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THE STINK BUGS OF OHIO
(HEMIPTERA: Pentatomidae)

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INTRODUCTION

One purpose of this study is to provide a current checklist of the 53 taxa (species and varieties) of Pentatomidae (stink bugs) that occur in Ohio and those in surrounding states which may be reported for Ohio in the near future. Another purpose is to provide a workable key to enable persons unfamiliar with the family to determine species. For each species this report includes a fairly complete synonymy, which should be an aid in reference work. Statements on distribution and economic importance are given with each species description, since many attack food crops and trees, while others may destroy harmful insects. For some species (indicated by "†" after the host information), detailed host and biological data may be found in Esselbaug (1948).

My collection of specimens from 56 counties of Ohio was initiated in June 1968 but was concentrated during the period from August to mid-October of that year. Most of the specimens were secured by using a beating sheet; some were collected by sweeping. Data on the above fresh specimens were supplemented by data from specimens from the collections of museums and of individuals, all of which specimens were examined personally, except those marked below with an asterisk (*):

- Dr. Richard Berry (DB)
- Dr. Donald J. Borror (DJB)
- Cincinnati Museum of Natural History (Cinci Mus.)
- Cleveland Museum of Natural History (CM)
- Dr. Robert Hamilton (RH)
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- Ohio Agricultural Research and Development Center, Wooster (WO)—Dr. Roy W. Rings
- Ohio Historical Society (OM)—Dr. David H. Stansbery
- Ohio State University (OSU)—Dr. Charles A. Triplehorn
- Ohio University (OU)—Dr. William Romoser
- Purdue University (PU)—Dr. Eric Smith

The abbreviations with the above names identify the collection in the distribution data. My personal collection is marked (DGF). Where there is no indication, the data are from The Ohio State University collections.

The keys and descriptions were written using a variety of available specimens, plus some borrowed from other collections. The keys in Hart (1919), Blatchley (1926), Torre-Bueno (1939), and my own observations were used to compile the key. The synonymy was primarily taken from Van Duzee (1917). All but nine figures were my personal work, done with the aid of a reticule, at eighteen times the original size, except where indicated as "x?".
CHECKLIST OF THE OHIO PENTATOMIDAE

Subfamily Acanthosominae (Stål)
- Meadorus lateralis (Say)
- Elasmostethus cruciatus (Say)
- Elasmostethus atricornis (Van Duzee)

Subfamily Asopinae (Spinola)
- Stiretrus anchorago var. fimbriatus (Say)
- Perillus exaptus (Say)
- Perillus circuncinctus Stål
- Perillus bioculatus (Fabricius)
- Perillus bioculatus var. lianda (Say)
- Rhacognathus americanus Stål
- Mineus strigipes (Herrich-Schäffer)
- Apateticus cynicus (Say)
- Apateticus bracteatus (Fitch)
- Podisus placidus Uhler
- Podisus maculiventris (Say)
- Podisus modestus (Dallas)
- Podisus fretus Olsen
- Podisus serieventris Uhler

Subfamily Pentatominae Stål

Tribe Halyini (Stål)
- Brochymena arborea (Say)
- Brochymena quadripustulata (Fabricius)
- Brochymena carolinensis (Westwood)
- Brochymena punctata Van Duzee

Tribe Pentatomini (Stål)

Subtribe I
- Trichopepla semivittata (Say)
- Trichopepla atricornis Stål
- Chlorochroa persimilis Horvath
- Thyanta pallido-virescens subsp. accerra (McAtee)
- Thyanta custator (Fabricius)
- Thyanta calceata (Say)
- Holcostethus abbreviatus (Uhler)
- Holcostethus limbolarius Stål
- Holcostethus piceus (Dallas)

Subtribe II
- Murgantia histrionica (Hahn)
- Mormidea lugens (Fabricius)
- Solubea pugnax (Fabricius)
- Hymenarcys aequalis (Say)
- Hymenarcys nervosa (Say)
- Euschistus ictericus (Linnaeus)
- Euschistus variolarius (Palisot de Beauvois)
- Euschistus tristigmus (Say)
- Euschistus tristigmus var. pyrrhocerus (Herrich-Schäffer)
- Euschistus politus Uhler
IDAE

Euschistus servus (Say)
Euschistus servus subsp. euschistoides (Vollenhoven)
Menecles insertus (Say)
Coenus delius (Say)
Neottiglossa undata (Say)
Neottiglossa cavifrons Stål
Neottiglossa sulcifrons Stål
Cosmopepla bimaculata (Thomas)

Subtribe III
Dendrocoris humeralis (Uhler)
Acrosternum pennsylvanicum (De Geer)
Acrosternum hilare (Say)
Banasa sordida (Uhler)
Banasa dimidiata (Say)
Banasa calva (Say)

MAP OF THE COUNTIES OF OHIO
KEY TO THE SUBFAMILIES OF PENTATOMIDAE

1. Tarsi two-segmented; sternum of thorax with longitudinal median ridge or flattened keel, thin and deeper anteriorly; second abdominal sternite with anteriorly produced spine reaching middle coxae, and with midventral ridge continuing along the entire length of the abdominal sternum .................................................. ACANTHOSOMINAE (Stål) Page 4

1'. Tarsi three-segmented; without midventral thoracic ridge or keel .................. 2

2. First segment of the beak slender and embedded between the wide parallel bucculae (Pl. I, Fig. 3) .................................................................................................................. PENTATOMINAE Stål Page 15

2'. First segment of the beak short and fat, not contained within the bucculae or only at the base; bucculae converging and united dorsally to the beak (Pl. I, Fig. 2) .......................................................... ASOPINAE (Spinola) Page 6

SUBFAMILY ACANTHOSOMINAE (Stål)

KEY TO THE OHIO GENERA OF ACANTHOSOMINAE (STÅL)

1. Posterolateral margins of the pronotum depressed indented and posterior angles of pronotum projecting posteriorly (Pl. II, Fig. 26); ostiolar canal short and curved, not reaching the middle of metasternum; sixth sternite with outer hind angle not strongly produced backward .............................. Meadorus Mulsant & Rey

1'. Posterolateral margins of the pronotum not depressed and posterior angles of pronotum not projecting out or back (Pl. II, Fig. 27); ostiolar canal long and straight reaching past middle of metasternum; sixth sternite with outer hind angle strongly produced backward and spinose .............................. Elasmostethus Fieber

Genus Meadorus Mulsant & Rey

Meadorus Mulsant & Rey, 1886, p. 315.
Clinocoris Hahn, 1834, 2:70.
Sastragala Fieber, 1861, p. 78, 327.
Elasmucha Stål, 1864, 4(4):54.
Acanthosoma Distant, 1881, 1:100.
Elasmostethus Lethierry & Severin, 1893, 1:255.

Meadorus lateralis (Say) is the only known species in this genus.

Meadorus lateralis (Say)

(Pl. II, Fig. 26)

Edessa lateralis Say, 1831, p. 8; Fitch reprint p. 757; Compl. Writ. 1:312.
Acanthosoma lateralis (Say), Stål, 1872, 10(4):61; Uhler, 1878, 19:381; Van Duzee, 1904, 30:73.
Elasmucha lateralis (Say), Bergroth, 1907, 18:48; Smith, 1910, p. 138; Horvath, 1912, 10:608.
Clinocoris lateralis (Say), Van Duzee, 1908, 11:109.
Edessa nebuloasa (Kirby), 1837, 4:277; Bethune reprint, 1878, 10:138.
Acanthosoma nebuloasa (Kirby), Dallas, 1851, 1:307.
Elasmostethus nebuloasa (Kirby), Stål, 1862, 13:109.
Acanthosoma affinis (Westwood), 1837, 1:30.
Acanthosoma picicolor (Westwood) 1837, 1:30.
Meadorus lateralis (Say), Van Duzee, 1917, p. 67. (To my knowledge, this is the first placement of lateralis (Say) in this genus.)

Body small and oblong-oval. Head moderately declivent and apically rounded, with tylus slightly longer than juga. Pronotum strongly declivent in front. Pronotum and scutellum rather evenly and sparsely marked with reddish-brown punctures (coarser and sparser than those on the corium). Apical third of the scutellum narrowly tapered to a
Body elongate-oval; head more narrowed in front than *Meadorus* and *juga* more sinuate. Anterior part of pronotum declivent. Dorsally, light yellow or brown with reddish borders on the inner and apical part of corium. Ventrally, thoracic punctures without color; abdominal sterna not punctate at all, with the last abdominal segment laterally prolonged into a reddish spine or point tipped with black. Scutellum tapering to a point just before tip, tapered part relatively narrower and shorter than in *Meadorus*.

**KEY TO THE SPECIES OF THE GENUS **ELASMOSTETHUS **FIEBER**

1. Antennae pale, the apical segment dusky; humeral angles pale; pronotal punctures dark colored, widely separated ........................................... *E. cruciatus* (Say)

1'. Antennae piceous or black throughout; humeral angles black; pronotal punctures with little or no color anteriorly and concolorous medially; a narrow darker series of punctures at the posterior margin of pronotum ............... *E. atricornis* (Van Duzee)

**Elasmostethus cruciatus** (Say)

(Pl. II, Fig. 27; Pl. IV, Fig. 41)

*Edessa cruciata* Say, 1831, p. 2; Fitch reprint, p. 756; Compl. Writ. 1:311.
*Acanthosoma cruciata* (Say), Uhler, 1861, 1:23; Stål, 1872, 10(4):61; Van Duzee, 1904, 30:73.
*Acanthosoma borealis* Westwood, 1837, 1:30; Stål, 1872, 2:61.
*Elasmostethus cruciatus* (Say), Bergroth, 1907, 18:49.

Inner and apical borders of corium with broad, reddish, unevenly edged lines. Pronotum sparsely, unevenly punctured in reddish-brown. Scutellum evenly, more closely marked with similar but coarser punctures. Corium more finely, densely, and evenly punctate. Male genitalia ventral hind border with a lateral black tooth, lateral to the groups of ciliate hairs; clasper heads rounded medially and produced laterally (Pl. IV, Fig. 41). Female basal genital plates larger and not very triangular. Several reddish-brown punctures between and in front of the ocelli. Length, 8 - 10 mm; width, 4.5 - 6.0 mm.

Host: Unknown.

Elasmostethus atricornis (Van Duzee)

(Pl. IV, Fig. 40)

Acanthosoma atricornis Van Duzee, 1904, 30:75.
Acanthosoma cruciata (Provancher), 1886, 3:48.
Elasmostethus atricornis (Van Duzee), Bergroth, 1907, 18:49.

Inner and apical borders of corium with narrow, reddish, parallel-edged lines. Pronotum and corium sparsely, unevenly, and finely marked with reddish-brown punctures. Scutellum with coarser punctures than pronotum and corium, but finer, more even and sparser than cruciatus. Male genitalia ventral hind border without tooth lateral to groups of ciliate hairs; clasper heads rounded laterally and produced medially (Fig. 40). Female basal genital plates shorter and more triangular than cruciatus. No (or few) punctures between or in front of the ocelli. Length, 9 - 10 mm; width, 5 - 6 mm.

Host: Leaves and stems of spikenard, Aralia racemosa L. Blatchley, 1926, p. 207.

