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J. E. McPherson  
*Southern Illinois University*

B. C. Weber  
*USDA Forest Service*

T. J. Henry  
*National Museum of Natural History*

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## SEASONAL FLIGHT PATTERNS OF HEMIPTERA IN A NORTH CAROLINA BLACK WALNUT PLANTATION. 7. MIRIDAE

J. E. McPherson,<sup>1</sup> B. C. Weber,<sup>2</sup> and T. J. Henry<sup>3</sup>

### ABSTRACT

The seasonal flight patterns of 79 species of Miridae collected in window traps in a North Carolina black walnut plantation are described. Flying height distributions and seasonal flight activities of *Deraeocoris nebulosus* (Uhler), *Keltonia sulphurea* (Reuter), *Lygus lineolaris* (Palisot de Beauvois), *Plagiognathus politus* Uhler, and *Reuteroscopus ornatus* (Reuter) are considered in detail.

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This is the last 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 family Miridae; earlier papers dealt with the Pentatomoidea (1980), Coreoidea (1981a), Reduvidae (1981b), Cimicoidea (1981c), Lygaeoidea (1981d), and Tingidae and Aradidae (1981e). 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 are 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

Seventy nine mirid species were collected during the two years of this study with the subfamily Mirinae being best represented; numbers of specimens collected for all taxa ranged from 1 to 2673 (Table 1).

Most of the species were collected in numbers too low to permit conclusions about seasonal flight patterns. However, *Deraeocoris nebulosus* (Uhler), *Keltonia sulphurea* (Reuter), *Lygus lineolaris* (Palisot de Beauvois), *Plagiognathus politus* Uhler, and *Reuteroscopus ornatus* (Reuter) were collected in sufficient numbers (Table 1) to allow a more detailed discussion of flying height distributions and seasonal flight activities.

*D. nebulosus*, a predaceous species, is generally associated with trees and shrubs (Wheeler et al. 1975). It has been reported to attack various species of mites and insects including, among others, European red mite, *Panonychus ulmi* (Koch); woolly apple aphid, *Eriosoma lanigerum* (Hausmann); clover aphid, *Nearctaphis bakeri* (Cowen); hop aphid, *Phorodon humuli* (Schrank); cotton aphid, *Aphis gossypii* Glover; terrapin scale, *Lecanium nigrofasciatum* Pergande; eyespotted bud moth, *Spilonota ocellana* (Denis and Schiffermüller); and possibly codling moth, *Laspeyresia pomonella* (L.) (see literature survey of Wheeler et al. 1975). Wheeler et al. (1975), in their study of this insect, also reported its feeding on the mite *Oligonychus bicolor* (Banks); the oak lace bug, *Corythucha arcuata*

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<sup>1</sup>Department of Zoology, Southern Illinois University, Carbondale, IL 62901.

<sup>2</sup>USDA Forest Service, North Central Forest Experiment Station, Forestry Sciences Laboratory, Carbondale, IL 62901.

<sup>3</sup>Systematic Entomology Laboratory, IIBIII, Agricultural Research Service, USDA, c/o National Museum of Natural History, Washington, DC 20560.

