

INSECTA MUNDI

A Journal of World Insect Systematics

0244

Notes on the distribution and habitat of *Omethes marginatus* LeConte
(Coleoptera: Omethidae)

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Date of Issue: August 24, 2012

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Insecta Mundi 0244: 1–6

Published in 2012 by

Center for Systematic Entomology, Inc.

P. O. Box 141874

Gainesville, FL 32614-1874 USA

<http://www.centerforsystematicentomology.org/>

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Abstract. The known distribution of a rarely collected omethid, *Omethes marginatus* LeConte (Coleoptera), includes Arkansas, Connecticut, District of Columbia, Indiana, Maryland, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, and West Virginia. Collection and ecological notes on recent collections in Arkansas, Indiana, and Virginia are presented.

Key words. Coleoptera, Omethidae, false soldier beetle, *Omethes*, rare species, state distribution

Introduction

The family Omethidae consists of eight genera and 33 species distributed in eastern Asia and North America (Ramsdale 2010). Larval omethids are unknown, as are the feeding habits of the adults. Little is known of their natural history, other than the adults emerge in spring and summer, are predominantly diurnal, and are short-lived (Ramsdale 2002).

With the exception of the North American taxa, the world omethid fauna lacks a catalogue, is difficult to identify, and is in dire need of revision. The lack of larvae and rarity of adults in museum collections are major impediments to taxonomic, morphological, and phylogenetic studies of the family. In their studies on the evolution of bioluminescence in cantharoids, Branham and Wenzel (2001, 2003) examined most of the North American omethid genera and included them in phylogenetic analyses that support the monophyly of the Nearctic taxa.

Of the seven omethid genera in North America, five (*Ginglymocladius* Van Dyke, *Matheteus* LeConte, *Malthomethes* Fender, *Symphymethes* Wittmer, *Troglomethes* Wittmer) are restricted to California and Oregon. Two genera and species are found east of the Mississippi River. *Blatchleya gracilis* (Blatchley) is known only from Indiana and Ohio. The genus *Omethes* contains two species: *O. marginatus* LeConte (Figs. 1, 2) from eastern North America (Fig. 3) and *O. rugiceps* (Lewis) from Japan (Ramsdale 2002). *Blatchleya* Knab is distinguished from *Omethes* LeConte by having two antennomeres enlarged and excavated, while the antennae of *Omethes* are simple.

Materials and Methods

This study is based on our own fieldwork, literature records, and the examination of specimens housed in the following collections:

AVEC	Arthur V. Evans, Richmond, Virginia, U.S.A.
FMNH	Field Museum of Natural History, Chicago, Illinois, U.S.A.
KESC	Kyle E. Schnepf, West Lafayette, Indiana, U.S.A.
MTEC	Montana Entomology Collection, Montana State University, Bozeman, Montana, U.S.A.

NHMB	Naturhistorisches Museum Basel, Basel, Switzerland
NMNH	Department of Entomology, National Museum of Natural History, Smithsonian Institution, Washington, D.C., U.S.A.
PJJC	Paul J. Johnson, Brookings, South Dakota
PURC	Department of Entomology, Purdue University, West Lafayette, Indiana, U.S.A.
RMBC	R. Michael Brattain, Lafayette, Indiana
VMNH	Virginia Museum of Natural History, Martinsville, Virginia, U.S.A.

Discussion

Nothing has been published on the ecology or circumstances surrounding the collection of *O. marginatus* since Ulke's (1902) century-old statement "beaten from bushes." While sorting through spring Malaise trap samples from the Bull Run Mountains Natural Area Preserve in Prince William County, Virginia, Evans discovered two specimens of *Omethes marginatus* LeConte: **Prince William Co.**, Bull Run Mountains Natural Area Preserve, Chestnut Ridge Trail, 38°49.6'N, 77°42.4'W, 13–27 May 2011, D.R. Smith, Malaise trap (AVEC); same data, except 27 May–11 June 2011 (VMNH).