Distribution: Hocking Co., May 26; Clifton, Greene Co., May 27-June 4; Tuscarawas Co., Sept. 9; Ashland Co., Sept. 1; Highland Co., July 20 (OU). Recorded from Indiana (PU) and Michigan (MU).

SUBFAMILY ASOPINAE (Spinola)

KEY TO THE OHIO GENERA OF ASOPINAE (SPINOLA)

1. Front femora with short ventral spine or tubercle at the apical third or fourth (Pl. V, Figs. 73 & 74); pubescent patch on male submedially on sternites 4-6
   2.
   1'. No front femoral spine; no pubescent patch on male, except in Mineus

2. Scutellum wide, its apex broadly rounded and U-shaped, almost twice the width of the corium and reaching almost to posterior tip of abdomen; frena about one quarter the length of the scutellum
   2'. Scutellum not broad and U-shaped and not as long as abdomen, its tip not more than slightly wider than corium

3. Juga much longer than tylius, meeting and extending well beyond the end of it (Pl. I, Fig. 5); ostiolar canal very short; no spine or tubercle on second sternite; segment two of beak as long as or longer than segments three and four together
   4.
   3'. Juga not much longer than tylius and usually not touching in front of it (Pl. I, Figs. 6 and 7); ostiolar canal long; second sternite with a spine or tubercle; segment two of beak not as long as three and four together

4. Segment four of beak about twice as long as three; side margins of pronotum entire incised, smooth, not serrate; bucculae strongly elevated (Pl. I, Fig. 4); color black and red, orange, or yellow
   5.
   4'. Segment four of beak equal to or not quite as long as segment three; second sternite usually with spine or tubercle; side margins of pronotum crenulate or serrate; color grayish or brownish

5. Juga slightly longer than tylius (Pl. I, Fig. 6), rarely touching in front of it; length 14 mm or more; female genital segment usually with three basal plates (Pl. IV, Fig. 56)
   6.
   5'. Juga equalling tylius (Pl. I, Fig. 7); female genital segment with only two basal plates (Pl. IV, Fig. 55); length 12 mm or less; median ventral row of slit-like dots on most segments, more often a submedial row of dots at the anterior margin of each segment, these dots often continuing in this line on the thoracic pleura, including one on apex of the ostiolar canal

6. Podisus (Herrich-Schäffer)
Genus Stiretrus Laporte

Stiretrus Laporte, 1832, p. 75; Herrich-Schäffer, 1839, 5:23; Dallas, 1851, 1:78; Stål, 1870, 1:22.
Stiretrosoma Spinola, 1837 (1840), p. 356; Amyot and Serville, 1843, p. 76.
Stictodonus Stål (as subgenus), 1870, 9(1):22.
Oncogaster Stål (as subgenus), 1870, 9(1):24.
Stictocranion Kirkaldy, 1903, 27:27;
Stictocranus Kirkaldy, 1905, 24:268.
Stiretroides Schouteden (as subgenus), 1907, 52:7, 9.

Body oval, convex; head porrect, its apex subtruncate with juga rounded and equal to tylius or slightly surpassing it; beak slightly surpassing middle coxae. Second abdominal sternite projected into a broad median spine that may reach the middle coxae. Front tibiae dilated with flattened keel or ridge on the dorsal posterior border. Male with median notch in genital plate and clasper heads flattened into thin, plate-like structures. Punctation above sparse, uneven and coarse on pronotum becoming more even, denser and finer toward the tip of the scutellum. Ostial canal very broad and curved with a well defined evaporative area. Color pattern variable. Only one variation of S. anchorago in Ohio.

Stiretrus anchorago (Fabricius)

Cimex anchorago Fabricius, 1781, 2:341; Gmelin in Linnaeus, 1788, 14(2):212.
Tetyra anchorago Fabricius, 1803, 4:86.
Stiretrus anchorago (Fabricius), Dallas, 1851, 1:80; Stål, 1870, 9(1):24; Uhler, 1876, 1:261; Van Duzee, 1904, 30:63.
Pentatoma pulchellus (Westwood), 1837, p. 42.
Stiretrus pulchellus Van Duzee, 1909, 9:158.
Pentatoma pulchellus inflata Schumacher, 1912, p. 96.

Color above, pale yellow or light brown with metallic dark green or, rarely, reddish-brown markings. Pronotum with thick dark green,median, concave stripe with one pair of different sized dark dots laterally, humeri darkly tipped. Lightly colored areas with very sparse punctuation. Scutellum pattern varied, usually with median butterfly-shaped mark. Underside pale yellow with dark green spiracular dots and dots at each incisura with median, thick, circular irregular ring covering most of venter. Antennae and legs reddish-brown, femora usually with pale yellow markings. Length, 7 - 10 mm; width, 5.0 - 6.5 mm.

Host: Predaceous on larvae of Galeruca, larvae of Leptinotarsa decemlineata (Say), Papilio asterias larvae and some social caterpillars (Blatchley, 1926, p. 182). Larvae, pupae, and adults of Epilachna varivestis Muls. (U.S.D.A., 1936, p. 8).

Distribution: Ohio counties: Lucas, June 30 (OM); Hocking, May 23-Aug. 9 (OSU-DJB); Sandusky, Aug. 13; Hamilton, May 30 (OM); Fairfield, May 11-July 29 (OM); Butler, Aug. 27 (MU); Athens, July 27 (OU); Meigs, July 27 (DB); Vinton, July 3 (OU); Adams, July 14; Franklin, May 30-Sept. 16 (OSU-OM); Delaware, May 3-Aug. 28; Licking, May 18; Greene, May 12-Sept. 13.
Genus *Perillus* Stål

*Perillus* Stål, 1862, 23:88; Provancher, 1886, 3:32; Van Duzee, 1909, 41:370.

*Perilloides* Schouteden, 1907, p. 11, 37; Zimmer, 1912, 11:234.

Body small to medium sized, oval; head somewhat declivent. Juga broadly rounded and equal to tylus; head subtruncate in front. Beak reaching middle coxae, its second segment almost as long as joints three and four together (third joint the shortest). Humeri obtusely rounded; scutellum broad and not widened behind the middle, its tip broadly rounded. Spine of second sternite present but short, scarcely reaching hind coxae; ostiolar canal long, curved, and its margins broad; tibia sulcate or flat above. Pronotal and scutellar punctation coarse, sparse and uneven; coriunculate punctation fine, dense and even.

**KEY TO THE OHIO SPECIES OF PERILLUS STÅL**

1. Front femorawith only a small tubercle or spine not longer than width (Pl. V, Fig. 73); pronotum with anterior, transverse, impunctate black stripe, not interrupted at the middle; small, not over 7.5 mm in length. .......... *P. exaptus* (Say)
1'. Front femorawith a distinct spine ortubercle which is longer than width (Pl. V, Fig. 74); pronotum with anterior, transverse stripe interrupted at the middle, forming two black oval spots; larger, 8.5 mm or more in length. .......... 2

2. Antennaeblack, only the joints pale in *P. bioculatus* var. clanda segments one and two often pale; venter of abdomen with a row of submedial black spots in the female, or a large pair of submedial black pubescent patches on sternites 4-6 in the male; abdominal spiracles in larger black spots. .......... 2'
2'. Antennae with segments one, two and the basal part of three, pale; venter of abdomen without submedial black spots, but with large, broad, dark stripes submedially; no dark spots around abdominal spiracles. .......... *P. circumcinctus* Stål

3. Black with red markings; hemelytra black. .......... *P. bioculatus* Fabricius
3'. Rufous or chestnut brown, with pale yellow markings; coriuncite surrounded by pale border, almost entirely .......... *P. bioculatus* var. clanda (Say)

*Perillus exaptus* (Say)

(Pl. V, Fig. 73)

*Pentatoma exapta* Say, 1825, 4:313; Compl. Writ., 2:240.

*Zicrona exapta* (Say), Uhler, 1861, 1:23.

*Perillus exaptus* (Say), Stål, 1870, 91:32; Van Duzee, 1903, 29:107; ibid., 1904, 30:65; Uhler, 1878, 19:969.

*Perilloides exapta* (Say), Schouteden, 1907, p. 38, Pl. 3, Fig. 2.

*Pentatoma variegata* (Kirby), 1837, 4:267; ibid.; in Bethune's reprint, p. 137.

*Zicrona margiella* (Dallas), 1851, 1:109.

Body small, oval; head red or orange except the base which is black (some with head mostly black). Lateral margins of juga inflexed somewhat. Pronotum red-orange except subanterior, collar-like, black, transverse band not reaching the lateral borders and may be either narrow or wide. All of the outer margin of the corium bordered in red-orange and a U-shaped, wide, red line around the border of the scutellum, its base black. Only the first antennal segment is light colored. There is great variation of the color pattern of the underside of this species which may or may not be regional. Most of the Ohio specimens are as follows: propleura and sternum orange, meso- and metapleura and sternum black; femora mostly pale with tibiae and tarsi fuscous; no spiracular black spots;
female sternites orange except for a median black spot on the anterior border of the sixth sternite. Most of the preceding characters vary in some specimens from nearby states, but the following traits are constant: subtriangular, submedial, black band across sternites one and two (in male and female). Male with submedial, pubescent, black patches, genitalia black. Length, 5 - 8 mm; width, 4 - 5 mm.

Host: Predaceous, unknown.

Distribution: Ohio counties: Hocking, June 12; Delaware, June 21-July 2; Clifton, Greene, June 23; Scioto, May 14 (OM); Streetsboro, Portage, July 24 (CM); Athens, April 12 (OU). Recorded in Indiana (PU) and Michigan (MU).

**Perillus circumcinctus** Stål

Perilloides circumcinctus (Stål), Schouteden, 1907, p. 37.
Perillus marginatus Provancher, 1872, 4:74.

Chestnut brown with ivory or pale yellow as follows: outer border of corium, lateral and anterior borders and medial line of pronotum, and the borders of the scutellum. Thoracic sternites posteriorly with some pale or ivory color, and with black, coarse, sparse and uneven punctation. Length, 9 - 11 mm; width, 5 - 6 mm.

Host: Weeds; bushes; trees; predaceous on *Blepharida rhois* L. larvae on sumac (Blatchley, 1926, p. 187). *Trirhabda canadensis* larvae (Knight, 1952).


**Perillus bioculatus** (Fabricius)

(Pl. V, Fig. 74)

Perillus bioculatus (Fabricius), Stål, 1872, 10(4):129; Lethierry and Severin, 1893, 1:206; Van Duzee, 1904, 30:66.
Mineus bioculatus (Fabricius), Gillette and Baker, 1895, p. 12.
Perilloides bioculatus (Fabricius), Schouteden, 1907, p. 37.

Body medium sized, oval. Pronotum red or orange with two medial black spots covering most of the disc. Anterior half of the outer edge of corium with red border; scutellum red with central part of disc black in a Y-shape. Connexivum with its edge bordered in red-orange; venter red-orange; thoracic sterna and pleura black and the punctation concolorous. Female with two submedian rows of black spots on venter of abdomen and black, submedial stripes along venter of abdomen; genital plate black. Male with submedial, pubescent, black patches; submedial row of black spots along venter of abdomen; genital plate black. All antennal segments black; legs black with mid and hind tibia with pale rings. Length, 8.5 - 11.5 mm; width, 5.5 - 7.0 mm.