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

Taxon	No. Collected	Collection Height (m)		Range of Collection Dates
		$\bar{x} \pm SE$	Range	
MIRINAE				
<i>Adelphocoris lineolatus</i> (Goeze)	2	2.00	—	27 May
<i>Adelphocoris rapidus</i> (Say)	11	1.82 $\pm$ 0.33	1-4	26 May-6 Oct.
<i>Agnocoris pulverulentus</i> (Uhler)	2	4.50 $\pm$ 2.50	2-7	26 May-30 June
<i>Capsus ater</i> (L.)	4	4.25 $\pm$ 0.95	3-7	20 May-9 June
<i>Dichroscytus elegans</i> Heidemann	1	7.00	—	23 June
<i>Dichroscytus suspectus</i> Reuter	1	4.00	—	2 June
<i>Garganus fusiformis</i> (Say)	3	1.67 $\pm$ 0.67	1-3	24 June
<i>Leptopterna dolabrata</i> (L.)	5	3.20 $\pm$ 1.02	1-6	13 May-26 May
<i>Lygocoris caryae</i> (Knight)	11	3.82 $\pm$ 0.52	2-7	13 May-7 July
<i>Lygocoris geneseensis</i> (Knight)	3	6.00 $\pm$ 1.00	4-7	13 May-17 June
<i>Lygocoris</i> sp.	1	4.00	—	27 May
<i>Lygus lineolaris</i> (Palisot de Beauvois)	929	2.60 $\pm$ 0.002	1-7	31 March-13 Oct.
<i>Megaloceroea recticornis</i> (Geoffroy)	1	1.00	—	16 June
<i>Phytocoris</i> prob. <i>americanus</i> Carvalho	2	3.50 $\pm$ 1.50	2-5	7 July
<i>Phytocoris confluentis</i> Reuter	1	5.00	—	30 June
<i>Phytocoris conspurcatus</i> Knight	1	3.00	—	7 Oct.
<i>Phytocoris erectus</i> Van Duzee	2	4.50 $\pm$ 0.50	4-5	23 June-5 Aug.
<i>Phytocoris fenestratus</i> Reuter	1	7.00	—	20 May
<i>Phytocoris intermedius</i> Henry	3	5.33 $\pm$ 0.67	4-6	20 May-16 June
<i>Phytocoris minutulus</i> Knight	7	2.00 $\pm$ 0.53	1-5	30 June-6 Oct.
<i>Phytocoris penipectus</i> Knight	1	6.00	—	13 May
<i>Phytocoris puella</i> Reuter	2	5.50 $\pm$ 0.50	5-6	23 June-30 June
<i>Phytocoris salicis</i> Knight	1	5.00	—	7 July
<i>Phytocoris tibialis</i> Reuter	8	2.50 $\pm$ 0.73	1-7	30 June-15 Sept.
<i>Polymerus basalis</i> (Reuter)	21	1.90 $\pm$ 0.33	1-7	1 April-13 Oct.
<i>Prepops fraterculus</i> (Knight)	1	7.00	—	2 Sept.
<i>Stenodema trispinosa</i> Reuter	4	2.75 $\pm$ 1.44	1-7	1 April-6 May
<i>Stenotus binotatus</i> (Fabricius)	6	4.00 $\pm$ 0.93	1-7	2 June-30 June
<i>Taylorilygus pallidulus</i> (Blanchard)	36	2.11 $\pm$ 0.21	1-6	30 June-7 Oct.

