

**TEXOCORIS NIGRELLUS: DISTRIBUTION AND
HOSTS OF AN ENIGMATIC PLANT BUG
(HETEROPTERA: MIRIDAE: ORTHOTYLINAE)**

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Abstract.—Nine new state records are given for the seldom-collected plant bug *Texocoris nigrellus* (Knight). Bloodroot, *Sanguinaria canadensis* L. (Ranunculaceae), is the only previously recorded host, but it is questioned whether this native North American herb is an important host or whether the rearing from this plant was merely accidental. Nymphs are reported from 4 exotic ornamental shrubs: *Abelia grandiflora* (André) Rehd. (Caprifoliaceae), *Ilex crenata* Thunb. (Aquifoliaceae), and *Pyracantha coccinea* M. J. Roem. and *Spiraea thunbergii* Siebold ex Blume (Rosaceae). *Texocoris nigrellus*, belonging to a monotypic genus, does not show a close relationship to other North American orthotylinines. Although certain of its attributes fit those of an immigrant, it is concluded that without further data *T. nigrellus* should be considered a North American endemic.

Knight (1939) described *Parthenicus nigrellus* from Illinois, Iowa, and Texas, placing the new species in the orthotyline tribe Halticini. Schaffner (1974) described the new genus *Texocoris* in the Orthotylini, with *T. secludis* from Texas as the only included species. Henry (1982), however, determined that *secludis* was conspecific with Knight's *nigrellus*. Because *nigrellus* was found not to belong in *Parthenicus* Reuter, Henry retained the monotypic genus *Texocoris* Schaffner, recognizing the combination *T. nigrellus* (Knight).

Since Knight's (1939) original description, only Georgia (Knight, 1941), Missouri (Froeschner, 1949), and Wisconsin (Akingbohungbe et al., 1972) have been added to the known distribution of *T. nigrellus*. Little information is available on this bug's habits. In Wisconsin, Akingbohungbe et al. (1972) reported that nymphs were collected and reared on "blood root" [apparently *Sanguinaria canadensis* L. (Ranunculaceae)]. Schaffner (1974) noted that in Texas he had taken a single nymph but had been unable to determine the host owing to this mirid's occurrence in "dense vegetative undergrowth under a rather thick stand of secondary growth trees." In Georgia, Henry and Smith (1979) reported its collection from a Malaise trap, and Blinn and Yonke (1985) collected 10 adults from a fruiting mulberry, *Morus* sp., and one on Ohio buckeye, *Aesculus glabra* Willd., in Missouri.

Until recently, I had not seen nymphs of this species and had rarely collected adults, and then mainly on ornamental plants that seemed unlikely to have served as breeding hosts. Herein, I give new distribution records of *T. nigrellus* and report the abundance of nymphs on four exotic ornamental shrubs. These data raise questions concerning the geographic origin and native hosts of this orthotyline.

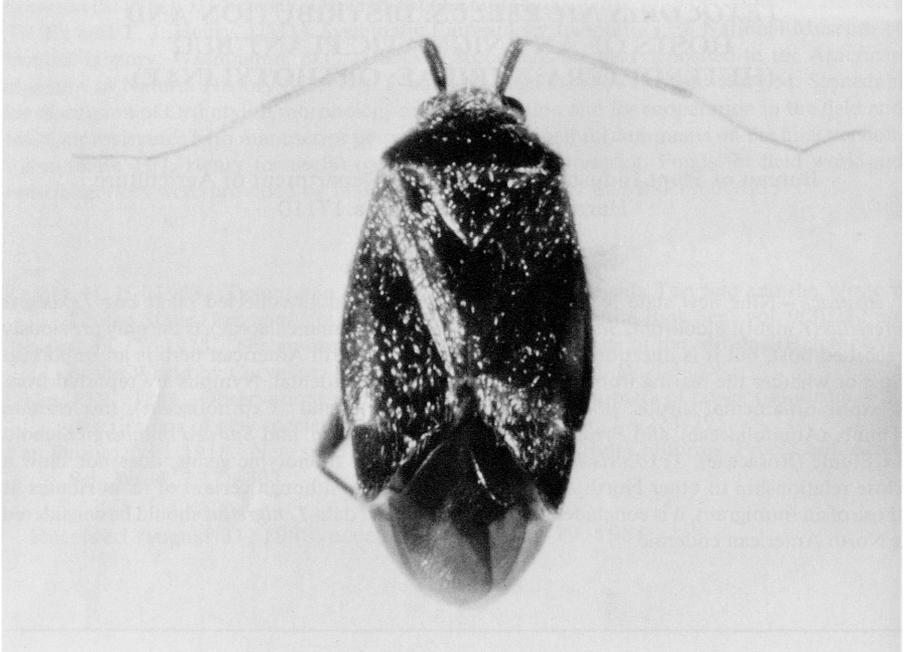


Fig. 1. *Texocoris nigrellus*, dorsal habitus.