Host: Predaceous on the larvae of *Leptinotarsa decemlineata*, *Crioceris asparagi*, *Lema trilineata*, *Trichoplusia ni*, *Disonycha xanthomelaena*, and *Trirhabda canadensis* (Knight, 1952).†

Distribution: Ohio counties: Butler; Guernsey, Mar. 27; Adams, Aug. 11; Darke, Sept. 6; Franklin, Oct. 10; Fulton; Ross, July 2; Geauga, May 8; Lucas, Aug. 22; Muskingum, Sept. 1; Seneca, Aug. 29 (WO); Cuyahoga,
June 21 (CM); Wayne, July 1 (WO); Huron, May 8 (DJB); Hocking, June 25 (WO); Meigs, July 28 (OU); and Athens, April 25 (OU). Recorded in Michigan (MU), Indiana (PU), Kentucky and Pennsylvania (UL).

**Perillus bioculatus var. clanda (Say)**

*Pentatoma clanda* Say, 1825, p. 312; Compl. Writ., 2:240.

*Perillus bioculatus var. clanda* Uhler, 1872, p. 296; Van Duzee, 1904, 30:67.

*Perillus bioculatus var. clanda* (Say), Van Duzee, 1917, p. 74. (To my knowledge, this is the first placement of bioculatus var. clanda (Say) in this genus.)

Same as typical *P. bioculatus* (Say), with 2 exceptions: where the latter form is black, this is brown, and where the latter form is orange or red, this is ivory-white or pale yellow; also, the corium is pale colored except for the inner margin and a median, narrow, elongate, triangular spot, which are dark colored; antennal segments one, two, and the first part of three are pale colored, the rest are black; thoracic pleura and sterna mostly pale and the punctuation concolorous. Length, 7.5 - 10.5 mm; width, 5 - 7 mm.

Host: Unknown; collected by sweeping herbage (Blatchley, 1926, p. 187).

Distribution: Not recorded in Ohio yet, but probably occurring here; Indiana, Marion Co., July 21 (Blatchley, 1926, p. 187) and Tippecanoe Co., Aug. 8 (PU); Michigan, in several scattered counties, July 14 - Sept. 2 (MU).

**Genus Rhacognathus Fieber**

*Rhacognathus* Fieber, 1861, p. 81, 347; Schouteden, 1907, p. 54.

*Rhacognathus americanus* Stål is the only species on this continent.

**Rhacognathus americanus** Stål

(Pl. I, Fig. 5)

*Rhacognathus americanus* Stål, 1870, 9(1):33; Uhler, 1876, 1:282; Van Duzee, 1904, 30:68; Schouteden, 1907, p. 55.

Broadly oval body; dorsal surface and thoracic pleura and sterna coarsely, rugosely marked with black punctures, leaving smooth, raised, dull clay-yellow areas, giving the surface a mottled appearance. Segments 2-6 of the connexivum broadly exposed with mid yellow-orange spots visible dorsally and ventrally. Base of femora and broad mid-tibial ring pale yellow; tibiae flat above, fore tibiae expanded into a keel on the dorsal posterior margin. Anterior lateral borders of the pronotum finely crenulate; ostiolar canal very short. Length, 9 - 11 mm; width, 5.5 - 6.5 mm.

Host: Unknown.

Distribution: Ohio counties: Ashland, June 14, 1900; and Lucas, June 21-30; Indiana, Lake Co., June 7 (Blatchley, 1926, p. 189); and Michigan, Clare and Midland Cos., July 11-16 (MSU).
Genus Mineus Stål

Mineus Stål, 1867, 24:498.

Mineus strigipes (Herrich-Schäffer) is the only species known.

Mineus strigipes (Herrich-Schäffer)

(Pl. I, Fig. 4)

Podisus strigipes Herrich-Schäffer, 1853, 9:338.
Tynacantha (?) strigipes Walker, 1867, 1:144.
Mineus strigipes (Herrich-Schäffer), Stål, 1870, 91:32; Van Duzee, 1904, 30:67; Torre-Bueno, 1908, 16:224.

Elongate oval body; body black, scutellum black with a broad red-orange V-shaped submargin; pronotum red-orange with two large black spots forming a median line of separation; abdomen red-orange. Punctuation on pronotum and scutellum dense, even and coarse and on the corium finer, dense and even. The narrow edges of the head and costal borders of the corium are pale red; membrane dark fuscous. Venter of abdomen with two rows of black spots fused into two large submedial spots covered by pubescent patches on sternites 4 - 6 in males. Femora with dorsal and ventral light lines with lateral stripes on the tibiae. Male and female genitalia black; second abdominal sternite spine short and narrow. Length, 7.5 - 9.5 mm; width, 4 - 5 mm.

Host: Swept from wire-grasses and herbage, Jersey Tea (Ceanothus) Blatchley, 1926, p. 192. Host unknown; found on Eupatorium perfoliatum UK.

Distribution: Ohio counties: Vinton, June 19-22; Cuyahoga, July 17 CM; Athens, April 18-Oct. 18 (OU); Hocking, June 1 (OM); Fairfield, Oct. 14 (DGF); and Mercer, June 30. Recorded from Lexington, Kentucky (UK); Fulton Co., Indiana (Blatchley, 1926, p. 191); and from Michigan (MU).

Genus Apateticus Dallas


Large elongate oval body; head porrect; juga rounded and slightly longer than tylus. Dorsal and ventral surface usually a uniform golden brown color; entire dorsal surface with coarse, dense, uneven, reddish-brown punctuation; venter of abdomen with sparse different sized punctures. Prominent second abdominal sternal spine reaching the anterior margin of the hind coxae; beak stout extending past middle coxae. Antennae long and slender, segments four and five subequal, with two longest and three shortest. Humeri acute or subspinose; scutellum strongly tapered; connexivum dorsally with black spots at the anterior and posterior edge. Membrane clear without spots or pattern, veins simple. Anterolateral pronotal margin finely crenulate.

KEY TO THE OHIO SPECIES OF APATETICUS DALLAS

1. Basal median plate of female genital segment quadrangular (Pl. IV, Fig. 56); lower appendages of male broad, flattened, and bent, upper appendages dissimilar, palpus-like, small, nearly straight and about one half as long as lower (Pl. IV, Fig. 43); connexivum narrowly or not at all exposed; antennal segments three and five equal or subequal .................................................. A. cynicus (Say)
1'. Basal median plate of female genital segment triangular (Pl. IV, Fig. 57); lower appendages of male narrow and curved, upper appendages similar, and about equally as long as lower (Pl. IV, Fig. 42); connexivum often rather widely exposed; antennal segment three shorter than five..................A. bracteatus (Fitch)

**Apateticus cynicus** (Say)

(Pl. I, Fig. 6; Pl. IV, Figs. 43 & 56)

*Pentatomina cynicia* Say, 1831, p. 3; Fitch reprint, p. 757; Compl. Writ., 1:312.

*Apateticus cynicus* (Say), Uhler, 1876, 1:282; ibid., 1878, 4:504; Schouteden, 1907, p. 71, Pl. 5, Fig. 8.

*Podisus cynicus* (Say), Uhler, 1878, 19:370; Van Duzee, 1904, 30:70.

*Arma cynicus* (Dallas), 1851, 1:96.

*Podisus grandidis* (Dallas), Stål, 1867, 24:497.

*Podisus grandidis* (Dallas), Stål, 1870, 1:49.

Punctuation on juga coarser, rather sparse and uneven; juga surpassing tylus more than in *A. bracteatus* (Fitch); other characters as in the key. Length, 13 - 20 mm; width, 8 - 11 mm.

Host: *Caterpillars cecropia, gypsy and other moths* (Blatchley, 1926, p. 194).

Distribution: Statewide in Ohio, recorded in all the geographical areas of the state, June 1 - Oct. 25.

*Apateticus bracteatus* (Fitch)

(Pl. I, Fig. 1; Pl. IV, Figs. 42 & 57)

*Arma bracteatus* Fitch, 1856, 16:336.

*Podisus bracteatus* (Fitch), Gillette and Baker, 1895, p. 12; Van Duzee, 1904, 30:70.

*Apateticus bracteatus* (Fitch), Schouteden, 1907, p. 79.

Punctuation on juga denser, finer and more even than on *A. cynicus* (Say); juga not surpassing tylus as much as in *A. cynicus*; male smaller sized than female; other characters as in the key. Length, 13 - 17 mm; width, 8 - 10 mm.

Host: Predaceous on various caterpillars.

Distribution: Ohio counties: Williams, Aug. 29 (OM), and Lucas, July 20 (OM). Michigan (MU), recorded from counties in all geographical areas of the state.

**Genus Podisus** Herrich-Schäffer


The juga do not surpass the tylus at all. Dorsum and venter golden brown in color but often with red areas; venter with coarse, uneven, reddish-brown punctation, which is not as dense as that on dorsum. Many with median and submedian rows of black dots on abdominal sternites. Ostiolar canal long and curved with a dark spot on its tip. The outer border and entire outer apical angle of the corium very distinctly dark red underneath, the central and inner part light brown. Anterolateral pronotal margin distinctly crenulate.

**KEY TO THE OHIO SPECIES OF PODISUS HERRICH-SCHÄFFER**

1. Apical or subapical tip of the membrane without dusky vittae or dark spot; anterolateral side margins of pronotum straight, humeral angles obtuse, not produced and rounded at apex (Pl. II, Fig. 28); body broadly oval; hind femora immaculate .................. *P. placidus* Uhler
1'. Apical or subapical tip of the membrane with dusky vittae or dark spot; anterolateral side margins of pronotum slightly or greatly concave, humeral angles usually acute (except *P. fretus* Olsen, which is obtuse), produced and rounded or spinose at apex; body more elongate, not broadly oval .................................................. 2

2. Humeral angles prolonged into a sharp slender spine (Pl. II, Fig. 30); hind femora with two subapical black dots on the anterior face; ventral abdominal spine usually long; median row of spots on venter of abdomen uniformly small posteriorly .............................................. *P. maculiventris* (Say) 2'. Humeral angles not prolonged, either bluntly acute or obtusely angled (Pl. II, Fig. 29); hind femora variable; ventral abdominal spine variable .................................................. 3

3. Length, 11 mm or less; hind femora immaclate; median ventral abdominal spots small or indistinet; ventral abdominal spine short, not reaching hind coxae; lighter golden brown above .............................................. *P. modestus* (Dallas) 3'. Length, 11 mm or more; hind femora thickly flecked with dark dots; median, ventral, abdominal spine usually long, reaching hind coxae; darker, mottled, fuscous color above .................................................. 4

4. Length, 12.5 mm or more; hind femora without apical or subapical darkened band; humeral angles obtusely rounded; ventral abdominal spine long, reaching between the hind coxae; median row of spots on venter of abdomen, large, dull, reddish-brown and not sharply defined .............................................. *P. fretus* Olsen 4'. Length, 11.5 mm or less; hind femora with apical or subapical darkened band; humeral angles barely acutely angled; ventral abdominal spine shorter, just reaching the posterior margin of the hind coxae; median row of spots on venter of abdomen, black, more defined and larger posteriorly .............................................. *P. serieventris* Uhler

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**Podisus placidus** Uhler

(Pl. II, Fig. 28)

*Podisus placidus* Uhler, 1870, 2:203; *Van Duzee*, 1904, 30:71.