The Chestnut Ridge Trail site is located northwest of Mountain House, headquarters of the Bull Run Mountain Conservancy. It is the same trap site where another rare beetle was collected, *Phyllophaga spreta* (Horn) (Scarabaeidae) and is located in the northern Piedmont physiographic region on a steep, xeric, well-drained, southwest-facing upper slope at the south end of a ridge (Evans 2009). According to Fleming (2002), the surface substrate consists primarily of organic matter (83%), flat flaggy quartzite/muscovite schist fragments 8–25cm in diameter (10%), non-vascular plant cover (10%), larger flat stone fragments >25 cm (5%), and decaying wood (2%). The hardwood forest is dominated by mountain or rock chestnut oak (*Quercus montana* Willdenow) and some black oak (*Quercus velutina* Lamarck in J. Lamarck et al.) that show evidence of gypsy moth defoliation. Other tree and shrub species include red maple (*Acer rubrum* Linnaeus), black gum (*Nyssa sylvatica* Marshall), black huckleberry (*Gaylussacia baccata* (Wangenheim) K. Koch), mountain laurel (*Kalmia latifolia* Linnaeus), pink azalea (*Rhododendron periclymenoides* (Michxaux) Shinners), American beech (*Fagus grandifolia* Ehrhart), white oak (*Q. alba* Linnaeus), and sassafras (*Sassafras albidum* (Nuttall) Nees). The oak stand was logged perhaps 60 or more years ago and has largely regenerated from stump sprouts. The understory is sparsely vegetated and consists primarily of low, ericaceous shrubs, such as Blue Ridge blueberry (*Vaccinium pallidum* Aiton) and deerberry (*V. stamineum* Linnaeus).

The discovery of this family and species in Virginia led to additional specimen records by Schnepf from Arkansas and Indiana. Unless otherwise noted, all of the Indiana specimens of *O. marginatus* are housed in the RMBC. The label data for the Indiana specimens examined are as follows: **Brown Co.**, Morgan Monroe SF, Management Unit 9, Bird pt. 1919, VI-02-2007, window trap (1-PURC); **Fountain Co.**, (920), nr. Covington, N4449255 E461370, VI-23-2005, J. Holland (1-PURC); **Monroe Co.**, Morgan Monroe SF, Management Unit 4, Bird pt. 1401, VI-11-2007, window trap (1-PURC); same data except M.U. 5, Bird pt. 1506 June 1, 2010, purple sticky trap (1-PURC). **Parke Co.**, Shades St. Pk., May 8, 2002, R.M. Brattain (1-PURC); same data with multiple collections from 2002 to 2011, with dates ranging from May 2 to June 17.

Specimens from Morgan-Monroe State Forest were collected during a survey of wood boring beetles as part of the Hardwood Ecosystem Experiment (Holland 2010). The specimen from Fountain County was collected during a statewide survey of wood-boring beetles; '920' represents the trapping site for this specimen. At this site, two Lindgren multiple funnel traps, one Intercept Panel Trap, and one multi-pane window trap were set (Holland 2006), but no specific trapping method was indicated on the locality label. The coordinates given are in Universal Transverse Mercator (UTM) NAD83 and are the northing and easting for zone 16. The latitude and longitude conversion is 40°11'34.073"N, 87°27'13.801"W.

