

**Nectarivory in a weevil, *Smicronyx squalidus* (Coleoptera:  
Curculionidae: Curculioninae), on *Desmanthus* (Fabaceae)**

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**ABSTRACT.** The first apparent nectarivorous weevil, *Smicronyx squalidus*, is documented on *Desmanthus illinoensis*. Although found feeding from extra-floral nectaries (EFN's) located between the petioles of *D. illinoensis*, it is believed that *S. squalidus* merely supplements its diet with nectar, due to an apparent lack of mouthpart modifications for a more efficient uptake of fluids. Photographs of the adult *S. squalidus*, as well as the EFN's on *D. illinoensis*, are provided.

**KEY WORDS:** extra-floral nectaries, glands, host-plant associations, herbivory.

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INTRODUCTION

*Smicronyx squalidus* Casey (Curculioninae: Smicronychini), formerly placed within Eriirhininae, is a small weevil, approximately 2.1-2.5 mm in length (excluding the rostrum). In the Nearctic region, recorded hosts of *Smicronyx* include *Ambrosia* (ANDERSON et al. 2006), *Helianthus*, *Haplopappus*, *Dracopis* (SALSBURY 2000), *Iva* (Asteraceae), and *Cuscuta* (Convolvulaceae). To this list, *Desmanthus illinoensis* (Fabaceae) can now be added as an additional host of *S. squalidus*. Before this documentation, the only described beetle pests of *D. illinoensis* were in Bruchidae (*Acanthoscelides*) and Chrysomelidae (*Anomoea*) (LATTING 1996). Herbivory was not observed in this host-herbivore interaction, however, but rather it was nectarivory that took place at the button-shaped extra-floral nectaries

(EFN's) located on the stems between the petioles of the evenly bipinnate leaves (SO 2004) (Figs 5-9).

Although nectarivory is a commonplace occurrence in many insect orders, such as Hymenoptera, Hemiptera, and Diptera, it is not so well documented in Coleoptera. The few accounts of coleopterans feeding on nectar, often feeding on pollen as well, reveal a wide range of specificity in nectarivory. There are adult meloids (*Epicauta*) that often only supplement their diet or occasionally feed on nectar (ADAMS & SELANDER 1979), while some cantharids (*Cantharis*) may mainly feed on nectar, pollen, or honeydew sources (TRAUGOTT 2003, WÄCKERS et al. 2007). Numerous species of adult coccinellids, despite mainly being predators, also sometimes heavily consume nectar (PEMBERTON & VANDENBERG 1993). It appears, however, that no records exist to date of nectarivory in weevils (Curculionidae). This observation, then, documents weevil nectarivory for the first time, and in the genus *Smicronyx*.

#### Acknowledgements

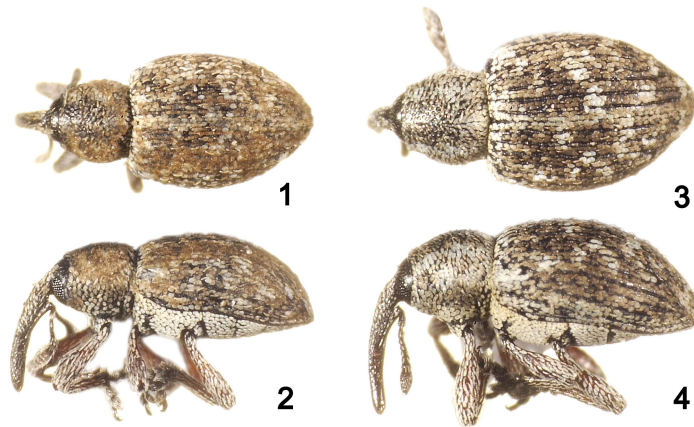
Much appreciation is given to Dr. Mark E. MORT, Department of Ecology and Evolutionary Biology, University of Kansas, and Dr. Craig C. FREEMAN, Natural History Museum and Biosurvey, University of Kansas, for identification of plant specimens.

#### MATERIALS AND METHODS

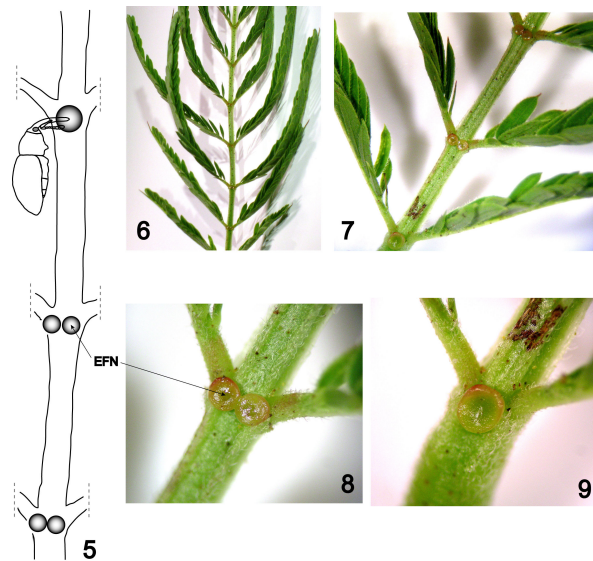
Photographs of *Desmanthus* were taken using a Nikon Coolpix 5400 digital camera. Adult photographs of *S. squalidus* were taken with a Microptix photo system. All observations of nectarivory were made approximately 50 km west of Lawrence, Kansas, USA, in degraded prairie/cattle pasture habitat.

#### Description of nectarivory

Adult males and females of *S. squalidus* (Figs 1-4) were found perched adjacent to EFN's on *D. illinoensis* (Fig. 5). No movement was visible while perched, and feeding took place with their rostra extended towards the middle of the button-shaped gland, just touching it. One adult weevil per gland was visible, and never was more than one weevil observed at each EFN. Due to no apparent adaptations to the mouthparts, it is presumed that *S. squalidus* only supplements its diet with nectar and does not specialize on the consumption of it (WÄCKERS et al. 2007). Reasons for why a weevil might temporarily switch to a nectar source are unknown; however, nectar sources do provide a high concentration of sugars, as well as trace amounts of amino acids and other organic compounds (DIAZ-CASTELAZO et al. 2005). Due to the extremely wide diet breadth of curculionids on plants, though, it may come as no surprise that they too feed on nectar sources from plants.



**Figs 1-4.** *Smicronyx squalidus*, adult male and female. 1- male, dorsal view; 2 - male, lateral view; 3 - female, dorsal view; 4 - female, lateral view.



**Figs 5-9.** 5 - position of *S. squalidus* on the stem of *D. illinoensis* during nectarivorous feeding; 6-9: digital photographs of the button-shaped EFN's on *D. illinoensis*.

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Received: August 23, 2007

Accepted: September 19, 2007