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SEASONAL OCCURRENCE OF *GNOPHOTHrips FUSCUS*
(THYSANOPTERA: PHLAEOTHRIPIDAE)
ON SLASH PINE IN FLORIDA

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Adults of the slash pine flower thrips, *Gnophothrips fuscus* (Morgan), feed from Dec-Feb on female slash pine, *Pinus elliottii* Engelm. var. *elliottii*, flowers, so reducing potential seed yields (Ebel 1961, DeBarr 1969, Hedlin et al. 1980). Adults also have been observed from Apr-Sep on current-year's shoots of slash pines of all ages and within the needle fascicles of seedlings (Hedlin et al. 1980). The immature life stages of *G. fuscus* have been described by Ranasinghe et al. (1985). We report on the occurrence of all life stages on young slash pine seedlings and of flying adults within the crowns of older (cone-bearing) slash pine trees in NE Florida.

One hundred young (2-5-yr old) slash pine seedlings growing in the understory of open-grown, mixed slash and longleaf, *P. palustris* Mill., pine trees in a seed production area near Olustee, FL were sampled from Apr 1979-May 1980. At 1-2-week intervals from Apr-Sep and monthly otherwise, an entire current year's (or most recently formed) shoot was collected from each of 15 randomly-selected seedlings. The numbers of thrips life stages present per 15-shoot sample, determined by microscopic examination, were plotted against collection dates.