All specimens collected in Shades State Park were beaten or swept from low-lying vegetation along trails (M. Brattain, pers. comm.). Shades State Park is located in southwestern Montgomery, northeastern Parke and southeastern Fountain Counties in Indiana. Shades, along with Turkey Run State Park and the forested corridor along Sugar Creek, is the largest contiguous forest remaining in the Central Till Plain Region of Indiana (Scott 2009). Much of Shades is composed of American beech (*Fagus grandifolia* Ehrhart), sugar maple (*Acer saccharum* Marshall), tulip tree (*Liriodendron tulip-*

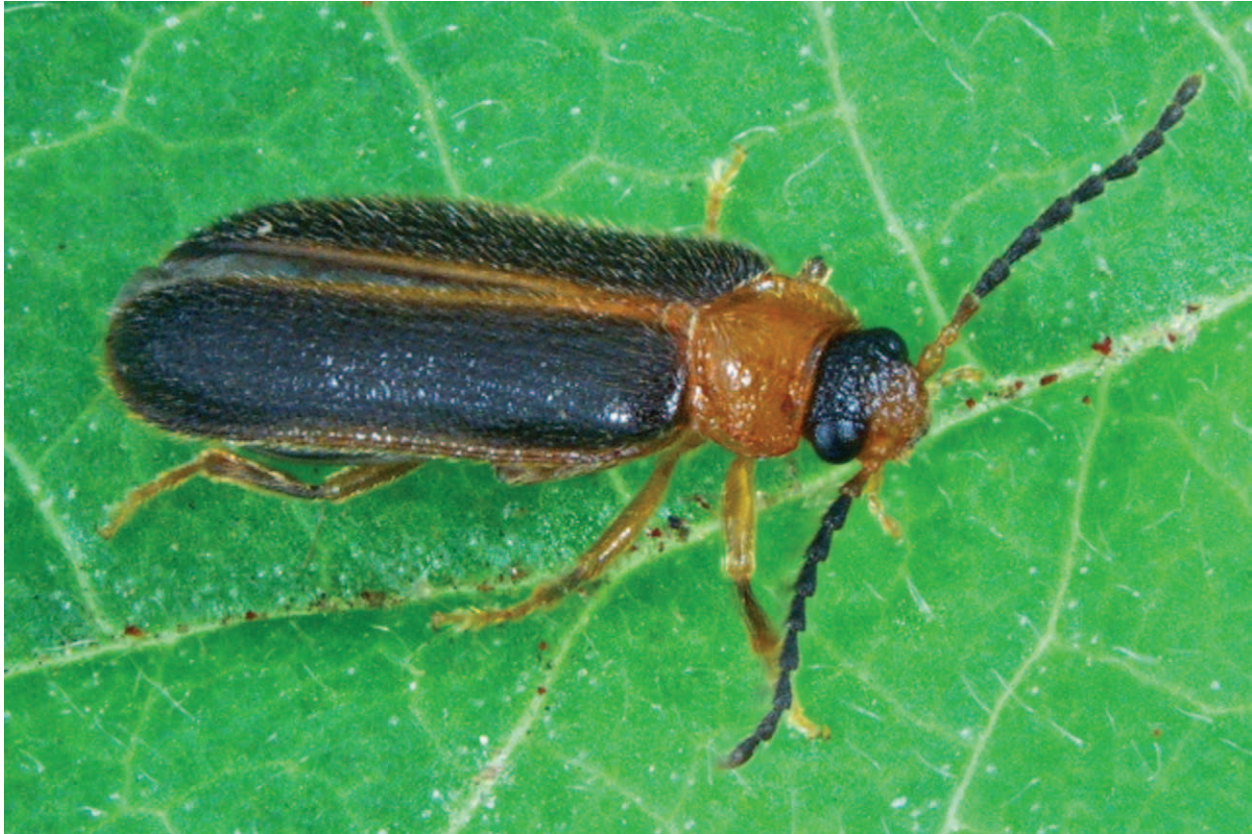


Figure 1. *Omethes marginatus* LeConte. Photo by K.E. Schnepf.

ifera Linnaeus), and white oak (*Quercus alba* Linnaeus), a population that is considered to be a mature hardwood forest in Indiana (McCormick 1962). The understory is predominantly flowering dogwood (*Cornus florida* Linnaeus) and maple-leaf viburnum (*Viburnum acerifolium* Linnaeus) (McCormick 1962). In addition, Shades and the surrounding area contain some remnant populations of Eastern hemlock (*Tsuga canadensis* (Linnaeus) Carriere), Eastern white pine (*Pinus strobus* Linnaeus), and Canada yew (*Taxus canadensis* Marshall).

