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SEASONAL FLIGHT PATTERNS OF HEMIPTERA IN A NORTH CAROLINA BLACK WALNUT PLANTATION. 5. LYGAEOIDEA

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ABSTRACT

The seasonal flight patterns of 31 species of Lygaeoidea collected in window traps in a North Carolina black walnut plantation are described. Flying height distributions and seasonal flight activities of *Antillocoris pilosulus* (Stål), *Crophius disconotus* (Say) and *Geocoris punctipes* (Say) are considered in detail.

This is the fifth in a series of papers on seasonal flight patterns of Hemiptera in a black walnut (*Juglans nigra* L.) plantation near Asheville, North Carolina, and deals with the superfamily Lygaeoidea; earlier papers dealt with the Pentatomoidea (1980), Coreoidea (1981a), Reduvioidea (1981b), and Cimicoidea (1981c). The study was conducted from 24 March to 14 October in 1977, and from 24 March to 13 October in 1978. Specimens were collected weekly by window trapping; traps were suspended at 1, 2, 3, 4, 5, 6 and 7 m. The study site and trap construction were discussed in detail by McPherson and Weber (1980). All hemipteran specimens collected during this study are deposited in the Entomology Collection. Zoology Research Museum, Southern Illinois University, Carbondale.

RESULTS AND DISCUSSION

Thirty one lygaeoid species were collected during the two years of this study with the lygaeids being best represented; numbers of specimens collected for all taxa ranged from one to 311 (Table 1).

Most of the species were collected in numbers too low to permit conclusions about seasonal flight patterns. However, *Antillocoris pilosulus* (Stål), *Crophius disconotus* (Say) and *Geocoris punctipes* (Say) were collected in sufficient numbers (Table 1) to allow a more detailed discussion of flying height distributions and seasonal flight activities.

A. pilosulus has been swept from grasses in a dry cranberry bog in New York (Torre-Bueno 1912); found in a grass clump and at lights in Missouri (Froeschner 1944); in the pitcher plant *Sarracenia purpurea* L. in North Carolina (Wray and Brimley 1943); in the litter of the shrub *Rhododendron catawbiense* Michaux and in leaf litter along a mesophytic woodland edge, both sites in North Carolina (Sweet 1964); apparently in the thick litter beneath the bayberry, *Myrica pensylvanica* Loiseleur-Deslongchamps, in Connecticut (Sweet 1964): and beneath stones on the slopes of hillside pastures in Indiana (Blatchley 1926). It apparently is univoltine and overwinters as adults (Sweet 1963).

In the present study, *A. pilosulus* adults were found from late March to mid-October (Table 1). They were collected at all seven flying heights with almost 40% captured at 4–5 m (Fig. 1).

This species overwintered as adults but the number of generations per year is unclear from the data available (Fig. 4). If, as Sweet (1963) suggested, this species is univoltine, then the

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Table 1. Seasonal flight activity of Lygaeoidea during 1977–78 in a North Carolina black walnut plantation.

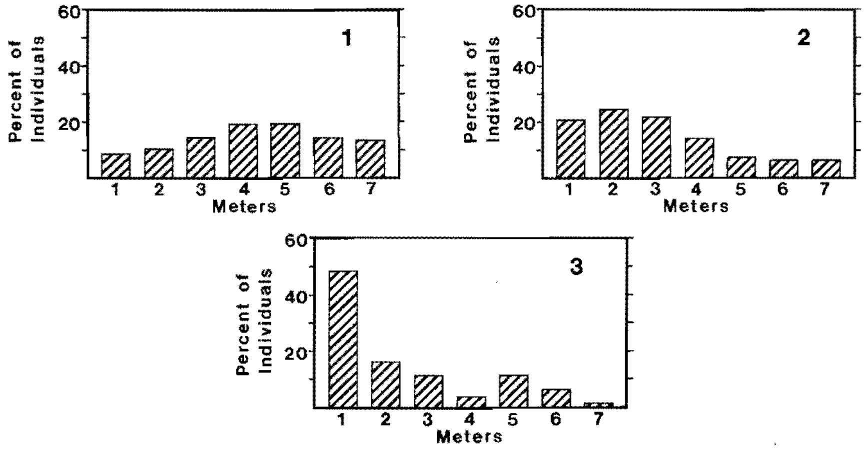
Taxon	No. Collected	Collection Height (m)		Range of Collection Dates
		$\bar{x}$±SE	Range	
LYGAEIDAE				
Antillocorus pilosulus (Stål)	311	4.26±0.10	1–7	31 March–13 Oct.
Belonochilus numenius (Say)	38	5.71±0.25	2–7	1 April–6 Oct.
Blissus leucopterus (Say)	1	6.00	—	8 July
Crophius disconotus (Say)	79	3.09±0.20	1–7	19 May–13 Oct.
Cryphula trimaculata (Distant)	1	1.00	—	16 Sept
Cymus angustatus Stål	4	3.00±1.41	1–7	31 March–25 Aug.
Cymus discors Horvath	7	4.43±0.61	2–7	31 March–1 Sept.
Eremocoris ferus (Say)	3	5.00±1.00	3–6	31 March–30 June
Geocoris punctipes (Say)	78	2.37±0.20	1–7	31 March–13 Oct.
Geocoris uliginosus (Say)	9	5.22±0.52	3–7	20 May–9 Sept.
Heraeus plebejus Stål	3	5.33±0.88	4–7	30 June–22 July
Kleidocerys resedae (Panzer)	28	5.39±0.34	1–7	29 April–13 Oct.
Kolenetrus plenus (Distant)	1	1.00	—	6 Oct.
Ligyrocoris diffusus Uhler	7	3.86±0.94	1–7	29 April–15 Sept.
Lygaeus kalmii Stål	19	1.68±0.20	1–4	9 June–29 Sept.
Lygaeus turcicus (Fabricius)	1	2.00	—	9 June
Myodocha serripes Olivier	10	4.20±0.77	1–7	22 April–7 July
Neacoryphus bicrucis (Say)	2	5.00±0.00	—	7 July–14 July
Nysius niger Baker	10	4.70±0.72	1–7	7 April–13 Oct.
Ortholomus scolopax (Say)	12	2.58±0.68	1–7	10 June–25 Aug.
Pachybrachius basalis (Dallas)	12	4.00±0.71	1–7	1 April–13 Oct.
Pachybrachius bilobatus (Say)	13	3.00±0.39	1–5	17 June–13 Oct.
Phlegyas abbreviatus (Uhler)	1	1.00	—	29 July
Pseudocnemodus canadensis (Provancher)	2	5.50±1.50	4–7	30 June–14 July
Ptochiomera nodosa Say	45	3.80±0.32	1–7	3 June–13 Oct.
Xyonysius californicus (Stål)	9	4.11±0.77	1–7	7 April–6 Oct.
Zeridoneus costalis (Van Duzee)	1	7.00	—	20 May
BERYTIDAE				
Jalysus spinosus (Say)	1	6.00	—	26 May
Jalysus wickhami Van Duzee	30	3.40±0.38	1–7	3 June–8 Sept.
Neides muticus (Say)	1	3.00	—	14 April
PIESMATIDAE				
Piesma cinerea (Say)	32	3.72±0.44	1–7	14 April–13 Oct.

