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First record of *Sesbania punicea* (Fabales: Fabaceae) as a host plant for *Chinavia hilaris* (Hemiptera: Pentatomidae)

P. Glynn Tillman[*]

The green stink bug, *Chinavia hilaris* (Say) (Hemiptera: Pentatomidae), is an economic pest of cotton, *Gossypium hirsutum* L. (Malvales: Malvaceae) (Barbour et al. 1990). In the coastal plain of the southeastern USA, cotton is a mid-to-late-season host of *C. hilaris* (Bundy & McPherson 2000). Feeding on bolls by *C. hilaris* results in injury to bolls, which can be assessed by examining bolls for internal injury (i.e., warts and stained lint) (Bundy et al. 2000).

Sesbania punicea (Cav.) Benth. (Fabales: Fabaceae) is a deciduous, leguminous shrub that grows up to 4 m tall (Hoffmann & Moran 1998). A native plant of South America, it has been distributed widely as an attractive ornamental to other parts of the world. Escapes from cultivation have led to naturalization in some areas of the USA, such as coastal southern states (including Georgia) and California (USDA NRCS 2015). This plant thrives in riparian and wetland areas and can exclude native species and alter water flow (Hunter & Platenkamp 2003). The bright red flowers are 2 to 3 cm long (University of Florida IFAS 2015). The fruit (i.e., pods) are longitudinally 4-winged and oblong in shape. Pods are 6 to 8 cm long, and each pod contains 3 to 9 seeds, located in the center of the pod.

In southeastern USA farmscapes, numerous non-crop hosts of *C. hilaris*, including black cherry (*Prunus serotina* Ehrh.; Rosales: Rosaceae), elderberry (*Sambucus nigra* subsp. *canadensis* [L.] R. Bolli; Dipsacales: Adoxaceae), and mimosa (*Albizia julibrissin* Durazz.; Fabales: Fabaceae), exist in field edges bordering cotton (Jones & Sullivan 1982; Cottrell & Tillman 2015). In Florida, Drake (1920) found a *C. hilaris* parasitized by *Trichopoda pennipes* (F.) (Hymenoptera: Tachinidae) on *Crotalaria* sp., a plant in the Fabaceae family. Because *S. punicea* is naturalized in Georgia, the goal of this paper was to determine if this leguminous shrub served as a host for *C. hilaris*.

In the summer of 2014, all *S. punicea* plants (n = 6) in the field border (plants approx. 3 to 15 m from the cotton field edge) surrounding a cotton field (31°31'21"N, 83°20'8"W) near Ocilla, Georgia, USA, were sampled for *C. hilaris*. Each plant was visually examined for all developmental stages of *C. hilaris*. Sampling was done 2 to 3 times per week from 11 Jun through 15 Aug. Direct observations of feeding by adults and nymphs were recorded. Visibly parasitized (i.e., darkened) egg masses detected during sampling were collected and held in the laboratory for emergence of egg parasitoids. Unparasitized egg masses were checked 3 to 5 d later for parasitism or emergence of 1st instars.

To determine if *C. hilaris* adults disperse from *S. punicea* to other host plants, adults detected on this leguminous shrub during sampling were marked. A medium-line, opaque, oil-based paint marker was used to paint a mark on the insect's prothorax. This mark can remain on a *N. viridula* adult for at least 54 d in the field, and thus it is an effective method for marking stink bugs (Tillman 2006).

A graph of the *C. hilaris* population, grouped by egg masses, young nymphs (2nd and 3rd instars), old nymphs (4th and 5th instars), and adults was constructed for 3 time periods in 2014, from 11 through 27 Jun, from 30 Jun through 25 Jul, and from 28 Jul through 15 Aug. These 3 time periods were chosen because they tended to reveal the overall development of the population over the period of the study.

Fruit were present on *S. punicea* plants from 11 Jun through mid-Aug 2014. Eggs masses of *C. hilaris* were found only on fruit of *S. punicea*, and subsequently nymphs and adults fed only on fruit. Each of the 3 egg masses detected on plants were parasitized by *Trissolcus edessae* Fouts (Hymenoptera: Scelionidae) and 2 were parasitized by *Ooencyrtus* sp. (Hymenoptera: Encyrtidae) and *Anastatus* sp. males (Hymenoptera: Eupelmidae). In general, around 50% of the *C. hilaris* (50.5% for young nymphs, 65.1% for old nymphs, and 62.5% for adults) detected on *S. punicea* plants were observed feeding on fruit.