Texocoris nigrellus (Knight)

Fig. 1

Distribution. In addition to the states Henry and Wheeler (1988) listed in the recent catalog of North American Heteroptera—Georgia, Illinois, Iowa, Missouri, Texas, and Wisconsin—nine new state records are available. The Michigan and Clemson, South Carolina, records are based on specimens in the collection of the National Museum of Natural History, Washington, DC (USNM); remaining records, except one for Auburn, Alabama from G. L. Miller and Raleigh, North Carolina, from R. L. Blinn, are based on my recent collecting in the eastern United States. Voucher specimens have been deposited in the Cornell University, Pennsylvania Department of Agriculture, and USNM collections. Hosts are not listed below but are mentioned in the discussion of host plants that follows.

The following records extend the known distribution of *T. nigrellus*. ALABAMA: Lee Co., Auburn University campus and Davis Arboretum, Auburn, 8–9, 11 May 1986, A. G. Wheeler, Jr.; Auburn Univ., 19 May 1988, G. L. Miller. ARKANSAS: Washington Co., Univ. of Arkansas, Fayetteville, 15 June 1987, AGW and T. J. Henry. KENTUCKY: Warren Co., Western Kentucky Univ., Bowling Green, 5 June 1985, AGW and T. J. Henry. MICHIGAN: Midland Co., 15 July 1947, R. R. Dreisbach. NORTH CAROLINA: Guilford Co., Univ. of North Carolina—Greensboro and Greensboro College, Greensboro, 16 May 1988; Rowan Co., Catawba Coll., Salisbury, 16 May 1988, AGW; Wake Co., Raleigh, 6–8, 15 June 1987 and 28–30

May, 6 June 1988, R. L. Blinn. PENNSYLVANIA: *Centre Co.*, Pennsylvania State Univ., University Park, 25 June 1988, AGW. SOUTH CAROLINA: *Greenwood Co.*, Lander Coll., Greenwood, 14 May 1988, AGW; *Laurens Co.*, Presbyterian Coll., Clinton, 15 May 1988, AGW; *Newberry Co.*, Newberry Coll., Newberry, 15 May 1988, AGW; *Pickens Co.*, Clemson Univ., Clemson, 27 May 1955, D. Dunavin; *Spartanburg Co.*, Converse Coll. and Wofford Coll., Spartanburg, 15 May 1988, AGW. TENNESSEE: *Knox Co.*, Univ. of Tennessee, Knoxville, 27 May 1985, AGW and T. J. Henry; *Rutherford Co.*, Middle Tennessee State Univ., Murfreesboro, 28 May 1985, AGW and TJH. VIRGINIA: *Albermarle Co.*, Univ. of Virginia, Charlottesville, 21 May 1988, AGW.

Host plants and habits. Before 1988, I had collected adults of *T. nigrellus* by sweeping mixed herbaceous vegetation (Arkansas), a flowering rubiaceaceous weed growing in a lawn (Tennessee), *Croton alabamense* E. A. Sm. ex Chapman (Alabama), *Fagus* sp. and *Ilex* sp. (Kentucky), and by beating various shrubs and small trees in an arboretum (Alabama). Particular shrub and tree species generally were not recorded in a field notebook because occurrence of the bugs on those plants seemed accidental or, at most, to reflect dispersal to inflorescences for adult feeding. In addition, *T. nigrellus* sometimes was mistaken in the field for the common phylina plant bug *Criocoris saliens* (Reuter) (cf. Knight, 1941: Fig. 91).

In May 1988, nymphs were encountered on several ornamental shrubs, sometimes in large numbers, during field work in South Carolina. The striking, saltatorial nymphs are bright red with the tip of the head and abdomen whitish; Akingbohunge et al. (1973) briefly described the fifth instar. After the discovery of host plants, surveys for *T. nigrellus* were made in other eastern states by concentrating on the same plant species. The following ecological notes pertain to collections made from four principal hosts; botanical information was taken from Everett (1981) and Dirr (1983).

Abelia × *grandiflora* (André) Rehd. (Caprifoliaceae): This hybrid between the Chinese *A. chinensis* R. Br. and *A. uniflora* R. Br. ex Wallich. was a common host of *T. nigrellus*. Adults and fifth instars were collected on glossy abelia on two college campuses in South Carolina, and fourth and fifth instars on three North Carolina campuses during mid-May. Small numbers of second through fourth instars were beaten from this plant in Virginia in late May. Nymphs developed on *A. × grandiflora* before flowers were present. In Alabama, G. L. Miller took adults on glossy abelia in mid-May.