*Apateticus placidus* (Uhler), Smith, 1910, p. 138.

Body small, oval; connexivum orange-red. Venter of abdomen often with irregular reddish punctures; submedial rows, no medial, of brown dots on abdominal sternites. Juga and stylus sparsely and irregularly punctate with black border on the posterior part of juga. Pronotal side margins straight with fine, very obtuse crenulations. Length, 7.5 - 11.0 mm; width, 4.5 - 6.0 mm.

Host: Predaceous on tent caterpillars, gypsy moth, and other lepidopterous larvae (Blatchley, 1926, p. 201); on the larvae of *Gal erucella luteola* Torre-Bueno, 1939; collected from leguminous trees, wild cherry, wild grape, and peach.

Distribution: Ohio counties: Delaware, Sept. 25; Lucas, June 30 (OM); Wayne, June 2-Nov. 20 (WO); Trumbull, July 8 (WO); Fulton, Sept. 5 (DGF) and Portage, Sept. 3 (DGF). Michigan, statewide, May 14-Sept. 2 (MU).

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**Podisus maculiventris** (Say)

(Pl. I, Figs. 2 & 7; Pl. II, Fig. 30; Pl. IV, Fig. 55)

*Pentatoma maculiventris* Say, 1832, p. 11; reprint in Psyche, 1899, 8:307.

*Podisus maculiventris* (Say), *Van Duzee*, 1904, 30:71.

*Apateticus maculiventris* (Say), *Zimmer*, 1912, 11:236.

*Arma spinosa* (Dallas), 1851, 1:98.

*Podisus spinosa* (Dallas), Stål, 1870, 9(1):51; Uhler, 1876, 1:282; *ibid.*, 1877, 3:399; *Van Duzee*, 1894, 5:170.
Above light to dark brown; membrane with fuscous apical spot. Vent-er of abdomen with one or two rows of submedian and one row of small median black spots; the sixth sternite with a large median black spot. Thoracic pleura with one or two submedian black spots. Pronotal side margins broadly but definitely concave. Length, 8.5 - 13.0 mm; width, 6 - 8 mm.

Host: Predaceous on various caterpillars and grubs; bayberry caterpillar; cucumber, elm leaf and asparagus beetle larvae; Leptinotarsa decemlineata larvae; codling moth larvae; and webworms Blatchley, 1926, p. 198. This has been collected on numerous types of vegetation, where it is presumably feeding on other insects; however, I have raised it on bits of apple.

Distribution: Recorded in all geographical areas of Ohio, Mar. 29- Oct. 23.

Podisus modestus (Dallas)
(Pl. II, Fig. 29)

Small body size; color golden brown above and below, lighter in general than P. maculiventris (Say). Usually without median and submedian rows of spots on venter of abdomen and if present, then much more feeble than on P. maculiventris (Say) and P. serieventris Uhler, and these spots brown rather than black. Anterolateral margins of pronotum with very blunt, obtuse crenulations. Length, 8 - 11 mm; width, 4.5 - 6.0 mm.

Host: Predaceous on tent caterpillars and various insect larvae (Blatchley, 1926, p. 200). Collected on bushes, hazel, honeysuckle, oak, and grape.

Distribution: Ohio counties: Hocking, May 26-Oct. 14 (OSU-OM); Ottawa, Aug. 8; Franklin, Sept. 5; Athens, Sept. 11; Greene, Sept. 22; Fairfield, Aug. 15-Sept. 13; Licking, July 9 (OM); Lucas, June 12-Sept. 8 (OM, DGF); Columbiana, Sept. 9 (OM); Cuyahoga, May 31-Sept. 5 (CM); Summit, Mar. 21-May 23 (CM); Wayne, June 12-Aug. 8 (DGF-WO); Trumbull, Sept. 23 (DGF); and Hamilton.

Podisus fretus Olsen

Similar in some ways to P. maculiventris (Say) and P. serieventris Uhler. Color above yellow, thickly marked with reddish-brown punctures; underside with coarse, uneven, sparse, dark red punctures, leaving large pale yellow, smooth, rugose areas. Submedian row of light reddish-brown or fuscous spots on anterior margin of sternites 3-6. Antennae pale reddish-brown throughout. Head wider than P. maculiventris (Say) with its side margins parallel; punctuation on juga fuscous and denser than on P. maculiventris (Say) on the inner edge near the tyulus. Crenulations of
prontal side margins very rounded, obtuse and irregular, with its narrow edge somewhat pale yellow and smooth. Legs speckled with dull fuscous dots, hind femora immaculate apically with a slight concentration of fuscous dots subapically on the anterior ventral side. Long, broad, curved ostiolar canal. Length, 12.5 - 14.0 mm; width, 6.5 - 7.5 mm.

Host: Collected on pine and oak and from lake wash-up (Olsen, 1916, p. 83).

Distribution: Not yet recorded in Ohio, but possibly occurring here. Lake Co., Indiana, June 10 (PU); Ottawa Co., Michigan, June 10 (Blatchley, 1926, p. 198).

Podisus serieventris Uhler

Podisus serieventris Uhler, 1871, 14:74; ibid., 1878, 19:370; Van Duzee, 1904, 30:71.

Above dark or mottled, grayish-brown color; triangular spot at basal angles of scutellum smoothly calloused and ivory-white; ventral abdominal like P. maculiventris (Say). Thoracic punctures coarser, denser and usually aggregated to form an irregular, black median stripe on the pleura. Pronotal side margins feebly but evidently concave, their front portion with rounded crenulations. Punctuation on tylus sparser, finer and lighter in color than that on juga; antennae with apical segments mostly black. Length, 8 - 10 mm; width, 5.0 - 6.5 mm.

Host: Predaceous on noctuid larvae (Torre-Bueno, 1939); various moth (tent) caterpillars (Blatchley, 1926, p. 200).

Distribution: Ohio counties: Hocking, May 8-October 26; Franklin; Scioto, June 10; and Greene, May 2-12. Recorded in Indiana (PU) and scattered counties in Michigan (MU).

SUBFAMILY PENTATOMINAE Stål

KEY TO THE OHIO TRIBES OF PENTATOMINAE Stål

1. Juga with a distinct tooth, laterally, just posterior to the apex (Pl. I, Fig. 8); few abdominal sternites with a shallow longitudinal median groove holding the end of the beak then eventually disappearing about halfway back on the abdomen; head long, its sides straight or slightly sinuate anterior to the eyes; side margins of the pronotum usually with coarse teeth .............................................................. Pentatomini (Stål)

1'. Juga without distinct tooth just posterior to the apex (Pl. I, Fig. 13); venter without shallow median groove on abdomen, more convex; head shorter, its side margins more sinuate; usually no coarse teeth on the side margins of the pronotum .............................................................. Halyini (Stål)

Tribe Halyini (Stål)

There is only one genus in this tribe on this continent: Brochymena Amyot and Serville.

Genus Brochymena Amyot and Serville

Brochymena Amyot and Serville, 1843, p. 106; Stål, 1872, 10(4):16; Van Duzee, 1904, 30:26.

Body large, broadly oval, and subdepressed; head porrect; juga flattened and equaling or surpassing the tylus; side margins of juga usually...
usually to the second abdominal sternite. Pronotum subhexagonal, its anterior half on a lower plane, its side margins with four to eight strong teeth or spines; prominent humeral angles. Entire dorsal surface very rugose, coarsely and irregularly marked with different sized black punctures. Color light yellow-brown to dark grayish-brown. Basal angles of scutellum, in most, with large black depression. Membrane forked or branched veins and black pattern. Punctuation on venter of abdomen denser and finer than above with pubescence denser; the entire venter covered thickly with a white powder-like substance; dorsally with the powder-like substance sparser in each puncture. Connexivum flattened and widely exposed; ostiole with finger-like auricle; tibiae sulcate.

KEY TO THE OHIO SPECIES OF BROCHYMENA AMYOT AND SERVILLE

1. Humeral projections of pronotum subquadrate and prominently toothed (Pl. III, Fig. 31); basal quarter of scutellum distinctly elevated; ostiole merely an inconspicuous pit without a canal or an auricle of any kind (or a very small one); no dull evaporative area evident ........................................ B. arborea (Say)

1'. Humeral projections subtriangular with small teeth, rounded or otherwise, but never subquadrate with prominent teeth (Pl. III, Fig. 32); basal quarter of scutellum hardly elevated; ostiole with an oblique crateriform base and a distinct, usually very prominent, laterally extending auricle, this sometimes with a partial spiral twist; a dull subtriangular evaporative area around the ostiole and canal ........................................ 2

2. Juga distinctly longer than tylus, exceeding it by at least the width of one jugum at that point, and incurved but usually not contiguous before its apex (Pl. I, Fig. 9); metasternal evaporative area not impressed in its surrounding plate; beak shorter with less prominent median, ventral, abdominal sulcus ......................... B. quadripustulata (Fabricius)

2'. Juga equal to or only slightly exceeding tylus, never by the width of one jugum at that point (Pl. I, Figs. 10 & 11); beak usually longer with more prominent median, ventral, abdominal sulcus ........................................ 3

3. Head produced and triangular in front of jugal tooth or projection which is quite prominent (Pl. I, Fig. 10); metasternal evaporative area impressed in its surrounding plate ........................................ B. carolinensis (Westwood)

3'. Head little, if at all, produced in front and without lateral tooth or with very obtusely rounded projection (Pl. I, Fig. 11); evenly rounded across the front of the head, subtruncate (Pl. I, Fig. 11); metasternal evaporative area not impressed in its surrounding plate ........................................ B. punctata Van Duzee

Brochymena arborea (Say)
(Pl. I, Fig. 8; Pl. III, Fig. 31)

Brochymena arborea (Say), Dallas, 1851, 1:188; Uhler, 1878, 19:372; Barber, 1906, 1:257.
Halys erosa (Herrich-Schäffer), 1839, 5:70; Fig. 515; ibid., 1844, 7:56.
Brochymena annulata Walker, 1867, 1:230.

Brochymena arborea (Say)
Broadly oval body; often with orange or red mixed with brown. Teeth on the side margins of pronotum very strong and acute; also with a spine on the postero-ventral corners of the humeral projection. Undersurface and legs dull with legs annulated in black; ventral pubescence not thick; abdominal sternite punctures fuscous, irregular and of different sizes. Ostiole with small or minute auricle. Male claspers hook-like and pointed ventrally; female basal genital plates strongly convex and hump-like. Juga not longer than tylus. Length, 11.5 - 17.0 mm; width, 7 - 10 mm.

Host: Predaceous on the larvae of Leptinotarsa 10-lineata; collected from grape, apple, peach, oak, and beech.