<i>Trigonotylus coelestialium</i> (Kirkaldy)	37	4.59 ± 0.33	1-7	29 April-13 Oct.
<i>Trigonotylus doddi</i> (Distant)	4	4.25 ± 1.03	2-7	30 June-6 Oct.
<i>Tropidosteptes rufusculus</i> (Knight)	2	6.00 ± 1.00	5-7	22 April-28 April
ORTHOTYLINAE				
<i>Ceratocapsus setosus</i> Reuter	2	2.50 ± 0.50	2-3	29 July-5 Aug.
<i>Ceratocapsus</i> sp.	1	6.00	—	15 July
<i>Diaphnocoris provancheri</i> (Burque)	6	2.83 ± 0.60	1-5	17 June-8 Sept.
<i>Halticus bractatus</i> (Say)	24	2.75 ± 0.34	1-6	5 May-29 Sept.
<i>Halticus intermedius</i> Uhler	3	3.33 ± 1.20	1-5	24 June-15 July
<i>Heterocordylus malinus</i> Reuter	1	7.00	—	9 June
<i>Ilnacora stalii</i> Reuter	82	2.09 ± 0.19	1-7	27 May-7 Oct.
<i>Lopidea heidemanni</i> Knight	33	2.06 ± 0.33	1-7	19 May-18 Aug.
<i>Lopidea media</i> (Say)	3	2.67 ± 0.88	1-4	23 June-24 June
<i>Lopidea robiniae</i> (Uhler)	1	7.00	—	7 July
<i>Orthotylus modestus</i> Van Duzee	7	5.14 ± 0.59	2-7	20 May-9 June
<i>Orthotylus ornatus</i> Van Duzee	3	5.00 ± 0.58	4-6	6 May-26 May
<i>Orthotylus ramus</i> Knight	5	4.80 ± 0.80	3-7	27 May-7 July
<i>Pilophorus crassipes</i> Heidemann	4	6.00 ± 0.58	5-7	10 June-6 Oct.
<i>Pseudoxenetus scutellatus</i> (Uhler)	2	4.50 ± 2.50	2-7	13 May-27 May
<i>Sericophanes heidemanni</i> Poppius	12	3.00 ± 0.51	1-6	5 May-13 Oct.
<i>Slaterocoris atritibialis</i> (Knight)	6	2.17 ± 0.75	1-5	29 April-16 June
<i>Slaterocoris stygicus</i> (Say)	1	1.00	—	26 May
PHYLINAE				
<i>Chlamydatus suavis</i> (Reuter)	5	3.60 ± 1.25	1-7	12 May-6 Oct.
<i>Criocoris saliens</i> (Reuter)	2	2.00	—	19 May-20 May
<i>Icodema nigrolineatum</i> (Knight)	2	3.50 ± 1.50	2-5	24 June-14 July
<i>Keltonia sulphurea</i> (Reuter)	194	1.32 ± 0.07	1-7	27 May-7 Oct.
<i>Lepidopsallus claricornis</i> Knight	14	3.36 ± 0.27	2-5	6 May-3 June
<i>Lepidopsallus miniatus</i> Knight	6	3.67 ± 0.88	1-7	22 April-16 June
<i>Lepidopsallus rostratus</i> Knight	13	3.77 ± 0.46	2-7	13 May-1 July
<i>Microphylellus modestus</i> Reuter	2	5.00 ± 1.00	4-6	27 May
<i>Plagiognathus albatus</i> (Van Duzee)	1	1.00	—	15 July
<i>Plagiognathus carneolus</i> Knight	4	2.50 ± 0.96	1-5	6 May-12 May
<i>Plagiognathus dispar</i> Knight	1	5.00	—	10 June

Table 1. Continued.

Taxon	No. Collected	Collection Height (m)		Range of Collection Dates
		$\bar{x} \pm SE$	Range	
<i>Plagiognathus guttulatus</i> (Reuter)	1	1.00	—	13 May
<i>Plagiognathus nigronitens</i> Knight	1	1.00	—	23 June
<i>Plagiognathus politus</i> Uhler	506	2.51 $\pm$ 0.004	1-7	5 May-13 Oct.
<i>Psallus strobicola</i> Knight	5	5.40 $\pm$ 0.81	3-7	27 May-23 June
<i>Pseudatomoscelis seriatus</i> (Reuter)	23	1.91 $\pm$ 0.33	1-7	2 June-29 Sept.
<i>Reuteroscopus ornatus</i> (Reuter)	2,673	4.58 $\pm$ 0.001	1-7	27 May-13 Oct.
<i>Rhinocapsus rubricans</i> (Provancher)	2	4.50 $\pm$ 2.50	2-7	16 June-28 July
<i>Spanagonicus albofasciatus</i> (Reuter)	30	4.23 $\pm$ 0.39	1-7	29 July-13 Oct.
DERAEOCORINAE				
<i>Deraeocoris nebulosus</i> (Uhler)	612	2.86 $\pm$ 0.002	1-7	1 April-29 Sept.
<i>Deraeocoris nigrifolius</i> Knight	3	5.33 $\pm$ 0.88	4-7	13 May-9 June
<i>Eustictus grossus</i> (Uhler)	2	5.00	—	22 July-16 Sept.
<i>Hyaliodes harti</i> Knight	7	2.43 $\pm$ 0.69	1-5	30 June-1 Sept.
<i>Hyaliodes vitripennis</i> (Say)	5	1.60 $\pm$ 0.60	1-4	24 June-29 Sept.
DICYPHINAE				
<i>Dicyphus famelicus</i> (Uhler)	1	1.00	—	15 April
<i>Dicyphus</i> prob. <i>rhododendri</i> Dolling	1	7.00	—	3 June
BRYOCORINAE				
<i>Sixeonotus tenebrosus</i> (Distant)	3	3.33 $\pm$ 0.88	2-5	3 June-7 Aug.
CYLAPINAE				
<i>Fulvius imbecilis</i> (Say)	2	4.00 $\pm$ 3.00	1-7	29 July-8 Sept.
<i>Fulvius slateri</i> Wheeler	8	4.50 $\pm$ 0.33	3-6	24 June-25 Aug.

