



## **LEUCTRA PINHOTI, A NEW SPECIES OF STONEFLY (PLECOPTERA: LEUCTRIDAE) FROM ALABAMA, U.S.A.**

**Scott A. Grubbs<sup>1</sup> & Andrew L. Sheldon<sup>2,3</sup>**

<sup>1</sup>Department of Biology and Center for Biodiversity Studies  
Western Kentucky University Bowling Green, KY, U.S.A. 42101  
E-mail: [scott.grubbs@wku.edu](mailto:scott.grubbs@wku.edu)

<sup>2</sup>Division of Biological Sciences University of Montana  
Missoula, Montana, U.S.A. 59812

<sup>3</sup>Current address: 16 Bryant St., Crawfordville, FL, U.S.A. 32327  
E-mail: [andysheldon@comcast.net](mailto:andysheldon@comcast.net)

---

### **ABSTRACT**

*Leuctra pinhoti* sp. n. is described from the Talladega National Forest region of eastern Alabama, U.S.A. *Leuctra pinhoti* sp. n. is distinguished from other members of the *L. biloba* species group mainly by the unique dorsal process on the male 8<sup>th</sup> abdominal tergum. A new Alabama state record of *Diploperla robusta* Stark & Gaufin is reported.

**Keywords:** Plecoptera, Leuctridae, *Leuctra*, Alabama, new species

---

### **INTRODUCTION**

The stonefly genus *Leuctra* Stephens (Plecoptera: Leuctridae) displays a broad Holarctic distribution, with approximately three-fourths of the ca. 200 described species known from Europe (Harper & Harper, 2003). In the Nearctic Region *Leuctra* is found mainly east of the Mississippi River, Lake Superior, and Hudson Bay Basins, becoming increasing diverse in the Cumberland Plateau, Appalachian Mountain and Upper Piedmont regions. In total, 26 Nearctic species are currently recognized (Harper & Harper, 1997). As part of a broader study of the stoneflies of the Talladega National Forest region of eastern Alabama, we discovered an undescribed species of *Leuctra* from small streams draining the state's second highest mountain. Although we anticipate completing this study by the end of 2010, we are describing this species herein to make the name

available for a review of the Leuctridae of eastern North America (Harper & Harper, in progress). Specimens are deposited at the Illinois Natural History Survey (INHS) and Western Kentucky University (WKU). Terminology follows Harper & Harper (1997, 2003).

### **RESULTS AND DISCUSSION**

*Leuctra pinhoti* sp. n.  
(Figs. 1–8)

**Material examined.** Holotype ♂, U.S.A., Alabama, Cleburne Co., unnamed tributary to South Fork Terrapin Creek, Talladega National Forest, 33°52.671N, 085°33.282W, 22 May 2006, A.L. Sheldon (INHS). Additional paratypes: same as Holotype but 3 ♂ (INHS, WKU); unnamed tributary to South Fork

Terrapin Creek, Talladega National Forest, 33°52.790N, 085°34.026W, 11 May 2005, 1 ♂, A.L. Sheldon (WKU); unnamed tributary to South Fork Terrapin Creek, Talladega National Forest, 33°53.059N, 085°34.520W, 22 May 2006, 1 ♂, A.L. Sheldon (WKU); unnamed tributary to South Fork Terrapin Creek, Talladega National Forest, 33°53.188N, 085°33.352W, 17 May 2008, 5 ♂, S.A. Grubbs (WKU).

