

## One new species and one new record of *Helotrephes* (Insecta: Hemiptera: Heteroptera: Helotrephidae) from Laos

H. Zettel\*

### Abstract

This study reports two species of *Helotrephes* STÅL, 1860 from Houaphan Province in Laos. *Helotrephes laoticus* sp.n. is a new species of the *H. jendeki* group. *Helotrephes shepardi* ZETTEL & POLHEMUS, 1998 of the *H. semiglobosus* group is recorded from Laos for the first time.

**Key words:** Heteroptera, Helotrephidae, *Helotrephes*, new species, first record, Laos.

### Zusammenfassung

Diese Arbeit behandelt zwei Arten von *Helotrephes* STÅL, 1860 aus der Provinz Houaphan in Laos. *Helotrephes laoticus* sp.n. ist eine neue Art aus der *H. jendeki* Gruppe. *Helotrephes shepardi* ZETTEL & POLHEMUS, 1998 aus der *H. semiglobosus* Gruppe wird erstmals aus Laos nachgewiesen.

### Introduction

Helotrephidae, or hemispherical backswimmers, are extremely diverse in southeastern Asia. Compared to neighboring Thailand, the helotrephid fauna of Laos is poorly known, although high diversity and many undescribed species are expected. For example, a new subgenus and species of Limnotrephini were recently described from this country (PAPÁČEK & ZETTEL 2011).

ZETTEL & POLHEMUS (1998) reported three species of *Helotrephes* STÅL, 1860 from Laos: *Helotrephes australis* ZETTEL & POLHEMUS, 1998, *Helotrephes nieserianus* ZETTEL & POLHEMUS, 1998 (both members of the *Helotrephes australis* group), and an unidentified species of the *H. sausai* species group (“near *H. major* ZETTEL & POLHEMUS, 1998”). In the present study, I report on a sample of *Helotrephes* STÅL, 1860 that originated from northeastern Laos and is deposited in the Natural History Museum Vienna. I describe a new species of the *H. jendeki* species group and report the first record of *H. shepardi* ZETTEL & POLHEMUS, 1998, a species of the *H. semiglobosus* species group, from Laos.

### Material and methods

Specimens were dry-mounted and glued on cards. Genitalia of males and the subgenital plate (sternum 7) of a female were dissected. The right legs of the holotype of *H. laoticus* sp.n. were dissected for Figure 2. All these parts have been glued on the cards together

\* Dr. Herbert Zettel, Entomological Department, Natural History Museum Vienna, Burgring 7, 1010 Vienna, Austria (herbert.zettel@nhm-wien.ac.at)

with the corresponding specimens. Material is referenced by citing the original labels, which are marked with “”; the backslash sign \ indicates the break of a line. Evaluation of hind-wing morphs (brachypterous or macropterous) was performed by examination of the claval fractures of the forewing (absent in brachypterous morph). The description of the new species primarily was made using a Nikon SMZ800 binocular microscope. Terminology follows ZETTEL & POLHEMUS (1998). Drawings (Figs. 1–5) were prepared using a camera lucida fixed to the microscope. Figures 6–9 were taken with a Leica DFC camera attached to a Leica MZ16 binocular microscope and processed Leica Application Suite software. They were then stacked with ZereneStacker 64-bit and processed with Adobe Photoshop 7.0.

### *Helotrephes laoticus* sp.n. (Figs. 1–7)

**Etymology:** This species is named after its country of origin, Laos. The epithet is a Latinized adjective.

**Holotype:** Hindwing-macropterous male (dissected) labelled “LAOS: Xamneua State\ a creek betw. Salesi & Ph. Pan\ alt. 1453 m\ 20°13'07.1"N/103°59'58.9"E\ 20, 23.V.2004, leg. M.L.Jeng” (Natural History Museum Vienna).

