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LIFE HISTORY OF *NEOPLEA STRIOLA* (HEMIPTERA: PLEIDAE)J. E. McPherson¹

ABSTRACT

The life history of *Neoplea striola* was studied in southern Illinois during 1983–1985. This apparently univoltine species overwintered as adults and became active in early March. First instars appeared in mid-May followed by marked overlapping of the subsequent instars. No active adults were found after November.

The pygmy backswimmer *Neoplea striola* (Fieber) occurs in America north of Mexico from Florida north to Ontario, west to Manitoba, south to Texas, and east to Florida (Sanderson 1982); it has also been reported from Utah (Drake and Chapman 1953). In Illinois, it has been recorded only from the northern 1/2 of the state (Lauck 1959).

Several notes have been published on the life history of this small bug (see literature reviews of Gittelman [1974], Sanderson [1982], and Wilson [1958]). It prefers tangles of vegetation in fairly static water (e.g., ponds, swamps, sluggish drainage ditches) or the sluggish parts of streams (Drake and Chapman 1953). It is predaceous on small crustacea (Hungerford 1919).

Adults overwinter (Gittelman 1975, Sanderson 1982) and emerge in the spring as early as April (Bare 1926). Eggs are inserted into aquatic vegetation (Bare 1926; Hungerford 1919; Rice 1954; Sanderson 1982; Torre-Bueno 1923, 1924). Nymphs are apparently most common during the summer months (Lauck 1959, Rice 1954) but both nymphs and adults can be found as late as October in Mississippi (Wilson 1958). The number of generations is not definitely known (Sanderson 1982).

N. striola has been reared in the laboratory from egg to adult (i.e., Bare 1926; Rice 1942, 1954) and the egg (Hungerford 1919; Rice 1942, 1954) and 1st-5th nymphal instars have been described (Gittelman 1974).

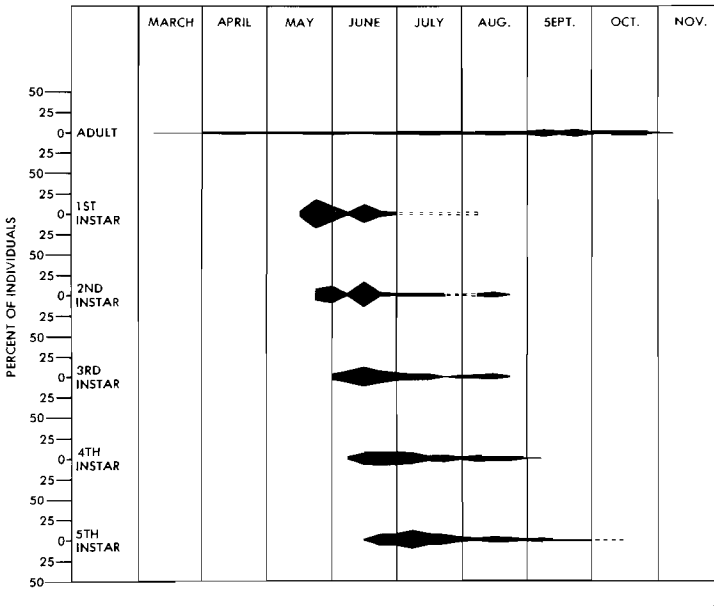
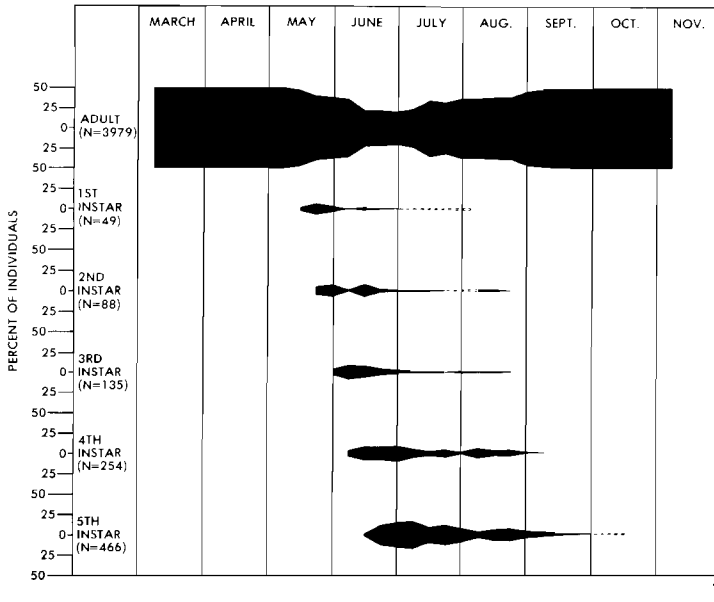
For the past three years (1983–1985), I have conducted a survey of aquatic and semiaquatic Hemiptera of the La Rue-Pine Hills Ecological Area. This area, located in the northwest corner of Union County, Illinois, ca. 29 km northeast of Cape Girardeau, is part of the Shawnee National Forest. It includes heavily forested areas atop limestone bluffs, and moist forests at the base of these bluffs that surround La Rue Swamp and Winters Pond. These aquatic habitats are continuous and it is here that this pleid occurs. Much of the study area is blanketed with duckweeds (i.e., *Lemna*, *Spirodela*, *Wolffia*, and *Wolffiella*) along the shoreline.

