



First discovery of *Quercus*-feeding Nepticulidae (Lepidoptera) in South America, with description of new species and designation of the *S. nigriverticella* complex in the *S. saginella* group

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Abstract

We describe three new species: *Stigmella crassifoliae* Remeikis & Stonis, **sp. nov.** (a leaf-miner on *Quercus crassifolia* and *Q. crispipilis* from the highlands of Guatemala), *S. robleae* Remeikis & Stonis, **sp. nov.**, and *S. humboldti* Remeikis & Stonis, **sp. nov.** (leaf-miners on *Quercus humboldtii* from the Colombian Andes). No *Quercus*-feeding Nepticulidae species were previously known from South America. All new species are illustrated with photographs of the leaf-mines, cocoons, adults, and genitalia. In the *S. saginella* species group, for the species possessing in male genitalia M-shaped gnathos with caudal processes closely juxtaposed and phallus without cornuti, a new species complex (the *S. nigriverticella* complex) is defined. We also provide a pictorial key to the species of the new complex.

Key words: Colombia, Guatemala, leaf-mines, Nepticulidae, new species, *Quercus humboldtii*, *Stigmella*

Introduction

Known information about the *Quercus*-feeding Nepticulidae of North America was revised by Wilkinson & Scoble (1979), Wilkinson (1981), Wilkinson & Newton (1981), and Newton & Wilkinson (1982). Recently, (Stonis *et al.* 2013b) provided the first report of *Quercus*-feeding *Stigmella* Schrank (Nepticulidae) from Central America: five of these species (*S. jaguari* Remeikis & Stonis, *S. lauta* Diškus & Stonis, *S. sublauta* Remeikis & Stonis, *S. aurifasciata* Diškus & Stonis, and *S. guatemalensis* Diškus & Stonis) were described and named by these authors; one new species from Guatemala was described but left unnamed because of lack of adults; and one species was misidentified and treated as *S. nigriverticella* (Chambers, 1875) because the extreme similarity of the male genitalia. However, a more detailed analysis of the material currently deposited at LEU allowed us to describe one more new species from Guatemala (*S. crassifoliae* Remeikis & Stonis, **sp. nov.**, described below).

Until now, no *Quercus*-feeding nepticulid species were known from South America. Two recent trips to the universities of Colombia, including the Universidad Nacional de Colombia and Pontificia Universidad Javeriana (Bogotá), undertaken in February 2013 and repeated in 2014, have resulted in the discovery of *Stigmella* species on *Quercus humboldtii* and revealed new interesting data on global distribution and morphology of the *Quercus*-feeding Nepticulidae.

The tree genus *Quercus* with about 600 species worldwide has one of its centers of diversity and endemism in North and Central America, particularly the southeastern United States, southern Mexico, and mountainous part of Central America (Menickiy 1984, Nixon 2006, Torres-Miranda *et al.* 2011). Contrastingly, a single oak species (*Quercus humboldtii* Bonpl) is known from South America (Pulido *et al.* 2006).

The genus *Quercus* expanded into the Andes from North and Central America (Fernández & Sork 2006). The relatively recent expansion of this genus into South America correlates with the uplifting of the Andes during the Pliocene, and the formation of the Isthmus of Panama (Pulido *et al.* 2006). During the expansion from northern