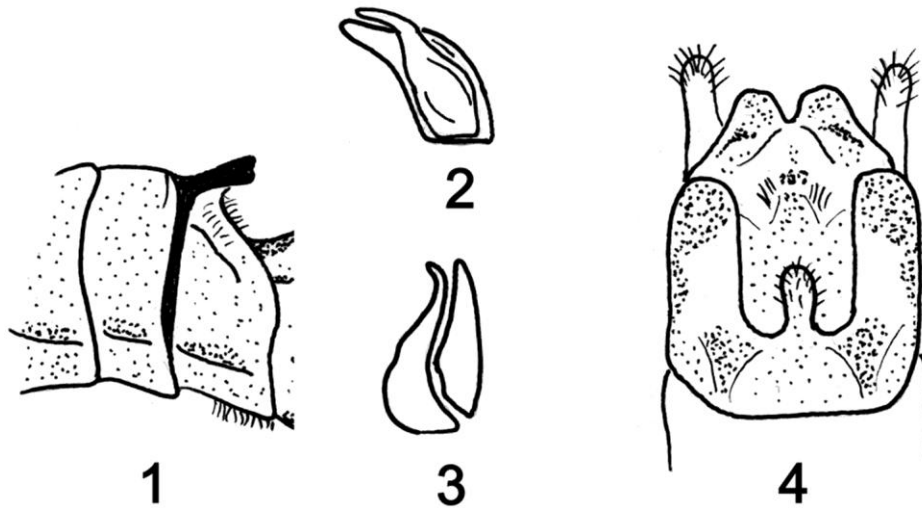
**Male.** Forewing length 5.5–6.0 mm. General body color and wings brown, typical of the genus. Cerci tubular and unmodified, typical of genus. Abdominal terga 1–7 unmodified. Abdominal tergum 8 with mesal portion unsclerotized, lateral margins lightly sclerotized; a darkly sclerotized anterior band expanded medially into a narrow dorsal process ca. 1/6<sup>th</sup> of segment width, extending beyond middle of segment, process narrowing slightly beyond base before expanding posteriorly to a slightly medially concave tip, appearing arcuate

when viewed anterodorsally due the presence of small lateroapical lobes (Figs. 1, 5–6). Specilla thickened and broad basally, in lateral view, proximal 2/3<sup>rd</sup> subrectangular in shape with subtriangular distal 1/3<sup>rd</sup> and rounded tip, toothed posteriorly along distal half (Figs. 2–3, 7–8). Lateral styles flattened and subtriangular basally, sinuate and tapering to an apically acute, anterodorsally-directed tip (Figs. 2–3, 7–8). Vesicle simple and gourd-like, with long hairs directed posteroventrally (Fig. 4).

**Female.** Unknown.

**Larva.** Unknown.

**Etymology.** The specific name, used as a noun in apposition, refers to the type locality positioned at a crossing of the Pinhoti National Recreation Trail. Pinhoti was an Upper Creek (= Muskogean) Native Americans village located in this region. The common name, Pinhoti Needlefly, is proposed for this species (Stark et al. 1998).



Figs. 1–4. *Leuctra pinhoti*, male. 1. Terminalia, lateral view; 2. Lateral view of specillum and lateral style; 3. Caudal view of specillum and lateral style; 4. Terminalia, ventral view.

