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First record of predation on a seed beetle (Coleoptera: Bruchidae) by a
checkered beetle (Coleoptera: Cleridae)

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First record of predation on a seed beetle (Coleoptera: Bruchidae) by a checkered beetle (Coleoptera: Cleridae)

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Abstract. A new relationship, that of predator and prey, between the coleopteran families Cleridae and Bruchidae is presented.

Introduction

Most species of Cleridae (Coleoptera) are assumed to be generalized insect predators, although the identity of prey items is infrequently recorded on labels or otherwise documented. Similarly, while Bruchidae (Coleoptera)—mostly small and chemically unprotected species—are probably subject to predation by a wide variety of invertebrate and small vertebrate predators, the literature contains scant mention of such interactions. This paper presents a rare observation of predation by *Enoclerus coccineus desertus* Barr (Cleridae) upon a *Acanthoscelides pallidipennis* (Motschulsky) (Bruchidae) where both individuals were subsequently captured and subject to identification.

Enoclerus Gahan is a speciose (about 400 species) New World genus of predaceous beetles. Members are generally small to medium-sized, and most are diurnally active predators in both their larval and adult forms. Several species are associated with pine trees and are important for the control of pestiferous bark beetles (Coleoptera: Curculionidae: Scolytinae) that ravage pine forests (Williams et al. 2009). Because of this relationship, there have been several studies documenting the prey preferences of conifer-inhabiting *Enoclerus* species (e. g. Rice 1969), including research on the semiochemical interactions between predator and prey (Lindgren and Miller 2002; Zhou et al. 2001). However, for the vast majority of *Enoclerus* species, our knowledge of their prey preferences and predation behavior is negligible and based on scattered anecdotes and the occasional published observation. There are several possible reasons for this. First, most *Enoclerus* species not associated with bark beetles are not relatively commonly collected and rather broadly dispersed in their environment; aggregations occur, but are associated with transient and localized food sources (e.g. recently felled trees; plant blooms that are attractive to prey insects). Second, *Enoclerus* species are only rarely observable in their microhabitats, as they tend towards concealment among branches and leaves. The two most effective methods for collecting *Enoclerus*, the beating sheet and Malaise trapping, both invariably separate the specimen from its prey. Finally, most *Enoclerus* specimens are found by collectors other than cleridologists, and so details of predation are rarely recorded.

It is generally assumed that adult *Enoclerus* species will prey on most insects that they can physically overpower and disarticulate. Interestingly, although recorded observations of prey types are few in number, these do include Coccinellidae (ladybird beetles) that are chemically protected and toxic to at least some of their potential predators, including invertebrates. With the advent of cheap and ubiquitous digital macrophotography, however, we are beginning to see more documentation of insect predator-prey interaction. A recent posting to the online insect identification website BugGuide.Net records, probably for the first time, predation by a species of *Enoclerus* (*E. c. coccineus* (Schenkling)) on a heteropteran bug <<http://bugguide.net/node/view/558578/bgpage>>.

Bruchidae are seed predators as larvae, with the majority of species attacking species of legumes. Adults are free living and feed on pollen and nectar, habits that presumably make them vulnerable to

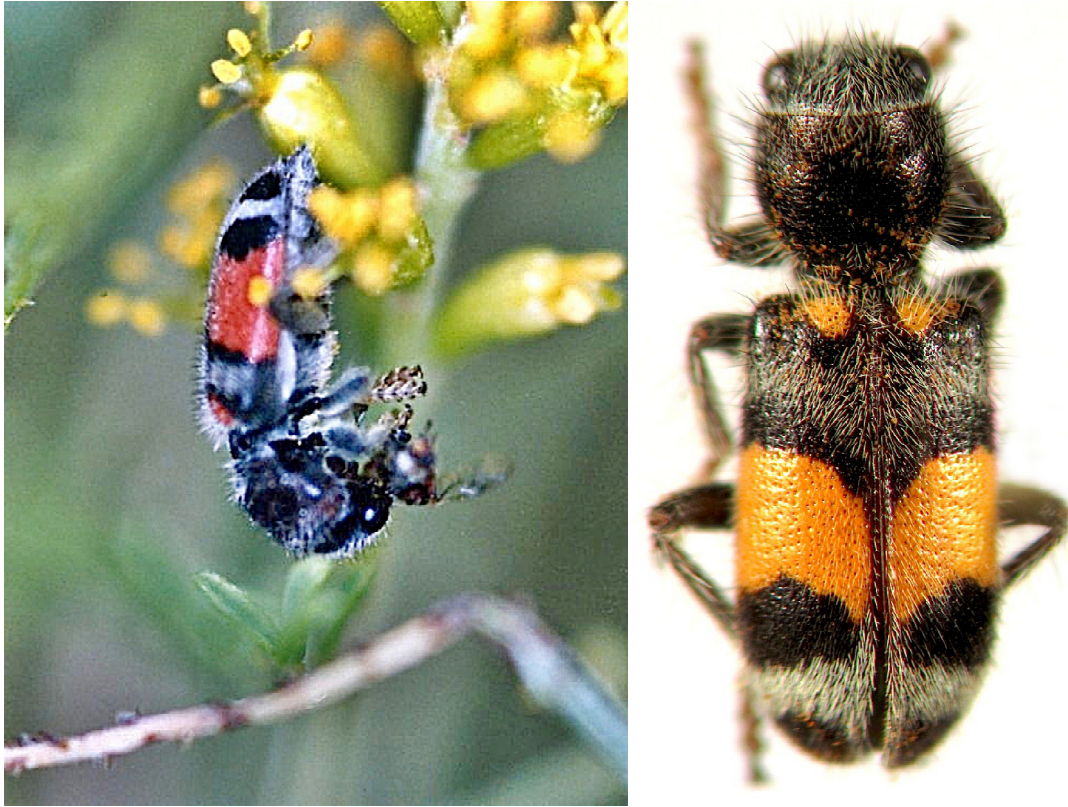


Figure 1-2. *Enoclerus coccineus desertus*. 1) In typical feeding posture. 2) Habitus.

many diurnal predatory invertebrates. *Acanthoscelides pallidipennis* (Motschulsky) is a native American bruchid that is a natural population regulator of *Amorpha* species (Fabaceae: Astragaleae).

Enoclerus coccineus desertus Barr (Fig. 1-2), recorded here as a predator on a *Acanthoscelides pallidipennis*, is restricted in distribution to Arizona, U.S.A., where it is known from the north, north central and northeast part of the state. It has been taken on yellow flowers, including *Gutierrezia sarothrae* (Pursh) Britton and Rusby (Asteraceae) in middle and late summer (Barr 1976; J. Rifkind, personal observation). A specimen was collected in Arizona (Apache County, 3.6-6.6 mi N Chambers, Hwy. 191, 7/VII/2002, 6000', J. Rifkind, A. Rifkind, P. Gum, & E. Gum collectors) preying upon a bruchid. Although the prey insect was missing its legs and antennae, its body was complete. Fortunately it is a male, allowing specific determination by examination of its genitalia, which correspond to those of *A. pallidipennis* (Fig. 3). The bruchid specimen is deposited in the Insect Collection, Phytosanitary Institute, Colegio de Postgraduados, Montecillo, Estado de México, México (CEAM); the clerid specimen is held in the second author's personal collection (JNRC).



Figure 3. *Acanthoscelides pallidipennis*, habitus.

Acknowledgments

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