(Say); hawthorn lace bug, *C. cydoniae* (Fitch); and greenhouse whitefly, *Trialeurodes vaporariorum* (Westwood). In the Harrisburg area of Pennsylvania, it overwinters as adults and is trivoltine (Wheeler et al. 1975).

In the present study, *D. nebulosus* adults were found from early April to late September (Table 1). They were collected at all seven flying heights with about 60% captured at 2–3 m (Fig. 1).

This species overwintered as adults but the number of generations per year is unclear from the data available (Fig. 6). If, as Wheeler et al. (1975) reported for Harrisburg, this species is also trivoltine near Asheville, then the overwintered adults emerged in early April and reproduced during the spring. Flight activity of their offspring began in early June, generally increased from mid-June through July, peaked in early August, and declined sharply during the second half of August; the length of this flight activity period (i.e., during much of the summer) suggests overlapping generations although it is possible it represents the activity of long-lived individuals.

*K. sulphurea* has been collected on *Ambrosia* sp., *Chenopodium album* L., *Symphoricarpos orbiculatus* Moench (Knight 1941), and *Sida spinosa* L. (Knight 1927, 1941, 1966). No information has been published on its life cycle other than its reported "breeding" on *S. spinosa* in early September in Georgia (Knight 1927).

In the present study, *K. sulphurea* adults were found from late May to early October (Table 1). They were collected at all seven flying heights with about 85% collected at 1 m (Fig. 2).

This species probably overwintered as eggs, this based on the large number of flying adults in the fall and the extended period of time in the spring before any adults were collected (i.e., late May) (Fig. 7). Also, if by "breeding" in early September Knight (1927) meant he observed copulating pairs at that time, then fertilized females would have had sufficient time to oviposit before the end of the season. If this species does overwinter as eggs, then the flight data suggest three generations; adults of the first generation were present from late May to about mid-July, those of the second from mid-July to late August, and those of the third from early September to the end of the season.