Distribution: Recorded from all the geographical areas in Ohio, February 4-October 14.
Brochymena quadripustulata (Fabricius)

(O. P. I, Fig. 9; O. III, Fig. 32)

Cimex quadripustulata Fabricius, 1775, p. 704.
Halys quadripustulata (Fabricius), Fabricius, 1803, p. 182.
Brochymena quadripustulata (Fabricius), Dallas, 1851, 1:188; Stål, 1872, 10(4):16; Van Duzee, 1904, 30:28.
Halys serrata (Palisot de Beauvois), 1805, p. 187, Hemip. Pl. 11, Fig. 8; Amyot and Serville, 1843, p. 107.
Halys pupillata (Herrich-Schäffer), 1839, 4:104, Fig. 453.
Brochymena annulata Uhler, 1876, 1:283.

Oval body, narrower behind than B. arborea (Say). Side margins of pronotum with teeth not as strong as in B. arborea (Say). Dorsally dark reddish-brown color, thickly marked with fuscous punctures and small, irregular, smooth, light spaces sparsely placed. Pronotum and scutellum with some coarse, deep, widely scattered punctures, more than in B. arborea (Say). Juga much longer than tylus. Ostiole and auricle distinct. Male claspers not hook-like or pointed ventrally; female basal genital plates only slightly convex. Length, 13 - 18 mm; width, 6 - 11 mm.

Host: Occasionally predaceous on brown-tail and tussock moth larvae (Ruckes, 1946), apple, maple, oak, hackberry, locust, honeysuckle, elm, hawthorn, cherry, grape, elderberry, pine, ironweed, alfalfa, etc.

Distribution: Collected in all geographical areas in Ohio, March 25-Oct. 17.

Brochymena carolinensis (Westwood)

(P. I, Fig. 10)

Halys carolinensis Westwood, 1837, 1:22.
Brochymena carolinensis (Westwood) Dallas, 1851, 1:189; Stål, 1872, 10(4):17.
Halys serrata Wolff, 1811, 5:184, Fig. 178.
Cimex annulatus (Fabricius), 1775, p. 704.
Halys annulatus (Fabricius), Herrich-Schäffer, 1844, 7:57, Fig. 728.
Brochymena annulata (Fabricius), Van Duzee, 1904, 30:30.
Brochymena harrisii Uhler, 1495; ibid., 1878, 9:373.

Dorsally, thickly marked with numerous fuscous and blackish punctures, the blackish ones much larger and usually aggregated to form two dark spots on the anterior submarginal part of the pronotum and a curved indented line at the basal angles of the scutellum. Juga slightly surpassing tylius. Anterior portion of the pronotum on a lower level than the posterior portion (not declivent); humeral angles subtriangular, rounded in front, usually unarmed and turned up above the plane of the pronotum. Scutellum with many deep, coarse, irregular, black punctures and with prominent longitudinal, median ridge. Hemelytra appear impressed in the dorsal connexivum with the latter's lateral edges raised above the hemelytra. Pronotal side margins with triangular regular teeth. Length, 13 - 19 mm; width, 7 - 11 mm.

Host: Pines and apple (fruits) (Ruckes, 1946); and oaks.

Distribution: Ohio counties: Hocking, June 5-Oct. 14, and Hamilton. Indiana, Henryville, June 25 (PU); Michigan, recorded from scattered counties in the lower half of the state, March. 20-Sept. 3 (MU).
Brochymena punctata Van Duzee

Brochymena punctata Van Duzee, 1909, 41:369.
Brochymena harrisii Van Duzee, 1904, 30:31.

Broadly oval body; dull reddish-brown in color; thickly marked with fuscous punctures and smooth white stellate elevations of varying sizes and shapes, sparsely all over the pronotum, scutellum and corium. Juga slightly surpassing tylus with their tips incurved and almost contiguous in front of tylus. Pronotal side margins with irregular blunt teeth, some of which (the more posterior ones) point posteriorly; pronotum with some coarse, deep, irregular black punctures. Female with median oblong lobe of the genital plate longer than the lateral lobes; in the male the heads of the claspers are squarish, block-shaped and nearly filling the cavity of the genital cup. Length, 14 - 18 mm; width, 8 - 13 mm.

Host: Oaks (Ruckes, 1946).

Distribution: Ohio counties: Hocking, October 20, 1929; Perry, June 9; recorded in Indiana from Crawford Co., August 31 (PU).

Tribe Pentatomini (Stål)

KEY TO THE OHIO SUBTRIBES OF PENTATOMINI (STÅL)

1. The second ventral abdominal sternite produced anteriorly, at the middle, in the form of a stout spine or tubercle towards or between the hind coxae (Pl. V, Fig. 64) ............... Subtribe III

1'. The second ventral abdominal sternite not produced anteriorly as a spine between the hind coxae

2. Ostiolar opening without a distinct auricle, but extended as a narrow, tapering-to-a-point, evanescent canal, which may be slightly raised (Pl. V, Figs. 66 & 69) Subtribe I

2'. Ostiolar opening usually (not very evident in Murgantia, Fig. 68) with a short curved auricle having a rounded tip, but not extended as a canal or, if so, then the canal very short, raised and ending abruptly (Pl. V, Fig. 67) ............... Subtribe II

Subtribe I of Pentatomini (Stål)

KEY TO THE OHIO GENERA OF SUBTRIBE I OF PENTATOMINI (STÅL)

1. Frena extending beyond midscutellum (Pl. III, Fig. 38); evaporative area well defined (Pl. V, Fig. 66); juga not surpassing tylus; body, especially abdominal sides and dorsum, pubescent

1'. Frena not reaching midscutellum; evaporative area not very well defined (Pl. V, Fig. 69); juga not surpassing tylus; body, especially abdominal sides and dorsum, pubescent

2. Ostiolar canal short, not extending beyond the middle of its supporting plate; juga not surpassing tylus

2'. Ostiolar canal long, extending beyond the middle of its supporting plate

3. Juga not surpassing tylus; ostiolar canal long and continued as a ridge which extends obliquely almost to the outer front angle of the supporting plate; color green or light brown, often with a dark red line transversely on the middle of the pronotum between the humeri

3'. Juga surpassing tylus and usually meeting in front of tylus; usually with scutellar tip light colored and very sparsely punctate, if at all

Trichopepla Stål

Small, oval. Antennal segments nearly equal. Pronotal side margins with irregular blunt teeth, some of which (the more posterior ones) point posteriorly. Pronotum with some coarse, deep, irregular black punctures. Female with median lobe of the genital plate longer than the lateral lobes; in the male the heads of the claspers are squarish, block-shaped and nearly filling the cavity of the genital cup. Length, 14 - 18 mm; width, 8 - 13 mm.

Host: Various plants.

Distribution: Ohio counties: Hocking, October 20, 1929; Perry, June 9; recorded in Indiana from Crawford Co., August 31 (PU).
Genus **Trichopepla** Stål

Trichopepla Stål, 1867, 24:528; Van Duzee, 1904, 30:34.

Small, oval, pubescent body; head convex and somewhat declivent. Antennal segment one not reaching apex of the head, segment two one-half longer than three, segments four and five longer, stouter and sub-equal. Pronotal side margins yellow-white, narrowly reflexed and flattened. Scutellum with its sides slightly sinuate, the tip narrowly rounded and the basal half of its edges lined with deep, coarse, black punctures. Connexivum narrowly exposed. Head with one medial (on tylus) and two submedial (jugal) yellow, smooth, raised lines, the medial one often continued to the tip of the scutellum. Dorsally, the surface with coarse, uneven, black punctures. Ostiolar canal not reaching middle of its supporting plate.

**KEY TO THE OHIO SPECIES OF TRICHOPEPLA STÅL**

1. Antennae reddish-brown, the two apical segments piceous (black); head tapering in front, its apex narrowly rounded (Pl. I, Fig. 13) ...................................... **T. semivittata** (Say)

1'. Antennae black, basal segment only, paler; head with sides parallel, its apex more broadly rounded (Pl. I, Fig. 14) ................................................... **T. atricornis** Stål

**Trichopepla semivittata** (Say)

(Pl. I, Fig. 13; Pl. V, Figs. 65 & 69)

*Pentatoma semivittata* Say, 1832, p. 9 (Fitch reprint, p. 766), Compl. Writ., 1:322.
*Trichopepla semivittata* (Say), Uhler, 1871, 14:96; Van Duzee, 1904, 30:34.

*Pentatoma semivittatum* (Herrich-Schäffer), 1844, 7:10, Fig. 766.
*Pentatoma pilipes* (Dallas), 1851, 1:247.

Punctuation on pronotum and scutellum coarse, sparse, black and very irregular; corium with finer, more even punctuation; usually a more distinct pattern of raised, smooth yellow-white lines than on **T. atricornis** Stål; scutellum with basal, yellow-white, raised, smooth borders and tip. Connexivum alternated with black and yellow. Head pointed with tylus raised and slightly longer than juga; head longer than its width across the eyes. Pronotal side margins nearly straight. Rostrum at least reaching to the posterior margin of the hind coxae, usually to the first few abdominal sternites (Fig. 65). Length, 5.5 - 8.0 mm; width, 4 - 5 mm.

Host: Collected on wild carrot and button snake root (Blatchley, 1926, p. 108), goldenrod; swept from clover, asters, mullein and ironweed.

Distribution: Recorded from all of the geographical areas in Ohio, March 23-November 8.

**Trichopepla atricornis** Stål

(Pl. I, Fig. 14)

*Trichopepla atricornis* Stål, 1872, 10(4):34; Van Duzee, 1904, 30:35.

Punctuation of the pronotum and scutellum not quite as coarse as and more even than on **T. semivittata** (Say). Tip of the scutellum narrowly pale but punctured; less pattern dorsally than the preceding species. Head broader, not pointed, with juga equal to or slightly longer than tylus; head not longer than its width across the eyes. Pronotal side margins arched. Rostrum not surpassing base of hind coxae. Length, 6 - 8 mm; width, 4 - 5 mm.
Host: Rank weeds (Van Duzee, 1916, p. 231) and wild carrot (Stoner, 1920).

Distribution: Ohio counties: Franklin, June 5; Vinton, November 24; Licking, September 23; and Fairfield, September 16. Recorded in several counties in Michigan (MU).

Genus Chlorochroa Stål

Chlorochroa Stål, 1872, 10(4):33 (as a subgenus of Lioderma); Van Duzee, 1904, 30:38 (as a subgenus of Pentatoma); Kirkaldy, 1909, 1:53 (as a subgenus of Rhytidolomia).

Pentatoma Fieber, 1861, p. 80, 336; Van Duzee, 1904, 30:35.

Lioderma Provancher, 1886, 3:41.

Pitada Amyot, 1845, 3(2):445, 446; Reuter, 1888, 15:494. Pitada is often used currently, but Dr. R. I. Sailer (personal communication) informs me that Chlorochroa is a valid name and for persimilis.

There is only one species that occurs in this part of the country: Chlorochroa persimilis Horvath.

Chlorochroa persimilis Horvath


(The following references are for C. uhleri. Since persimilis was considered a synonym of uhleri, some references to uhleri may have been persimilis. I have included cases where uhleri may have been used as synonyms of persimilis.)

Chlorochroa uhleri Stål, 1872, 10(4):33; Van Duzee, 1917, p. 36; Blatchley, 1925, p. 112.

Pentatoma uhleri (Stål), Van Duzee, 1904, 30:39.

Lioderma uhleri (Stål), Zimmer, 1912, 11:225.

Cimex (?!) flavomarginatus (Kuschakewitsch), 1867, 4:99.

