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Keith S. Summerville  
*Miami University*

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DISCOVERY OF TWO MOTH SPECIES NEW TO MICHIGAN  
(LEPIDOPTERA: NOCTUIDAE, TORTRICIDAE)Keith S. Summerville<sup>1, 2</sup>

## ABSTRACT

*Rhizedra lutosa* (Noctuidae) and *Argyrotaenia cockerellana* (Tortricidae), are reported from Michigan for the first time, from remnant patches of mesic lakeplain prairie in Sumpter Township, Wayne Co. *Rhizedra lutosa* is a Eurasian species that is rapidly establishing populations across the United States. *Argyrotaenia cockerellana* is primarily known from the western United States, with eastern records from Nebraska and Ontario, Canada.

The Lepidoptera fauna of Michigan has been only moderately documented. Exceptions to this are the superfamilies Papilionoidea and Hesperioidea (butterflies and skippers). These groups tend to receive more attention due to their showiness, diurnal activity, and relatively large size (Scott 1986). Most moth species, however, are more difficult to identify, tend to be nocturnal, and have a wider range in body size. Therefore, moths, in particular the Ditrysia (micro-moths), have yet to receive adequate state-wide attention. Although the Michigan Lepidoptera Survey and the Michigan Natural Features Inventory are striving to catalog Michigan's Lepidoptera, novel aspects of the state's fauna remain to be discovered and documented. This paper details the discovery of two moth species new to Michigan: *Rhizedra lutosa* (Hübner) (Noctuidae), and *Argyrotaenia cockerellana* (Kearfott) (Tortricidae). I will examine the significance of each state record and demonstrate that the discovery of each species holds different biological significance for Michigan's fauna.

## MATERIALS AND METHODS

Both state records were collected on 7 October 1997 during an insect survey of mesic lakeplain prairie in Sumpter Township (Twp. 4S, Rge. 8E, Sec 27) located in Wayne Co., Michigan. This survey was conducted as part of a series of late-season moth surveys performed by the Michigan Chapter of The Nature Conservancy (TNC) and the Michigan Natural Features Inventory (MNFI). Collecting was performed using mercury vapor light and black-light bulbs at sheet stations from 1930–0100 hr. The temperature remained above 10°C for the duration of the collecting period. Two stations were used, and each was placed in disjunct patches of mesic lakeplain prairie vegetation.

<sup>1</sup> The Nature Conservancy, East Lansing, MI 48826.

<sup>2</sup> Current Address: Institute of Environmental Sciences, Miami University, Oxford, OH 45056.

Surveyed patches contained a heterogenous mix of lakeplain prairie flora, and no attempt was made to quantify the vegetation. Dominant herbaceous species were visually estimated to be *Andropogon gerardii* (Vitman), *Andropogon scoparius* (Michaux), *Pteridium aquilinum* (L.), *Liatris scariosa* (L.) Willd., *Lupinus perennis* (L.), and *Baptisia tinctoria* (L.) R. Br. Each patch was moderately large in size, and was completely surrounded by woody growth of *Salix*, *Cornus*, and *Quercus* (shrubs and large trees). The soil in each patch was fairly sandy. Across the broader landscape, the lakeplain prairie community occurred within a matrix of agricultural and abandoned land (see Comer et al., 1995 for a more complete historic and floristic analysis of lakeplain prairies in Michigan).

Lepidoptera specimens were taken with ethyl acetate by David Cuthrell of MNFI and myself. I collected both state record specimens and had all identifications verified by recognized authorities in the field. Examples of more common species are retained in my personal collection; however, both state record vouchers have been deposited in the Insect Collection at Michigan State University.

## RESULTS AND DISCUSSION

The majority of my collection from Sumpter Township consisted of fairly common species of fall Noctuidae, including *Papaipema eupatorii* (Lyman), *Papaipema unimoda* (Smith), *Catocala concumbens* (Walker), *Metaxaglaea inulta* (Grote), *Agrotis ipsilon* (Hufn.), and *Eupsila tristigmata* (Grote). Few Geometridae were observed, with the exception of *Ennomos magnaria* (Gn.), which was seen in numbers. Micro-moths were frequent visitors at our sheets, with the most common species being *Atteva punctella* (Cramer) [Yponmeutidae] and an unidentified *Sparganothis* sp. [Tortricidae]. All these species can be found in a variety of habitat contexts, including disturbed land and mid-seral communities. In addition to these common moths, however, I also collected one female *Rhizedra lutosa* and one female *Argyrotaenia cockerellana*.

*Rhizedra lutosa* is a Noctuid moth of Eurasian origin, first documented in North America by McCabe and Schweitzer from collections in 1988-9 (McCabe and Schweitzer 1991). These authors collected this species from New Jersey salt marshes near the Delaware Bay area. Dates of *R. lutosa* collection reported by McCabe and Schweitzer ranged from 30 September to 4 November. Subsequent to this discovery, *R. lutosa* has appeared in New York and Ohio (Mikkola and LaFontaine 1994; Metzler, pers. comm.). Thus, the discovery of this species in Michigan represents a further range extension for this introduced species.