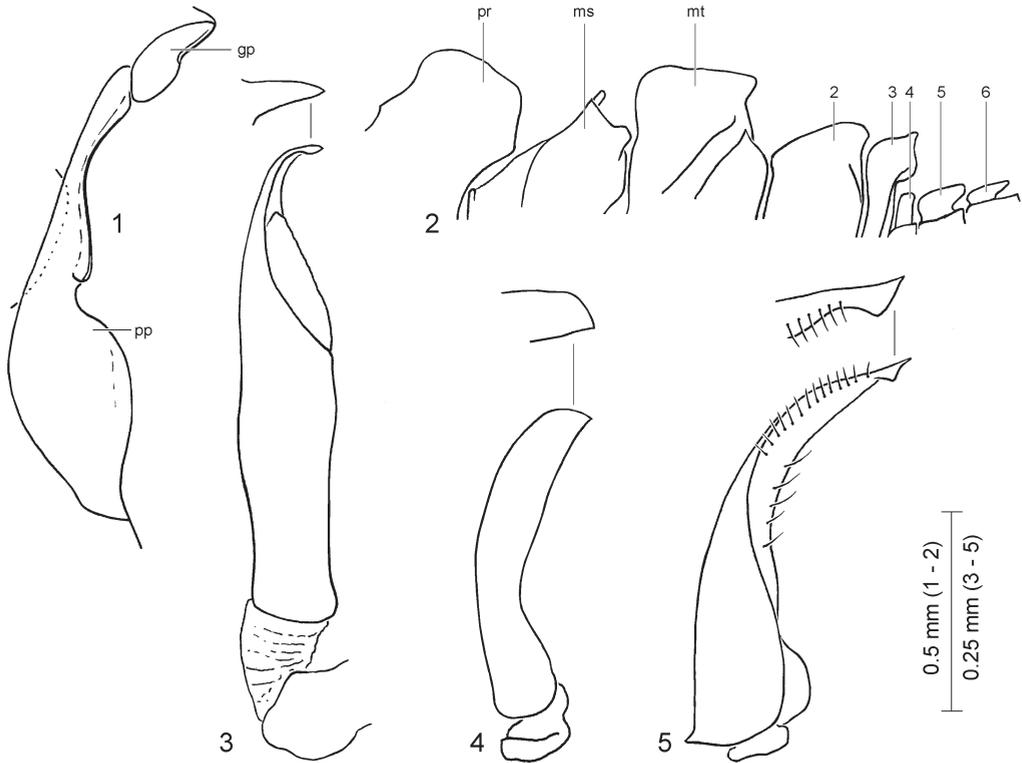
**Type locality:** Northeastern Laos, Houaphan Province, Xam Neua (alternative spelling: Sam Neua) State, south of Xam Neua city, “between Salesi and Ph. Pan”, N 20°13'07.1" E 103°59'58.9", 1,453 m a.s.l. (coordinates taken from label data).

**Description of hindwing-macropterous male:** Size: length 3.07 mm, width 2.08 mm.

Colour (Figs. 6, 7): Dorsum yellow, with blackish brown marks. Head yellow with wide, clearly delimited blackish mark along midline, not reaching anterior head margin. Pronotum, mesoscutellum and hemielytra with numerous, small, rather evenly distributed, partly confluent dark brown marks. Anterior margin of mesoscutellum narrowly black. Venter yellow to dark brown. Legs and antennae yellowish. Rostrum brown.

Cephalonotum shiny. Head with small punctures most sparse along midline; their distance ca. 0.5–4.0 times as large as their diameter; interspaces mostly with fine micro-punctures, except on midline, most densely set along anterior margin. Pronotum with very fine and widely scattered punctures, those on anterior disc about half as large as punctures on head, those near hind margin even smaller and more shallow, only those near lateral margins slightly larger; interspaces smooth. Genal plate very narrow; pronotal plate anteriorly very narrow, at mid-length with distinct, approximately semi-circular incision (Fig. 1). Mesal corner of propleural plate truncate. Eye index (minimum distance between eyes : maximum width of eye measured orthogonally to midline) = 2.5. Fourth rostral segment 2.2 times as long as segment 3. Mesoscutellum 0.9 times as long as wide; punctures of similar size as those on head, their distances about 1–4 times as large as their diameters; interspaces smooth and shiny. Punctures of hemielytron anteriorly very large, increasing in size posteriorly, their relative distances decreasing from base to apex (0.2–1.5 times the diameter of punctures); interspaces mostly smooth and shiny.