Initially, egg masses and young nymphs occurred on *S. punicea* plants (Fig. 1). Some old nymphs also were present during this early sampling period, indicating that they were likely developing on this plant prior to initiation of sampling. These older nymphs did not disperse from another host plant onto *S. punicea*, because nymphs were not present on any other host plant at this location during this time period. In the 2nd sampling period, only old nymphs and adults were present on *S. punicea* plants suggesting that *C. hilaris* was developing on this plant. Near the end of this time period, a female dispersed from *S. punicea* to nearby fruiting elderberry; a female marked in *S. punicea* on 18 Jul 2014 was found on elderberry on 24 Jul 2104. By the last sampling period, some egg masses and young nymphs were present again on the plant indicating that adults that had developed on the plant laid some eggs on plants. After 15 Aug, fruit dried out, and *C. hilaris* was not observed on plants again.

The buildup of *C. hilaris* on *S. punicea* in the field border next to cotton in early summer potentially could have a negative impact on fruiting cotton by either dispersing to other nearby host plants or moving directly into cotton. For example, preliminary mark–recapture studies have shown that *C. hilaris* disperses from elderberry into cotton in late Jul to early Aug (Tillman, unpublished). Management of this invasive plant could reduce its potential to exclude native species and alter water flow, as well as eliminate a possible source of *C. hilaris* into cotton.

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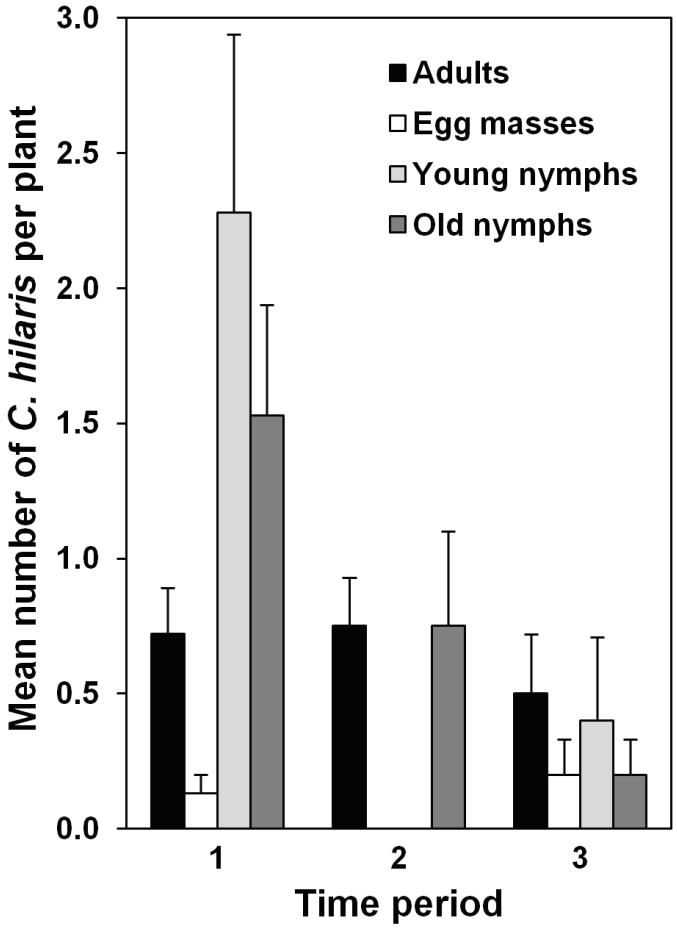


Fig. 1. Mean (± SE) number of *Chinavia hilaris* per *Sesbania punicea* plant over 3 time periods in 2014; time period 1 was from 11 through 27 Jun, time period 2 was from 30 Jun through 25 Jul, and time period 3 was from 28 Jul through 15 Aug. Young nymphs were 2nd and 3rd instars; old nymphs were 4th and 5th instars.

Summary

Sesbania punicea (Cav.) Benth. (Fabales: Fabaceae) plants in a field border surrounding a cotton field were sampled for *Chinavia hilaris* (Say) (Hemiptera: Pentatomidae) to determine if this leguminous shrub served as a host for this stink bug. *Chinavia hilaris* adults and nymphs fed on fruit of this plant, and nymphs developed on the plant. This is the first record of *S. punicea* as a host for this stink bug.

Key Words: rattlebox; green stink bug; feeding; egg parasitoid

Sumario

Plantas de *Sesbania punicea* (Cav.) Benth. (Fabales: Fabaceae) en el borde arrededor de un campo de algodón fueron muestreados para *Chinavia hilaris* (Say) (Hemiptera: Pentatomidae) para determinar si este arbusto leguminoso sirve como un hospedero para esta chinche. Adultos y ninfas de *C. hilaris* se alimentaron con fruto de esta planta, y las ninfas se desarrollaron sobre la planta. Este es el primer registro de *S. punicea* como hospedero de esta chinche.

Palabras Clave: *Sesbania*; chinche verde; alimentación; parasitoide de huevos

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