 2008, 25 exx. (WIOŚ 3); R. Trzebyczka, confluence with R. Przemsza (CA78), 3 X 2008, 1 ex. (WIOŚ 3); **Kraków-Wieluń Upland**: Praszka (CB25), R. Proсна, 2008, 4 exx. (WIOŚ 9); Krzepice (CB44), R. Bieszczza, confluence with R. Liswarta, 10 IX 2008, 2 exx. (WIOŚ 3); Częstochowa, Krakowska street (CB62), R. Stradomka, confluence with R. Warta, 16 V 2008, 1 ex. (WIOŚ 3); **Małopolska Upland**: Słowików (DC90), R. Wiązownica, 8 V 2008, 3 exx. (WIOŚ 13); Zawady (CB55), R. Liswarta, 21 VI 2007, 8 exx. (WIOŚ 3); Borowa (CB65), R. Biała Oksza, confluence with R. Liswarta, 9 IX 2008, 1 ex. (WIOŚ 3); R. Liswarta, Kule stream gauge (CB65), 20 VI 2007, 4 exx., 5 VI 2008, 4 exx. (WIOŚ 3); Trzebca (CB65), R. Kocinka, 16 VI 2008, 141 exx. (WIOŚ 3); Jamno (CB74), R. Struga, 20 VI 2008, 1 ex. (WIOŚ 3); Żerniki (DB52), R. Nida, (Biała Nida), 2007, 7 exx. (WIOŚ 4); Fanisławiczki (DB53), R. Wierna Rzeka (Łososina), 2007, 11 exx. (WIOŚ 4); Borszowice (DB60), R. Brzeźnica, 15 VI 2007, 1 ex. (WIOŚ 4); Bzin (DB86), R. Kamienna, 12 V 2008, 25 exx. (WIOŚ 4); Skarżysko-Kamienna (DB96), R. Oleśnica, 12 V 2008, 1 ex. (WIOŚ 4); Michałów (EB05), R. Kamienna, 14 V 2008, 4 exx. (WIOŚ 4); Osuchów (EB28), R. Modrzejowica, 18 V 2008, 2 exx. (WIOŚ 13); Wola Pawłowska (EB55), R. Kamienna, 26 V 2007, 1 ex. (WIOŚ 4); Chotcza (EB57), R. Hżanka, confluence with R. Wisła, 14 VI 2008, 1 ex. (WIOŚ 13); **Świętokrzyskie Mts.**: Marysz (DB72), R. Czarna Nida, 22 V 2007, 1 ex. (WIOŚ 4); R. Warkocz, Suków-Daleszyce road (DB82), 22 V 2007, 1 ex., 25 V 2008, 1 ex. (WIOŚ 4); **Lublin Upland**: Biskupice (FB36), R. Gielczew, 7 V 2008, 1 ex. (WIOŚ 6); Puchaczów (FB38), a canal with saline water from the Bogdanka coal mine, 26 VII 2002, 1 ex., R. Świnka, 30 VI 2002, 9 exx., 26 VII 2002, 9 exx., leg. PB; Łączna (FB38), R. Wieprz, 30 VI 2002, 4 exx., 8 IX 2002, 4 exx., leg. PB; Dorohuczka (FB47), R. Rów Mokry, 4 V 2008, 37 exx. (WIOŚ 6); **Sandomierz Lowland**: Okulice (DA64), R. Gróbka, 4 VI 2008, 3 exx. (WIOŚ 5); R. Uszewka, confluence with R. Gróbka (DA75), 4 VI 2008, 1 ex. (WIOŚ 5); Płazówka (EA57), R. Przyrwa, 21 VI 2007, 2 exx. (WIOŚ 11); Szczutków (FA45) R. Lubaczówka, 19 VI 2007, 2 exx. (WIOŚ 11); **Western Beskid Mts.**: Right bank of R. Młynówka Kiczycza, confluence with R. Mała Wisła (CA32), 12 VI 2008, 26 exx., 21 V 2009, 5 exx. (WIOŚ 3); Wisła (CA40), R. Wisła, 14 VIII 2009, 1 ex., leg. CG; R. Bładnica, confluence with R. Mała Wisła (CA41), 6 VII 2007, 9 exx. (WIOŚ 3); R. Brennica, confluence with R. Mała Wisła (CA41), 9 V 2007, 1 ex. (WIOŚ 3); R. Mała Wisła (CA41), above confluence with R. Bładnica, 27 V 2008, 1 ex. (WIOŚ 3); R. Zlewaniec, confluence with R. Iłownica (CA42), 26 V 2008, 1 ex., 2009, 6 exx. (WIOŚ 3); Brenna (CA50), R. Brennica, 28 IV 2010, 1 ex. leg. CG; R. Iłownica, confluence with R. Mała Wisła (CA53), 13 VI 2008, 1 ex. (WIOŚ 3); R. Mała Wisła, below confluence with R. Iłownica (CA53), 13 VI 2008, 1 ex. (WIOŚ 3); Kunice (DA32), R. Niżowski Potok, 8 VI 2007, 12 exx. (WIOŚ 5); Winiary (DA32), R. Młynówka, 12 V 2008, 1 ex. (WIOŚ 5); Pierchów (DA43), R. Królewski Potok, 18 VI 2007, 1 ex., 12 V 2008, 7 exx. (WIOŚ 5); Jordanów (DV19), R. Skawa, 7 V 2009, 2

exx. (WIOŚ 5); Leluchów (DV96), R. Poprad, 3 IX 2008, 1 ex., 6 V 2009, 1 ex. (WIOŚ 5); **Nowy Targ Basin**: Jabłonka (DV08), R. Czarna Orawa, 2007, 5 exx., 10 IX 2008, 5 exx., 13 V 2009, 15 exx. (WIOŚ 5); **Eastern Beskid Mts.**: Topoliny (EA30), R. Ropa, 5 VI 2008, 2 exx. (WIOŚ 11).

