

Redbanded Stink Bug, Red-Banded Stink Bug, Smaller Green Stink Bug (suggested common names) *Piezodorus guildinii* (Westwood) (Insecta: Hemiptera: Pentatomidae)¹

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Introduction

The redbanded stink bug, *Piezodorus guildinii*, is a Neotropical stink bug that has recently become established in the southeastern United States (Figure 1). The redbanded stink bug feeds on many leguminous plants including several economically important crops such as beans, peas, alfalfa, and lentils. In South America, the redbanded stink bug has become one of the most significant pests of soybean, *Glycine max* (Smaniotto and Panizzi 2015).



Figure 1. Anterior view of adult redbanded stink bug, *Piezodorus guildinii* (Westwood), on alfalfa, *Medicago sativa*. Credits: Morgan Pinkerton, UF/IFAS

Distribution

The first description of the redbanded stink bug originated from the Caribbean island of St. Vincent. This pest is present in both Central and South America and has caused major economic damage throughout South America. In Brazil, Uruguay and Argentina, the redbanded stink bug is one of the most prevalent pests of soybean (Akin et al. 2011). The redbanded stink bug was first reported in the United States in the early 1970s but the time of its arrival in North America is still unclear (Panizzi 2005). It is currently found from Argentina to the southern United States and it was not until 2002 that the redbanded stink bug was considered a major economic pest in the US (Husseneder et al. 2016). As of 2016, the redbanded stink bug has been recorded in several southern states including Alabama, Florida, Georgia, Louisiana, Mississippi, New Mexico, South Carolina, and Texas (Temple et al. 2013).

Description

Adults

Adults are small, glossy, green stink bugs, and average 8–11mm in length and 4–6mm in width across the

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pronotum (Zerbino et al. 2014). The adult usually has a single band across the pronotum that is cream colored or red but periodically appear orange to deep purple (Figure 2). This is natural variation within the species. In many cases, the connexivum, or the outer dorsal edge of the flattened part of the abdomen, also shows the same colorations as the pronotal band. A key feature to the identification of adult redbanded stink bugs is the presence of a long spine on the ventral side of the abdomen (Figure 3).



Figure 2. Dorsal view of an adult redbanded stink bug, *Piezodorus guildinii* (Westwood), on alfalfa, *Medicago sativa*. Credits: Morgan Pinkerton, UF/IFAS



Figure 3. Ventral view of the spine on the abdomen of the redbanded stink bug, *Piezodorus guildinii* (Westwood). Credits: Morgan Pinkerton, UF/IFAS



Figure 4. Redbanded stink bug, *Piezodorus guildinii* (Westwood), adult with the horizontal red band. Credits: Morgan Pinkerton, UF/IFAS

Nymphs

Nymphs undergo five instars before becoming adults. Each instar lasts 3–13 days with the 3rd instar being the longest (Panizzi and Smith 1977). In laboratory colonies, nymphs can reach adulthood in as little as 20 days (Zerbino et al. 2013). Nymphal development and survival is optimal at temperatures around 27°C (Gomez et al. 2013). Nymphs can survive in relative humidities ranging from 50% to 90% (Zerbino et al. 2013). Similar to other stink bugs, the first instar does not feed on plants (Silva et al. 2013). In early instars, the pronotum and head are often black while the abdomen is red with black markings (Figure 5). Later instars develop a green coloration with black markings and a few thick, red and black stripes dorsally on the abdomen (Figures 5–8).



Figure 5. Redbanded stink bug, *Piezodorus guildinii* (Westwood), first instars. Credits: Morgan Pinkerton, UF/IFAS



Figure 6. Redbanded stink bug, *Piezodorus guildinii* (Westwood), second instars. Credits: Morgan Pinkerton, UF/IFAS

Eggs

Overwintering adults lay eggs in spring to begin the first generation of the year. Generally, the 4-8 annual generations begin to overlap in July (Panizzi and Smith 1977). Oviposition begins about 16 days following the imaginal molt and subsequent mating (Panizzi and Smith 1977). Eggs are black in color and cylindrical (Figure 10). Clutches are laid as two side by side rows, varying in numbers of eggs but generally containing 13–17 eggs per clutch. Oviposition preferentially occurs directly on bean pods; however, eggs

can also be found on the undersides of leaves, stems, and other parts of the plant. The eggs take about 7.5 days to hatch under optimal conditions (Panizzi and Smith 1977).