Pentatoma ligata (Fitch), 1856, 16:389.

Lioderma ligata (Fitch), Provancher, 1886, 3:41.

Pentatoma juniperina (Provancher), 1886, 3:38; Van Duzee, 1904, 30:39.

Clear pea or dark green color above with side margins of the pronotum, costal borders of the corium and border of connexivum pale or reddish-orange and tip of the scutellum pale; ventral surface olive or yellow-green. Some of dorsal surface of pronotum and scutellum rough with raised, smooth, transverse ridges or bumps; punctuation uneven and concolorous; punctuation of corium more even and finer. Juga about equal to tylius and their side margins feebly sinuate. Connexivum narrowly exposed. Heads of the male claspers with a distinct three pronged shape; ventral posterior part of the male genital plate protruding posteriorly and the genital opening located dorsally. Antennal segment two distinctly longer than segment three which is subequal to segment four. Length, 11.5 - 15.0 mm; width, 7.0 - 8.5 mm.

There has been some question as to the synonymy of Chlorochroa persimilis Horvath with C. uhleri Stål. Torre-Bueno 1939, p. 216 has these two questionably synonymized, noting a color difference of the borders of the pronotum, scutellum and connexivum; a difference in the relative length of antennal segment two; a difference in the protrusion of the ventral posterior part of the male genitalia; and a size range difference. Blatchley (1926, p. 111) uses uhleri Stål as the species found in eastern North America and mentions persimilis Horvath as a synonym.
Esselbaugh (1947, p. 164; 1948, p. 30) recognizes the problem of separating these two and he also notes some discrepancies in Torre-Bueno's key. However, Esselbaugh makes no definite statement as to what he thinks the status of the two should be, although he seems not to consider them as synonyms.

From The Ohio State University and Purdue collections, I see two groupings. The ones which are from the West (Colo., Calif., Ariz., Utah, and Idaho) are paler, pea green color above with a pale connexivum, scutellum and pronotum border; with sparsely scattered, raised, smooth, white bumps all over the dorsum and with three of these raised smooth bumps on the scutellum, one baso-medial and one at each basal lateral corner. The ones from the East (Ohio, N.Y., Maine, and Kansas) have a darker green dorsal color with the various borders light reddish or orange and with few if any of the sparsely scattered raised bumps or the scutellar bumps. There is a noticeable difference between the male claspers of the eastern and western groups, the former having three distinct prongs or branches and the latter having actually two branches with a medial one slightly forked distally. Also, the second antennal segment is approximately one third or more longer than segment three in the eastern group and less than one third longer or subequal in the western.

From the limited specimens examined, I conclude that the eastern group is Chlorochroa persimilis Horvath, as found in Ohio, and the western group is Chlorochroa uhleri Stål and possibly some C. sayi. It will probably be necessary to examine a larger series for a more valid conclusion. Dr. Sailer (personal communication) states that C. persimilis is the eastern species of Chlorochroa, but it also extends into the northwest, and that C. uhleri does not extend east of 96° longitude (just west of the Mississippi River).

Host: Dwarf prickly pear fruit and dwarf cedar (Juniperus sabina Linn.) (Blatchley, 1926, p. 112); willow and juniper trees (Vestal, 1913, p. 29); nasturtium, Chrysopsis, Kuhnia, Ambrosia psilostachya, Lespedeza capitata, Grindelia squarrosa, and grasses (Torre-Bueno, 1939, p. 216); corn, peas, tomato, currants, blackberry and the seeds of sunflower (Felt, 1915)

Distribution: Sandusky Co., Ohio, July 14, 1915; Ohio specimen, 1953 (RH); recorded from several counties in Indiana (PU) and from Michigan (MU) throughout the state.

Genus Thyanta Stål

Thyanta Stål, 1862, 3:58; Van Duzee, 1904, 30:52.

Small to medium sized oval bugs. Dorsal color from light to dark green or from very light to dark greenish-brown; some of the green ones with a red band between the humeri; venter usually about the same color as the dorsum. Pronotum and scutellum rugosely punctate, forming irregular, transverse, raised, smooth ridges; corium with a more even punctation. Connexivum narrowly exposed. Juga feebly sinuate in front of the eyes and equal to or slightly shorter than the tylus. Front of the pronotum declivent. Mesosternum with a small carina. Antennal segments 2-5 approximately subequal. These characters and the ones in the key to species apply mostly to northeastern and midwestern species, not to southern and western species.

There are two broods in the Ohio species: the summer brood, which
is green or yellow-green; and the autumnal-vernial brood, which is tan, brownish or olivaceous.

This genus is very diverse throughout the U.S. and there has been much controversy as to the proper naming of some of the species. This problem involves the species in the Ohio area. It was previously believed that *Thyanta custator* (Fabricius) and *T. calceata* (Say) were the two species present in Ohio as described by Blatchley (1926) and Torre Bueno (1939).

In 1919 McAtee described a variety of *T. custator* (Fabricius) as *T. custator* var. *accerra*, but Sailer (1951) says that this is a synonym of *T. custator* (Fabricius), merely a color variation.

Ruckes (1957) attempted to clear up the problem. He said that what Blatchley, Torre Bueno and others have often called *T. custator* (Fabricius) was a subspecies of *T. pallido-virens* (Stål) described by Stål in 1859 from California. Ruckes said there were four subspecies of *T. pallido-virens* (Stål) throughout most of the U.S., and *T. custator* (Fabricius) was found only along the Atlantic coast and some of the Gulf coast. Of the four subspecies of *T. pallido-virens* (Stål) the most widespread was *T. pallido-virens* *accerra* (McAtee) extending through the entire U.S. west of Idaho, Colorado and western Texas.

Ueshima (1963) confirms Ruckes' classification using genetic research. Ueshima implies further that the subspecies *T. pallido-virens* *accerra* (McAtee) may be a separate species. So, the former *T. custator* from Ohio, etc., is actually now incorporated into *T. p-v. accerra*.

The following key is based largely on Ruckes (1957) using his classification, which is now generally accepted.

I have only a few specimens of *T. p-v. accerra* (McAtee) from Ohio (including males) and no specimens of the true *T. custator* (Fabricius) from the Atlantic or Gulf coasts, so I will follow the descriptions of Ruckes. In a footnote Ruckes (1957, p. 7) says that there is a specimen of *T. custator* (Fabricius) from Gallia County, Ohio in the California Academy of Science collection; thus this species is present in the Mississippi and Ohio River valleys. *T. calceata* (Say) is common and I have studied many.

### Key to the Ohio Species of *Thyanta* Stål

1. Side margins of pronotum, apical angles of abdominal segments at the incisures, a midventral row of post spiracular spots, and a pair of dots on the pronotal disc at the medial tip of a smooth impunctate area (callus) (Pl. III, Fig. 33) piceous or colored black
   - 2

1'. Side margins of pronotum, apical angles of abdominal segments pale or concolorous with post spiracular spots and no black spot on the medial tip of the callus
   - 3

2. Body form elongate oval; male genital segment with the medial lobe nearly straight-edged (Pl. IV, Fig. 45); tip of scutellum surpassing the inner angles of the corium and the tip of the scutellum one third of the total scutellar length
   - *T. custator* (Fabricius)

2'. Body broadly oval; male genital segment with the medial lobe subtriangular (Pl. IV, Fig. 44); tip of scutellum just reaching the inner angles of the corium and the tip of the scutellum one fourth of the total scutellar length
   - *T. calceata* (Say)
which is tan, Thyanta pallido-virens accerra McAtee, 1919, 14:16.
Thyanta accerra McAtee, 1926, p. 118.
Thyanta custator (Fabricius), Blatchley, 1926, p. 115; Torre Bueno, 1939, 193:231.

Male genital segment with median lobe straight edged. Very similar to T. custator (Fabricius); for further differences between these two species see Ruckes (1957, p. 8-16). Length, 10 mm; width, 6.5 mm. These should be common in Ohio since they replace T. custator; it is possible that most of the specimens which I called T. custator originally were actually T. p-v. accerra.

Host: Low shrubs, huckleberry, and same as T. custator (Fabricius).
Distribution: Ohio counties: Clinton, May 1; Franklin, April 13, 1935; Washington, September 13, 1905; Richland, July 7, 1934. Five males and many females, Versailles, Indiana, July 16-23, 1957, collected by H. E. Evans, determined by H. Ruckes from Cornell University collection.

Thyanta custator (Fabricius)

Cimex custator Fabricius, 1803, p. 164.
Pentatoma custator (Fabricius), Dallas, 1851, 1:251.

For a detailed description, see Ruckes (1957). There were no specimens of this species at my disposal.

Host: Clover, grasses, goldenrod, mullein, asparagus and corn (Hart, 1919); oats, sorghum, cotton and sugar beets (Torre Bueno); peach, alfalfa, pokeweed and ironweed.


Thyanta calceata (Say)

(Pl. III, Figs. 33, 38; Pl. IV, Fig. 44; Pl. V, Fig. 66)
Pentatoma calceata Say, 1831, p. 8; Fitch reprint, p. 765; Compl. Writ., 1:320.
Thyanta calceata (Say), Barber, 1911, 19:108.
Pentatoma custator (Herrich-Schäffer), 1844, 7:106, Fig. 771.

Broadly oval body. Color quite variable, dark, pale green, olive-brown or greenish-yellow. Often with reddish purple band between the humeri. Scutellar tip tapered broadly. Antennae with the last two segments fuscous and reddish at the base. Legs greenish; tarsi and apex of tibiae reddish or fuscous. Length, 7.0 - 10.5 mm; width, 5 - 6 mm.

Host: Mullein, pine, wild raspberry and goldenrod.

Distribution: Ohio counties: Ross, July 9; Scioto, August 16 (OM); Adams, April 12-October 13 (WO-OSU); Gallia, August 13; Fairfield, April 1-October 14 (RH-DGF); Ashland, July 23 (OM); Athens, April 23-November 8 (OU); Harrison, September 29 (OM); Guernsey, September 30 (OM); Jackson, April 8-September 23 (OM); Knox, June 23-July 15 (WO-OM); Licking, September 25-October 14 (OM-DGF); Muskingum, September 30 (OM); Pike, October 14 (OM); Morgan, August 2 (OM); Richland,
Genus Holcostethus Fieber

Peribalus Mulsant and Rey, 1866, p. 237, 262; Van Duzee, 1904, 30:32.

Small, oval body; head broadly rounded in front, its side margins feebly sinuate, head about as wide across the eyes as it is long. Pronotum with its side margins straight, with the humeral angles obtusely rounded. Male genital segment subvertical and its apical margin deeply emarginate at the middle, its outer apical angles usually ending in short, oblong, bluntly rounded lobes. Scutellum subequilateral. Pronotal side margins with their narrow edges and the tip of the scutellum pale yellow and impunctate.