Ilex crenata Thunb. (Aquifoliaceae): Fifth instars were found on Japanese holly, including the cultivars 'Convexa' and 'Microphylla,' on five South Carolina campuses in mid-May. Nymphs were beaten mainly from plants bearing staminate flowers.

Pyracantha coccinea M. J. Roem. (Rosaceae): On the University of Virginia campus, small numbers of nymphs (<10) were collected on a specimen plant of scarlet firethorn in late May. Much larger numbers (>100) of instars II-IV were present on a hedge of this ornamental that is native from Italy to western Asia. Plants in the hedge were not flowering; nymphs were observed on the new growth.

Spiraea thunbergii Siebold ex Blume (Rosaceae): Nymphs were common in mid-May on this Asian spirea on two South Carolina college campuses. Development on this early-blooming shrub (flowers are present before the leaves) apparently takes place on the foliage.

On the Penn State campus, adults were common on a honeysuckle, *Lonicera*

morrowii A. Gray, in late June. Because some of the specimens obviously were teneral (one female was mostly reddish), it is likely that nymphal development had occurred on this Japanese shrub of the Caprifoliaceae.

Nymphs were not observed feeding in the field. In the laboratory, fourth and fifth instars were reared on foliage of glossy abelia, and third instars were reared on excised terminals of scarlet firethorn. The bugs also fed on crushed caterpillars and on dead nymphs of their species.

In South Carolina (Presbyterian College) and on the University of Virginia campus nymphs of *T. nigrellus* were collected on glossy abelia with late instars of the dark red, nonsaltatorial *Rhinocapsus vanduzeei* Uhler. In Virginia, nymphs of both species were present on the single scarlet firethorn plant, and both were abundant on the firethorn hedge. Nymphs of the phylline *R. vanduzeei* frequently develop on cultivated azaleas, *Rhododendron* spp. (Ericaceae) (Wheeler and Herring, 1979). *Abelia × grandiflora* and *Pyracantha coccinea* are new host records for *R. vanduzeei*.

In Pennsylvania, an adult was collected on a flowering privet, *Ligustrum* sp., and R. L. Blinn took adults on azalea in Raleigh, North Carolina (pers. comm.). The plants, and others on which *T. nigrellus* has been collected, possibly serve as hosts but it is apparent that adults disperse to various plants following development on their breeding hosts. My observations support Schaffner's (1974) suggestion that populations of this plant bug are univoltine.

DISCUSSION

The distribution and habits of *T. nigrellus* are now better known. Its recorded distribution has been increased from six to 15 states, and four ornamental shrubs have been identified as common hosts. In many respects, though, this plant bug remains a puzzling species.

Despite extensive collecting of Miridae in the eastern states since 1972, I have never encountered this species outside landscape plantings. In fact, I have taken *T. nigrellus* only on college campuses, and nymphs have been collected only on exotic plants. The four shrubs found to serve as hosts are all Old World, mainly Asian, species. *Lonicera morrowii*, a probable host, also is Asian.

What are the native hosts of *T. nigrellus*? Akingbohunge et al. (1972) report bloodroot, an indigenous herb of rich woods, as a host in Wisconsin. *Sanguinaria canadensis* may indeed be a host plant, but it might be predicted that a mirid developing on this alkaloid-rich member of the Ranunculaceae would be a specialist herbivore unlikely to adapt to exotic shrubs belonging to three unrelated families. Akingbohunge et al. listed only Dane County as the collection site; three specimens in the University of Wisconsin insect collection bear label data indicating that Akingbohunge collected *T. nigrellus* in the University's arboretum at Madison. Coupling nymphs have dropped or been dislodged from some ornamental shrub such that their presence on bloodroot in the understory vegetation was merely incidental. Schaffner (1974) reported a series of specimens from a state park in southcentral Texas and a nymph from dense vegetation. The Texas host, as yet undiscovered, may represent a native plant species.

The known distribution of *T. nigrellus*—Wisconsin and Michigan south to Georgia and west to Texas—is greater than for many mirids. Its abundance on ornamental shrubs, including the widely planted glossy abelia, Japanese holly, and scarlet fir

thorn, suggest that its movement in shipments of nursery stock has broadened the native range.

Where did this taxon originate? the southwestern United States? perhaps Mexico? Unfortunately, the nearest relatives of this monotypic genus are unknown. Schaffner (1974) stated that despite the enlarged hind femora, a character generally associated with the Halticini, other characters affirmed placement in the Orthotylini. T. J. Henry (pers. comm.) indicates that the male genitalia are not characteristic of the Halticini and agrees with Schaffner that *T. nigrellus* is quite distinct among North American Orthotylini.

