

SEASONAL FLIGHT OF *PLECIA NEARCTICA*
(DIPTERA:BIBIONIDAE) IN SOUTHERN FLORIDA

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The lovebug, *Plecia nearctica* Hardy, is a serious nuisance to motorists traveling in southern states. The insects are smashed against windshields obscuring vision and cars may overheat when radiators become clogged. The smashed insects also damage car paint if the body fluids are not removed soon after contact (Callahan and Denmark 1973). The insect was first described by Hardy (1940) from Galveston, Texas, who reported it to be widely spread, but more common in Texas and Louisiana than other Gulf Coast states. It has now progressed to all states bordering on the Gulf of Mexico, as well as Georgia, South Carolina, and parts of Central America. It was first collected in Florida in 1949 and today is found throughout Florida (Denmark and Mead 1992).

Adult flights of lovebugs have been reported to occur primarily during May and September in different areas of the insect's range (Hetrick 1970; Callahan and Denmark 1973; Buschman 1976; Thornhill 1976; Callahan 1985). However, in spite of these previous reports, no data have ever been presented actually showing seasonal flights of the lovebugs. Our objective was to determine seasonal flight patterns of *P. nearctica* in southern Florida. Additional data on temporal synchrony of flights at different locations are also presented.

Yellow sticky traps (Pherocon AM, no bait) made by Trece Inc., Salinas, California and baited with anethole (Cherry 1998) were used to monitor adult flights of lovebugs. Sampling was conducted by putting out 15 new sticky traps each month at approximately mid-month. These 15 traps were located at three different locations (5 traps/location) to provide data on temporal synchrony between locations. One location was the Everglades Research and Education Center (location one), University of Florida, located near Belle Glade, Florida. The other two locations were located approximately 24 km southwest of the research center (location two) and 31 km east of the research center (location three). All three locations were located within Palm Beach County, Florida, and surrounded by agricultural lands (sugarcane, rice, vegetables). Traps at each location were placed 250 m apart in a straight line (i.e. a one km transect) adjacent roads. Each trap was hung one m above the ground on a metal rod and had a sponge (3 × 3 × 3 cm) containing 5 ml of anethole wedged into it. All 15 traps were hung and baited on the same day and collected seven days later. The seven day exposure period was used to avoid short term inclement weather factors such as rain, extreme winds, etc. that might greatly reduce adult catches within a shorter trap exposure time. Traps were collected by wrapping each trap in clear cellophane in the field. Lovebugs on each trap were counted by microscopic identification in a laboratory. A sample of lovebug adults collected on the traps during different major flight periods (May, September, December) was sent to Dr. Gary Steck, Division of Plant Industry, Gainesville, Florida who corroborated that the insects were *P. nearctica*.

Statistical analysis was conducted by SAS (1996). Temporal synchrony of adult flights between locations was determined by multiple correlation using the total number of adults caught each month at each location. Differences in mean numbers of adults caught at each location during different months were determined by using Tukey's test. A figure to visually show the overall seasonal flight pattern of the lovebugs is also presented.

Although different numbers of lovebugs were observed between locations (Table 1), there was temporal synchrony in flight between locations. Multiple correlation of

TABLE 1. MEAN^a NUMBER OF ADULT LOVEBUGS CAUGHT PER TRAP IN DIFFERENT MONTHS AT THREE DIFFERENT LOCATIONS IN PALM BEACH COUNTY, FLORIDA.

	Location ^b		
	1	2	3
April 1998	64.4 a	206.8 a	543.2 a
May	57.4 a	39.0 bc	213.4 c
June	1.4 a	1.8 c	12.8 e
July	23.4 a	11.8 c	53.8 de
Aug.	59.8 a	75.2 b	390.8 b
Sep.	99.0 a	149.2 a	566.0 a
Oct.	0.0 a	0.0 c	0.0 e
Nov.	0.0 a	0.4 c	0.0 e
Dec.	17.2 a	10.2 c	160.0 cd
Jan. 1999	28.0 a	28.6 bc	72.4 de
Feb.	12.0 a	6.8 c	89.4 cde
Mar.	2.0 a	4.0 c	25.2 e

^aMeans in a column followed by the same letter are not significantly different ($\alpha = 0.05$) using Tukey's test (SAS 1996).

^bLocation one is the Everglades Research and Education Center (EREC) located at Belle Glade, Florida. Locations two and three are 24 km southwest and 31 km east of the EREC, respectively.

the total number of adults on traps between locations each month gave Pearson correlation coefficients of 0.83, 0.93, and 0.94 between locations one and two, locations one and three, and locations two and three respectively, all of which are highly significant ($P < 0.001$). Local differences in adult emergence schedules have been reported in other insects such as the oriental beetle, *Exomala orientalis* (Waterhouse), in a New York golf course (Facundo et al. 1999).

At all three locations, major flight activity took place during April-May and August-September, plummeted during October-November and then rose again in December (Table 1). The total number of lovebugs caught at all locations each month is shown in Figure 1, which gives a visual summary of the lovebug flight throughout the year. As noted earlier, several studies have reported that lovebug major flight periods were in May and September. Our data are in general agreement with the reported May and September flight activity. However, our data showed more flight activity in April than May and also large numbers of adults flying in August. Moreover, we observed a minor flight peak in December that has not previously been reported. Our data indicating three lovebug flight peaks per year in southern Florida do not necessarily contradict observations from earlier studies of two flight peaks which may be the actual pattern for more northern populations. Additional research is needed to determine exactly when lovebugs fly in different parts of their range.

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SUMMARY

Temporal synchrony was observed in flights of adult lovebugs between three locations. Flight peaks occurred in April, September, and December.

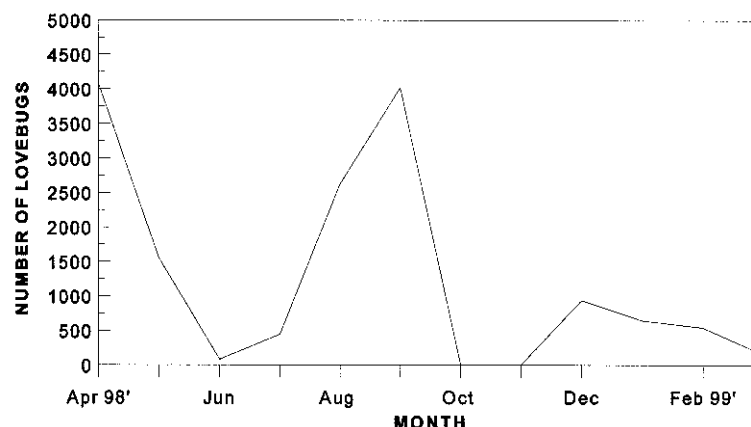


Fig. 1. Total number of lovebugs caught on 15 sticky traps over a seven day period each month.

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