THREE NEW *HYDRAENA* SPECIES IN LITHUANIA (COLEOPTERA: HYDRAENIDAE)

PAWEŁ BUCZYŃSKI[1], GIEDRĖ VIŠINSKIENĖ[2], MAREK PRZEWOŹNY[3]

[1]Maria Curie–Skłodowska University, Department of Zoology, Akademicka Str. 19, PL-20-033 Lublin, Poland. E-mail: pawbucz@gmail.com
[2]Vilnius University, Institute of Ecology, Akademijos 2, LT-08412 Vilnius-21, Lithuania. E-mail: giedre@ekoi.lt
[3]Adam Mickiewicz University, Faculty of Biology, Department of Systematic Zoology, Umultowska Str. 89, PL-61-614 Poznań, Poland. E-mail: marekprzewozny@poczta.onet.pl

Introduction

According to the latest check-lists (Pileckis & Monsevičius, 1995, 1997) and later publications, approximately 3400 species of beetles were recorded in Lithuania. Aquatic beetles are poorly known. Hydraenidae is the poorest studied family as only four species belonging to the genus *Hydraena* Kugelann, 1794 are known in Lithuania: *H. britteni* Joy, 1907, *H. gracilis* Germar, 1824, *H. palustris* Erichson, 1837, and *H. riparia* Kugelann, 1794. The number of known species is higher in neighbouring countries: 21 are known from Poland (Przewoźny, 2004), including seven species registered near Lithuanian south-eastern regions (e.g. Burakowski *et al.*, 1976; Czachorowski *et al.*, 1993; Majewski, 1998). More detailed studies of aquatic invertebrates in various habitats of different waterbodies should significantly increase the list of Lithuanian species.

In order to fill the gaps in the knowledge on Lithuanian fauna, the authors present data on three species recorded for the first time in this country. Brief information about their habitats is also included.

Material and Methods

The research of Coleoptera as the component of aquatic bentic macroinvertebrates was carried out in rivers of Southern and Eastern Lithuania. The samples were collected by hydrobiological hand net monthly from April till October in 2004. The habitat, physical and chemical parameters were studied at least three times per year and amount of organic matter was measured in August and October in each study site. The geographic coordinates were taken using GPS receiver.

Sparse deciduous trees were present on the banks of studied rivers. Aquatic vegetation presented in each study site: *Ranunculus* spp. were stated in all rivers; *Potamogeton* spp. – in the Merkys river; stones overgrown with aquatic moss in the Virinta and the Grūda rivers; not numerous green filamentary algae observed in the Grūda and the Ūla rivers. For all rivers, the pH values (about 8) and low concentration of phosphates (0–0,25 mg/l) were similar. The physical and chemical parameters possibly necessary for the further ecological studies of *Hydraena* species are presented in Table 1.

The material was collected by G. Višinskienė and identified by P. Buczyński and M. Przewoźny. The material is deposited in the collections of Maria Curie-Skłodowska University (Lublin, Poland) and Adam Mickiewicz University (Poznań, Poland). The nomenclature of beetles follows M.A. Jäch (2004).

List of localities (Fig. 1):

Anykščiai district	Virinta river	55°25’39”N, 25°03’54”E
Varėna district	Grūda river	54˚07’07”N, 24˚18’35”E
	Merkys river	54˚06’26”N, 24˚16’33”E
	Ūla–Pelesa river	54˚07’42”N, 24˚27’45”E

Table 1. Parameters of the studied rivers (average ± SD or min–max, * - data from Gailiušis *et al*., 2001).

River	Basin area* km^2	*Length** km	Temperature C°	Velocity m/s	Depth cm	NO_3 mg/l	NO_2 mg/l	Amount of oxygen mg/l	Total hardness mmol/l	*Organic matter* mgO_2/l	Bottom structure
Merkys	3781	190,2	10,6±2,8	0,73±0,1	20–80	0–5	0–0,01	9,33±0,8	2,67±0,1	3,1±0,8	gravel
Grūda	239	36,2	11,4±2,9	0,83±0,2	20–40	0–1	0–0,01	9,8±0	2,4±0,1	3,2±1,3	stones
Ūla-Pelesa	451,2	84,4	11,8±2,6	0,6±0,2	10–50	1–10	0–0,25	8,97±0,8	2,8±0,2	4,15±3,2	pebble
Virinta	566,3	59,1	11,9±4,1	1,0±0	20–80	0–10	0–0,35	9,43±0,9	3,27±0,2	3,55±1,2	stones