The species has been reported from 16 regions in Poland, in both the lowlands and the mountains: Baltic Coast, Pomeranian Lake District, Masurian Lake District, Wielkopolska-Kujawy Lowland, Mazovian Lowland, Podlasie Lowland, Białowieża Primeval Forest, Lower and Upper Silesia, Małopolska Upland, Lublin Upland, Roztocze, Sandomierz Lowland, Western and Eastern Sudetes Mts., Western Beskid Mts. The species is widespread in Poland and regularly found, but usually only as single specimens. Recently found in the Pomeranian Lake District, Masurian Lake District, Mazovian Lowland, Podlasie Lowland, Białowieża Primeval Forest, Małopolska Upland, Lublin Upland, Roztocze and Sandomierz Lowland (BURAKOWSKI et al. 1983, CZACHOROWSKI et al. 1993, PAKULNICKA & BARTNIK 1999, KUBISZ 2001, KOWALIK & BUCZYŃSKI 2003, BUCZYŃSKI & KOWALIK 2004, 2005, TOŃCZYK & PAKULNICKA 2004, BUCZYŃSKI & KOWALIK 2005, NIJBOER et al. 2006, PRZEWOŹNY et al. 2006, JASKUŁA et al. 2008, BUCZYŃSKI et al. 2009, BUCZYŃSKI & PRZEWOŹNY 2009, JASKUŁA & PRZEWOŹNY 2009, JASKUŁA et al. 2010, BUCZYŃSKI et al. in press b). We report this species as new for the Kraków-Wieluń Upland, the Świętokrzyskie Mts. and the Nowy Targ Basin. Unlike the closely related *O. troglodytes*, it inhabits mainly the hyporhithral and metapotamal zones of rivers and streams, avoiding strong currents. In Scandinavia it also inhabits lakes (BOUKAL et al. 2007).

#### ***Riolus cupreus* (P.W.J. MÜLL.)**

**Eastern Beskid Mts.**: Besko (EV69), R. Wisłok, 2007, 1 ex. (WIOŚ 11); Tyrawa Solna (EV99), R. Tyrawka, 2007, 2 exx. (WIOŚ 11).

A widely distributed European species. Extremely rare in Poland – found in 3 regions only: Baltic Coast, Kraków-Wieluń Upland and Eastern Beskid Mts., mostly a century ago. Recently found only once at Prądnik Ojcowski in the Kraków-Wieluń Upland (KUBISZ & PAWŁOWSKI 1998). Found in the Eastern Beskid Mts. in the 1930s; the data from the Baltic Coast are doubtful (BURAKOWSKI et al. 1983). It inhabits much the same habitats as the closely related *R. subviolaceus*, with which it sometimes occurs (BOUKAL et al. 2007). Our findings confirm the presence of the species in Poland.

#### ***Riolus subviolaceus* (P.W.J. MÜLL.)**

**Kraków-Wieluń Upland**: Rudawka (DA05), R. Rudawa, the stretch towards the confluence with the R. Raclawka, 3 VI 2008, 1 ex. (WIOŚ 5); Dolina Będkowska (DA15), vic. “Dupa Słonia” rock, 21

V 2006, 2 exx., from a stream, leg. RR.

A widely distributed European species. Extremely rare in Poland – found in 5 regions: Kraków-Wieluń Upland, Sandomierz Lowland, Eastern Sudetes Mts., Eastern Beskid Mts. and Pieniny Mts.; most records are from the 19<sup>th</sup> and early 20<sup>th</sup> c. (BURAKOWSKI et al. 1983). Recently found just once in the Głębokki Potok in the Pieniny NP (ROSSA 2005). Very often confused with the related *R. cupreus*, but in many areas it is the more frequent species (BOUKAL et al. 2007). The species inhabits mostly stony bottoms in the epirhithral and metarhithral zones of lowland and montane streams with slow or medium-fast currents (BOUKAL et al. 2007). Our findings prove the occurrence of the species in the Kraków-Wieluń Upland.

***Macronychus quadrituberculatus* P.W.J. MÜLL.**

**Pomeranian Lake District:** Bogdanka (WU58), R. Drawa, 5 VI 2009, 1 ex. (WIOŚ 12); **Masurian Lake District:** Smokowo (EE29), R. Dejna (Dajna), 19 V 2010, 1 ex. (WIOŚ 8); **Podlasie Lowland:** Kłoda Duża (FC56), R. Lutnia, 11 VI 2007, 1 ex. (WIOŚ 6); **Sandomierz Lowland:** Ubieszyn (FA15), R. San, 14 X 2008, 2 exx. (WIOŚ 11).

A widespread European species. Until recently it was regarded as extremely rare in Poland or even of doubtful occurrence requiring verification. It was reported only from three regions: Masurian Lake District, Kraków-Wieluń Upland and Western Beskid Mts. (BURAKOWSKI et al. 1983). However, in recent years the number of its known localities has increased significantly, so in some areas it is not rare at all. In 1990s, two localities of *M. quadrituberculatus* proving its occurrence in Poland were reported, in the Lublin Upland (STANIEC 1997) and in the Eastern Beskid Mts. (BABULA 1991). After 2000, 19 more localities were found: one on the Baltic Coast (PRZEWOŻNY et al. 2009), 3 in the Mazovian Lowland (KALISIAK et al. 2003, JASKUŁA et al. 2005, PRZEWOŻNY et al. 2009), 11 in the Podlasie Lowland (BUCZYŃSKI & SERAFIN 2004, JASKUŁA et al. 2005; PRZEWOŻNY et al. 2006, BUCZYŃSKA & BUCZYŃSKI 2006, BUCZYŃSKI et al. in press b), 3 in the Małopolska Upland (KALISIAK et al. 2003) and 4 in the Lublin Upland (BUCZYŃSKI & PAŁKA 2003, JASKUŁA et al. 2005, PRZEWOŻNY et al. 2006, BUCZYŃSKA & BUCZYŃSKI 2006). Now the species is known from 9 regions, but there is still no data from western and south-western Poland. Also, there are no recent data from the Kraków-Wieluń Upland (the latest are from the 19<sup>th</sup> c.) and from the Western Beskid Mts. (data from the early 20<sup>th</sup> c.) (BURAKOWSKI et al. 1983). We report the beetle for the first time from the Pomeranian Lake District and the Sandomierz Lowland. The locality in the River Drawa at Bogdanka is the first record of the species in western Poland. Eutrophication of water bodies does not appear to have a great impact on its distribution (JASKUŁA et al. 2005, PRZEWOŻNY et al. 2009, BUCZYŃSKI et al.



in press b). The species is a xylobiont living on submerged wood (BOUKAL et al. 2007).

