

POPULATIONS OF SHARPSHOOTERS IN TWO CITRUS GROVES IN EAST-CENTRAL FLORIDA AS INDICATED BY YELLOW STICKY CARD TRAPS

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Sharpshooter infestations in Florida citrus are a concern due to potential introduction of citrus variegated chlorosis (CVC), a serious disease of citrus caused by a strain of the bacterium *Xylella fastidiosa* Wells et al. 1987. The disease is transmitted by some sharpshooter species (Redak et al. 2004) and is present in citrus in Brazil (Lacava et al. 2001). We recently surveyed two citrus groves in east-central Florida for sharpshooters. One of the citrus groves was near Fort Pierce (27°26'08"N, 80°25'50"W), and the other was near Vero Beach (27°39'02"N, 80°28'02"W).

One yellow sticky card trap (7.62 × 12.7 cm, sticky on both sides) (Great Lakes IPM, Vestaburg, MI) was placed in each of 10 trees randomly selected within each block of trees. The traps were suspended 1 to 1.5 m above ground in each tree near the outside of the canopy from a branch by a twist tie and replaced weekly. The Fort Pierce grove contained many blocks of trees of various varieties and ages, all regularly irrigated. The particular block sampled contained 'Marsh' grapefruit (*Citrus paradise* Macf.) trees (2.5 yr old, ~1.3 m tall). Sampling was conducted from Jan 2005 to Jul 2006, when the young trees had to be removed due to discovery of citrus canker disease. The Vero Beach grove was a non-irrigated block of 'Temple' orange [*C. reticulata* Blanco × *C. sinensis* (L.) Osbeck] trees (36 years old, ~3.4 m tall). Sampling was conducted from Jan 2005 to the end of Dec 2007. Petroleum spray oil was periodically applied for plant disease control (twice to the young trees, 1 or 2 times each year to the mature trees). No other pesticides were applied.

Three sharpshooter species were captured during the study: *Homalodisca insolita* (Walker), *H. vitripennis* (Germar) and *Oncometopia nigrigans* (Walker). These species had previously been shown to occur in citrus (Timmer et al. 1982), and *H. vitripennis* and *O. nigrigans* are known to transmit CVC (Brlansky et al. 2002, Damsteegt et al. 2006). Only 2 *H. insolita* adults were captured during the study, a single adult at each grove during Aug 2005. Greater numbers of this species might have been collected if traps had been positioned lower to the ground, as Ball (1979) reported that *H. insolita* is a low flying species. Only 1 adult *H. vitripennis* was captured in the young trees; this individual was collected during Mar 2005. However, *H. vitripennis* was often relatively abundant in the mature trees. Differences in vegetation surrounding the 2 blocks may have been responsible for the near absence of *H. vitripennis* on traps in the young trees and its abundance on

traps in the mature trees. The block of young trees was imbedded near the edge of a large, well-manicured citrus grove surrounded by a wide expanse of fallow ground. The block of mature trees frequently needed mowing and was surrounded in close proximity by many different plant species including grasses, herbaceous vegetation, various tree species, and ornamental plants. Low numbers of *O. nigrigans* were frequently captured on traps in the mature trees, but only a single individual was trapped in the young trees (Jun 2006). Applications of insecticides were made during the study to some blocks of trees in the vicinity of the young trees, which could have negatively influenced the number of sharpshooters captured in the young trees.

Increases in numbers of *H. vitripennis* captured on traps in the mature citrus trees generally occurred each year when air temperatures began to exceed 30°C and increases in rainfall occurred (Fig. 1). Peak means of 0.01, 0.004, and 0.01 adult *H. vitripennis* per cm² per trap per week (2.0, 0.8, and 1.9 adults per trap per week) were observed in the mature trees during 2005, 2006, and 2007, respectively. Mean populations of only 0.0003 and 0.001 adults per cm² per trap per week were reported in citrus groves during Apr-Jul (1980) in east-central Florida (Vero Beach and Indiantown, respectively) (extrapolations of data from Timmer et al. 1982). We observed a mean of 0.014 *H. vitripennis* per cm² per trap per week during these months in the mature trees. *Homalodisca vitripennis* has been reported to be more abundant in northern than southern areas of Florida (Timmer et al. 1982). However, data comparisons indicated that appreciable population levels of *H. vitripennis* may sometimes develop in citrus in east-central Florida. Differences between population levels of *H. vitripennis* we observed and those reported by Timmer et al. (1982) could have been an artifact of environmental differences and/or differences in alternate host plant species used by *H. vitripennis* in the vicinity of the groves sampled.