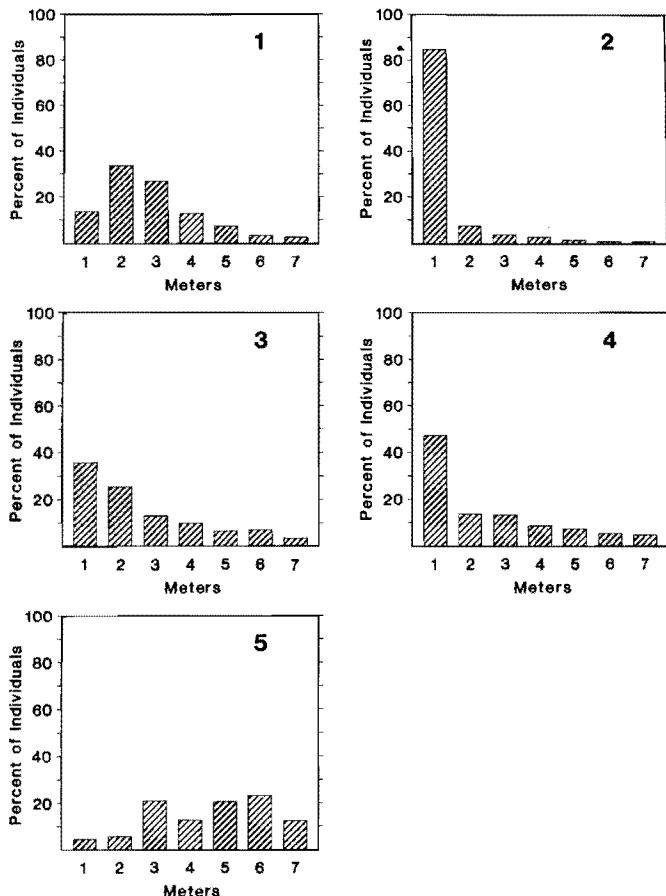
*L. lineolaris* (tarnished plant bug) feeds on numerous plants including alfalfa, apple, apricot, aster, bean, beet, blackberry, cabbage, carnation, carrot, celery, cherry, chrysanthemum, clover, cotton, cucumber, currant, dahlia, grape, lettuce, marigold, pea, peach, pear, peony, plum, potato, quince, raspberry, rose, strawberry, tobacco, and turnip (Kelton 1975). However, it also feeds on certain arthropods including alfalfa plant bug, *Adelphocoris lineolatus* (Goeze); potato leafhopper, *Empoasca fabae* (Harris); pea aphid, *Acyrtosiphon pisum* (Harris); Colorado potato beetle, *Leptinotarsa decemlineata* (Say); alfalfa weevil, *Hypera postica* (Gyllenhal); species of Noctuidae; *Pleuroprucha insularia* (Guenée); alfalfa blotch leafminer, *Agromyza frontella* (Rondani); *Aphidius ervi pulcher* Baker; *A. smithi* Sharma and Subba Rao; *Praon* sp.; species of Formicidae; and the harvestman *Phalangium opilio* L. (Wheeler 1976).

This species overwinters as adults (Guppy 1958, Kelton 1975, Ridgway and Gyrisco 1960, Stewart and Khoury 1976) and has two (Guppy 1958, Kelton 1975) or perhaps three (Ridgway and Gyrisco 1960, Stewart and Khoury 1976) generations per year.

Ridgway and Gyrisco (1960) used tanglefoot traps to determine flying height patterns between 0 and 18 feet. They found that *L. lineolaris* flew fairly close to the ground; of 323 adults collected, 300 were captured within 6 ft of the ground and only one as high as 15–18 feet.

In the present study, *L. lineolaris* adults were found from late March to mid-October (Table 1). They were collected at all seven flying heights with about 60% captured at 1–2 m and about 3% at 7 m (Fig. 3); this roughly corresponded to the flying height pattern reported by Ridgway and Gyrisco (1960).

This species overwintered as adults and is apparently bivoltine near Asheville (Fig. 8). Adults began to emerge from overwintering sites in late March. Their adult offspring (summer generation) occurred from about late May to mid-August. Adults of the second (overwintering) generation occurred from about late August or early September to the end of the season. It is possible that an additional generation occurred during the summer but this could not be determined from the data available.