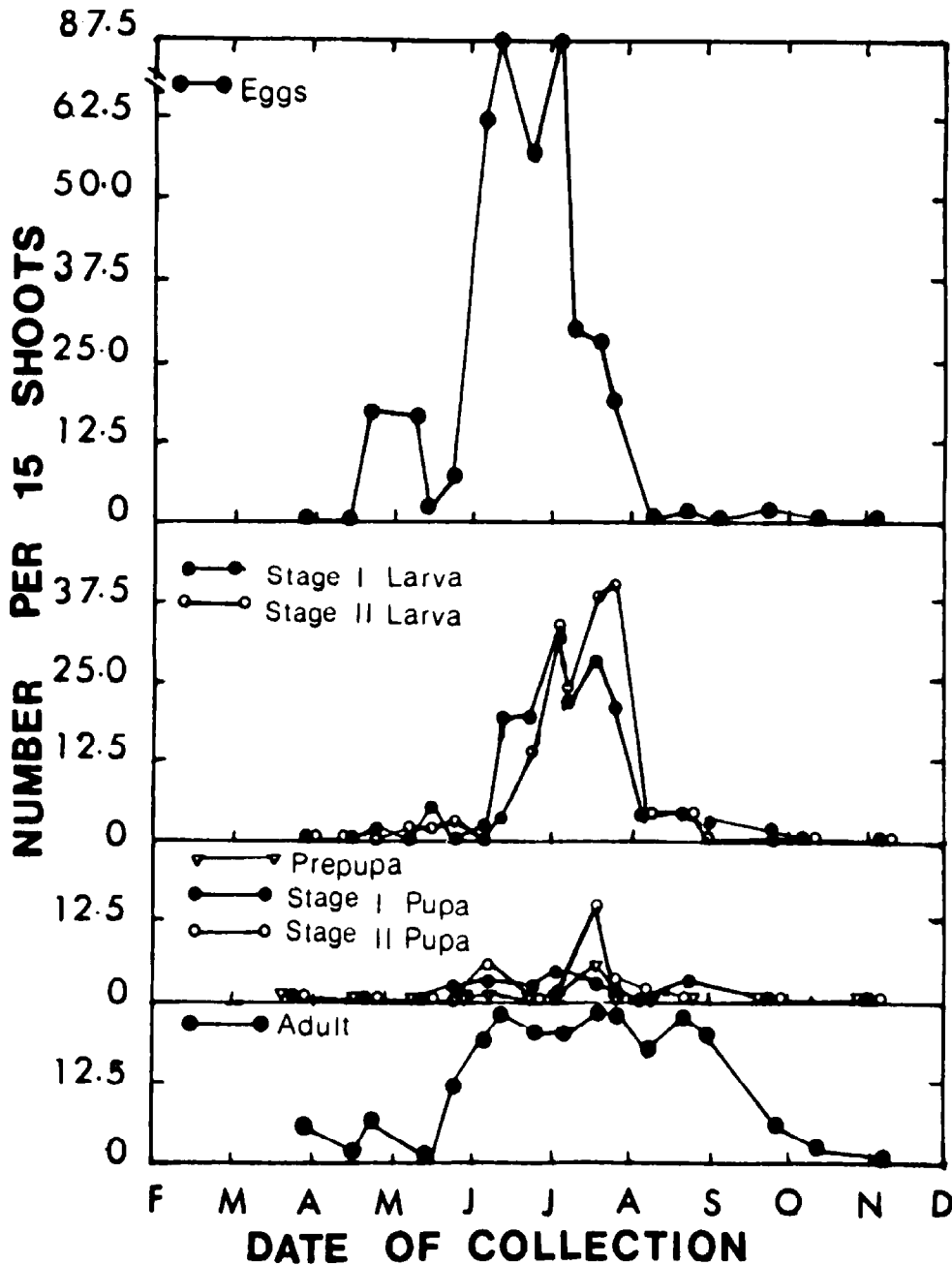


Fig. 1. Seasonal abundance of *G. fuscus* life stages on shoots of young slash pine seedlings near Olustee, FL from April 1979-May 1980. Note: Numbers of specimens shown in April and May are averages for 1979 and 1980.

The crowns of six older (17-20-yr old) slash pine trees growing in the overstory at the same site as the seedlings were divided into N, E, S and W quadrants. Sticky traps (yellow plastic discs 15-cm dia sprayed on one side with Tanglefoot® insect adhesive) were used to sample flying *G. fuscus* adults. One trap was suspended from a shoot in the middle of each quadrant in the upper crown by means of a thin nylon cord which permitted the disc to rotate in the wind. Exposed traps were replaced with fresh ones

monthly and trapping was conducted from Dec 1977-Nov 1979 (total of 1 trap x 4 quadrants x 6 trees = 24 traps per month). Mean monthly catches were plotted against collection dates and weather station air temperatures at nearby Lake City. Data were analyzed to determine if there were significant differences in the number of *G. fuscus* adults trapped among seasons, years, and quadrants (FUNCAT procedure, SAS Institute 1982).

On young slash pine seedlings, all stages of *G. fuscus* were collected in small numbers during spring (22 Mar-21 Jun), the numbers peaked in the summer (22 Jun-21 Sep), and declined during fall (22 Sep-21 Dec). None was found during the winter (22 Dec-21 Mar) (Fig. 1). Mean numbers collected per 15-shoot sample were 12.4 adults, 25.0 eggs, 9.0 stage-I larvae, 9.5 stage-II larvae, 0.5 prepupae, 1.8 stage-I pupae, and 1.9 stage-II pupae, respectively. An estimated three generations of *G. fuscus* can occur per growing season in NE Florida, based on laboratory rearing experience (Ranasinghe 1981).

All *G. fuscus* adults trapped within the crowns of older trees were macropterous. Mean catches were lowest during winter, peaked in the spring, and declined during the summer and fall. (Fig 2). Low catches coincided with colder winter temperatures and reported feeding activity on female slash pine flowers, suggesting that adults overwinter and feed on flowers within the crown of a given tree. Macropterous adults perhaps migrate to breed on fresh host material during warmer weather (Fig 2). Lewis (1973) reports similar behavior of many species of thrips. There were significant differ-