Numbers of *H. vitripennis* captured on traps in the mature citrus trees indicated that populations were abundant during Jul through Sep with large peaks during Jul and Aug (Fig. 1). Seasonal trends in population levels of adult *H. vitripennis* on traps at our mature-tree study site were similar to those reported in other areas of Florida (Timmer et al. 1982), although the largest population peaks occurred somewhat later than previously reported. *Oncometopia nigrigans* was captured on traps nearly every month of the year in

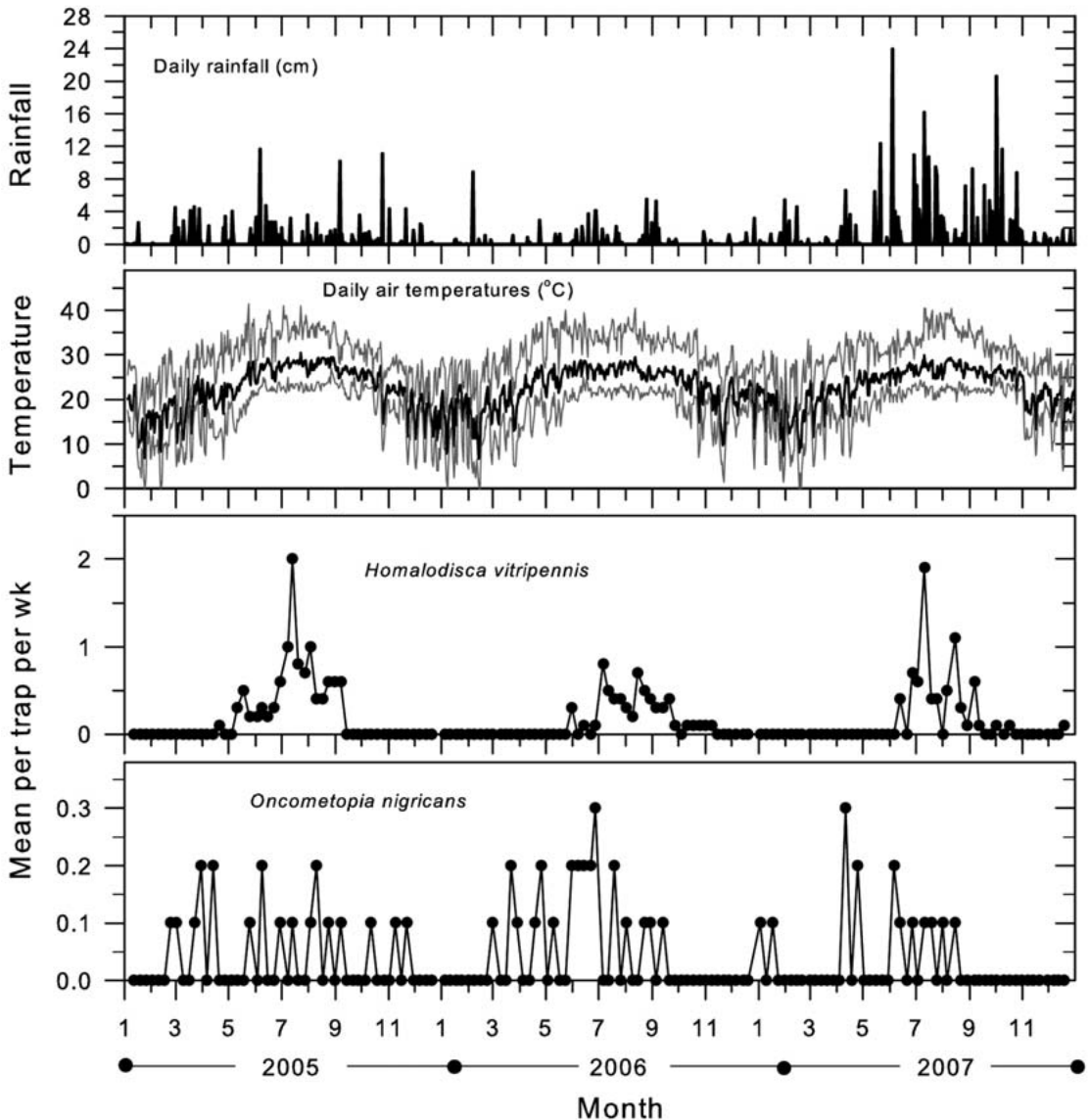


Fig. 1. Rainfall, daily air temperatures (mean, minimum and maximum), and mean number of sharpshooters per sticky trap per week in a block of non-irrigated, mature orange trees in east-central Florida. Placement of monthly labels correspond to the first day of each month.

the mature trees, but year-to-year variation in combination with low numbers of adults trapped made it difficult to characterize this sharpshooter's phenology and peak periods of activity in citrus. Timmer et al. (1982) reported population peaks of *O. nigricans* in citrus during summer.

Adult *H. vitripennis* have a wide host range (Turner & Pollard 1959), are long-lived, and exceptionally mobile. Adults feed on host plants that are in a growth phase, thus they move frequently searching for plants at this phase (Mizell et al. 2008). Caution therefore must be taken in

interpreting population levels of *H. vitripennis* in vegetation proximal and distal to citrus based on trap captures of the sharpshooter in citrus (Mizell et al. 2008).

SUMMARY

Three sharpshooter species were captured on yellow sticky card traps in two citrus groves in east-central Florida: *Homalodisca insolita*, *H. vitripennis* and *Oncometopia nigricans*. *Homalodisca vitripennis* and *O. nigricans* were relatively

common and *H. vitripennis* relatively abundant over a 3-year period in a block of mature trees that frequently needed mowing and that was surrounded by an array of plant species. *Homalodisca vitripennis* and *O. nigricans* were uncommon during an 18-month study in a young block of trees within a well-manicured grove. *Homalodisca insolita* was detected at each grove but uncommon on traps, possibly due to the height at which traps were operated.

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