

New data on the macrofauna of Lake Fertő, Hungary

By

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Abstract. In the course of zoological investigations on Lake Fertő, some new species for its Hungarian area were discovered. Species from the following taxa were found for the first time in this lake: Hirudinoidea 1, Heteroptera 4, Coleoptera 8 and Trichoptera 1 species. Two of these species, *Salda muelleri* (Gmelin, 1790) and *Tricholeiochiton fagesii* (Guinard, 1879) are new elements for the fauna of Hungary, too.

Lake Fertő (Austrian part named Neusiedler See) is a typical example of shallow lakes with a relatively large surface. This lake is of special interest from limnological point of view due to its extreme shallowness and high salinity, which make an unbalanced system to the lake. The first zoological records on this area are from the beginning of the 20's (Horváth, 1923). Scientific results on the lake were published by disciplines in the papers of the Fertő Basin Committee (Andrikovics & Berczik, 1975; Lászlóffy, 1972). Work carried out in Austrian part of the lake was summarised by Löffler (Löffler, 1979). During the 1970's a detailed long-term macrofauna study was carried out on the submerse macrophyte stands of Lake Fertő by Andrikovics (1973, 1979). After a longer break, new macrofauna investigations have started in recent years. Results of these studies are published in the present article.

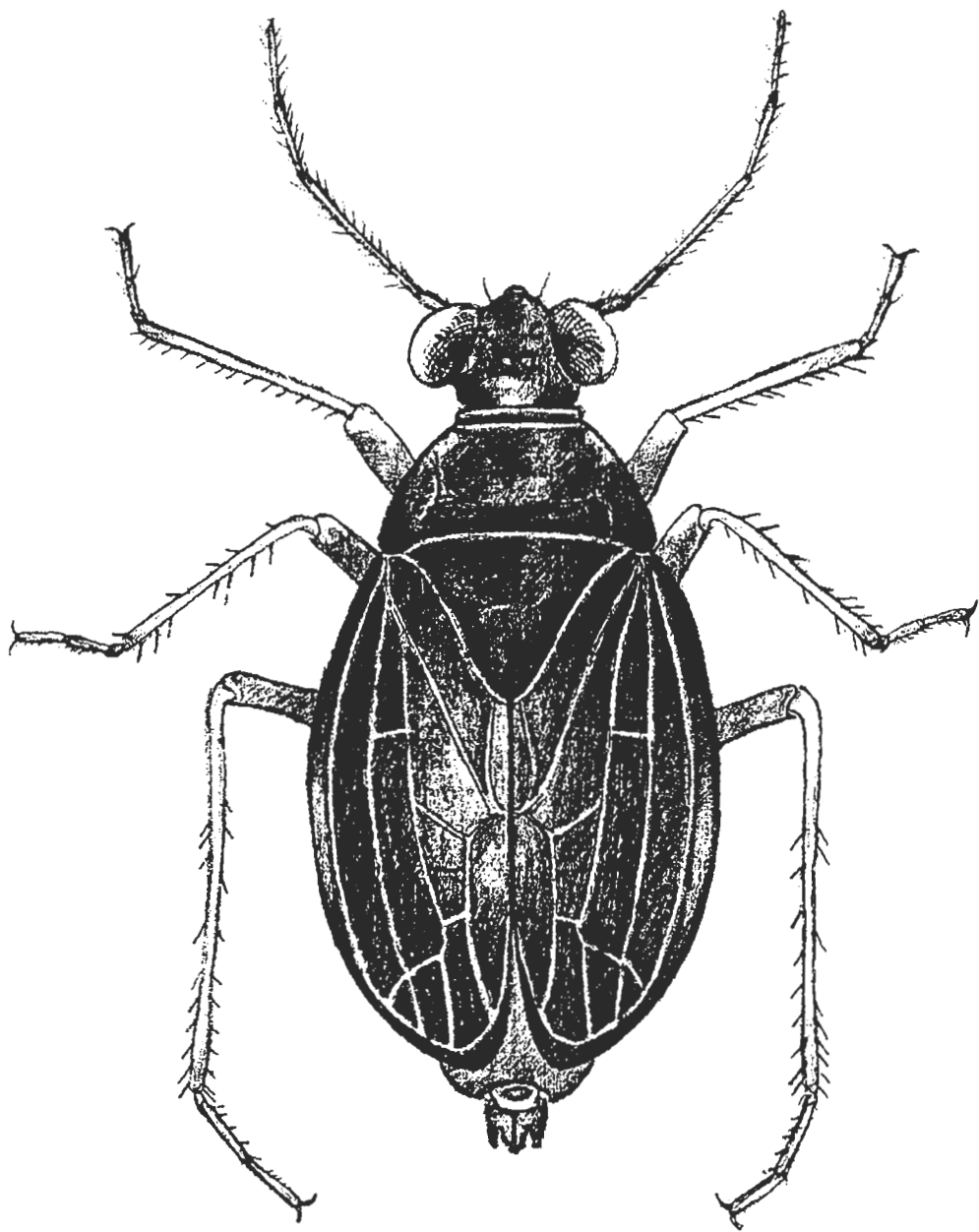
Materials and methods

(1) Under the guidance of the late Dr. Imre Loksa, a large number of pitfall traps were put out by the Department of Systematic Zoology and Ecology of the Eötvös Loránd University to investigate the fauna elements of the lake from 1982 to 1986. The aquatic-, semiaquatic- and shore bugs were completely identified from the collected material.

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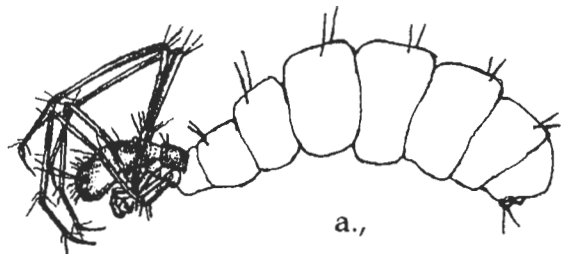
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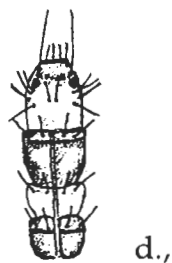
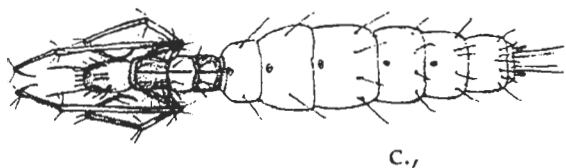
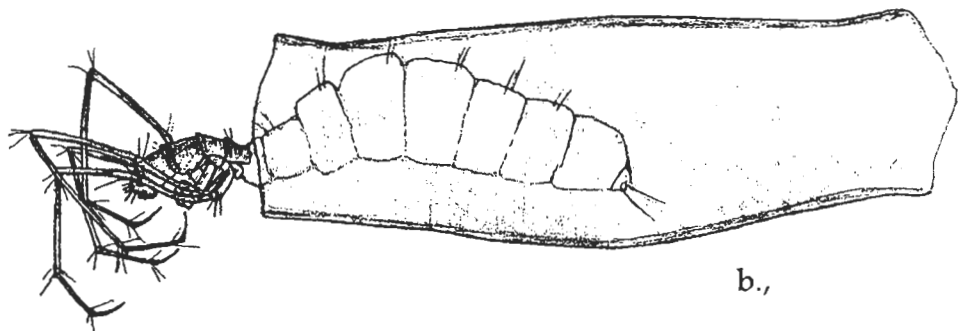


2 mm

Fig. 1. *Salda muelleri* (Gmelin, 1790), a heteropteran species new to the fauna of Hungary



1 mm



5 mm

Fig. 2. *Tricholeiochiton fagesii* (Guinard, 1879), a trichopteran species new to the fauna of Hungary.

(2) We investigated the macroinvertebrate communities of floating dead reed remains (*Phragmites australis*) at Lake Fertő in 1995-96. Animals were collected seasonally by surface netting and washing out from five sampling sites of different characteristics (open water edge of reed, smaller and larger inner ponds etc.) (Varga, 1997).