Fig 1. Localities of new *Hydraena* species registered in Lithuania in 2004 (1 – the Virinta, 2 – the Merkys, 3 – the Grūda, 4 – the Ūla–Pelesa rivers)

List of species

***Hydraena* (*Hydraena*) *pulchella* German, 1824**
Grūda r., 10 06 2004, 1 spec.; Merkys r., 19 10 2004, 2 spec.
***Hydraena* (*Hydraena*) *reyi* Kuwert, 1888**
Ūla–Pelesa r., 18 08 2004, 1 spec.; Virinta r., 12 09 2004, 2 spec.
***Hydraena* (*Hydraena*) *minutissima* Stephens, 1829**
Virinta r., 12 04 2004, 1 spec., 13 06 2004, 1 spec.

Discussion

According to Jäch (2004), there are 355 species belonging to the genus *Hydraena* in Palaearctic. Of these, 192 species were recorded in Europe. Approximately 30 species are found in the Middle Europe (Klausnitzer, 1997). New species are still being described. The low number of species known from Lithuania so far, even after the increase to seven, indicates the urgent need of research on the distribution of the representatives of the genus discussed.

The recorded species are widely distributed in Europe and are known from 21–26 countries. All of them are also present in Poland, however, they are rare there. *H. reyi* was recorded from Estonia and *H. pulchella* from Belarus, Estonia and Latvia (Mahler, 2004; Przewoźny, 2004; Alonso-Zaranzaga & Jäch, 2007).

The record of *H. pulchella* and *H. reyi* in Lithuania filled the gap in already known picture of distribution of this species in the Middle Europe. The northern border of distribution area of *H. reyi* crosses Estonia, of *H. pulchella* –Russian Fennoscandia (Mahler, 2004; Alonso-Zaranzaga & Jäch, 2007).

The different situation is in the case of *H. minutissima.* The record of this species in Lithuania is interesting due to the zoogeographic reasons. The area of its distribution reaches Ireland and Great Britain in the West of Europe; nevertheless, in the centre of the continent, according to the current data, it reaches Germany and Poland only (Alonso-Zaranzaga & Jäch, 2007). This decline of maximum latitude is particularly well observed in Poland: in the West of the country this species was recorded from the northernmost regions (Baltic Coastland, Pomeranian Lake District), in the East – only in the southern areas (Roztocze Upland) (Burakowski *et al.*, 1976). Theoretically, it can partially result from incomplete data. However, north-eastern part of Poland has been studied systematically for years in case of aquatic beetles by the researchers from scientific centre from Olsztyn (e.g. Biesiadka & Pakulnicka, 2004; Czachorowski *et al.*, 1993, 2000; Pakulnicka, 2008; Pakulnicka & Bartnik, 1999). The study site from Lithuania seems to be strongly isolated (disjunction ca. 300–350 km). Moreover, it is situated farther to the north than the study sites in Ireland (Tierney *et al.*, 2002) and at the same latitude as in study sites in Scotland (Foster, 2001).

Similarly as the large group of Central European representatives of the genus *Hydraena*, the recorded species are regarded as stenotopes of running waters. In Poland, all of them were determined as rheophiles (Przewoźny, 2004). Moreover, B. Klausnitzer (1997) has found *H. minutissima* and *H. pulchella* as bryophiles, and *H. minutissima* as well as *H. reyi* as species typical for mountain brooks. However, their geographic distribution shows that despite the fact that they are more frequent in mountain areas, they also can find good conditions for the development in countries and regions with low

absolute heights. The habitats of those species found in Lithuania seemed to be rather typical.

The analysis of data from adjacent countries (Aleksandrovich *et al.*, 1996; Alonso-Zaranzaga & Jäch, 2007; Przewoźny, 2004; Telnov, 1997) indicates that there are still many non-recorded species of *Hydraena* in Lithuania. Due to the zoogeographic reasons (a vast area surrounding Lithuania or at least reaching farther to the north), the certain candidates will be *H. excisa* Kiesenwetter, 1849 and *H. nigrita* Germar, 1824. With smaller but not marginal probability, at least 10 other species may be found as well. This confirms the thesis about the urgency of studies on *Hydraenidae* in Lithuania. Very fruitful co-operation could be with coleopterologists and specialists of running water ecology who collect large amount of beetles while conducting macrozoobenthic analyses or biomonitoring studies.

Acknowledgements

The authors are grateful to Edyta Buczyńska for the linguistic help and Kęstutis Arbačiauskas for kind assistance with map illustration.