### Checklist

Below, we present a verified checklist of the Elmidae species found in Poland. Definitively identified species are indicated by numbers, those reported erroneously are marked “-”, and the species whose occurrence needs to be verified are marked “?”. The comments of some species are placed below the checklist.

Family: Elmidae CURTIS, 1830

Subfamily: Larinae LECONTE, 1861

Tribe: Potamophilini MULSANT & REY, 1872

Genus: *Potamophilus* GERMAR, 1811

1. *Potamophilus acuminatus* (FABRICIUS, 1792)

Subfamily: Elminae CURTIS, 1830

Tribe: Elmini CURTIS, 1830

Subtribe: Elmina CURTIS, 1830

Genus: *Dupophilus* MULSANT & REY, 1872

– *Dupophilus brevis* MULSANT & REY, 1872 <sup>1)</sup>

Genus: *Elmis* LATREILLE, 1802

2. *Elmis aenea* (P.W.J. MÜLLER, 1806)

3. *Elmis latreillei* BEDEL, 1878

4. *Elmis maugetii maugetii* LATREILLE, 1802

5. *Elmis obscura* (P.W.J. MÜLLER, 1806)

– *Elmis rioloides* (KUWERT, 1890) <sup>2)</sup>

Genus: *Esolus* MULSANT et REY, 1872

6. *Esolus angustatus* (P.W.J. MÜLLER, 1821)

7. *Esolus parallelepipedus* (P.W.J. MÜLLER, 1806) <sup>6)</sup>

?8. *Esolus pygmaeus* (P.W.J. MÜLLER, 1806) <sup>3)</sup>

Genus: *Limnius* ILLIGER, 1802

– *Limnius intermedius* FAIRMAIRE, 1881 <sup>4)</sup>

– *Limnius muelleri* (ERICHSON, 1847) <sup>5)</sup>

?9. *Limnius opacus opacus* P.W.J. MÜLLER, 1806 <sup>6)</sup>

10. *Limnius perrisi perrisi* (DUFOR, 1843)

11. *Limnius volckmari* (PANZER, 1793)

Genus: *Normandia* PIC, 1900

– *Normandia nitens* (P.W.J. MÜLLER, 1817) <sup>7)</sup>

– *Normandia sodalis* (ERICHSON, 1847) <sup>8)</sup>

Genus: *Oulimnius* GOZIS, 1886

?12. *Oulimnius troglodytes* (GYLLENHAL, 1827)<sup>9)</sup>

13. *Oulimnius tuberculatus tuberculatus* (P.W.J. MÜLLER, 1806)

Genus: *Riolus* MULSANT et REY, 1872

14. *Riolus cupreus* (P.W.J. MÜLLER, 1806)

15. *Riolus subviolaceus* (P.W.J. MÜLLER, 1817)

Subtribe: *Stenelmina* MULSANT & REY, 1872

Genus: *Stenelmis* DUFOUR, 1835

?16. *Stenelmis canaliculata* (GYLLENHAL, 1808)<sup>10)</sup>

–. *Stenelmis consobrina consobrina* DUFOUR, 1385<sup>11)</sup>

–. *Stenelmis puberula* REITTER, 1887<sup>12)</sup>

Tribe: *Macronychini* MULSANT & REY, 1872

Genus: *Macronychus* P.W.J. MÜLLER, 1806

17. *Macronychus quadrituberculatus* P.W.J. MÜLLER, 1806

<sup>1)</sup> Species reported from Poland on the basis of a single larval record from one locality in the Western Beskid Mts. (ZACWILICHOWSKA 1968). It was treated as doubtful by BURAKOWSKI et al. (1983), who did not include this species in the Polish fauna. Mostly distributed in the Mediterranean Basin, it has been found in 8 countries: Armenia, France, Georgia, Germany, Portugal, Spain, Switzerland and Turkey. All its known localities are far away from Poland (SCHÖLL 2002, JÄCH et al. 2006, KACHVORYAN et al. 2008). Its occurrence in Poland is therefore very unlikely.

<sup>2)</sup> The species was reported only once from Poland by MICHALSKI (1969). BURAKOWSKI et al. (1983) showed that this record was erroneous and did not include the species in his checklist of beetles occurring in Poland. This beetle is widespread in Europe, found in many countries from Portugal to Turkey, Lebanon and Israel. Its northernmost localities, closest to Poland, are in Germany, the south-western and eastern Czech Republic, and in Slovakia (JÄCH et al. 2006, BOUKAL et al. 2007). Hence, the species may occur in southern Poland, most likely in the western part of the Western Beskid Mts. (Beskid Śląski, Beskid Żywiecki) or in the Cieszyn region of Silesia.

<sup>3)</sup> The species is distributed mainly in the Mediterranean Basin, from Morocco to Turkey, Israel and Lebanon, with its northernmost localities in Germany and Poland (JÄCH et al. 2006, BOUKAL et al. 2007). In Poland found only in 5 regions: Baltic Coast, Mazovian Lowland, Lower Silesia, Western Sudetes Mts. and Western Beskid Mts. (BURAKOWSKI et al. 1983) – all the data are at least a century old. According to JÄCH (pers. comm.) the findings of this species in Poland are doubtful, most probably based on misidentification. The data from the Małopolska Upland (NIJBOER et al. 2006) are doubtful, given possible misidentifications by non-specialists. In the Czech Republic the species is treated as extinct – it has not been found there in the last 60 years. Regarded as threatened and very rare in

Central Europe (BOUKAL et al. 2007). Recently found in Slovakia in the Nízke Beskid Mts. (ČIAMPOR & ZAŤOVIČOVÁ 2004), some 7 kilometers from the Polish border near Łupków (Sanok district). Its recent occurrence in Poland is therefore very probable but needs verification with newly collected materials. Most probably in southern Poland the species reaches its northernmost range boundary in Europe. The beetle prefers the hyporhithral and epipotamal zones of streams and small rivers in lowlands and submontane localities up to altitudes of 300 m (BOUKAL et al. 2007).