(3) *In situ* studies following the speed of reed degradation have been done since 1995 at Lake Fertő in the framework of EUREED, the complex reed research programme of the European Union. A determined quantity of reed stem and leaves were put into separate litter bags (made out of 1 mm mesh size nets) and fixed in the water at approximately 30 cm above the lake bottom, at two sites (Herlakni pond; 300 meter south-east from the Hydrometeorological Station at Fertőrákos - called Reed 3 area). Litter bags were put out in November, 1995. Two reed stem and two leaf samples were collected monthly from each site from April, 1996. Macroinvertebrates were washed out from the samples directly after the sampling procedure. Zoological analysis was made in every second months. Till now, a preliminary analysis of the material from April, June, August, October and December of 1996 and March of 1997 was carried out (Varga & Berczik, 1998).

For species identification, the following keys were used: Benedek, 1968, 1969; Freude et al., 1971; Jansson, 1986; Péricart, 1990; Richoux, 1982; Savage, 1989; Soós, 1968; Vásárhelyi, 1990; Wallace et al., 1990; Waringer & Graf, 1997.

New species for the fauna of Lake Fertő (Hungarian part)

Hirudinoidea

Erpobdella monostriata Gedroyc (3)

Heteroptera

Micronecta scholtzi Fieber [Corixidae] (2)

Microvelia reticulata Burmeister [Veliidae] (2)

Salda muelleri (Gmelin) [Saldidae] (1)

Chartoscirta elegantula Fallén [Saldidae] (1)

Coleoptera

Halipplus variegatus Sturm. [Haliplidae] (2)

**Noterus clavicornis* De Geer [Dytiscidae]

**Bidessus unistriatus* Schrank [Dytiscidae]

Limnebius aluta Bedel [Hydrophilidae]

Cercyon obsoletus Gyll. [Hydrophilidae]

Ptenidium sp. [Hydrophilidae]

**Scirtes* sp. larva [Helodidae]

Trichoptera

Tricholeiochiton fagesii (Guinard) [Hydroptilidae] (2,3)

*Known earlier from the Austrian part of Lake Fertő (Löffler, 1979).

Salda muelleri (Gmelin, 1790)

Salda is a Holarctic genus consisting of 17 species. Nine species have Palearctic distribution, six species live in Europe. No representative of this genus has been found in Hungary so far. *S. muelleri* is a 4.6–7 mm long, dark coloured animal with light legs. Hemelytra black, slightly dotted. Medialis cell of the membrane distally not reaching to the neighbouring cells (Fig. 1). Distributed throughout the western Palearctic, though it was also found in Kazakhstan and moreover, even from the Kamchatka Peninsula. In Europe it is widely distributed, but not common. The occurrence of this species was expected in the north-west part of Hungary, since it had already been found in both Slovakia and Austria (Aukema & Rieger, 1995). It is generally believed to be a mountain species. This species usually appears in wet detritus in littoral zone of running waters. Its feeding habits are not known, probably it mostly predares. – Locality: 3 specimens, Hegykő, 1985.

Tricholeiochiton fagesii (Guinard, 1879)

Fully grown larvae 3.5–4 mm long. Thoracic segments long, abdomen characteristically curved. The 1st and 2nd abdominal segments are much smaller (narrower and lower) than the following ones. The largest segment is the 4th. The 2nd and 3rd pair of legs four to five times longer than the 1st one. They are more or less equal to the entire body lengths (Fig. 2).

This species is the only representative of the genus. It has a Western-Palearctical distribution. Since the species had already been found in the neighbouring countries, it was also expected to occur in Hungary (Botosaneanu-Malicky, 1978). Habitats favoured by this species are lakes or slowly flowing rivers with a dense macrophyton vegetation. Case is made out of saliva secretion by the final (V.) instars only. Case is sac-shaped with thin transparent walls, laterally strongly flattened, anterior and posterior ends of case similar shape. The larvae feed on periphyton and fine organic particles (Lepneva, 1966; Wallace et al., 1990). – Localities: Kisherlakni pond, V. 1995, Hidegségi pond, V., VII., X. 1996, washed, reed 3, IV. 1996, stem VI., VIII., X., stem, leaf, III. 1997, leaf.

These data also emphasize that the faunistical investigations on the fauna of Lake Fertő are not completed yet. There is need for further investigations, which can produce a lot of new results.

