

Outbreak dynamics of *Sciocoris atifi* (Hemiptera: Heteroptera: Pentatomidae) on wild lettuce (*Lactuca serriola* L.): First report from Türkiye

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ABSTRACT: During the summer of 2025, an outbreak of the stink bug *Sciocoris atifi* Lodos & Önder, 1982 was documented for the first time in Elazığ Province, Eastern Anatolia. Field surveys conducted in Temur village revealed a dense infestation in a 20-decare field dominated by wild lettuce (*Lactuca serriola* L.). A total of 420 specimens were collected and sexed, consisting of 250 females and 170 males. Both adults and nymphs were observed in large aggregations on the stems, leaves, and developing seeds of wild lettuce, as well as clustering on the soil surface. The infestation extended beyond the field, spreading into neighboring vegetable plantations, orchards, and even along house walls, where both immature stages and adults formed dense colonies. Despite the outbreak reaching levels of 20–30 individuals per m², no significant damage was observed on cultivated plants. The affected field had been left fallow after wheat (*Triticum aestivum* L.) cultivation in the previous year, which may have provided favorable conditions for population buildup. To date, *S. atifi* has been reported on Poaceae, Lamiaceae, Hypericaceae, Vitaceae and weeds; however, this study provides the first host plant record of the species on *Lactuca serriola* and the first

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outbreak record in Türkiye. These findings expand the known ecological range of *S. atifi* and highlight its potential to adapt to novel weed hosts under suitable environmental conditions. Although not traditionally regarded as a major pest, the species' ability to reach outbreak densities and disperse into anthropogenic habitats suggests it may pose an underappreciated risk for local agroecosystems. Continuous monitoring and further ecological studies are recommended to clarify its pest status and to develop potential management strategies.

KEYWORDS: Hemiptera, Pentatomidae, *Sciocoris atifi*, outbreak, *Lactuca serriola*, Türkiye

INTRODUCTION

The genus *Sciocoris* Fallén, 1814 (Heteroptera: Pentatomidae) is widely distributed throughout the Palearctic region and comprises several species commonly associated with herbaceous vegetation. Members of this genus are typically seed- and sap-feeding insects that occur in natural and agricultural ecosystems. Although they are generally regarded as minor components of the pentatomid fauna, certain species have been occasionally reported at higher densities in cereal and legume fields, raising concerns regarding their potential economic impact (Lodos & Önder, 1982; Rider, 2006).

Stink bugs more broadly are known as important pests in many regions of the world due to their ability to damage seeds, fruits, and vegetative tissues (McPherson & McPherson, 2000; Schaefer & Panizzi, 2000). Host-plant diversity plays a key role in their population dynamics, with many pentatomids exploiting both crops and weeds as alternative resources (Wheeler, 2001; Panizzi & Grazia, 2015).

Among them, *Sciocoris atifi* Lodos & Önder, 1982 is a poorly studied species with limited published information on its biology, host range, and population dynamics. Lodos & Önder (1982) gave this species on *Vitis vinifera* L. (Vitaceae), on *Oryza sativa* L. (Poaceae) and on weeds. The very few studies that later recorded *Sciocoris atifi* from Türkiye do not contain any significant information about the host plants of the species. Hoberlandt (1997) gave *Stipa* sp. (Poaceae), *Hypericum* sp. (Hypericaceae), *Salvia* sp., *Marrubium* sp. (both Lamiaceae) as host plants from Iran, the only country where the species is distributed outside Türkiye. These host plant associations suggest a degree of ecological flexibility, allowing the species to exploit both cultivated crops and weeds in disturbed habitats. However, no reports exist on its occurrence on members of the Asteraceae family, nor have any outbreak events been documented in Türkiye.

Weeds play an important role in the ecology of many heteropteran insects, often serving as alternative hosts that sustain populations in the absence of primary crops. *Lactuca serriola* L. (Asteraceae), also known as wild lettuce, is a widespread and common weed in temperate regions, frequently invading agricultural landscapes, fallows, and field margins. Its presence can influence the distribution and abundance of phytophagous insects, yet little is known about its role as a host for stink bugs. The discovery of a dense infestation of *S. atifi* on *L. serriola* thus provides an opportunity to expand our understanding of the ecological interactions of this species.

In addition to the novelty of the host plant record, the outbreak observed in Elazığ Province represents the first documentation of *S. atifi* reaching outbreak densities in Türkiye. Outbreak phenomena in seed-sucking pentatomids are often triggered by a combination of environmental factors, including favorable climatic conditions, the availability of abundant host plants, and reductions in natural enemy pressure.