Schnepf also collected a single *O. marginatus* in Arkansas that bears the following data: Stone Co., Ozark National Forest, C.R. 52/Green Mountain Rd., May 12, 2009. This specimen was swept from roadside weeds along a gravel road.

Before this study, *O. marginatus* LeConte was known from north central and northeastern United States (Malkin 1945; Ramsdale 2002). The above collections, published records, and additional museum specimen data now expand this range south to Virginia and Tennessee, and west to Indiana and Arkansas (Figure 3). Following is a summary of the known state and county records known to us:

Arkansas: Stone (KESC). **Connecticut:** state only (Ramsdale 2002). **District of Columbia:** Washington (USNM). **Indiana:** Brown, Fountain, Monroe, Parke (PURC, RMBC). **Maryland:** Baltimore, Cecil, Montgomery (MTEC, PURC, USNM). **New Jersey:** Warren (Ramsdale 2002; MTEC). **New York:** Orange (Malkin 1945; FMNH). **North Carolina:** Buncombe, "Retreat" not located (MTEC, USNM). **Ohio:** Hamilton, Hocking (Dury 1902; PJJC). **Pennsylvania:** Allegheny, Berks, Franklin, Montgomery, Northampton (Ramsdale 2002; FMNH, NHBM, USNM). **Tennessee:** Shelby (MTEC). Virginia: Fairfax, Prince William, Shenandoah (AVEC, USNM, VMNH). West Virginia: Marion (MTEC).

All of the above specimens were collected in May and June. Data specific to collection methods include "BL," "on *Cornus* sp.," "window trap," "purple sticky trap," and "Malaise trap." We hope that the above records, habitat information, and collecting notes will result in additional collections that produce more data leading to a better understanding of *O. marginatus* in particular and the Omethidae in general.



Figure 2. *Omethes marginatus* LeConte (used with permission, CSIRO, Australia).

Acknowledgments

We thank Mike Brattain for generously provided a living specimen of *Omethes* to photograph, as well as locality data and collecting details from Shades State Park, Indiana. Linda Leavitt and Adam Slipinski, CSIRO (Canberra, Australia) granted permission to use the habitus image of *Omethes*. Molly Schnepf meticulously prepared the distribution map. Jeff Holland's trapping efforts across Indiana have yielded many intriguing and unusual species, including the *O. marginatus* presented in this paper. Warren Steiner, Jr. (retired-National Museum of Natural History, Smithsonian Institution, Washington, D.C.) brought to our attention the NMNH *Omethes* holdings on loan to Montana State University. Mike Ivie (Montana State University, Bozeman, Montana) generously shared locality data of specimens housed at MTEC, as well as those on loan from the FMNH, NHMB, PJJC, and USNM as part of a study initiated by the late Alistair Ramsdale. Evans is particularly grateful to the Bull Run Mountains Conservancy (BRMC) for financial support to conduct a beetle survey of the Bull Run Mountains in 2010–2011; Michael Kieffer, Executive Director of the BRMC provided additional logistical support. Rick Myers, Natural Areas Stewardship Manager, Virginia Department of Conservation and Recreation, Division of Natural Heritage issued the research and collecting permit to allow the study and collection

of beetles in the Bull Run Mountains Natural Area Preserve. Dave Smith (retired-National Museum of Natural History, Smithsonian Institution, Washington, D.C.) established several Malaise traps in the Bull Run Mountains and kindly provided access to the beetles in those samples. Finally, we thank Warren Steiner, Jr., the late Richard Hoffman, Paul Skelley, and J. Howard Frank for their cogent comments and suggestions that improved the accuracy and clarity of this article.