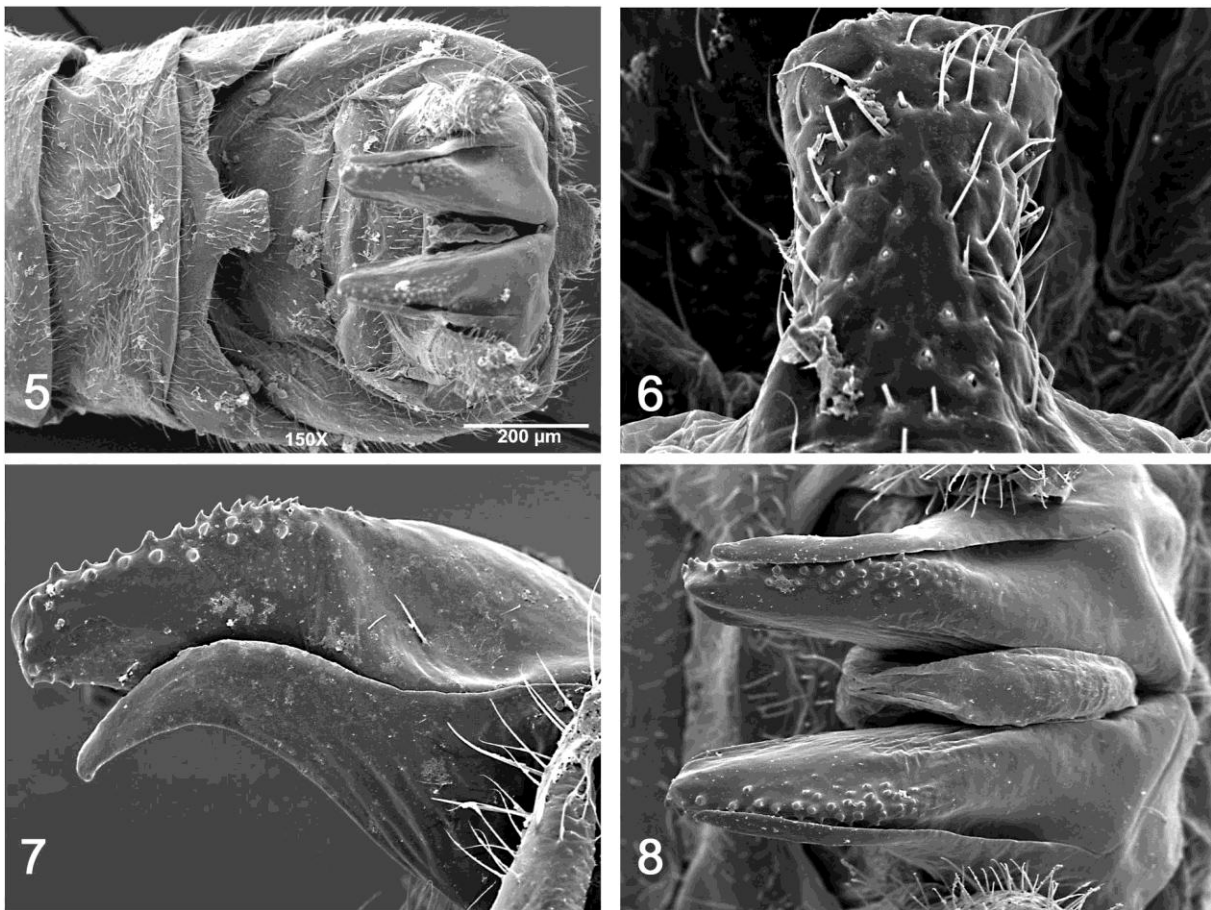
**Diagnosis.** According to the Nearctic species groups defined recently by Harper & Harper (1997), *Leuctra pinhoti* belongs to the *L. biloba* Claassen group with *L. alexanderi* Hanson, *L. biloba*, *L. mitchellensis* Hanson, *L. monticola* Hanson and *L. nephophila* Hanson. The male

of *L. pinhoti* possesses a well-developed process on the 8<sup>th</sup> abdominal tergum, the specilla (= subanal lobes) are broadened basally with toothed outer margins, and the lateral styles (= paraprocts) are flattened and recurved anterodorsally.

*Leuctra pinhoti* can be distinguished from the other members of the *L. biloba* group mainly by the width and shape of the 8<sup>th</sup> abdominal dorsal process (Hanson, 1941a,b; Harper & Harper, 1997). The dorsal process of *L. pinhoti* is only ca. 1/6 the width of the 8<sup>th</sup> tergum, contrasting markedly from *L. alexanderi* (ca. 1/3), *L. biloba* (1/3), *L. mitchellensis* (ca. 1/3), *L. monticola* (ca. 1/2) and *L. nephophila* (ca. 1/4). Although the shape of the dorsal process of *L. pinhoti* (i.e. narrow beyond base, but expanding slightly distally) is similar to *L. alexanderi*, *L. mitchellensis* and *L. monticola*, it is easily distinct from these three species due to the clearly narrower profile as seen in dorsal view. The strongly bilobed dorsal process of *L. biloba* and the presence of the broad subapical shoulders of the dorsal process prior to the tear-drop shaped apical portion of *L. nephophila* are both

distinct from *L. pinhoti*.