Investigating such events is crucial for assessing potential risks to agroecosystems and for identifying emerging pest threats.

The present study aims to (i) document the first outbreak of *S. atifi* in Türkiye, (ii) record *L. serriola* as a new host plant association for the species, and (iii) provide preliminary ecological observations that may inform future monitoring and management strategies. By reporting this case, we contribute to the baseline knowledge of stink bug ecology in the region and highlight the importance of weed hosts in shaping insect population dynamics.

MATERIALS AND METHODS

Field surveys were carried out between July and August 2025 in Temur village, Elazığ Province, Eastern Anatolia (38°50'475N, 39°05'858E). The infested area consisted of a 20-decare field dominated by *Lactuca serriola* (Figure 1a), from which *Sciocoris atifi* specimens were collected. (Figure 1b).

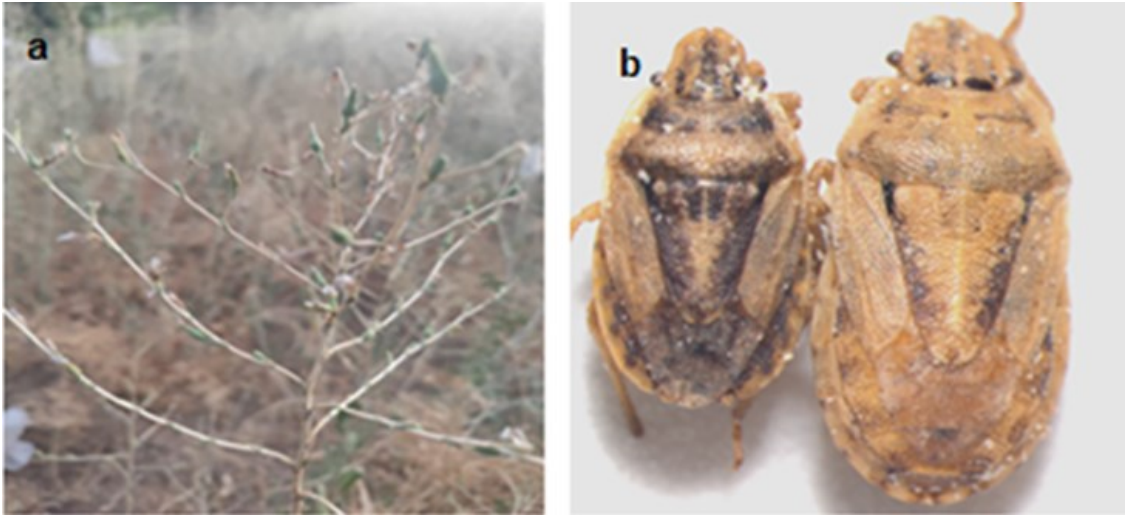


Figure 1. a. *Sciocoris atifi* (Hemiptera: Pentatomidae) adults observed on their host plant, *Lactuca serriola* (Asteraceae), in Elazığ Province. b. *Sciocoris atifi* adult, dorsal view.

Specimens were collected using sweep-netting and direct counts on host plants. A total of 420 individuals were collected and sexed under a stereomicroscope. Species identification was performed using diagnostic keys (Lodos & Önder, 1982).

RESULTS

Genus *Sciocoris* Fallén, 1829

Subgenus *Aposciocoris* Wagner, 1965

***Sciocoris atifi* Lodos & Önder, 1982**

Material examined: Elazığ, Temur village, (1149 m), July–August 2025, 250 ♀♀, 170 ♂♂.

Distribution in Türkiye: Asian Türkiye: Gaziantep, Hatay, Kahramanmaraş, Kilis, Siirt (Lodos & Önder, 1982; Önder et al., 1995, 2006; Lodos et al., 1998).

General Distribution: Asia: Asian Türkiye, Iran (Aukema, 2018).

A total of 420 specimens of *S. atifi* (250 females and 170 males) were recorded from

the 20-decare *L. serriola* field. Infestations reached outbreak levels, with densities of 20–30 individuals per m². Large aggregations of both adults and nymphs were observed on stems, leaves, and developing seeds of wild lettuce.

Sciocoris atifi exhibited a dense population both on the soil surface and around *L. serriola* plants (Figures 2, 3). The infestation extended into neighboring vegetable plantations and along house walls, where both immature stages and adults were recorded in high numbers. Although no significant damage was observed on cultivated plants, the infested field had been left fallow after wheat cultivation in the previous year. Continuous monitoring of *S. atifi* populations will be important to assess its potential as an emerging pest in the region.