<sup>4)</sup> The range of this species lies mostly in the Mediterranean Basin, from Morocco and North Africa to Turkey, Israel and Lebanon; its northernmost localities are in Denmark. It has not been reported from Germany (JÄCH et al. 2006, BOUKAL et al. 2007). It may occur in Poland as it has been found in three neighbouring countries: the Czech Republic, Slovakia and Ukraine (JÄCH et al. 2006). Probably all records of *Limnius muelleri* in Poland should be attributed to this species, as it is very similar and often misidentified (JÄCH, pers. comm.).

<sup>5)</sup> The distribution of this species is limited to Central Europe with 100% certain localities known only from Austria, the Czech Republic, France, Germany, Hungary and Switzerland (JÄCH et al. 2006, BOUKAL et al. 2007). Its records closest to Poland (but already ca 90 years old) come from a few localities in Moravia in the Czech Republic (BOUKAL et al. 2007). The species is regarded as extinct in most of the countries within its range (apart from France). Its sole recent locality in Central Europe is in Hungary (KOVÁCS & MERKL 2005). In Poland it was found in three regions: the Masurian Lake District, Kraków-Wieluń Upland and Western Beskid Mts., with most of the data coming from the 19<sup>th</sup> and early 20<sup>th</sup> c. It has not been reported for the last 50 years. The records from the Masurian Lake District are doubtful, as already mentioned by BURAKOWSKI et al. (1983). According to JÄCH (pers. comm.), the occurrence of this species in Poland is questionable and is most probably based on its easy confusion with *Limnius intermedius*. Therefore, we do not include this species in the Polish fauna.

<sup>6)</sup> The species is widely distributed in Europe, and is also known from North Africa (Algeria, Morocco), ranging as far as Turkey, Lebanon and Israel. Known to occur as far north as the Netherlands, Germany and Poland (JÄCH et al. 2006, BOUKAL et al. 2007). In Poland reported from 6 regions: the Baltic Coast, Pomeranian Lake District, Lower Silesia, the Kraków-Wieluń Upland, Western Sudetes Mts. and Western Beskid Mts. BURAKOWSKI et al. (1983) regarded the data from Lower Silesia as doubtful owing to the lack of voucher specimens. The beetle has not been found in our country for the last 100 years or so (BURAKOWSKI et al. 1983). In the Czech Republic considered extinct; it is known only from historical data (BOUKAL et al. 2007). Recently found in Hungary (SZIVÁK et al. 2010). Its occurrence in Poland should be verified with new material.

<sup>7)</sup> An Atlantic-Mediterranean species widely distributed in Western Europe and North

Africa, ranging east to Asia Minor, and in Europe to Belarus, Latvia and Finland (JÄCH et al. 2006, BOUKAL et al. 2007). From Poland reported generally from the former East Prussia (SEIDLITZ 1888), but BURAKOWSKI et al. (1983) cast doubt on these records and did not include the species in our fauna. The occurrence of the species in Poland is probable, however, as it occurs in three neighbouring countries: Germany, Belarus and Lithuania (JÄCH et al. 2006). The species is easily confused with species of the genus *Riolus*. Most likely it will be discovered in northern and western Poland – in the Masurian and Pomeranian Lake Districts. It inhabits streams and rivers, particularly waters rich in calcium. In Central Europe the species is probably thermophilic (BURAKOWSKI et al. 1983, BOUKAL et al. 2007).

<sup>8)</sup> A Western European species, known from only 5 countries: Spain, France, Italy, Switzerland and Germany (JÄCH et al. 2006). In Poland reported generally from the former Prussia (RÜSCHKAMP 1929). This record was questioned and regarded as unreliable by BURAKOWSKI et al. (1983) and the species was excluded from our fauna. Judging by its known distribution, the species is unlikely to occur in Poland. It is easily confused with species of the genus *Riolus*.

<sup>9)</sup> An Atlantic species, ranging from Portugal, through France and the Benelux countries to Sweden and Lithuania (JÄCH et al. 2006, BOUKAL et al. 2007). In Poland known only from four localities in three regions: Baltic Coast (Puck and its vicinity), Kraków-Wieluń Upland (the Saspówka brook in the Ojców NP), Western Beskid Mts. (Krynica), based on data from the 19<sup>th</sup> and early 20<sup>th</sup> c. (BURAKOWSKI et al. 1983). Found 40 years ago in the Ojców NP (SZCZĘŚNY 1968). Very easily confused with *Oulimnius tuberculatus* – in the Czech Republic all individuals identified as “*O. troglodytes*” were in fact this species (BOUKAL et al. 2007). The species inhabits mainly the littoral of large, often eutrophic lakes, but in the southern part of its range also inhabits small streams (BOUKAL et al. 2007). Thus, the localities in the Ojców NP are doubtful and need to be verified; likewise the records from the Beskid Mts. Only the records from the Baltic Coast are probable. Generally, the occurrence of *O. troglodytes* in Poland requires verification with new material. Most probably it will be found in northern and western Poland, in the Masurian and Pomeranian Lake Districts, as it does occur in Lithuania (JÄCH et al. 2006).

<sup>10)</sup> An Atlantic species, known mostly from Western Europe, ranging east to Ukraine (JÄCH et al. 2006, BOUKAL et al. 2007). In Poland known from two localities only (Barania Góra and Zakopane) reported by HILDT (1914). The species is threatened and very rare in Central Europe. Its most recent findings from Bavaria and Thuringia (Germany) are based on 100 year old data (BOUKAL et al. 2007). The occurrence of the species in Poland requires verification with new material.

<sup>11)</sup> The nominate subspecies of this species has been reported from scattered localities in Morocco, Tunisia, Israel, Syria, Turkmenistan, Spain, France, Italy, Bosnia and

Herzegovina, Greece, Switzerland, Germany, the Czech Republic, Hungary, and from the Caucasus Mts. A second subspecies occurs in Central Asia (JÄCH et al. 2006, CSABAI & SÁR 2007, TOUAYLIA et al. 2010). The species was recently reported for the first time in Poland from the River Bug (Podlasie Lowland) by BŁACHUTA & BŁACHUTA (2003), but its occurrence was not confirmed by PRZEWOŹNY et al. (2006) and BUCZYŃSKI et al. (in press b) after intensive fieldwork along a 250 km stretch of that river. Moreover, the species was identified only on the basis of larval specimens (BŁACHUTA pers. comm.) and no voucher specimens exist. Therefore, we will not include the species in the Polish fauna until new material has been collected and definitively identified. In any case, the presence of the species in Poland seems highly probable as it is also known from the Czech Republic (found twice during the last 35 years), yet everywhere it is regarded as critically endangered (BOUKAL et al. 2007). It will most probably be found in southern Poland.