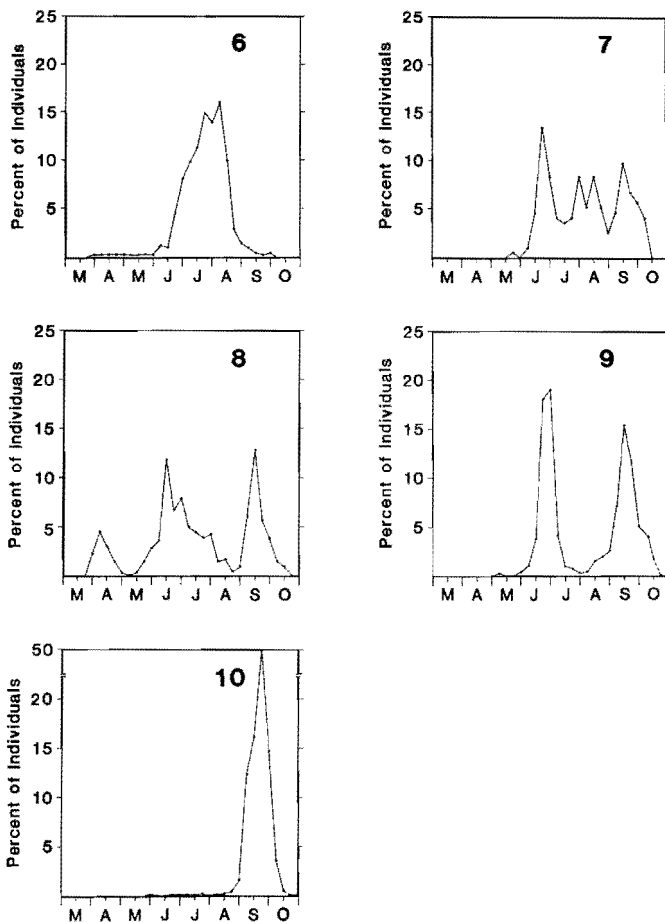


Figs. 1-5 Flying height distributions of five mirid species during 1977-78 in a North Carolina black walnut plantation: (1) *Deraeocoris nebulosus*, (2) *Keltonia sulphurea*, (3) *Lygus lineolaris*, (4) *Plagiognathus politus*, (5) *Reuteroscopus ornatus*.

*P. politus* has been collected from several plants including *Pyrus* (Leonard 1915, Knight 1941), *Ambrosia* sp., *Betula* sp., *Carya* sp., *Corylus* sp., *Juniperus virginiana* L., *Pinus strobus* L., *Quercus* sp., *Robinia pseudoacacia* L., *Salix* sp., *Solidago* sp., *Symphoricarpos orbiculatus* Moench, *Taxodium distichum* (L.) (Knight 1941), *Erigeron*, and *Verbascum* (Froeschner 1949). It overwinters as eggs (Leonard 1915) and apparently has two broods per year (is bivoltine?) (Froeschner 1949, Knight 1941). In Missouri, adults of the first generation have been collected between 10 June and 20 August and those of the second between 8 August and 31 September (Froeschner 1949).

In the present study, *P. politus* adults were found from early May to mid-October (Table 1). They were collected at all seven flying heights with almost 50% captured at 1 m (Fig. 4).

This species apparently overwintered as eggs, thus agreeing with the findings of Leonard (1915). Supporting this conclusion were the large number of flying adults in the fall and the



Figs. 6-10. Seasonal flight activities of five mirid species during 1977-78 in a North Carolina black walnut plantation: (6) *Deraeocoris nebulosus*, (7) *Keltonia sulphurea*, (8) *Lygus lineolaris*, (9) *Plagiognathus politus*, (10) *Reuteroscopus ornatus*.

extended period in the spring before the first adults were collected (i.e., early May) (Fig. 9). It is apparently bivoltine near Asheville; adults of the first (summer) generation were present from early May to late July, and those of the second (overwintering) generation from early or mid-August to the end of the season.

*R. ornatus* has been collected from *Ambrosia* (Kelton 1964, Knight 1941) and *Chenopodium album* L. (Knight 1941). No information has been published on its life cycle.

In the present study, *R. ornatus* adults were found from late May to mid-October (Table 1). They were collected at all seven flying heights with more than 55% captured at 5-7 m (Fig. 5).