Figure 2. Aggregations of *Sciocoris atifi* in Elazığ Province, Türkiye. Nymphal stages clustering on soil surface in a fallow field. Mass aggregation of adults on soil and stone surfaces near infested areas.

The species was occasionally observed forming aggregations along house walls, exhibiting a high level of infestation in these areas.

DISCUSSION

The holotype of *Sciocoris atifi* was collected on *Vitis vinifera* L. in the type locality (Kilis) in 1976. The allotypes and paratypes were collected on *Oryza sativa* in Siirt (Kurtalan) on the same date as the holotype and on weeds in Kahramanmaraş (Afşin) in 1973 (Lodos & Önder, 1982). Lodos et al. (1998) reported that they collected this species on weeds in Hatay (Altınözü) and Kahramanmaraş (Nurhak Dağı). The only known country outside Türkiye for this species is Iran. Hoberlandt (1997) gave *Stipa* sp. (Poaceae), *Hypericum* sp. (Hypericaceae), *Salvia* sp., and *Marrubium* sp. (Lamiaceae) as host plants for the species recorded in Alborz and Isfahan.

The present study is remarkable as it provides two novel records: (1) the first documented outbreak of *S. atifi* in Türkiye, and (2) the first host plant association with *Lactuca serriola* (Asteraceae).

This discovery expands the ecological amplitude of the species, suggesting that it may adapt to a wider range of weeds and non-traditional hosts when conditions are favorable.

The observed outbreak in Elazığ Province may be linked to a combination of factors. Climatic conditions, particularly the hot and dry summer of 2025, could have

facilitated rapid development and survival of multiple generations. The dominance of *L. serriola* in a 20-decare fallow field provided abundant and continuous resources, while the absence of crop rotation following wheat cultivation in the previous year may have created favorable conditions for population buildup. Moreover, reduced activity of natural enemies such as predatory bugs, parasitoids, and entomopathogenic fungi could have further contributed to the sudden increase in population density.



Figure 3. Remains and mass accumulations of *Sciocoris atifi* individuals observed on soil surface in Elazığ Province, Türkiye.

Similar outbreak events involving seed-sucking stink bugs have been reported elsewhere, often linked to weed hosts that provide abundant resources and refuge (Wheeler, 2001; Panizzi & Grazia, 2015). This highlights the importance of weed management in integrated pest management (IPM) frameworks. Furthermore, stink bugs are globally recognized as potential pests due to their polyphagy and ability to disperse across habitats (McPherson & McPherson, 2000; Schaefer & Panizzi, 2000). Although *S. atifi* is not yet a major agricultural pest, its capacity for outbreak formation, novel host utilization, and dispersal into cultivated landscapes suggests it may represent an underappreciated risk for agroecosystems.

Interestingly, despite the extraordinarily high population levels, no significant damage was recorded on neighboring cultivated crops. This indicates that *S. atifi* may currently pose a limited direct risk to economically important plants, yet its presence in adjacent vegetable plantations and orchards demonstrates its potential for dispersal and host-switching. If similar outbreaks recur, the risk to nearby horticultural or field crops could increase. This emphasizes the importance of

long-term monitoring programs to detect early signs of population growth and range expansion.

Behavioral observations also revealed that *S. atifi* occasionally formed dense aggregations along house walls and other anthropogenic structures. Such behavior indicates a capacity for synanthropic adaptation, which may enhance survival during adverse conditions and facilitate wider spread. Similar aggregation tendencies have been documented in other Pentatomidae, often linked to overwintering behavior. Future studies should examine whether *S. atifi* exhibits similar overwintering strategies and how this may affect its persistence in agricultural landscapes.

The ecological plasticity demonstrated by colonizing *L. serriola* a widespread weed species commonly found in disturbed areas, highlights the potential for *S. atifi* to exploit non-traditional habitats. This could complicate management efforts, as weed hosts are often overlooked in pest control programs. Integrated pest management (IPM) strategies should therefore consider weed-pest interactions, including targeted weed management, biological control surveys, and ecological studies on population regulation.

In conclusion, while *S. atifi* has not yet emerged as a major pest, its capacity for outbreak formation, novel host utilization, and dispersal into cultivated landscapes suggests that it may represent an underappreciated risk to agroecosystems. Comprehensive ecological studies, coupled with regular monitoring, are needed to evaluate its long-term impact and to develop early intervention strategies before it establishes itself as a recurring pest problem in Türkiye.

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