Ventral carinae (Fig. 2): prosternal carina with very blunt posterior corner, posterior-distal edge straight; mesosternal carina apically with short tip; metasternal carina with



Figs. 1–5: *Helotrephes laoticus* sp.n., male holotype: (1) Pronotal (pp) and genal plate (gp), ventrolateral aspect. (2) Ventromedian carinae, right aspect, venter turned upward; carinae on prosternum (pr), mesosternum (ms), metasternum (mt), and abdominal sterna 2–6. (3–5) genitalia of male, right aspect, with apical view of structures added: (3) aedeagus; (4) right paramere; (5) left paramere.

distal edge almost straight, posteriorly with short, rounded tip; carina of sternum 2 long; carina of sternum 3 distally rhomboidal; carina of sternum 4 short and high; carinae of sterna 5 and 6 well developed, low and long, posteriorly acute.

Genitalia: Aedeagus (Fig. 3) elongated, widest at mid-length, with long, curved, in apical view strongly acuminate apex. Left paramere (Fig. 5) with very large basal lobe, strongly curved and almost evenly tapered toward apex; distal part with row of short setae; apex triangular. Right paramere (Fig. 4) slightly shorter than left paramere, relatively stout, widest in distal half; apex truncated.

**Comparative notes:** *Helotrephes laoticus* sp.n. belongs to the *H. jendeki* species group sensu ZETTEL & POLHEMUS (1998), which contains three other described species: *Helotrephes jendeki* ZETTEL, 1995 and *H. guizhouensis* ZETTEL, 2004 from southern China (Jianxi and Guizhou, respectively), and *H. porntipae* ZETTEL & POLHEMUS, 1998 from northern Thailand (Chiang Mai) (ZETTEL 1995, 2004, ZETTEL & POLHEMUS 1998). All species are montane, known only from their type localities, and probably locally endemic. *Helotrephes laoticus* sp.n. is most similar to *H. porntipae*, with similar genitalic structures of the male and dense puncturation of hemielytra, whereas *H. jendeki* and *H. guizhouensis*



Figs. 6–9: Habitus, dorsal and frontal aspect. (6, 7) *Helotrephes laoticus* sp.n., male holotype (cephalonotal width 2.08 mm). (8, 9) *Helotrephes shepardi*, female from Laos (cephalonotal width 2.48 mm).

have widely spaced punctures on their hemielytra and *H. jendeki* has strongly different genitalia (male of *H. guizhouensis* unknown). In *H. laoticus* sp.n., the apex of the aedeagus is more curved than in *H. porntipae* and the punctures of the dorsum are generally smaller. There are considerable differences between both species in the shapes of mid-ventral carinae, especially on the prosternum, mesosternum, metasternum (with highly raised posterior tip in *H. porntipae*), and abdominal sternum 4.

***Helotrephes shepardi* ZETTEL & POLHEMUS, 1998** (Figs. 8–9)

**Material examined:** Two hindwing-micropterous males (both dissected) and five hindwing-micropterous females (one dissected) “LAOS: Xamneua State\ a creek betw. Salesi & Ph. Pan\ alt. 1453 m\ 20°13' 07.1"N/103°59'58.9"E\ 20, 23.V.2004, leg. M.L.Jeng” (Natural History Museum Vienna).

**Notes:** *Helotrephes shepardi* originally was described by a mixed series of two sibling species. Subsequently, PAPAČEK & KOVAC (2001) described *H. senckenbergi*, and ZETTEL (2005) analysed the distribution and morphological divergence of the two species. *Helotrephes shepardi* is recorded from mountainous areas in southwestern China, northern Thailand, and northern Vietnam. The new material represents the first record from Laos. ZETTEL (2005) pointed out that “the *H. shepardi-senckenbergi* complex consists of isolated mountain populations with specimens mostly unable to fly” and “it seems advisable to check the status of several populations of *H. shepardi*, ... eventually also by molecular studies”. Figures 8–9 illustrate habitus and colour pattern of a hindwing-micropterous *H. shepardi* specimen for the first time. Morphologically the Laotian specimens fall well within the variability of *H. shepardi*; the similar shapes of the females' subgenital plates indicate close relationships of populations from northern Laos and northern Vietnam.

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