Notes on the Taxonomy and Biology of Leeches of the Genus *Helobdella* Blanchard 1896 (Hirudinea: Glossiphioniidae)

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With 1 Figure and 1 Table

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Abstract

The European leech *Helobdella striata* Kutschera 1985 was renamed as *H. europaea*, since the species-name *striata* was found to be preoccupied. The most important features separating *H. europaea* from the similar American species *H. triserialis* are compiled in a table. It is shown, that *H. europaea* and *H. triserialis* differ also in their host specificity.

Introduction

The genus *Helobdella* was established by Blanchard in 1896 and comprises small glossiphioniid leeches characterized by one pair of eyes, diffuse salivary glands, maximally 6 pairs of crop caeca and one annulus between the gonopores (Blanchard 1896, Soos 1969, Sawyer 1986). The vast majority of the described species are distributed in South- and North America (Soos 1969, Sawyer 1972, 1986). Until recently only one *Helobdella*-species was known from Europe, *H. stagnalis* L. 1758 (AUTHUM 1958, Sawyer 1986). In 1982 I discovered a new *Helobdella*-species in a brook nearby Freiburg i.Br., West Germany and described this leech as *H. striata* (Kutschera 1985). The reproductive biology and parental care of *H. striata* was reported recently (Kutschera and Wirtz 1986).

In the meantime, I discovered that the species-name *striata* is preoccupied. Ringelet (1943) described a new variety of the common polymorphic American species *H. triserialis* E. Blanchard 1849 (syn. *H. lineata* Verrill 1872), *H. triserialis* var. *striata* nov. var. Since this leech was found to be different from *H. triserialis* in anatomical features Ringelet considered it later as a separate species, *H. striata* Ringelet (1978).

In the present contribution I have renamed *H. striata* Kutschera (1985) and reported, which features separate this second European *Helobdella*-species form its similar American relative, *H. triserialis*.

Material and Techniques

Approximately 100 *H. triserialis*-specimens were collected from the underside of stones and leaves in two different waters in California: Stow Lake, Golden Gate Park, San Francisco, and an unnamed creek in Stanford. The leeches were kept at room temperature (18–24°C) in aquaria or petri dishes
which contained a few aquatic plants from the leeches' habitats. For anatomical studies fixed specimens were cut at 10 μm and stained in haematoxylin and eosin using standard techniques.

Results and Discussion

Genus Helobdella Blanchard 1896

*Helobdella europaea* syn. *H. striata* Kutscher 1985

*H. europaea* is well separated from *H. stagnalis* by morphological and anatomical features (Kutscher 1985). *H. europaea* resembles the polymorphic warm-water species *H. triserialis* which is widely distributed in South- and North America (Kutscher 1985, Sawyer 1986). In the following Tab. 1 I have compiled the most important features separating *H. europaea* from *H. triserialis*, based on *H. triserialis*-specimens collected in California.

Fig. 1 shows the morphology of the crop (stomach) of both species after feeding. *H. striata* Ringuelet (1978) differs from *H. triserialis* basically by a distinct reproductive system. This species is only known from Central and North Argentina and Uruguay (Ringuelet 1943, 1978).

<table>
<thead>
<tr>
<th>Feature</th>
<th><em>H. europaea</em></th>
<th><em>H. triserialis</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>body length [mm]</td>
<td>15—18</td>
<td>15—27</td>
</tr>
<tr>
<td>body width [mm]</td>
<td>4—6</td>
<td>5—8</td>
</tr>
<tr>
<td>pigmentation on neural annulus</td>
<td>1—5 white spots</td>
<td>6 white spots</td>
</tr>
<tr>
<td>pairs of crop caeca</td>
<td>5, not branched</td>
<td>6, branched</td>
</tr>
<tr>
<td>pairs of testes</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>ovaries</td>
<td>2, not branched</td>
<td>2, branched</td>
</tr>
<tr>
<td>hosts</td>
<td>oligochaeta (<em>Tubifex</em>), watersnails, crustaceans (<em>Asellus aquaticus</em>)</td>
<td>watersnails, bivalves (<em>Pisidium</em>)</td>
</tr>
<tr>
<td>color of specimens fixed in 80% ethanol</td>
<td>white</td>
<td>brown</td>
</tr>
</tbody>
</table>

![Diagram](image-url)

Fig. 1. Crop of *H. europaea* and *H. triserialis* after feeding. 1—6: number of pairs of crop caeca.
The hosts of *H. europaea* are oligochaeta (*Tubifex*), watersnails (*Physa acuta, Radix peregra*) and crustaceans (*Asellus aquaticus*) (Kutschera 1985). In captivity the leeches preferred *Tubifex*-worms as hosts over watersnails and *Asellus aquaticus*, i.e. in the presence of all three potential hosts the *Tubifex*-worms were sucked off first (unpublished results). Moreover, *H. europaea* carrying young on their ventral side were found to feed their offspring with captured *Tubifex*-worms (Kutschera and Wirtz 1986).

In contrast to *H. europaea*, *H. triserialis* was found under laboratory conditions to feed on a variety of different watersnails and bivalves (*Pisidium*), see Sawyer (1986). In order to determine, whether *H. triserialis* feeds also on oligochaeta I have kept 10 adult *H. triserialis* (5 carrying young) isolated in petri dishes in the presence of *Tubifex*-worms as a potential host. None of the leeches took up haemolymph from the *Tubifex*-worms over the next subsequent 4 weeks. Likewise the young carried on the belly of 5 of the leeches took up no food. After 4 weeks watersnails (*Physa gyrina*) were added to the dishes. Within one h the leeches sucked off the blood of the snails; the young took up food by sucking with the parent on the host. This experiment was repeated three times with the same result.

This shows that *H. triserialis* does ignore the preferred host of *H. europaea*, i.e. the two species are well separated by their host specific. In summary the results of the present report indicate that *H. europaea* and *H. triserialis* are two well separated species.

**Acknowledgement**

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**References**


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