This paper presents information on the life history of *N. striola*.

MATERIALS AND METHODS

The study began in March 1983, before the bugs emerged from overwintering sites that year. Samples of adults and (or) nymphs were taken with an aquatic net at ca. weekly

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Figs. 1–2. (1) Percent of individuals in each stage per sample of *N. striola* during 1983–1985 combined seasons in Union County, Illinois. (2) Percent in each sample of total individuals of same stage of *N. striola* during 1983–1985 combined seasons in Union County, Illinois. For both figures, bars extend to last date specimens were collected; dashed lines between first and last dates indicate no specimens were found.

intervals at six sites along the edge of the study area into November after all nymphs had disappeared and adult activity had markedly decreased. Sampling during the following two years was conducted similarly. All samples were preserved in 75% ethanol and subsequently examined in the laboratory to accurately determine the developmental stages present in each sample. Occasional samples were also taken during the winter to determine the overwintering stage(s). Data gathered during the three years of this study were combined to gain a better understanding of the annual life cycle.

RESULTS AND DISCUSSION

This species overwintered as adults and became active in early March (Figs. 1, 2). Unfortunately, only one overwintering adult was found, and that in a sample of mud and detritus in shallow water within 1 m of the shoreline. However, this observation agrees with that of Gittelman (1975) who also found that adults overwinter in bottom litter. No eggs were found. First instars were found from mid-May to early August, 2nd instars from the 3rd week of May to the 3rd week of August, 3rd instars from late May and early June to the 3rd week of August, 4th instars from early June to early September, and 5th instars from mid-June to mid-October.

Overwintered adults were most abundant between early April and early June. New adults began to appear in July as evidenced by the increase in number of adults following the 1st appearance of 5th instars (Figs. 1, 2).

The number of generations is not clearly evident from the data. There was marked overlapping of the various stages and, therefore, any particular sample could have any combination of individuals (Fig. 1). Also, weekly plotting of data for each stage failed to show distinct peaks of abundance (Fig. 2). Thus, either one or more generations/year might seem equally probable. However, I believe this bug is univoltine and capable of sustained oviposition. The drops in percentages of 1st and 2nd instars in early June followed by increases might suggest a partial 2nd generation. But both drops occurred at the same time in the two instars and, therefore, probably reflect their small sample sizes; the 3rd–5th instars, with larger sample sizes, did not show a similar pattern. The reappearances of 1st and 2nd instars late in the year, and the increases in percentage of the 3rd–5th instars, also suggest a partial 2nd generation. However, Bare (1926) and Rice (1942, 1954) reported that F_1 adults reared from eggs deposited in the laboratory by field-collected parents did not, in turn, reproduce, thus further supporting my contention that *N. striola* is univoltine.

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