Figure 7. Redbanded stink bug, *Piezodorus guildinii* (Westwood), third instar nymphs.
Credits: Morgan Pinkerton, UF/IFAS



Figure 8. Redbanded stink bug, *Piezodorus guildinii* (Westwood), fourth instar.
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Figure 9. Redbanded stink bug, *Piezodorus guildinii* (Westwood), fifth instar.
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Similar Species

The redbanded stink bug is similar in appearance to other common stink bugs and can occasionally be found on the

same plants. The Southern green stink bug, *Nezara viridula* (L.), and the green stink bug, *Chinavia hilaris* (Say), can be confused with adult *Piezodorus guildinii* due to coloration, but are easily distinguished because they are twice the size of *Piezodorus guildinii* (Figure 11). Other possible adult look-alikes are bugs in the genus *Thyanta*. *Thyanta custator* (Fabricius), the red shouldered stink bug, is green with a similar red band on the pronotum. However, *Thyanta* spp. have a dull finish to the dorsal surface and do not have the distinct ventral spine as in the redbanded stink bug (Figure 12). Nymphs of *Thyanta* spp. appear similar to *Piezodorus guildinii* but they can be distinguished based on body shape and stripes. *Thyanta* spp. nymphs are more similar in shape to other stink bugs with the body width about equal to the length; whereas, redbanded nymphs are oval with the length greater. Furthermore, *Thyanta* spp. have many more thin horizontal stripes across the dorsal abdomen (Akin et al. 2011).



Figure 10. Redbanded stink bug, *Piezodorus guildinii* (Westwood), eggs.
Credits: Morgan Pinkerton, UF/IFAS



Figure 11. Redbanded stink bug, *Piezodorus guildinii* (Westwood), (left), next to the Southern green stink bug, *Nezara viridula* (L.) (right).
Credits: Morgan Pinkerton, UF/IFAS



Figure 12. Redbanded stink bug, *Piezodorus guildinii* (Westwood), (left), and look-alike the redshouldered stink bug, *Thyanta* sp. (right). Credits: Morgan Pinkerton, UF/IFAS (left), and Russ Ottens, University of Georgia, Bugwood.org (right)

Host Plants

Like many other pest stink bugs, the redbanded stink bug is polyphagous but appears to have a narrower host range. This pest primarily feeds on fabaceous plants including peas, beans, and other legumes. Several of these hosts are of economical importance with the most important being soybean. Other economically significant hosts include beans (*Phaseolus vulgaris*), peas (*Pisum sativum*), lentils (*Lens culinaris*), alfalfa (*Medicago sativa*), and other forage legumes (Zerbino et al. 2014). The redbanded stink bug also feeds on weedy legumes such as *Crotalaria* spp. and *Indigofera* spp. (Panizzi and Slansky Jr 1985).



Figure 13. Redbanded stink bug, *Piezodorus guildinii* (Westwood), nymphs feeding on green beans, *Phaseolus vulgaris*. Credits: Morgan Pinkerton, UF/IFAS (left), and Russ Ottens, University of Georgia, Bugwood.org (right)

Damage

A stink bug damages plants by piercing plant tissues with a long stylet. Damage can occur to leaves and stems but the majority of feeding is on the seedpods. Stink bugs inject salivary enzymes into the plants to break down tissues. In soybeans, this feeding behavior can reduce yields and

delay maturation of the plants. Pods are marked and the internal soybeans can shrivel. The damage can also make plants susceptible to pathogens such as fungi. Due to their extended duration of feeding, the redbanded stink bug appears to cause a significantly higher level of seed damage than other Neotropical stink bugs (Depieri and Panizzi 2011).



Figure 14. Internal stink bug damage to soy bean, *Glycine max*. Credits: Ric Bessin, University of Kentucky



Figure 15. External stink bug damage to sweet pea, *Pisum sativum*. Credits: Morgan Pinkerton, UF/IFAS

Management

Monitoring

One method of monitoring for the redbanded stink bug is visual sampling of fields on a weekly basis. Infestations can occur rapidly and large numbers can be hard to control. Monitoring consists of looking for eggs, nymphs and adults or any suspicious damage to plants, fruits or seeds.

Another method for monitoring for *Piezodorus guildinii* is to sample fields using a sweep net. It is recommended to use a 15-inch-diameter sweep net in the early morning or late evening. In Louisiana and Arkansas, the economic threshold for soybean is 6 bugs in 25 sweeps in soybean (Akin et al. 2011).

A trap with a lure has not yet been developed specifically for *Piezodorus guildinii*. However, *Piezodorus guildinii* responds well to the pheromone lure for *Euschistus heros* in the Neotropics (Borges et al. 1998). *Euschistus heros* is another Neotropical stink bug, but it has not established in the United States.

Cultural

Early maturing varieties of crops can be planted to avoid stink bugs since they typically are a late season pest. This cultural control practice is recommended for all stink bugs including the redbanded stink bug (Akin et al. 2011). Furthermore, it is suggested that *Piezodorus guildinii* can be managed using insect resistant varieties in soybean (Silva et al. 2013).

Chemical

Chemical control does not appear to be as effective for *Piezodorus guildinii* as for other common stink bugs. Insecticides with mixtures of active ingredients and rotation of insecticides is essential to avoid insecticidal resistance (Akin et al. 2011).

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