<sup>12)</sup> A species with a poorly known, disjunct range. Distributed mostly in Asia Minor and in the Middle East (Turkey, Israel, Lebanon, Syria, Iran, Turkmenistan) and known also from Armenia, Bosnia and Herzegovina, Ukraine and Slovakia (JÄCH et al. 2006). In Slovakia found in the Nízke Beskid Mts. only 6 km from the Polish border near Łupków in the district of Sanok (KODADA et al. 2004). In Ukraine known from Bustino and Iza in Carpathian Ruthenia (KOVÁCS & MERKL 2005), some 100 and 120 km from the Polish border in the Bieszczady Mts. Thus, the presence of the species in the above-mentioned parts of Poland is probable. The species inhabits slow-flowing streams in submontane (300-400 m) areas (KODADA et al. 2004).

## DISCUSSION

Among the 17 species of Elmidae found in Poland, only 4 can be regarded as common: *Elmis aenea*, *E. maugetii*, *Limnius volckmari* and *Oulimnius tuberculatus*. *Elmis latreillei*, *E. obscura*, *Esolus angustatus*, *Limnius perrisi* and *Macronychus quadrituberculatus* can be treated as rare or very local (even if locally abundant) in Poland. Four species are very rare in Poland: *Potamophilus acuminatus*, *Esolus parallelepipedus*, *Riolus cupreus* and *Riolus subviolaceus*. Proof is needed of a further four species: *Esolus pygmaeus*, *Limnius opacus*, *Oulimnius troglodytes* and *Stenelmis canaliculata*. Another five species may be found in Poland in the future: *Elmis rioloides*, *Limnius intermedius*, *Normandia nitens*, *Stenelmis consobrina*, *S. puberula*.

Elmid beetles are rather difficult to identify by the non-specialist, as congeneric species are often extremely similar to each other and definitive determination can be based only on the morphology of the male (sometimes also female) genitalia, or through comparison with a long series of correctly identified specimens. Superficial identification results in many doubtful data, which leads to information chaos in the literature. In particular, the data from

hydrobiological and ecological works are ambiguous as they are most often based on identifications by non-specialists. Identifications based only on larval stages cannot be trusted either. Apart from *Potamophilus acuminatus*, the larvae of other species are very difficult if not impossible to determine to the species level. Most of the species erroneously reported as new for Poland were identified on the basis of larval stages, e.g. *Dupophilus brevis* by ZAĆWILICHOWSKA (1986) or *Stenelmis consobrina* by BŁACHUTA & BŁACHUTA (2003). The most accessible key to this family in Poland (WIĘŻLAK 1986) does not include all the species likely to be found in our country (*Limnius intermedius* and *Stenelmis puberula* are missing). Neither is a key to the larval stages provided. We would advise the use of the following identification keys: imagines in Central Europe – OLMÍ (1976) and STEFFAN (1979) with the supplement by JÄCH (1992); larval stages – OLMÍ (1976), KLAUSNITZER (1984) and KLAUSNITZER & RICHOUX (1996).

The data presented in our study reveal that at least some elmí species are common in Polish rivers, and their “rarity” has been the result of an unsuitable collection method (direct collection from the substrate). The proper use of a hydrobiological net for sampling (KOWNACKI & SOSZKA 2004, BIS 2007, BIS & WENIKAJTYS 2007), as well as regular sampling (e.g. within the programme carried out by the Provincial Inspectorates for Environmental Protection), give completely different results.

In the literature elmí beetles are often regarded as perfect bioindicators of good water quality (WIĘŻLAK 1986). Our results suggest that either the water quality has improved greatly since the 1980s or that at least some of the species are not so sensitive to water quality. Only such species as *Elmis obscura* and *Potamophilus acuminatus* can be treated as good bioindicators of natural river state. The former is a flightless species living in unregulated rivers with banks overgrown by trees with submerged roots. The latter is associated with dead submerged wood, which is often removed from the river bed during river regulation or dredging (JÄCH et al. 2005).

Moreover, we can expect that the above monitoring programme, initiated and coordinated by the Chief Inspectorate for Environmental Protection, will result in further revelations of the Elmidae distribution in our country. Such a large-scale sampling of benthic fauna in running waters is yielding very promising results and will undoubtedly be of assistance in faunistic studies of all macroinvertebrates inhabiting running waters in Poland.

#### REFERENCES

- BABULA P.J. 1991. Nowe stanowisko *Macronychus quadrituberculatus* (Ph. MÜLL.) (Coleoptera, Limniidae) w Polsce. *Wiadomości Entomologiczne* 10: 64.
- BIS B. 2007. Metodyka standardowych procedur laboratoryjnych dla prób makrobezkręgowców wodnych dla celów monitoringu ekologicznego zgodnego z założeniami RDW. [In:] BIS B. (ed.). *Metodyka reprezentatywnego poboru prób siedliskowych (MHS) zespołów fauny dennej z*

