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The Acontiinae and Eustrotiinae (Lepidoptera: Noctuidae) of Great Smoky Mountains National Park

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Abstract

Five species of Acontiinae and nine species of Eustrotiinae are known to occur in Great Smoky Mountains National Park. Each species is documented with an adult image, description/diagnosis, flight period, park distribution, abundance, elevational range, general distribution, and larval hosts. Species accumulation curves using the abundance-based estimators Chao 1 and ACE, and the incidence-based estimators Chao 2 and ICE are presented for each subfamily. The results from these estimators indicate that the number of species observed is equal to or very close to the number of estimated species and, therefore, it is unlikely that additional species will be added to the fauna of GSMNP in these subfamilies.

Key words: systematics, all taxa biodiversity inventory, North Carolina, Tennessee, species richness estimators

Introduction

This is the fourth paper in a series documenting the Noctuidae of Great Smoky Mountains National Park (GSMNP) as part of the All Taxa Biodiversity Inventory (ATBI) project (Pogue 2005, 2006, 2010). Introductory remarks are found in Pogue (2005).

Lafontaine and Schmidt (2010) have recently revised the checklist of the Moths of North America. I followed this classification. The changes in the Acontiinae from the earlier checklist (Franclemont and Todd 1983) include removing the tribe Cydosiini to the subfamily Cydosiinae and raising the rank of the tribe Eustrotiini to subfamily. In addition to these changes there have been several generic reassignments in the Acontiinae (Lafontaine and Poole 2010) and Eustrotiinae (Ueda 1984, 1987; Lafontaine and Schmidt 2010; Ferris and Lafontaine 2009).

The Acontiinae are mostly small moths, many of which are camouflaged as bird droppings. There are 87 species in North America and five in GSMNP. Adults are characterized by the following autapomorphies: 1) tympanum having an enlarged alula that forms a flap partially coving the tympanic opening, 2) tympanum with hood reduced or absent, and 3) male genitalia with scaphium membranous and having one or two areas of hair-like setae. Larvae have two SV setae on the first abdominal segment.

The Eustrotiinae are also mostly small moths, usually included in the Acontiinae (Franclemont and Todd 1983, Covell 1984). There are 51 species in North America and nine in GSMNP. This is a paraphyletic assemblage of species that lacks consistent diagnostic features in adults as well as larvae (Kitching and Rawlins 1998). Larvae have three SV setae on the first abdominal segment (Fibiger and Lafontaine 2005).

Methods and materials

Methods and materials are discussed in Pogue (2005). Adult and larval common names are from Covell (1984, 1999). Each species is sequentially numbered. All collecting localities are listed in Table 1 and shown on Map 1. Scientific and common names of plants were verified from The Plants Database (USDA, NRCS 2008).

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