

First Field Record of *Rhynocoris iracundus* (Hemiptera: Reduviidae) Predation on *Carpocoris pudicus* (Hemiptera: Pentatomidae) in Eastern Anatolia: Implications for Biodiversity and Biological Control

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ABSTRACT: In this study, during a field observation conducted on June 29, 2025, in the rural area of Şahaplı Village, Baskil District, Elazığ Province, a predatory feeding behavior of *Rhynocoris iracundus*, a species from the Reduviidae family, on an individual of *Carpocoris pudicus*, from the Pentatomidae family, was directly observed and photographed. Although both species are commonly found in the Palearctic region, this observed predator-prey interaction is documented for the first time in the Elazığ province. The observation provides important data that may be evaluated in terms of biological control and ecological balance.

KEYWORDS: *Rhynocoris iracundus*, *Carpocoris pudicus*, *Verbascum euphraticum*, Elazığ, predatory insect, field observation

INTRODUCTION

Rhynocoris iracundus (Poda, 1761) is a predatory species within the order Heteroptera and is considered a biological control agent due to its feeding on various pests. With its

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entomophagous feeding strategy, it plays a role as a natural regulator in many agricultural ecosystems (Ambrose, 2003). *Carpocoris pudicus* (Poda, 1761) is a widespread phytophagous species and can occasionally cause damage in fruit and vegetable production. Although the Palearctic distribution of both species is known, the trophic interaction between these two species has not been directly observed in the Elazığ region until now (Matocq et al., 2014; Yazıcı et al., 2014; Fent & Dursun, 2022;). While the predatory behavior of *R. iracundus* has been documented on species such as *Pentatoma rufipes* and *Graphosoma lineatum* in the literature (Chlond et al., 2020), this study includes the first field record of predation on *C. pudicus*. The data obtained in this study are significant for predator-prey dynamics, biological control efforts, and Hemiptera biodiversity.

MATERIAL AND METHODS

The field study was conducted on June 29, 2025, in the rural area of Şahaplı Village, Baskil District, Elazığ Province. Observations were made in open fields under daylight conditions. The moment of interaction was examined using a 10× magnifying hand lens and was photographed with a digital camera. Species identifications were confirmed using current Heteroptera taxonomy references, reference specimens, and expert opinions. The plant specimen on which the insects were found was identified as *Verbascum euphraticum* Benth. by Prof. Dr. Murat Kürşat (Bitlis Eren University).

RESULTS

Material examined: Elazığ, Baskil, Şahaplı Village, 1 ♂ *Rhynocoris iracundus*, 1 ♀ *Carpocoris pudicus*, totally. 2 exc.

Remarks: Species interaction was observed on *Verbascum euphraticum* Benth.

During the observation, it was identified that *R. iracundus* inserted its rostrum into *C. pudicus*, creating a hemiplegic/paralytic effect, and then liquefied and ingested the internal tissues. Additionally, saprophytic flies belonging to the family Chloropidae were noted on the host species during the predation event. This observation not only revealed the predator-prey interaction but also illustrated the involvement of multiple organisms in the natural food web.

Furthermore, the presence of other carnivorous species in the area during the predation event suggests that the predatory insect may compete within the natural population.

DISCUSSION AND CONCLUSION

This observation represents the first documented case of *Rhynocoris iracundus* preying on *Carpocoris pudicus* in a natural habitat in the Elazığ province. The interaction, captured photographically in the field, provides field-based validation of trophic behaviors previously reported under laboratory conditions. It also enhances regional data on Hemiptera biodiversity, which remains relatively underexplored in Eastern Anatolia.

The ecological implications of this observation are twofold. First, it expands the known prey spectrum of *R. iracundus*, a species recognized for its entomophagous habits and role in natural pest suppression (Raghuraman & Rajendran, 1996). Second, it suggests potential for localized natural control of phytophagous Pentatomidae, which are known to inflict economic damage on fruit and vegetable crops. Given the phytosanitary challenges in Turkish agriculture, especially in semi-arid zones such as Elazığ, identifying indigenous predatory species with effective field activity is of significant interest.

The presence of Chloropidae flies and other carnivorous insects in proximity to the

predation site further illustrates the complexity of ecological interactions and highlights the need for more detailed food web analyses. These micro-scale interactions, when systematically studied, can contribute to macro-scale ecological planning in sustainable agriculture.

Moreover, documenting such interactions can inform habitat management strategies. If *R. iracundus* populations are supported by suitable flora such as *Verbascum* spp., then maintaining or restoring native vegetation could enhance in-situ biological control potential. In this context, *R. iracundus* may serve as a model organism in developing region-specific integrated pest management (IPM) frameworks.

Systematic biodiversity monitoring and faunistic surveys are essential to track the distribution and ecological roles of such native predators. These efforts can support both conservation goals and the advancement of applied entomology in Turkey.

The findings from this study underline the importance of field-based ecological data in shaping environmentally conscious and sustainable agricultural practices.



Figure 1. Visualization of the interaction between *Rhynocoris iracundus* and *Carpocoris pudicus* on a mullein (*Verbascum euphraticum* Benth.)

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