- różnych typów wód oraz standardowych procedur laboratoryjnych dla celów monitoringu ekologicznego rzek zgodnego z założeniami Ramowej Dyrektywy Wodnej 2000/60/WE. Opracowanie na zlecenie Głównego Inspektoratu Ochrony Środowiska. Wydawnictwo EXALL, Łódź, Rozdział II: 3-16.
- BIS B., WENIKAJTYS M. 2007. Metodyka reprezentatywnego poboru prób siedliskowych (MHS) zespołów fauny dennej w wodach trudnodostępnych i dużych rzekach dla celów monitoringu ekologicznego zgodnego z założeniami RDW. [In:] BIS B. (ed.). Metodyka reprezentatywnego poboru prób siedliskowych (MHS) zespołów fauny dennej z różnych typów wód oraz standardowych procedur laboratoryjnych dla celów monitoringu ekologicznego rzek zgodnego z założeniami Ramowej Dyrektywy Wodnej 2000/60/WE. Opracowanie na zlecenie Głównego Inspektoratu Ochrony Środowiska. Wydawnictwo EXALL, Łódź., Rozdział V: 3-15.
- BLACHUTA J., BLACHUTA J. 2003. Ocena ekologiczna Bugu na podstawie makrozoobentosu. [In:] IV Międzynarodowa Konferencja Naukowa Zagospodarowanie Zlewni Bugu i Narwii w ramach zrównoważonego rozwoju. Warszawa – Popowo, 23-24 maja 2003: 147-155.
- BOUKAL D.S., BOUKAL M., FIKÁČEK M., HÁJEK J., KLEČKA J., SKALICKÝ S., ŠTASTNÝ J., TRÁVNÍČEK D. 2007. Catalogue of water beetles of the Czech Republic (Coleoptera: Sphaeriidae, Gyrinidae, Haliplidae, Noteridae, Hygrobiidae, Dytiscidae, Helophoridae, Georissidae, Hydrochidae, Spercheidae, Hydrophilidae, Hydraenidae, Scirtidae, Elmidae, Dryopidae, Limmichidae, Heteroceridae, Psephenidae). *Klapalekiana* **43**: 1-289.
- BUCZYŃSKA E., BUCZYŃSKI P. 2006. Wstępne badania wybranych owadów wodnych (Odonata, Coleoptera, Trichoptera) doliny Bugu między Włodawą a Kodniem. [In:] KLONOWSKA-OLEJNIK M., FIAŁKOWSKI W. (eds.). XIII Ogólnopolskie Warsztaty Bentologiczne – Zastosowanie hydrologii w badaniach biologicznych wód płynących. Ochotnica – Kraków, 18-20.05.2006 r., Bel Studio, Kraków – Warszawa: 73-74.
- BUCZYŃSKI P., BUCZYŃSKA E. (in press). Pierwsze stwierdzenie *Limnius volckmari* (PANZ.) (Coleoptera, Elmidae) na Wyżynie Lubelskiej. *Wiadomości Entomologiczne* **30**.
- BUCZYŃSKI P., KOWALIK K. 2004. Nowe dane o wodnych chrząszczach (Coleoptera) obszarów chronionych Lubelszczyzny. [In:] Parki Narodowe i rezerwaty przyrody w Polsce jako naturalne ostoje europejskiej fauny owadów. Konferencja Naukowa Białowieża 17-19 września 2004, materiały zjazdowe. *Wiadomości Entomologiczne* **23**: 123-124.
- BUCZYŃSKI P., KOWALIK W. 2005. Aquatic beetles (Coleoptera) in the collection of Zoological Department of University of Agriculture in Lublin. *Annales Universitatis Mariae Curie-Skłodowska (C)* **60**: 19-39.
- BUCZYŃSKI P., PAŁKA K. 2003. Nowe stanowiska *Potamophilus acuminatus* (FABRICIUS, 1782) i *Macronychus quadrituberculatus* PH. MÜLLER, 1806 (Coleoptera, Elmidae) z południowo-wschodniej Polski. *Wiadomości Entomologiczne* **22**: 245-246.
- BUCZYŃSKI P., PRZEWOŹNY M. 2006. Stwierdzenia niektórych chrząszczy wodnych (Coleoptera: Haliplidae, Dytiscidae, Hydrophilidae, Elmidae) na Wyżynie Lubelskiej i w Beskidzie Wschodnim. *Wiadomości Entomologiczne* **25**: 57-58.
- BUCZYŃSKI P., PRZEWOŹNY M. 2009. Aquatic beetles (Coleoptera) of Wdzydze Landscape Park (Tuchola Forests, N Poland). *Nature Journal* **42**: 67-85.
- BUCZYŃSKI P., PRZEWOŹNY M., ZAWAL A., ZGIERSKA M. (in press a). On the occurrence of *Potamophilus acuminatus* (FABRICIUS, 1772) (Coleoptera: Elmidae) in Poland. *Baltic Journal of Coleopterology* **11**.
- BUCZYŃSKI P., PRZEWOŹNY M., ZIĘBA P. 2009. Aquatic beetles (Coleoptera: Adephaga, Hydrophiloidea, Staphylinoidea, Byrrhoidea) of the Polish part of the Roztocze Upland. *Annales Universitatis Mariae Curie-Skłodowska (C)* **63**: 87-112.
- BUCZYŃSKI P., PRZEWOŹNY M., ZGIERSKA M. (in press b). Biodiversity hot spot and important