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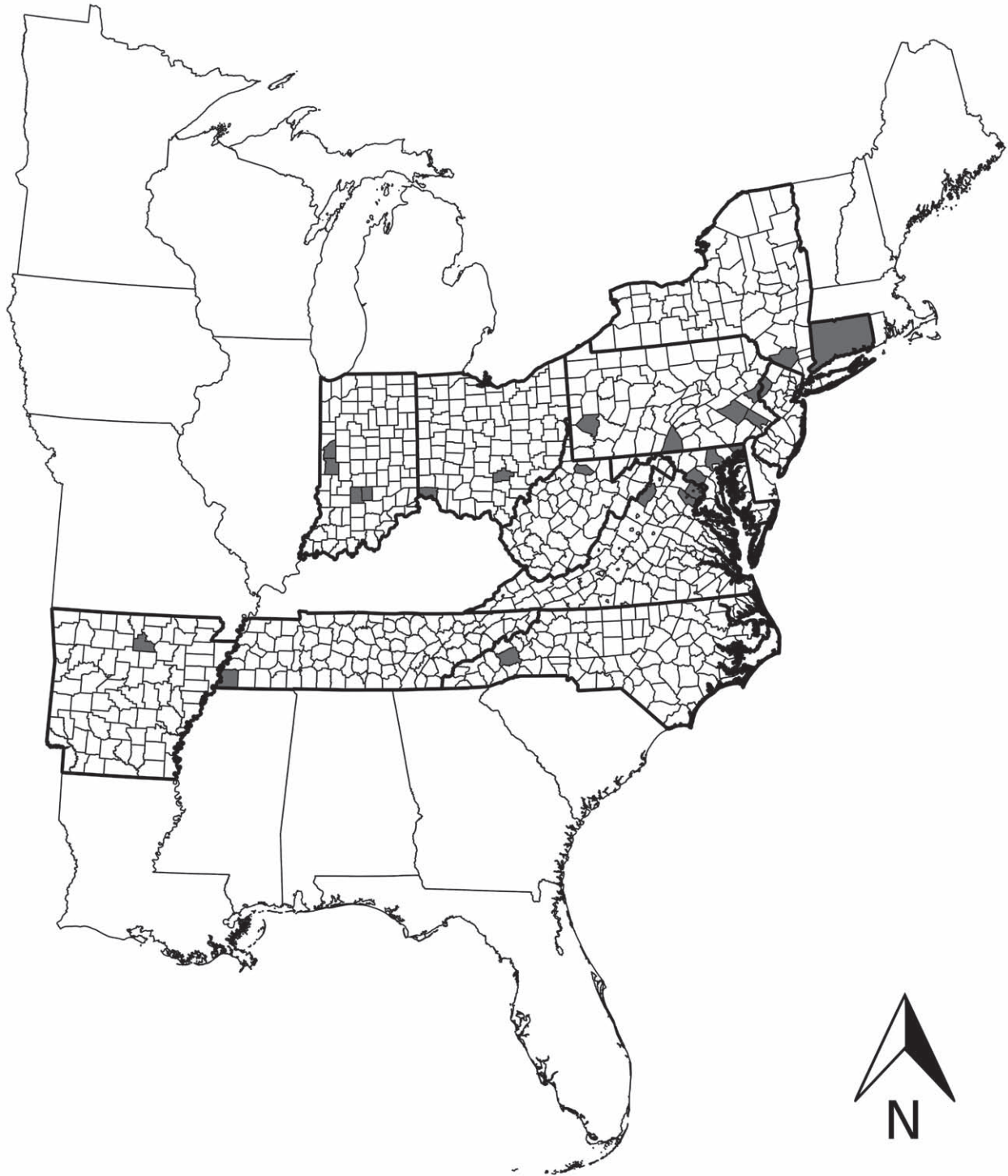


Figure 3. Distribution of *Omethes marginatus* LeConte. Includes state and county records in Malkin (1945) and Ramsdale (2002).

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Received July 15, 2012; Accepted August 5, 2012.