References

Aleksandrovitch O. R., Lopatin I. K., Pisanenko A. D., Tsinkevitch V. A., Snitko S. M. 1996. *A catalogue of Coleoptera (Insecta) of Belarus.* Minsk.

Alonso-Zaranzaga M. A. & Jäch M. A. 2007. Hydraenidae. In *Fauna Europaea, ver. 1.3.* Available from http://www.faunaeur.org.

Biesiadka E., Pakulnicka J., 2004. Chrząszcze wodne (Coleoptera) Łomżyńskiego Parku Krajobrazowego Doliny Narwi. *Parki Narodowe i Rezerwaty Przyrody* 23: 427–447.

Burakowski B., Mroczkowski M., Stefańska J. 1976. *Katalog fauny Polski, XXIII, 4. Chrząszcze Coleoptera. Adephaga prócz Carabidae, Myxophaga, Polyphaga: Hydrophiloidea.* Warszawa.

Czachorowski S., Grużewski S., Pakulnicka J. 2000. Chruściki Trichoptera i chrząszcze wodne Coleoptera źródeł i ich odpływów okolic Drozdowa (północno-wschdonia Polska). *Przegląd Przyrodniczy* 11: 25–28.

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 Districts, northeastern Poland). *Acta Hydrobiologica* 35: 49–64.

Foster G. 2001. *Atlas of Scottish Water Beetles.* Edinburgh.

Gailiušis B., Jablonskis J., Kovalenkovienė M. 2001. *Lietuvos upės (Hidrografija ir nuotėkis)*. Kaunas.

Jäch M. A. 2004. Hydraenidae. In I. Löbl, A. Smetana (eds.) *Catalogue Of Palaearctic Coleoptera, 2.* Stensrup, 102–122.

Klausnitzer B. 1997. *Käfer im und am Wasser.* Magdeburg – Heidelberg – Berlin – Oxford.

Mahler V. 2004. Some waterbeetles (Hydraenidae, Scirtidae, Elmidae) new to Estonia. *Baltic Journal of Coleopterolology* 4: 55–56.

Majewski T. 1998. Nowe i rzadkie Hydraenidae i Hydrochidae (Coleoptera) w Polsce. *Acta entomologica silesiana* 5–6: 21–23.

Pakulnicka J., 2008. The formation of water beetle fauna in anthropogenic water bodies.

Oceanological and Hydrobiological Studies 37: 31–42.
Pakulnicka J., Bartnik W., 1999. Changes in the fauna of aquatic beetles (Coleoptera aquatica) in Lake Luterskie (Olsztyn Lake District) in 1981–1993. *Fragmenta Faunistica* 42: 71–93.
Pileckis S., Monsevičius V. 1995. *Lietuvos fauna. Vabalai 1.* Vilnius.
Pileckis S., Monsevičius V. 1997. *Lietuvos fauna. Vabalai 2.* Vilnius.
Przewoźny M. 2004. Hydraenidae. In Bogdanowicz W., Chudzicka E., Pilipiuk I., Skibińska E. (eds). *Fauna of Poland. Characteristics and checklist of species.* Warszawa, 151–159.
Telnov D., Barsevskis A., Savich F., Kovalevsky F., Berdnikov S., Doronin M., Cibulskis R., Ratniece D. 1997. Check-List of Latvian Beetles (Insecta: Coleoptera). *Mitteilungen des Internationalen Entomologischen Vereins e.V. Suppl. 5*: 1–141. (online edition http://leb.daba.lv/)
Tierney D., Bradley C., Kelly-Quinn M., Murray D. 2002. Modern records of *Hydraena minutissima* Stephens, 1829 and of *Agabus biguttatus* Olivier, 1795 (Coleoptera) from Ireland. *Bulletin of the Irish Biogeographical Society* 26: 220–223.

Trys naujos *Hydraena* rūšys (Coleoptera: Hydraenidae) Lietuvoje

P. BUCZYŃSKI, G. VIŠINSKIENĖ, M. PRZEWOŹNY

Santrauka

Pateikiami duomenys apie 2004 metais Virintos (Anykščių raj.), Merkio, Grūdos, Ūlos–Pelesos (Varėnos raj.) upėse rastas 3 naujas Lietuvos faunos vabalų (Coleoptera: Hydraenidae) rūšis – *Hydraena pulchella* Germ., *H. reyi* Kuw. ir *H. minutissima* Steph. Kiekvienai rūšiai nurodomos datos, individų skaičius, radvietės ir būdingi biotopai. Aptariami *Hydraena* rūšių paplitimo Europoje ypatumai, pasiskirstymo Lietuvoje galimybės.

Received: October 9, 2008