- refugium of the potamocoen? Aquatic beetles (Coleoptera: Adephaga, Hydrophiloidea, Staphylinodea, Byrrhoidea) of the river Bug valley between Włodawa and Kodeń (eastern Poland). *Acta Biologica* **18**.
- BUCZYŃSKI P., SERAFIN E. 2004. O zasadności włączenia „Krowiego Bagna” do Poleskiego Parku Narodowego – na podstawie Odonata, wodnych Coleoptera i Trichoptera. [In:] Parki Narodowe i rezerваты przyrody w Polsce jako naturalne ostoje europejskiej fauny owadów. Konferencja Naukowa Białowieża 17-19 września 2004, materiały zjazdu. *Wiadomości Entomologiczne* **23**: 125-126.
- BURAKOWSKI B., MROCZKOWSKI M., STEFAŃSKA J. 1983. Chrzążce – Coleoptera. Scarabaeoidea, Dascilloidea, Byrrhoidea, Parnoidea. Katalog Fauny Polski, Warszawa, XXIII, **9**: 1-249.
- ČIAMPOR F. & ZAĽOVIČOVÁ Z. 2004. First record of *Esolus pygmaeus* (Coleoptera, Elmidae) from Slovakia. *Biologia, Bratislava* **59**: 218.
- CSABAI Z., SÁR J. 2007. *Stenelmis consobrina* DUFOUR, 1835 (Coleoptera: Elmidae): first record from Hungary. *Folia Entomologica Hungarica* **68**: 81-82.
- CZACHOROWSKI S., LEWANDOWSKI K., WASILEWSKA A. 1993. The importance of aquatic insects for landscape integration in the catchment area of the River Gizela (Masurian Lake District, northeastern Poland). *Acta Hydrobiologica* **35**: 49-64.
- FLEITUCH T. 1992. Evaluation of the water quality of future tributaries to the planned Dobczyce reservoir (Poland) using macroinvertebrates. *Hydrobiologia* **237**: 103-116.
- GRĘŃ C. 2009. Chrzążce wodne (Coleoptera: Dytiscidae, Haliplidae, Hydrophilidae, Elmidae) obszaru źródłiskowego Wisły w rezerwacie przyrody „Barania Góra” (Beskid Śląski). *Acta Entomologica Silesiana* **17**: 41-52.
- HILDT L. 1914. Krajowe owady wodne. Hydrocanthares. *Pamiętnik Fizyograficzny* **22**: 1-131.
- JÄCH M.A. 1992. 42. Familie: Dryopidae. [In:] LOHSE G.A., LUCHT W.H. (eds.). Die Käfer Mitteleuropas, 2 Supplementband mit Katalogteil. Goecke & Evers, Krefeld. Pp. 67-82.
- JÄCH M.A., DIETRICH F., RAUNIG B. 2005. Rote Liste der Zwergwasserkäfer (Hydraenidae) und Krallenkäfer (Elmidae) Österreichs (Insecta: Coleoptera). [In:] ZULKA P. (ed.). Rote Listen gefährdeter Tiere Österreichs. Checklisten, Gefährdungsanalyse, Handlungsbedarf. Part 1: Säugetiere, Vögel, Heuschrecken, Wasserkäfer, Netzflügler, Schnabelfliegen, Tagfalter (Grüne Reihe des Lebensministeriums, Vol. 14/1). Bundesministerium für Land- und Forstwirtschaft, Umwelt und Wirtschaft, Wien. Pp.: 211-284.
- JÄCH M.A., KODADA J., ČIAMPOR F. 2006. Elmidae. [In:] LÖBL I., SMETANA A. (eds.). Catalogue of Palaearctic Coleoptera, Volume **3**: 432-440.
- JASKUŁA R., BUCZYŃSKI P., PRZEWOŻNY M., WANAT M. 2005. New localities evidence that *Macronychus quadrituberculatus* P.W.J. MÜLLER, 1806 (Coleoptera: Elmidae) is not rare in Poland. *Lauterbornia* **55**: 35-41.
- JASKUŁA R., PRZEWOŻNY M. 2009. Elmidae (Coleoptera) Zaborskiego Parku Krajobrazowego. [In:] Materiały dotyczące XVI Ogólnopolskich Warsztatów Bentologicznych. Zeszyt Parku Narodowego „Bory Tucholskie” *Lobelia* **1**: 21.
- JASKUŁA R., PRZEWOŻNY M., MELKE A., SOSZYŃSKA-MAJ A. 2010. Chrzążce (Coleoptera). [In:] JASKUŁA R., TOŃCZYK G. (eds.). Owady (Insecta) Parku Krajobrazowego Wzniesień Łódzkich/Mazowiecko-Świętokrzyskie Towarzystwo Ornitologiczne. Łódź – Pionki. Pp.: 45-72.
- JASKUŁA R., PRZEWOŻNY M., SOCHA G. 2008. Elmidae (Coleoptera) Spalskiego Parku Krajobrazowego. XV Ogólnopolskie Warsztaty Bentologiczne: Bentos źródeł i strumieni, Zwierzyniec, 16-18 V 2008. Pp.: 28.
- KACHVORYAN E.A., PEPOYAN A.Z., HARUTYUNOVA M.V., MANVELYAN A.M. 2008. Ecosystems of Lake Sevan Basin's Rivers in Armenia. *World Academy of Science, Engineering and Technology* **44**: 543-547.
- KALISIAK J., JASKUŁA R., TOŃCZYK G. 2003. Rare or undiscovered: *Macronychus quadrimaculatus*



