



The discovery of *Megalota* in the Neotropics, with a revision of the New World species (Lepidoptera: Tortricidae: Olethreutini)

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Abstract

Megalota Diakonoff, previously known from the Indoaustralian Region (India, Sri Lanka, New Guinea, and Australia), Madagascar, and Africa, is reported from the Neotropics for the first time. Three previously described New World species (i.e., *Megalota submicans* (Walsingham), n. comb.; *M. delphinosema* (Walsingham), n. comb.; and *M. plenana* (Walker), n. comb.) were concealed within incorrect generic assignments or as “unplaced” species (i.e., lacking contemporary generic assignments). Twenty-one new species are described and illustrated: *M. synchysis* (TL: Venezuela), *M. peruviana* (Peru), *M. aquilonaris* (Mexico), *M. vulgaris* (Costa Rica), *M. cacaulana* (Brazil), *M. macrosocia* (Ecuador), *M. ochreoapex* (Costa Rica), *M. spinulosa* (Costa Rica), *M. simpliciana* (Costa Rica), *M. jamaicana* (Jamaica), *M. ricana* (Costa Rica), *M. cerativalva* (Venezuela), *M. bicolorana* (Costa Rica), *M. longisetana* (Costa Rica), *M. deceptana* (Costa Rica), *M. crassana* (Costa Rica), *M. gutierrezii* (Costa Rica), *M. chamelana* (Mexico), *M. beckeri* (Brazil), *M. flintana* (Brazil), and *M. pastranai* (Argentina). Males of the genus are characterized by three distinctive features of the genitalia: the uncus consists of a pair of greatly expanded, flattened, variably round or square lobes, densely covered with spines and setae; the valvae are narrow with an elongate, apically spined process arising from the base of the costa; and the juxta is membranous with a narrowly sclerotized U- or J-shaped posterior edge. Five species have been reared from *Croton* spp. (Euphorbiaceae) in Costa Rica, and this is consistent with a single record of this host for an Australian species of *Megalota*.

Key words: Olethreutinae, new species, new combinations, genitalia, hairpencil, host plants, *Croton*, Euphorbiaceae, biogeography

Prologue

Discoveries in systematics often are the result of coincidence or serendipity, when two or more pieces of a puzzle come together to provide a glimpse into the bigger picture of biogeography, phylogeny, life history, or some other aspect of natural history or taxonomy. The discovery of *Megalota* in the New World represents such a discovery, and compilation of the scattered specimens and data on the Neotropical members of the genus was facilitated by numerous sources, including a world community of tortricid workers, the presence of unsorted specimens in museum collections, large-scale faunal inventories in Costa Rica, the recent publication of a world catalog of the family, and a variety of other intangible coincidences. Below I briefly describe this serendipitous journey of discovery.

While examining specimens from Costa Rica collected by David Wagner during field work in 2005, as part of the NSF-funded Arthropods of La Selva Project (ALAS), I somewhat arbitrarily selected for dissection a small, orange-brown olethreutine moth that superficially resembled the genus *Olethreutes* of the Holarctic. To my surprise, the male genitalia revealed a huge, somewhat cordate uncus and relatively complex valvae with slight asymmetry and an unusual elongate process from the costa near its base. Although I initially suspected that the specimen represented a new genus because it was so dissimilar to all other Neotropical Olethreutini I had seen, the more I pondered the dissection, the greater my suspicion grew that I had seen these unusual genitalia somewhere before, and recently. So I began examining my most recent reprints from colleagues around the world. It wasn't long before I stumbled upon a paper published by Leif Aarvik in 2004 describing several new species of *Megalota* from Africa. I immediately recognized that the male genitalia of the Costa Rican species were congeneric with, and nearly indistinguishable from, Aarvik's new species from Africa. In the tortricid world, connections between the Afrotropical and Neotropical faunas are few and far between, so this discovery was accompanied by considerable excitement. Consultation with the recently published world catalog of Tortricidae revealed that *Megalota* included about a dozen species described from Australia, southeast Asia, Madagascar, and Africa. Adding the Neotropics to this list appeared to complete a pan-tropical distribution for the genus.

I immediately wrote to Jerry Powell, my mentor and fellow ALAS collaborator, to share this discovery and ask if he had additional material from Costa Rica. To my surprise, Jerry also recalled seeing similar male