*Rhizedra lutosa* is a moderate sized, whitish-ochreous colored moth that is known to feed in the stem base and rhizomes of *Phragmites australis* (Cav.) Steudel., the common reed (Skinner 1984). Feeding damage appears as a blanching of the host plants leaves (McCabe and Schweitzer 1991). This species is known to overwinter in the egg stage (Skinner 1984). McCabe and Schweitzer (1991) provide genitalic and habitus plates, contrasting *R. lutosa* to *Ommatostola lintneri* (Grote), with which *R. lutosa* may be confused. *Rhizedra lutosa* typically feeds within dense reed beds and it has been collected at night resting on the stems of reeds and grasses. It has been described as a very vagile species by Skinner (1984). Thus, this moth may be collected at some distance from its seasonal breeding sites. Such dispersal capacity also suggests that colonization of new patches of the host plant will be rapid, and that this species should swiftly establish populations wherever

*Phragmites australis* is abundant. Indeed, collectors in western Michigan, Indiana, and Wisconsin should anticipate finding this species in the near future.

*Argyrotaenia cockerellana* is a small tortricid moth first described by Kearfott in 1907 from specimens collected in Colorado and New Mexico. Powell (1964) revised this species' taxonomy, and extended its range throughout most of the western arid states. Single records for *A. cockerellana* exist for Nebraska and Ontario, Canada (Powell 1964). This moth is characterized by pale orange forewings interrupted by white spots and some darker shadings. The hindwing and the underside of both wings are white, with a white fringe (Kearfott, 1907; keys, genitalic figures and habitus plates in Powell, 1964). This species was collected in numbers by Dodge (1957) on several *Juniperus* species, and Powell (1964) asserts that *A. cockerellana* is a cedar-associate, with a potentially convergent resemblance to other *Juniperus*-feeding Tortricids, *Argyrotaenia paiuteana* (Powell) and *Choristoneura houstonana* (Grote). Aside from these reports, little else has been reported on the biology or ecology of this species.

The discovery of each of these species in Michigan has different implications for the biodiversity of Lepidoptera within the state. *Rhizedra lutosa* is an exotic species; recently introduced to the United States and rapidly spreading westward. The presence of non-native species in ecosystems has been linked to various ecological threats, including the disruption of natural functional dynamics, the extirpation of native biota from historic ranges, and the homogenization of global biodiversity (Price 1997, Samways 1995). Of these three threats, I suggest that, in the absence of other information, the latter is the most serious implication for *R. lutosa*. Mikkola et al. (1991) compiled a list of 95 species of Holarctic Noctuidae, noting that 26 species should be considered exotic introductions resulting from human activity. If nearly a full 30% of Holarctic Noctuidae are non-native to our region, the distinctiveness and uniqueness of our biota have been seriously compromised. Other examples of introduced Lepidoptera species becoming established in Michigan abound (e.g., *Thymelicus lineola* (Ochs.) [Lepidoptera: Hesperidae]; *Ostrinia nubilalis* (Hubner) [Lepidoptera: Crambidae]. Although the tangible consequences of spreading flora and fauna into habitats where they did not evolve are difficult to quantify, I would suggest that speaking of North American Noctuidae or Michigan Lepidoptera is becoming less meaningful. *Rhizedra lutosa* may have a negligible negative impact on ecosystems in the United States, but its persistence within native systems suggests that the distinctiveness of North American fauna is becoming increasingly blurred. It should be noted, however, that *R. lutosa*'s apparent dietary restriction to *Phragmites* may represent a blessing for land managers. *Phragmites australis* tends to be an aggressive colonizer of wetland communities, and it would be interesting to determine if *R. lutosa* has the potential to regulate or control the spread of this plant in the United States.

In contrast to the implications of discovering an introduced species in Michigan, the discovery of *Argyrotaenia cockerellana* in Michigan is a significant documentation of the range of this species. This moth, which, from Powell's (1964) accounts, appears to be relatively common in the western United States, is rare east of the Mississippi River. The single Ontario record noted by Powell, and this Michigan record may demarcate an eastern range limit for this species. With so few records upon which to base hypotheses, it is difficult to determine the status of *A. cockerellana* in Michigan. It is possible that the species is a permanent resident of the state, or it may erupt into Michigan during outbreak years of western populations. Within members of the Tortricidae, extreme demographic fluctuations are common, and other

species of *Argyrotaenia* are known to have serious outbreak potential (e.g., *A. velutinana* Walker). The deficiency in occurrence information for this species should prompt others to search for this moth in Michigan and surrounding states. Due to their small size and taxonomic complexity, micro-moths have received the least attention of all lepidopteran groups. Further collecting of the sub-order Ditrysia is likely to generate a wealth of new information at the state and regional levels. For example, Metzler and Zebold (1995) discovered 28 species of micro-moths new to Ohio by sampling just one tract of remnant prairie. It will be exciting to follow the future progress of the Michigan Lepidoptera Survey as it continues to produce more information about the status and distribution of Michigan's Lepidoptera fauna.

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