This species probably overwintered as eggs, this based on the same reasons as those given above for *P. politus*. The number of generations per year is unclear from the data available (Fig. 10). However, it is likely that at least one generation is represented by the few adult



specimens collected between late May and mid-August, and a later generation by the dramatic increase in numbers (i.e., increase in flight activity) in September. Interestingly, of the 2673 adults collected during this study, almost 93% were captured in September and almost 50% during the third week of September (Fig. 10).

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## LITERATURE CITED

- Froeschner, R. C. 1949. Contributions to a synopsis of the Hemiptera of Missouri, Pt. IV. Hebridae, Mesoveliidae, Cimicidae, Anthocoridae, Cryptostemmatidae, Isometopidae, Meridae (*sic*). Amer. Midland Natur. 42:123-188.
- Guppy, J. C. 1958. Insect surveys of clovers, alfalfa, and birdsfoot trefoil in eastern Ontario. Canadian Entomol. 90:523-531.
- Kelton, L. A. 1964. Revision of the genus *Reuteroscopus* Kirkaldy 1905 with descriptions of eleven new species (Hemiptera:Miridae). Canadian Entomol. 96:1421-1433.
- . 1975. The lygus bugs (genus *Lygus* Hahn) of North America (Heteroptera: Miridae). Mem. Entomol. Soc. Canada 95:1-101.
- Knight, H. H. 1927. Notes on the distribution and host plants of some North American Miridae (Hemiptera). Canadian Entomol. 59:34-44.
- . 1941. The plant bugs, or Miridae, of Illinois. Illinois Natur. Hist. Surv. Bull. 22:1-234.
- . 1966. *Keltonia*, a new genus near *Reuteroscopus* Kirk., with descriptions of new species (Hemiptera:Miridae). Canadian Entomol. 98:590-591.
- Leonard, M. D. 1915. The immature stages of *Plagiognathus politus* Uhler and *Campylomma verbasci* Herrick-Schaeffer (*sic*) (Capsidae, Hemiptera). J. New York Entomol. Soc. 23:193-197.
- McPherson, J. E. and B. C. Weber. 1980. Seasonal flight patterns of Hemiptera in a North Carolina black walnut plantation. 1. Pentatomoidea. Great Lakes Entomol. 13:177-183.
- . 1981a. Seasonal flight patterns of Hemiptera in a North Carolina black walnut plantation. 2. Coreoidea. Great Lakes Entomol. 14:11-13.
- . 1981b. Seasonal flight patterns of Hemiptera in a North Carolina black walnut plantation. 3. Reduvidioidea. Great Lakes Entomol. 14:15-17.
- . 1981c. Seasonal flight patterns of Hemiptera in a North Carolina black walnut plantation. 4. Cimicoidea. Great Lakes Entomol. 14:19-22.
- . 1981d. Seasonal flight patterns of Hemiptera in a North Carolina black walnut plantation. 5. Lygaeoidea. Great Lakes Entomol. 14:133-136.
- . 1981e. Seasonal flight patterns of Hemiptera in a North Carolina black walnut plantation. 6. Tingidae and Aradidae. Great Lakes Entomol. 14:137-140.
- Ridgway, R. L. and G. G. Gyrisco. 1960. Studies of the biology of the tarnished plant bug, *Lygus lineolaris*. J. Econ. Entomol. 53:1063-1065.
- Stewart, R. K. and H. Khoury. 1976. The biology of *Lygus lineolaris* (Palisot de Beauvois) (Hemiptera:Miridae) in Quebec. Ann. Entomol. Soc. Quebec. 21:52-63.
- Wheeler, A. G., Jr. 1976. Lygus bugs as facultative predators. p. 28-35, in D. R. Scott and L. E. O'Keefe (eds.). Lygus bug: host-plant interactions. Univ. Press Idaho, Moscow.
- Wheeler, A. G., Jr., B. R. Stinner, and T. J. Henry. 1975. Biology and nymphal stages of *Deraeocoris nebulosus* (Hemiptera:Miridae), a predator of arthropod pests on ornamentals. Ann. Entomol. Soc. Amer. 68:1063-1068.