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REFERENCES

1. ANDRIKOVICS, S. & BERCIK, Á. (1975): A Fertő-táj bioszférája. – A Fertő-táj mnográfiáját előkészítő adatgyűjtemény. 3. kötet: Természeti adottságok. Vizgazdálkodási Tudományos Kutató Intézet, Budapest: 423–534.
2. ANDRIKOVICS, S. (1973): Hidroökológiai és zoológiai vizsgálatok a Fertő hínárosaiban. – *Állatt. Közlem.*, 60: 39–50.
3. ANDRIKOVICS, S. (1979): Fertői makrofauna társulások hidroökológiai viszonyai. – Kandidátusi értekezés, Budapest: 1–157.
4. AUKEMA, B. & RIEGER, C. (1995): Catalogue of the Heteroptera of the Palaearctic Region. – The Netherland Entomological Society, Amsterdam, Vol.1 i-xxvi + 1–222.
5. BENEDEK, P. (1968): Saldids new to Hungarian fauna. – *Folia Entomol. Hung.*, 21: 365–367.
6. BENEDEK, P. (1969): Poloskák, VII. – Heteroptera, VII. – In: *Fauna Hungariae*, XVII: 1–86.
7. BOTOSANEANU, L. & MALICKY, H. (1978): Trichoptera. – In: Illies, J. (Ed.): *Limnofauna Europaea*. 2. Auflage, Stuttgart-New York-Amsterdam: 333–359.
8. FREUDE, H., HARDE, K. W. & LOHSE, G. A. (1971): *Die Käfer Mitteleuropas*. Band 3. – Goecke & Evers Verlag, Krefeld: 1–365.
9. HORVÁTH, G. (1923): A Fertő-tónak és közvetlen környékének Hemiptera faunája. – *Ann. Hist.-Nat. Mus. Nat. Hung.*, XX: 182–199.
10. JANSSON, A. (1986): The Corixidae (Heteroptera) of Europe and some adjacent regions. – *Acta Entomol. Fenn.*, 47: 1–94.
11. LÁSZLÓFFY, W. (szerk.) (1972): A Fertő-táj bibliográfiája. – Győr: 104–113.
12. LEPNEVA, S. G. (1966): Trichoptera. – *Fauna of the USSR*. (English translation.) 2: 388–391.
13. LÖFFLER, H. (1979): Neusiedlersee: The limnology of a shallow lake in Central Europe. – The Hague-Boston-London: 1–543.
14. PÉRICART, J. (1990): Hemipteres Saldidae et Leptopodidae d'Europe occidentale et du Maghreb. – In: *Fauna de France*, 77: 1–238.
15. RICHOUX, P. (1982): *Coleopteres aquatiques*. – University Claude Bernard, Lyon I.: 106–301.
16. SAVAGE, A. (1989): Adults of the British aquatic Hemiptera: key with ecological notes. – *FBA* 50: 1–173.
17. SOÓS, Á. (1968): Identification key to the species of the genus *Erpobdella* de Blainville, 1818 (Hirudinoidea: Erpobdellidae). – *Ann. Hist.-Nat. Mus. Nat. Hung.*, Budapest, 60: 141–145.
18. VARGA, I. (1997): A fertői avas nád-felhalmozódások makroinvertebrata együttese. – Thesis: 1–46.
19. VARGA, I. & BERCIK, Á. (1998): Macroinvertebrate communities in reed litter. – *Verh. Int. Ver. Limnol.*, 27 (in press).
20. VÁSÁRHELYI, T. (1990): Family-key to the larvae of true bugs of Hungary (Heteroptera). – *Folia Entomol. Hung.*, LI: 149–161.
21. WALLACE, I. D., WALLACE, B. & PHILIPSON, G. N. (1990): A key to the case-bearing caddis larvae of Britain and Ireland. – *Freshwater Biol. Assoc. Sci. Publ.*, 51: 70–79.
22. WARINGER, J. & GRAF, W. (1997): *Atlas der österreichischen Köcherfliegenlarven unter Einschluss der angrenzenden Gebiete*. – *Facultas Univ.-Verl.*, Wien: 1–286.