



The Aventiinae, Boletobiinae, Eublemminae, Pangraptinae, Phytometrinae, and Scolecocampinae (Lepidoptera: Noctuoidea: Erebidae) of Great Smoky Mountains National Park, U.S.A.

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Table of contents

Abstract	2
Material and methods	3
Species accounts	7
Subfamily Aventiinae Tutt, 1896	7
1. <i>Oruza albocostaliata</i> (Packard) The White-Edge	7
Subfamily Boletobiinae Grote, 1895	9
2. <i>Metalectra discalis</i> (Grote, 1876) Common Fungus Moth	9
3. <i>Metalectra quadrisignata</i> (Walker, [1858]) Four-spotted Fungus Moth	10
4. <i>Metalectra richardsi</i> Brower, 1941 Richards' Fungus Moth	10
5. <i>Metalectra tantillus</i> (Grote, 1875) Black Fungus Moth	11
6. <i>Dyspyralis illocata</i> Warren, 1891	12
7. <i>Dyspyralis nigellus</i> (Strecker), 1900	12
8. <i>Dyspyralis puncticosta</i> (Smith), 1908	13
Subfamily Eublemminae Forbes, 1954	14
1. <i>Eublemma minima</i> (Guenée, 1852) Everlasting Bud Moth	14
Subfamily Pangraptinae Grote, 1882	15
1. <i>Ledaea perditalis</i> (Walker, 1859) Lost Owlet	15
2. <i>Pangrapta decoralis</i> Hübner, 1818 Decorated Owlet	16
Subfamily Phytometrinae Hampson, 1913	17
1. <i>Hemeroplanis habitalis</i> (Walker)	17
2. <i>Hemeroplanis obliquialis</i> (Hy. Edwards)	18
3. <i>Spargaloma sexpunctata</i> Grote Six-spotted Gray	18
4. <i>Hyperstrotia pervertens</i> (Barnes & McDunnough) Dotted Graylet	19
5. <i>Hyperstrotia secta</i> (Grote) Black-patched Graylet	20
6. <i>Hyperstrotia villificans</i> (Barnes & McDunnough) White-lined Graylet	21
Subfamily Scolecocampinae Grote, 1883	22
1. <i>Abablemma brimleyana</i> (Dyar, 1914)	22
2. <i>Arugisa lutea</i> (Smith, 1900) Common Arugisa	23
3. <i>Gabara subnivosella</i> Walker, 1866	24
4. <i>Isogona tenuis</i> (Grote, 1872) Thin-lined Owlet	25
5. <i>Nigetia formosalis</i> Walker, 1866 Thin-winged Owlet	25
6. <i>Scolecocampa liburna</i> (Geyer, 1837) Dead-Wood Borer Moth	26
7. <i>Sigela brauneata</i> (Swett, 1913)	27
8. <i>Sigela penumbrata</i> Hulst, 1896	28
Discussion	29
Acknowledgements	29
Literature cited	29
Index to animal names	30
Index to plant names	31

Abstract

Twenty-five species of Erebiidae are documented from Great Smoky Mountains National Park (GSMNP) from the following subfamilies: Aveniinae (1 species), Boletobiinae (7 species), Eublemminae (1 species), Pangraptinae (2 species), Phytometrinae (6 species), and Scolecocampinae (8 species). Each species is documented with an adult image, description/diagnosis, flight period, park distribution, abundance, elevational range, general distribution, and larval hosts. The most common (155 specimens) and widespread (40 localities) species was *Pangrapta decoralis* Hübner. *Scolecocampa liburna* (Geyer) is the next most common (87 specimens) and widespread (30 localities). The most species rich locality was the combination of the 11 localities along the Foothills Parkway, Cocke Co., Tennessee.

Key words: systematics, all taxa biodiversity inventory, North Carolina, Tennessee, host plants

This is the first paper in a series documenting the Erebiidae of Great Smoky Mountains National Park (GSMNP) as part of the All Taxa Biodiversity Inventory (ATBI) project.