In view of its association with several exotic Asian shrubs and consistent occurrence in landscape plantings, another alternative is possible: that *T. nigrellus* is not native. Although most immigrant mirids detected in North America are indigenous to central and western Europe (e.g., Henry and Wheeler, 1979), a Japanese plant bug, *Stethoconus japonicus* Schumacher, has recently been reported from Maryland (Henry et al., 1986) and New York (Schwartz, 1989), apparently having been introduced on azalea nursery stock. A mirid conspecific with *T. nigrellus* is not included in Hsiao's (1942) list of Chinese Miridae or Lee's (1971) Korean list. Only a fragmentary knowledge of the plant bug fauna is available for the Oriental Region and, even if *T. nigrellus* is native there, it may be unknown. Without additional evidence, however, *T. nigrellus* should be considered a North American endemic. Only further collecting and study will help elucidate host relationships, nearest relatives, and origin of this interesting plant bug.

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LITERATURE CITED

- Akingbohunge, A. E., J. L. Libby and R. D. Shenefelt. 1972. Miridae of Wisconsin (Hemiptera: Heteroptera). Univ. Wisconsin-Madison, Coll. Agric. Life Sci. R 2396, 24 pp.
- Akingbohunge, A. E., J. L. Libby and R. D. Shenefelt. 1973. Nymphs of Wisconsin Miridae (Hemiptera: Heteroptera). Univ. Wisconsin-Madison, Coll. Agric. Life Sci, R 2561. 25 pp.
- Blinn, R. L. and T. R. Yonke. 1985. An annotated list of the Miridae of Missouri (Hemiptera: Heteroptera). Trans. Mo. Acad. Sci. 19:73-98.
- Dirr, M. A. 1983. Manual of Woody Landscape Plants: their Identification, Ornamental Characteristics, Culture, Propagation and Uses, 3rd Edition. Stipes Publ. Co., Champaign, Illinois, 826 pp.
- Everett, T. H. 1981. The New York Botanical Garden Illustrated Encyclopedia of Horticulture. Garland Publ., New York, 10 vols.
- Froeschner, R. C. 1949. Contributions to a synopsis of the Hemiptera of Missouri, Pt. IV

- Hebridae, Mesoveliidae, Cimicidae, Anthocoridae, Cryptostemmatidae, Isometopidae, Miridae. *Am. Midl. Nat.* 42:123-188.
- Henry, T. J. 1982. New synonymies and a new combination in the North American Miridae (Hemiptera). *Proc. Entomol. Soc. Wash.* 84:337-341.
- Henry, T. J., J. W. Neal, Jr. and K. M. Gott. 1986. *Stethoconus japonicus* (Heteroptera: Miridae): a predator of *Stephanitis* lace bugs newly discovered in the United States, promising in the biocontrol of azalea lace bug (Heteroptera: Tingidae). *Proc. Entomol. Soc. Wash.* 88:722-730.
- Henry, T. J. and C. L. Smith. 1979. An annotated list of the Miridae of Georgia (Hemiptera-Heteroptera). *J. Ga. Entomol. Soc.* 14:212-220.
- Henry, T. J. and A. G. Wheeler, Jr. 1979. Palearctic Miridae in North America: records of newly discovered and little-known species (Hemiptera: Heteroptera). *Proc. Entomol. Soc. Wash.* 81:257-268.
- Henry, T. J. and A. G. Wheeler, Jr. 1988. Family Miridae Hahn, 1833 (=Capsidae Burmeister, 1835). The plant bugs. Pages 251-507 *in*: T. J. Henry and R. C. Froeschner (eds.), *Catalog of the Heteroptera, or True Bugs, of Canada and the Continental United States*. E. J. Brill, Leiden and New York.
- Hsiao, T. Y. 1942. A list of Chinese Miridae (Hemiptera) with keys to subfamilies, tribes, genera and species. *Iowa State Coll. J. Sci.* 16:241-269.
- Knight, H. H. 1939. Three new species of Miridae from North America (Hemiptera). *Bull. Brooklyn Entomol. Soc.* 34:21-23.
- Knight, H. H. 1941. The plant bugs, or Miridae, of Illinois. *Ill. Nat. Hist. Serv. Bull.* 22(1): 1-234.
- Lee, C. E. 1971. Heteroptera of Korea. *Illustrated Encyclopedia of Fauna & Flora of Korea*. Vol. 12 (Insecta IV), pp. 99-448, 475-601, 1051-1059.
- Schaffner, J. C. 1974. *Texocoris secludis*, a new genus and species of Orthotylinae from Texas (Heteroptera: Miridae). *J. Kans. Entomol. Soc.* 47:281-284.
- Schwartz, M. D. 1989. New records of Palearctic Heteroptera in New York State: Microphysidae and Miridae. *J. New York Entomol. Soc.* 97:111-114.
- Wheeler, A. G., Jr. and J. L. Herring. 1979. A potential insect pest of azaleas. *Q. Bull. Am. Rhododendron Soc.* 33:12-14, 34.

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