- [sic!] MÜLLER, 1806 (Coleoptera, Elmidae) in Poland – comments on distribution in the Central and Eastern Europe. *Baltic Journal of Coleopterology* **3**: 29-34.
- KLAUSNITZER B. 1984. Käfer im und am Wasser. Die Neue Brehm-Bücherei. A. Ziemsen Verlag, Wittenberg Lutherstadt, 148 pp.
- KLAUSNITZER B. & RICHOUX P. 1996. 40. Familie: Elmidae. [In:] KLAUSNITZER B. (ed.). Die Larven Der Käfer Mitteleuropa, 3 Band. Goecke & Evers, Krefeld. Pp.: 110-143.
- KODADA J., ZAŤOVIČOVÁ Z. & ČIAMPOR F. 2004. *Stenelmis puberula*: new distributional records from Slovakia. *Entomologické Problemy* **34**: 143–144.
- KONWERSKI SZ. 2004. Elmidae (Coleoptera) potoku Glinnowieckiego na terenie poligonu wojskowego na Biedrusku koło Poznania. [In:] NAMIOŤKO T., SZYWUŁA T. (eds.). Bioróżnorodność środowisk dna zbiorników wodnych. BEL Studio, Gdańsk – Warszawa. Pp.: 62-63.
- KOVÁCS T., MERKL O. 2005. Data to the Hungarian distribution of some aquatic beetles, with notes on an extralimital species (Coleoptera: Gyrinidae, Haliplidae, Elmidae, Dryopidae). *Folia Entomologica Hungarica* **66**: 81-94.
- KOWALIK W., BUCZYŃSKI P. 2003. Beetles (Coleoptera) of saline waters from „Bogdanka” stone coal mine (South-Eastern Poland). *Acta Agrophysica* **1**: 115-121.
- KOWNACKI A. & SOSZKA H. 2004. Wytyczne do oceny stanu rzek na podstawie makrobezkręgowców oraz do pobierania prób makrobezkręgowców w jeziorach. Instytut Ochrony Środowiska, Warszawa, 51 pp.
- KUBISZ D. 2001. Byrrhidae – Heteroceridae. [In:] GUTOWSKI J. M., JAROSZEWICZ B. (eds.). Katalog fauny Puszczy Białowieskiej. Instytut Badawczy Leśnictwa, Warszawa. Pp.: 155-156.
- KUBISZ D., PAWŁOWSKI J. 1998. Suplement do znajomości chrząszczy (Coleoptera) Ojcowskiego Parku Narodowego i jego otuliny (w 145 rocznicę rozpoczęcia inwentaryzacji faunistycznej w Ojcowie). *Prace Muzeum Szafera* **11-12**: 293-323.
- MICHAŁSKI K. 1969. *Helmis maugei* BED. w wodach Pojezierza Kaszubskiego. *Przegląd Zoologiczny* **13**: 50-53.
- NIJBOER R., VERDONSCROT P., PIECHOCKI A., TOŃCZYK G., KLUKOWSKA M. 2006. Characterisation of Pristine river systems and their use as reference conditions for Dutch river systems. Alterra, Wageningen, 221 pp.
- OLMI M. 1976. Coleoptera Dryopidae, Elminthidae. *Fauna d'Italia* **12**. Edizioni Calderini, Bologna, vii + 280 pp.
- PAKULNICKA J., BARTNIK W. 1999. Changes in the fauna of aquatic beetles (Coleoptera aquatica) in Lake Lutenskie (Olsztyn Lake District) in 1981-1993. *Fragmenta Faunistica* **42**: 71-93.
- PAWŁOWSKI J. 1967. Chrząszcze (Coleoptera) Babiej Góry. *Acta Zoologica Cracoviensa* **12**: 419-665.
- PRZEWOŹNY M. 2010. Nowe stanowisko *Elmis obscura* (P.W.J MÜLLER, 1806) (Coleoptera: Elmidae) w Polsce. *Wiadomości Entomologiczne* **29**: 123.
- PRZEWOŹNY M., BUCZYŃSKI P., MIELEWCZYK S. 2006. Chrząszcze wodne (Coleoptera: Adepaha, Hydrophiloidea, Byrrhoidea) doliny Bugu w województwie lubelskim (południowo-wschodnia Polska). *Nowy Pamiętnik Fizjograficzny* **4**: 23-54.
- PRZEWOŹNY M., GEMBARZEWSKA Z., GLAZACZOW A., KONWERSKI SZ. 2009. Nowe stanowiska *Macronychus quadrituberculatus* PH. MÜLLER, 1806 (Coleoptera: Elmidae) w Polsce. *Wiadomości Entomologiczne* **28**: 278-279.
- ROSSA R. 2005. *Riolus subviolaceus* (Ph. MÜLLER, 1817) (Coleoptera: Elmidae) w Pieninach. *Wiadomości Entomologiczne* **24**: 52-53.
- RÜSCHKAMP F. 1929. Zur rheinischen Käferfauna VI. *Entomologische Blätter* **25**: 172-180.
- RUTA R. 2005. Potwierdzenie występowania *Elmis aenea* (PH. MÜLLER) w Polsce niżowej. *Wiadomości Entomologiczne* **24**: 189-190.
- RUTA R. 2009. Chrząszcze (Insecta: Coleoptera) Rynny Jezior Kuźnickich ze szczególnym

- uwzględnieniem rezerwatu przyrody „Kuźnik”. [In:] OWSIANNY P.M. (ed.). Rynna Jezior Kuźnickich i rezerwat przyrody Kuźnik – bioróżnorodność, funkcjonowanie, ochrona i edukacja. Muzeum Stanisława Staszica w Pile, Piła. Pp.: 150-177.
- SCHÖLL F. 2002. Das Makrozoobenthos des Rheins 2000. 68. Plenarsitzung – 2./3. Juli 2002 – Luxemburg. Internationale Kommission zum Schutz des Rheins. Bericht Nr. 128-d: 1-49.
- SEIDLITZ G. 1888. Fauna Transsylvanica. Die Käfer Siebenbürgens. I. und II. Lieferung. Königsberg, pp. I-XL, 1-48, 1-240.
- STANIEC B. 1997. Nowe stanowisko *Macronychus quadriturberculatus* PH. MÜLLER, 1806 (Coleoptera, Limniidae). Wiadomości Entomologiczne **15**: 250.
- STEFFAN A.W. 1979. 42. Familie: Dryopidae. [In:] FREUDE H., HARDE K.W., LOHSE G.A. (eds.). Die Käfer Mitteleuropa, Band 6. Goecke & Evers, Krefeld. Pp.: 265-294.
- SZCZĘSNY B. 1968. Fauna denna potoku Saspówka na terenie Ojcowskiego Parku Narodowego. Ochrona Przyrody **33**: 215-235.
- SZIVÁK I., DEÁK C., KÁLMÁN Z., SOÓS N., MAUCHART P., LÖKKÖS A., ROZNER G., MÓRA A., CSABAI Z. 2010. Contribution to the aquatic macroinvertebrate fauna of the mountains Mecsek with the first record of *Limnius opacus* P.J.W. MÜLLER, 1806 in Hungary. Acta Biologica Debrecina: Supplementum Oecologica Hungarica **21**: 197–222.
- TOŃCZYK G., PAKULNICKA J. 2004. Wstępna analiza wybranych grup owadów wodnych (Odonata, Heteroptera i Coleoptera) Łodzi. [In:] P. INDYKIEWICZ, T. BARCZAK (eds.). Fauna miast Europy Środkowej 21. wieku. Wyd. LOGO, Bydgoszcz: 95-101.
- TOUAYLIA S., BEJAOUI M., BOUMAIZA M., GARRIDO J. 2010. Contribution à l'étude des Coléoptères aquatiques de Tunisie: Les Elmidae CURTIS, 1830 et les Dryopidae BILLBERG, 1820 (Coleoptera). Nouvelle Revue d'Entomologie (N.S.) **26**: 1675-175.
- WIĘZŁAK W.W. 1986. Pamidae, Limniidae, Psephenidae. [In:] Klucze do Oznaczania Owadów Polski, XIX, 48-49, 67 pp.
- ZACWILICHOWSKA K. 1968. Bottom fauna in the basin of the River Kamienica Nawojowska. Acta Hydrobiologica **10**: 319-341.

Received: April 29, 2011

Accepted: May 20, 2011