The higher level classification of the Noctuoidea has undergone some major reclassification (Fibiger and Lafontaine 2005, Lafontaine and Fibiger 2006, Lafontaine and Schmidt 2010, Zahiri *et al.* 2011). The trifold forewing venation, where M2 is approximately halfway between M1 and M3, giving vein Cu a 3-branched or trifold appearance occurs in the Oenosandridae, Notodontidae, and Doidae. The quadrifid forewing venation, where M2 is approximate to M3, giving vein Cu a 4-branched or quadrifid appearance occurs in the Arctiidae, Lymantriidae, Nolidae, and Noctuidae. Recent molecular evidence from nuclear genes (Zahiri *et al.* 2011) confirms that the quadrifid noctuoids form a monophyletic group. Furthermore, the molecular evidence supports four additional monophyletic subgroups within the quadrifid group. These subgroups are the 1) quadrifine subfamilies, where M2 in the hind wing is present giving vein Cu a 4-branched appearance, 2) trifine subfamilies, where M2 is absent in the hind wing giving vein Cu a 3-branched appearance, 3) Nolinae, and 4) Eutelliinae. The new classification chosen by Zahiri *et al.* (2011) now include the families Erebiidae (quadrifine subfamilies), Noctuidae (trifine subfamilies), Nolidae, and Eutelliidae. I follow this arrangement in this paper.

The Aveniinae was treated as a subtribe of the Catocalini and included one species, *Laspeyria flexula* (Denis & Schiffermüller), from Europe (Goater *et al.* 2003). Later, it was treated as a subfamily, Aveniinae, based on the position of the ostium bursae at the base of the 8th abdominal segment in the female genitalia and the juxta being subdivided into a dorsal, more heavily sclerotized part that resembles an inverted Y and a ventral part that is a less sclerotized, semilunar-shaped plate (Fibiger and Lafontaine 2005). Vein M2 in the hind wing is in the primitive condition, approximately 1/3 up the cell and is not adjacent to M3 as in the Catocalinae. Therefore, Fibiger and Lafontaine (2005) give it a tentative rank of subfamily. The genus *Oruza* is included in the Aveniinae (Lafontaine and Schmidt 2010) with two North American species. This genus contains 51 species and is distributed worldwide (Poole 1989).

The Boletobiinae have a broad-winged geometridlike appearance; the labial palpus is long, thin, and roughly scaled; and the frons is fully scaled (Fibiger and Lafontaine 2005). In North America, there are three genera included, *Parascotia*, *Mycterophora*, and *Metalectra* with a total of 17 species. Only the genus *Metalectra* is found in Great Smoky Mountains National Park, with four of the 11 known species. The genus *Dyspyralis* includes four species, of which three are found in the Park. *Dyspyralis* is tentatively placed in the Boletobiinae, pending further molecular analysis (Lafontaine and Schmidt 2010).

The Eublemminae are small to very small moths that are often colorful with slender bodies. Autapomorphies include: 1) larva with MD1 and MSD2 setae enlarged on the abdomen (presently only confirmed in *Eublemma*); 2) male genitalia with the ampulla of the clasper and digitus short and broad, similar in length, overlapping, and fused basally; and 3) cucullus of valve entirely membranous, setose, apically rounded, and unarmed. Other characters include the following: lower half of the frons bare, both fore- and hind wings broad and almost equally long, and the valve broadest medially at the position of the clasper-digitus complex. There are five species in North America and one in Great Smoky Mountains National Park.

The Pangraptinae was treated as a tribe of the Eublemminae in Fibiger and Lafontaine (2005). Recent molecular studies of the Noctuoidea have resulted in the Pangraptinae being strongly supported as a sister group to a clade consisting of the Herminiinae, Aganainae, and Arctiinae (Zahiri *et al.* 2011). In North America, there are two species, both of which occur in the Park. Like the Aveniinae and Eublemminae, the hind wing has vein M2 in the