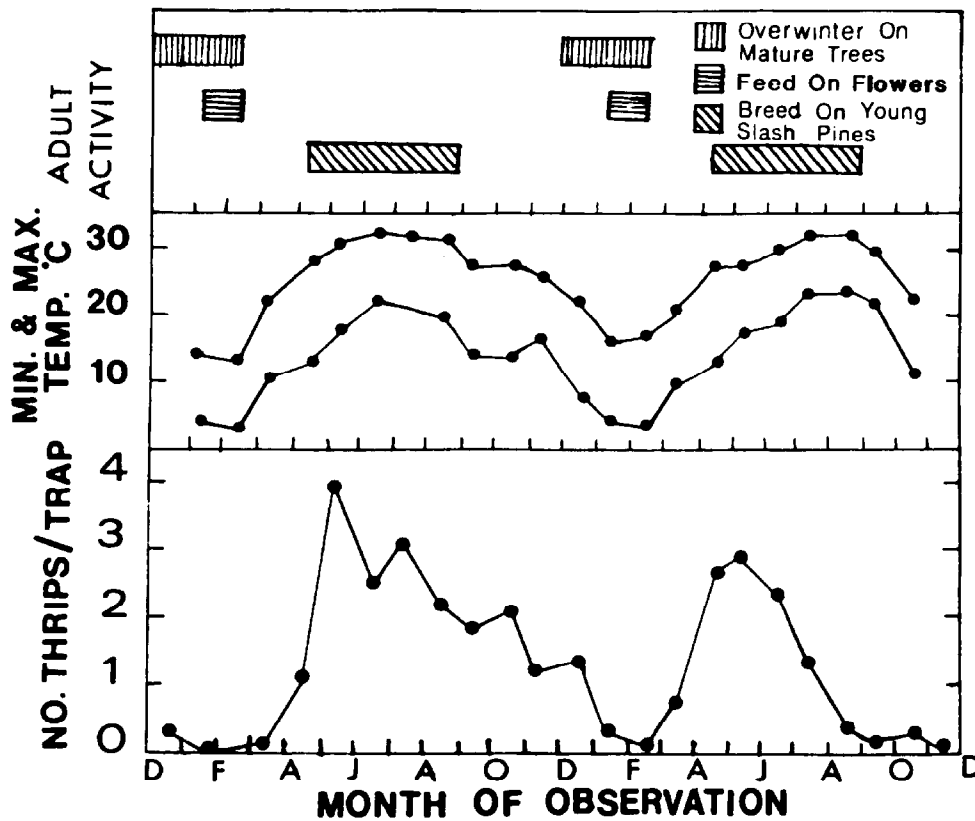


Fig. 2. Activities of *G. fuscus* adults (top), mean monthly air temperatures (middle) and mean monthly catches of *G. fuscus* adults per trap (bottom) in 24 sticky traps hung in the crowns of 6 cone-bearing slash pines near Olustee, FL from December 1977-November 1979.

ences ($\chi^2 = 79.42^{***}$, with 3 df) among seasons in the probability of a trap having a catch, but the year x season interaction also was significant ($\chi^2 = 57.15^{***}$, with 3 df). There were no such significant differences ($\chi^2 = 0.95$, n.s. for 3 df) among quadrants, in agreement with DeBarr et al. (1975) who found no significant differences in the numbers of *G. fuscus*-attacked female slash pine conelets among quadrants. Further research is needed to determine seasonal changes in the density of this thrips in managed slash pine seed orchards.

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A MITE, *OGMOTARSONEMUS EREPSIS* (TARSONEMIDAE),
IN OVIPOSITION INCISIONS OF THE PLANTHOPPER
PROKELISIA MARGINATA (HOMOPTERA, DELPHACIDAE)
ON THE SALTMARSH CORDGRASS,
SPARTINA ALTERNIFLORA

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The upper surfaces of leaves of saltmarsh cordgrass (*Spartina alterniflora* Loisel) on the shores of the northern Gulf of Mexico frequently bear distinctive brown wounds. The largest of these wounds are deep and visible through the leaf, from the lower, abaxial, surface. These wounds are more frequent and larger on older, basal, leaves of