Key to the Ohio Species of Holcostethus Fieber

1. Connexivum with black spots at the joints reaching almost to the edge; antennae with segments one to three pale, and four and five fuscous; most of the venter pale or light colored; juga usually not contiguous in front of the tylus; scutellum broadly tapered; male claspers broader and a small spine projecting toward them from the anterior side of the genital cup (Pl. IV, Fig. 47) ........................................... H. abbreviatus (Uhler)

2. Antennae with segments one to three pale, and four and five fuscous; scutellum more narrowly tapered; most of the venter pale or light colored; juga usually contiguous in front of the tylus; male claspers narrower (often pointed) and without an anterior spine projecting toward them (Pl. III, Fig. 33) ........................................... H. limbolarius Stål

Holcostethus abbreviatus (Uhler)

(Pl. IV, Fig. 47)

Holcostethus abbreviatus Uhler, 1872, p. 397; Gillette & Baker, 1895, p. 16; Kirkaldy, 1909, p. 47.
Peribalus abbreviatus (Uhler), Van Duzee, 1904, 30:33.

Body very broadly oval. Color above from pale brown or yellow to dark brown or grayish. Punctuation on head, pronotum and scutellum dense, coarse, uneven, and fuscous; corium with finer and more even punctuation. Sides of the pronotum flattened out somewhat. Connexivum narrowly exposed. Abdominal sternites may have a pair of medial and submedial irregular (zig-zag) fuscous stripes. Legs with some sparsely scattered punctures. Male genital segment having the apical margin with a deep medial emargination or notch and two lateral notches about as deep, thus two submedial lobes are formed with the apical margin laterally, feebly sinuate but not arched; the spine projecting from the anterior side of the genital cup is larger and broader than it is in H. piceus (Dallas) (Fig. 47). Head broad and long. Length, 8.0 - 9.5 mm; width, 5 - 6 mm.
October 19

Host: Prosopus juliflora (Torre-Bueno, 1939, p. 211).

Distribution: Not yet collected from Ohio, but a possibility. Recorded
from Charlevoix Co., Michigan, July 27 (MU).

Holostethus limbolarius (Stål)
(Pl. IV, Fig. 48)

Peribalus limbolarius Stål, 1872, 104:24; Van Duzee, 1904, 30:32.

Peribalus modestus Uhler, 1872, p. 396.

Holostethus limbolarius (Stål), Kirkaldy, 1909, p. 48.

Body oval; head not as long and as broad as in the other two species. Juga usually contiguous in front of the tylus. Antennae with segments one to three pale, and four and five longer than the other segments, the color above pale yellow or light brown to dark and with fuscous, dense, coarse, somewhat uneaven punctures. Undersurface pale yellow with venter of the abdomen having coarse fuscous punctures arranged sparsely and often abdominal sternites with a pair of medial and submedial fuscous, irregular (zig-zag) stripes. Legs with some sparsely scattered fuscous punctures. The narrow edges of the side margins of the pronotum, the basal third of the costal margin of the hemelytra, the edges of the connexivum, and the apex of the scutellum colored pale yellow and imanulate. Connexivum usually not exposed. Sides of the pronotum not flattened. Male genital segment with the apical margin with a deep medial emargination or notch and two lateral notches which are much deeper and broader, the two submedial lobes thus formed having their apical margin slightly arched but not laterally sinuate (Fig. 48). Length, 7-9 mm; width, 4.5 - 5.0 mm.

Host: Swept from clover, goldenrod, wheat (Pack and Knowlton, 1930); Solidago spp. (Stoner, 1920); shepherd's purse and cauliflower (Blatchley, 1926, p. 106); oak, ironweed, peach, corn, elderberry, mullein and mustard.

Distribution: Collected from all of the geographical areas in Ohio, February 28-November 2.

Holostethus piceus (Dallas)
(Pl. IV, Fig. 46)

Pentatoma (?) piceus Dallas, 1851, 1:236.

Peribalus piceus (Dallas), Gillette and Baker, 1855, p. 16; Van Duzee, 1904, 30:34.

Holostethus piceus (Dallas), Kirkaldy, 1909, p. 48.

Body broadly oval. Color above from pale brown or yellow to dark brown or grayish. Punctuation on the head, pronotum and scutellum dense, coarse, uneven and fuscous; punctuation on the corium finer and more even. Sides of the pronotum flattened out somewhat. Connexivum not usually exposed. Head and most of the anterior half of the pronotum (especially laterally) colored black or piceous. Entire venter of the abdomen solid piceous except a pair of contiguous openings, posterior to the spiracles on each sternite, which are pale yellow. Legs with fairly dense fuscous punctures and with an apical and subapical fuscous ventral spot. Male genital segment having the apical margin with a deep medial emargination or notch and two lateral notches about as deep, the two submedial lobes thus formed having their apical margins very straight; the spine projecting from the anterior side of the genital cup is smaller and
narrower than the one in *H. abbreviatus* (Uhler) (Pl. IV, Fig. 46). Head broad. Length, 7 mm; width, 4 mm (only one specimen examined).

**Host:** Unknown.

**Distribution:** Not yet recorded in Ohio but is a possibility. Recorded from northern Illinois, May 1 (PU); Cheboygan Co., Michigan, June 21 (MU), and the type from Ontario (Blatchley, 1926, p. 107).

**Subtribe II of Pentatomini (Stál)**

**KEY TO THE OHIO GENERA OF SUBTRIBE II OF PENTATOMINI (STÁL)**

1. **Juga** with anterior side margins thickened and reflexed; head strongly declivent, the front part almost vertical; ostiole with inner end nearly in line with outer edge of the adjacent coxae, without an evident raised auricle or canal and with the evaporative area narrow, not the usual large broad area (Pl. V, Fig. 68); color black or bluish-black variegated with red, yellow and orange .................................................. *Margaria* Stá1

2. **Juga** with anterior side margins not thickened and reflexed; head not strongly declivent; ostiole about one coxal diameter lateral of the outer lateral edge of the adjacent coxae and with a canal and evident raised auricle with a broad, large, opaque evaporative area (Pl. V, Fig. 67) .................................................. *Margaria* Stá1

3. **Scutellum** shorter than corium, its apical third narrower than apex of corium with the tip not broadly rounded .................................................. *Murgana* Stá1

4. **Scutellum** equal to or longer than corium, its apical third wider than the apex of the corium and with its tip broadly rounded (Pl. III, Fig. 39) .................................................. *Murgana* Stá1

5. **Hind tibiae** not sulcate or grooved dorsally throughout their length .................................................. *Murgana* Stá1

6. **Hind tibiae** sulcate or grooved dorsally throughout their length (Pl. V, Fig. 75) .................................................. *Murgana* Stá1

7. **Bucculae** nearly straight-edged, first segment of beak not longer than bucculae; humeral angles of pronotum not spined; scutellum either with a white V-shaped pattern or a large white spot on each basal angle .................................................. *Mormidea* Amyot and Serville

8. **Bucculae** long (%)., first segment of beak not longer than bucculae; humeral angles of pronotum with long forward-projecting spines; scutellum without white margins or large white basal spots; posterior angles of genital segment prolonged into sharp spines .................................................. *Euschenius* Dallas

9. **Bucculae** sloping off at posterior end without an evident posterior lobe ........................................... *Mormidea* Amyot and Serville

10. **Bucculae** elevated at posterior end into a distinct lobe ending abruptly behind (Pl. II, Fig. 15); side margins of pronotum not crenulate and humeral angles obtusely rounded (Pl. II, Figs. 24 and 25); margins of the front half of the pronotum not strongly flattened; beak not passing hind coxae; frena reaching the middle of scutellum; length less than 10 mm .................................................. *Hymenarcys* Amyot and Serville

11. **Side margins of the pronotum** crenulate (Pl. III, Fig. 34); humeral angles prominent (often produced into spines) and usually acute .................................................. *Euschenius* Dallas

12. **Side margins of the pronotum** broadly rounded and not crenulate with humeral angles obtusely rounded (Pl. III, Fig. 35); margins of the front half of pronotum strongly flattened; beak reaching apex of the second abdominal sternite; frena surpassing middle of scutellum; length 12 mm or more .................................................. *Menectes* Stá1

13. **Head** porrect or nearly so, tylus strongly convex and distinctly elevated above the surface of the Juga (Pl. II, Fig. 16); pronotum with side margins straight (Pl. I, Fig. 23); length 8 mm or more .................................................. *Coenus* Dallas

14. **Head** either declivent or strongly deflexed; tylus scarcely elevated above the level of the Juga; length not over 6 mm .................................................. *Neottiglossa* Kirby

15. **Juga** longer than tylus and meeting in front of it (Pl. II, Figs. 19, 20 & 21); head at least four-fifths or seven-eighths as wide as scutellum; color not black with red markings .................................................. *Neottiglossa* Kirby

16. **Juga** not longer than tylus; head less than seven eighths as wide as scutellum; color black with red markings .................................................. *Cosmopepla* Stá1
Genus Murgantia Stål

Murgantia Stål, 1862, 23:105; Kirkaldy, 1909, 1:106.

There is only one species in this part of the country: Murgantia histrionica (Hahn).

Murgantia histrionica (Hahn)

(Pl. V, Fig. 68)

Strachia histrionica Hahn, 1834, 2:116, Fig. 196; Stål, 1861, 22:141.

Eurydema histrionica (Hahn), Herrich-Schäffer, 1853, p. 93.

Murgantia histrionica (Hahn), Stål, 1862, 23:106; Van Duzee, 1904, 30:57.

Murgantia nigricons Cockerell, 1903, 2:85.

For a detailed description of the pattern, see Blatchley (1926, p. 155). Oblong, oval body; head very broad and triangular with juga shorter than tylus. Rostrum not extending beyond the middle of the hind coxae and with segment two as long as three and four together. Pronotum and scutellum are smooth and shiny, the punctuation not evident (or only slightly). Scutellum strongly tapered to a narrowly rounded tip; frena reaching apical fourth of the scutellum. Connexivum very narrowly exposed. Length, 8.0 - 11.5 mm; width, 5.0 - 6.5 mm.

Host: Cabbage and other cruciferous plants; turnip (UK).

Distribution: Ohio counties: Washington, January 8-September 14; Athens, April 19-September 2 (OU); Lawrence, July 14 (OU); Butler, August 17-September 17 (MIU); Madison, Jackson, August 20 (OM); Highland, May 1 (OM); Meigs, October 1 (WO); Mt. Logan, Ross, August 20 (OM); and Franklin, May 31 (DJB). Recorded from several counties in Indiana (PU) and Michigan (MU), also from Pennsylvania (MSU). These are commonly called harlequin bugs (E.S.A., 1965) and usually overwinter south of Ohio, then migrate here.

Genus Mormidea Amyot and Serville

Mormidea Amyot and Serville, 1843, p. 134; Stål, 1872, 10(4):19; Kirkaldy, 1909, 1:59.

There is only one species found in this part of the country: Mormidea lugens (Fabricius).

Mormidea lugens (Fabricius)

(Pl. I, Fig. 12)

Cimex lugens Fabricius, 1775, p. 716.

Cydnus lugens (Fabricius), Fabricius, 1803, p. 187.

Cimex lugens (Fabricius), Herrich-Schäffer, 1839, 5:66, Fig. 510.

Pentatoma lugens (Fabricius), 1844, 7:96; Dallas, 1851, 1:248.

Mormidea lugens (Fabricius), Stål, 1862, 23:103; Uhler, 1878, 19:376; Van Duzee, 1904, 30:42.

Mormidea albipes (Fabricius), 1798, p. 535.

Cimex gamma (Fabricius), 1803.