overwintered adults emerged in late March and were most active during the first two weeks of April. Their adult offspring were present from about July to the end of the season and were particularly active in August, and in October just before entering overwintering sites.

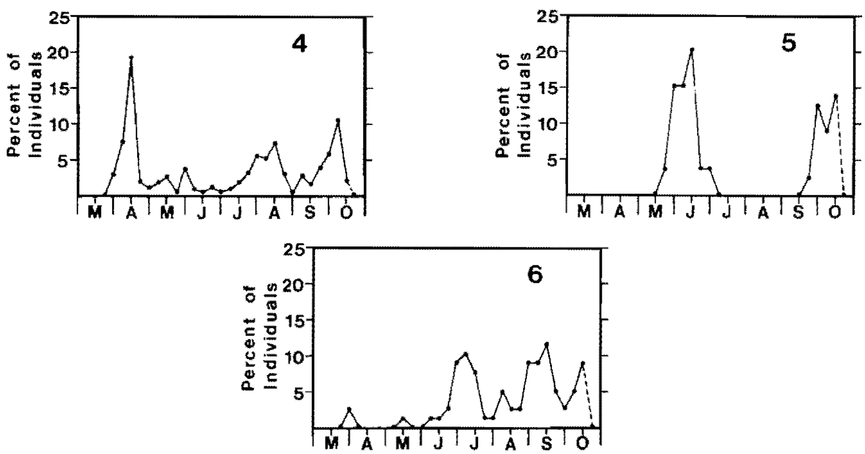
C. disconotus has been collected from pine (Slater and Baranowski 1978), goldenrod (Slater and Baranowski 1978, Torre-Bueno 1925, Van Duzee 1894) and oak (Torre-Bueno 1912). We have found no published information on its field life cycle.

In the present study, *C. disconotus* adults were found from the third week of May to mid-October (Table 1). They were collected at all seven flying heights with almost 66% captured at 1–3 m (Fig. 2).

This species overwintered as adults and was apparently univoltine (Fig. 5). Adults began to emerge from overwintering sites in late May and were present to late June. Their adult offspring occurred from late September to the end of the season. It is possible that other



Figs. 1–3. Flying height distributions of three lygaeid species during 1977–78 in a North Carolina black walnut plantation: (1) *Antillocoris pilosulus*, (2) *Crophius disconotus*, (3) *Geocoris punctipes*.



Figs. 4–6. Seasonal flight activities of three lygaeid species during 1977–78 in a North Carolina black walnut plantation: (4) *Antillocoris pilosulus*, (5) *Crophius disconotus*, (6) *Geocoris punctipes*.

generations were produced during the season that did not exhibit flight activity (e.g., overwintering adults may actually have emerged in March–April and the May–June activity is that of their adult offspring) but this could not be determined from the available data.

G. punctipes has been collected on alfalfa (Townsend 1894) and cotton (McGregor and McDonough 1917), and by sweeping low weeds and searching under objects on the ground (Froeschner 1944); it is known to feed on spider mites (McGregor and McDonough 1917). We have found no published information on its field life cycle other than it is known to overwinter as adults (Froeschner 1944).

In the present study, *G. punctipes* adults were found from late March to mid-October (Table 1). They were collected at all seven flying heights with almost 50% captured at 1 m.

This species overwintered as adults and was apparently bivoltine although the fluctuations in flight activity during the season make this difficult to determine. Nevertheless, the following life cycle seems probable. Adults began to emerge from overwintering sites in late March (Fig. 6). Their adult offspring (summer generation) occurred from about June to late July or early August, and peaked in early July. Adults of the second (overwintering) generation occurred from August to the end of the season. It is possible that the peak in October represents an additional generation but since the time between this peak and that in September is only one month, the drop at the end of September probably resulted from random variation or was a response to some environmental factor (e.g., temperature).

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