**Remarks.** The type locality is an unnamed headwater stream draining the eastern flanks of Dugger Mountain, Alabama's second highest peak at 650 m A.S.L. that is located in the Dugger Mountain Wilderness Area in Talladega National Forest. Despite intensive collecting efforts throughout the Talladega region we have yet to collect this species from other drainages. *Alloperla chloris* Frison, *A. usa* Ricker, *Amphinemura nigritta* (Provancher), *Beloneuria jamesae* Stark & Szczytko, *Eccoptura xanthenes* (Newman), *Hansonoperla cheaha* Kondratieff & Kirchner, *Leuctra grandis* Banks, *Sweltsa onkos* (Ricker), *Tallaperla laurie* (Ricker) and *T. maria* (Needham & Smith) have been collected with *L. pinhoti*.



Figs. 5–8. *Leuctra pinhoti*, scanning electron micrographs, male. 5. Terminalia, dorsal view, 150X; 6. Dorsal process of 8<sup>th</sup> abdominal tergum, 1000X; 7. Lateral view of specillum and lateral style, 500X; 8. Caudal view of specilla and lateral styles, 350X.

### New Alabama state records

*Diploperla robusta* Stark & Gaufin is distributed broadly along the Appalachian Mountains from Connecticut southwest to Tennessee and west to Indiana (Kondratieff, 2004). This species was collected recently from a Cumberland Plateau stream in northeastern Alabama, representing a new state record and a small southern range extension.

**Material examined.** U.S.A., Alabama, DeKalb Co., South Sauty Creek, Rte. 35, 4 km NW Rainsville, 7 May 2008, 1 ♂, S.A. Grubbs (WKU).

### ACKNOWLEDGEMENTS

Boris Kondratieff, Colorado State University, confirmed the novel identity of this species. Bill Stark (Mississippi College) and an anonymous referee provided helpful comments to improve this manuscript.

### REFERENCES

- Hanson, J.F. 1941a. Records and descriptions of North American Plecoptera. Part I. New species of *Leuctra* of the eastern United States. *American Midland Naturalist*, 26:174–178.
- Hanson, J.F. 1941b. Studies on the Plecoptera of North America, II. *Bulletin of the Brooklyn Entomological Society*, 36:57–66.
- Harper, P.P. & F. Harper. 1997. The genus *Leuctra* Stephens in North America: a preliminary report. Pages 467–472. *In* Landolt, P & M. Sartori, editors. *Ephemeroptera & Plecoptera: Biology-Ecology-Systematics*. Fribourg, MTL.
- Harper, P.P. & F. Harper. 2003. Comparison of Nearctic and Palaearctic species groups of *Leuctra*: affinities and origin of the North America fauna (Plecoptera: Leuctridae). Pages 219–223. *In* Gaino, E., editor. *Research Update on Ephemeroptera and Plecoptera*. University of Perugia, Italy.
- Kondratieff, B.C. 2004. Perlodidae - Perlodinae (The Springflies). Pages 149–192. *In* B.P. Stark & B.J. Armitage, editors. *Stoneflies (Plecoptera) of Eastern North America*. Volume II. Chloroperlidae, Perlidae, and Perlodidae (Perlodinae). The Caddis Press, Columbus, OH, U.S.A., 192 pp.
- Stark, B.P., R.W. Baumann, & R.E. DeWalt. 2009. Valid stonefly names for North America. HTML address: <http://pisa.inhs.uiuc.edu/plecoptera/validnames.aspx>. Accessed November 2009.

Stark, B.P., K.W. Stewart, S.W. Szczytko, & R.W. Baumann. 1998. Common names of stoneflies (Plecoptera) from the United States and Canada. *Ohio Biological Survey Notes*, 1:1–18.

Received 20 October 2009, Accepted 5 December 2009, Published 23 December 2009