



## Diversity and taxonomic review of *Leptusa* Kraatz (Coleoptera: Staphylinidae: Aleocharinae) from Great Smoky Mountains National Park, U.S.A., with descriptions of four new species

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### Abstract

A taxonomic review of the genus *Leptusa* Kraatz from Great Smoky Mountains National Park is presented. Ten species are recognized, and four new species are described and illustrated: *L. (Adoxopisalia) pseudosmokyiensis* Park & Carlton, **sp. nov.**, *L. (A.) stocksii* Park & Carlton, **sp. nov.**, *L. (Dysleptusa) gimmeli* Park & Carlton, **sp. nov.**, and *L. (Eucryptusa) ferroi* Park & Carlton, **sp. nov.** The previously undescribed female of *L. (D.) pusio* (Casey) is also reported for the first time. Descriptions, habitus illustrations and line drawings of diagnostic characters of all species occurring in Great Smoky Mountains National Park are provided. A key is provided that will allow discrimination of 16 of the 18 species of *Leptusa* known to occur in the eastern United States. “Overlooked Syndrome”, the phenomena where undescribed species persist in a well known fauna, is defined and discussed.

**Key words:** taxonomy, Homalotini, Great Smoky Mountains National Park, Overlooked Syndrome

### Introduction

The genus *Leptusa* Kraatz, 1856 includes over 400 species and is found in all geographical regions except Australia, Madagascar, and the Pacific islands (Pace 1989). After Pace (1989) published his monograph treating the world fauna of the genus, Assing described numerous species from the Palearctic fauna (Assing 2001, 2002, 2003, 2004, 2007, 2009a, 2009b, 2009c). Some North American species were treated by Gusarov (2003), and Klimaszewski *et al.* (2004) reviewed the Canadian species.

The Coleoptera Taxonomic Working Group of the All Taxa Biodiversity Inventory (ATBI) in Great Smoky Mountains National Park (GSMNP) has been active since June 2001 (Carlton & Bayless 2007). To date 2518 beetle species have been recorded from the park including more than 40 species new to science. The ATBI and related research resulted in the collection of 194 specimens of *Leptusa* from GSMNP. The majority of these specimens were collected as the result of two studies by M. L. Ferro and M. L. Gimmel (unpublished). During April 2006, 90 emergence chambers were filled with hardwood coarse woody debris (CWD) of various sizes and decay classes from six locations in GSMNP. Beetles emerging from the wood were collected monthly over a period of two years. During fall, 2006 and spring, 2007 a comparison of leaf litter and coarse woody debris decay class V (see Pyle & Brown 1999 for definitions of coarse woody debris decay classes) habitats was conducted at the same sites. Specimens were extracted from sifted leaf litter and woody debris samples using Berlese funnels. In total ten species were identified, four of which were undescribed. We also discovered the female of *L. pusio* (Casey), which has not been described previously.

Here we describe or provide updated redescrptions of all species of *Leptusa* found in the GSMNP including four new species. Redescrptions are provided to better compare and contrast newly described species with existing fauna and to facilitate recognition of additional undescribed species that might be discovered in future. Habitus illustrations and line drawings of diagnostic characters are provided for these