Pentatoma gamma (Fabricius), Say, 1831, p. 10; Fitch reprint, p. 757; Compl. Writ., 1:322.

Pentatoma punctipes (Palisot de Beauvois), 1805, p. 113, Pl. 8 (Hemipt.). Fig. 6.

Small oval body; head broad and somewhat declivent with juga sinuate in front of the globose eyes and tylus slightly longer. Pronotum anteriorly declivent with disc fairly evenly punctate; most of the side and...
Genus Solubea Bergroth

Solubea Bergroth, 1891, 10:235.
Oebalus Stål, 1862, 23:102.

There is only one species found in this country: Solubea pugnax (Fabricius).

Solubea pugnax (Fabricius)

(Pl. V, Fig. 67)

Cimex pugnax Fabricius, 1775, p. 704.
Oebalus pugnax (Fabricius), Stål, 1872, 10(4):22.
Solubea pugnax (Fabricius), Van Duzee, 1909, 9:155.
Cimex typheus (Fabricius), 1803, p. 162.
Mormidea typhoeus (Fabricius), Dallas, 1851, 1:216.
Pentatoma typheus (Fabricius), Guerin, 1857, p. 370.
Solubea typhoeus (Fabricius) Stål, 1862, 23:102.
Pentatoma orthocantha (Palisot de Beauvois), 1805, p. 130, Pl. 9 (Hemipt.), Fig. 9.
Pentatoma augur (Say), 1831, p. 3; Fitch reprint, p. 758; Compl. Writ., 1:313.
Cimex vitripennis (Burmeister), 1835, 2:387.

Elongate narrow body; head prorect with juga slightly shorter than tylus. Rostrum reaching posterior margin of the middle coxae. Antennae with segment one only slightly shorter than segment two, but three, four and five longer than two and approximately subequal. Pronotal side margins strongly concave and humeral angles with a prominent forward-projecting spine. Scutellum narrowly and strongly tapered. Color brownish-yellow above, marked with fuscous punctures arranged to form a vague stripe along the middle of each jugum. Pronotum with dense uneven punctuation; scutellum and corium with sparser uneven punctuation; outer apical angle of the corium with a small black dot. Underside dull yellow or tan; usually with a basal median spot on each abdominal sternite and a row of submedian fuscous punctures. Outer hind angles of the sixth abdominal segment prominent and spinose; female with two longer spinose projections from the genital plates medial to the projections of the sixth abdominal segment. Length, 8 - 11 mm; width, 4.0 - 5.5 mm.

Host: Grasses; alfalfa; corn and wheat (Torre-Bueno, 1939, p. 218); rice and sorghum (Sailer, 1944, p. 113).

Distribution: Ohio counties: Washington, July 23-October 23 (OSU-OU); Lawrence, June 27; Fairfield, September 3-October 14 (OM-DGF); further cha

Hymenarcys

Hymenarcys

Small equal to or the fourth broadly ro apex of the forming a concave la yellowish-l pronotum; corium. Ur. and uneve

KEY TO

1. Head lon edge of the membran straight

1'. Across the middle a thus the V, Fig. 77 Fig. 25; 1

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Smallest

often with; ant the humeral anterior part punctures.
Genus *Hymenarcys* Amyot and Serville

*Hymenarcys* Amyot and Serville, 1843, p. 124; Stål, 1872, 10(4):30; Kirkaldy, 1909, 1:72.

*Hymenarcys* Spinola, 1850, p. 36.

Small or medium sized; head poocyte with tylus strongly convex and equal to or only slightly surpassing the juga. Antennæ with apical half of the fourth and the entire fifth segment fuscous. Scutellum long, its apex broadly rounded and almost as wide as corium and almost reaching the apex of the latter. Basal genital plates of female with their medial border forming a small slightly-raised ridge; genital plate of male broad and concave laterally, the hind margin broadly and feebly sinuate. Color dark yellowish-brown above with dense, coarse, uneven punctuation on the pronotum and scutellum, and finer more evenly marked punctures on the corium. Underside lighter yellowish-brown with thorax coarsely, densely and unevenly punctured and abdomen with finer, even, but dense punctuation. Connexivum narrowly exposed, the borders fuscous with a median pale spot on each segment.

**KEY TO THE OHIO SPECIES OF HYMENARCYS AMYOT AND SERVILLE**

1. Head longer than wide, its sides parallel in front of the middle (sinuate from anterior edge of the eye, no abrupt jutting in from the eye anteriorly) (Pl. II, Fig. 24); veins of the membrane furcate or parallel, not anastomosing (Pl. V, Fig. 76); sides of the pronotum straight or slightly concave (Pl. II, Fig. 24); smaller, not over 8.5 mm

---------------------------------------------------------------------------------------------------------------------- H. aequalis (Say)

1'. Across the eyes, head as wide as or wider than long, its sides curved in front of the middle (an abrupt mesal jutting in on the side of the head just anterior to the eyes and thus the eyes appear stalked) (Pl. II, Fig. 25); veins of the membrane anastomosing (Pl. V, Fig. 77); side margins of the pronotum broadly convex and curved outward (Pl. II, Fig. 25); larger, 8.5 mm or more .............................. H. nervosa (Say)

*Hymenarcys aequalis* (Say)

(Pl. II, Fig. 24; Pl. V, Fig. 76)


*Hymenarcys aequalis* (Say), Stål, 1872, 10(4):30; Van Duzee, 1904, 39:49.

*Cimex dentatus* (Herrich-Schäffer), 1839, 5:64, Fig. 507.

*Pentatoma dentatus* (Herrich-Schäffer), 1842, 7:95.

*Pentatoma boxura* (Dallas), 1851, 1:244.

Smaller, oval body. Antennæ flecked with fuscous dots. Scutellum often with small narrow whitish dot on each side of the apex. The most anterior part of the pronotal side margins rough and unevenly bordered; humeral angles often flatly rounded with small indentation on the posterior part of the humeri. Juga with coarse, even, dense, fuscous punctures. Tibiae with some thin reddish-brown or fuscous spines. For further characters see the key. Length, 6.5 - 8.5 mm; width, 3.5 - 5.0 mm.
Host: Mullein and thistle (Blatchley, 1926, p. 143).

Distribution: Ohio counties: Washington, August 1; Delaware, April 10-September; Ottawa, July 20; Greene, June 20; Hocking, July 9-October 26 (OM-OSU); Franklin, October 10; Adams, August 10 (OM); Ashland, July 28 (OM); Fairfield, November 8 (OM); Muskingum, October 7 (OM); Wyandot, September 26 (OM); Ross, June 20 (OM); Champaign, March 18 (OM); and Wayne, June 6 (WO). Recorded in Indiana, Kentucky (UK), and Michigan (MU).

**Hymenarcys nervosa** (Say)

*Pentatoma nervosa* Say, 1832, p. 9; Fitch reprint, p. 766; Compl. Writ., 1:321.

*Hymenarcys nervosa* (Say), Walker, 1867, 2:283; Uhler, 1878, 19:375; Van Duzee, 1904, 30:49.

*Pentatoma pennsylvanica* (Westwood), 1837, 1:35.

*Larger, oval body. Antennae not flecked with fuscous dots. The narrow edge of the pronotal side margins and the edge of the tip of the scutellum, pale yellow. Underside yellow with black punctures and each side with a broad irregular stripe. Side margins of the pronotum entirely smooth and the humeral angles smoothly rounded. Tibiae with rows of thick black spines and femora with scattered fuscous punctures from each of which protrudes a small black spine. Juga with coarse, uneven, sparser, black punctures. Length, 8.5 - 11.0 mm; width, 5.0 - 6.5 mm.*

Host: Mullein.

Distribution: Ohio counties: Greene, February 22; Hocking, May 5-July 20; Delaware, March 17; Athens, June 5-October 5 (OU); Vinton, June 19-22; Lawrence, May 28; Warren, July 17 (OM); Ottawa, April 15 (OM); Holmes, March 7 (OM); Licking, May 8 (OM); Franklin, March 29-November 19 (WO-OM); Fairfield, May 7-June 30 (OM); Adams, August 11 (OM); Coshocton, May 25-September 12 (OM); Gallia, April 14 (WO); Richland, April 28 (WO); and Carroll, September 21 (WO). Recorded from southern Indiana (Blatchley, 1926, p. 144); southern Michigan (MU); and Kentucky (UK).

**Genus Euschistus Dallas**

*Euschistus* Dallas, 1851, 1:201; Stål, 1872, 104:243; Van Duzee, 1904, 30:43.

Broadly oval body; head porrect; juga feebly sinuate near the base, rounded at the tip, usually equalling, rarely exceeding the tylus. Antennae half the length of the body, the first segment shortest and stoutest, the third longest, fourth and fifth subequal and usually fuscous. Rostral segment two almost as long as three and four together. Pronotum anteriorly declivent with side margins usually concave. Frena nearly to the scutellar tip. Posterior angles of the sixth abdominal sternite prolonged acutely. Punctuation above coarse, dense and uneven; underside with thoracic punctuation coarse and concolorous and abdominal sternites usually with dense, finer, concolorous punctuation. Color above light to dark or reddish brown; underside usually a lighter brown. Male genital plates pointed and extending beyond the tip of the abdomen. This is a large genus with some variety and flexibility to some of the characters.
KEY TO THE OHIO SPECIES OF EUSCHISTUS DALLAS

1. Pronotum with a raised, calloused, smooth, yellowish, somewhat irregular line between the humeri; humeral angles acute or ending in a sharp spine which is directed upward and slightly forward; lateral incisures of the ventral abdominal segments without small black dots; color reddish-brown ................................E. ictericus (Linnaeus)

1'. Pronotum without a raised, smooth, yellowish, calloused, somewhat irregular line between humeri; humeral angles variable ..............................................

2. Lateral incisures of the ventral abdominal segments without small black dot or point (Pl. IV, Fig. 58); genital segment of male with a large black spot on the basal half (Pl. IV, Fig. 58) ........................................E. variolarius (Palisot de Beauvois)

2'. Lateral incisures of the ventral abdominal segments with small black dot or point (Pl. V, Fig. 63) .................................................................

3. Venter of the abdomen with one or more (usually three or four) black median spots or dots which are sometimes almost obsolete (Pl. IV, Fig. 59); length less than 12 mm; tip of the scutellum usually with a light or white spot; dorsum dark brown .........................................................

3'. Venter of the abdomen without median row of black spots or dots ................................

4. Side margines of the pronotum straight or nearly so, their edge ivory-white, bordered within by a line of black punctures; ventral apical margin of male genital plate with a large median V-shaped notch and a much smaller one lateral to it (Pl. IV, Fig. 51); length, 10 mm or less ........................................E. polita Uhler

4'. Side margines of the pronotum distinctly sinuate or concave, the pale edge not bordered within by a line of blackish punctures; ventral apical margin of male genital plate entire, broadly curved or subtruncate (Pl. V, Fig. 63); length, 12 mm or more ................................E. servus (Say) ...........................................

5. Juga equaling or slightly surpassing the tip of the tylus (Pl. II, Fig. 17); antennae entirely pale; connexivum usually rather widely exposed; humeri prominent, acute, or rounded but never spinose ......................................E. servus var. servus (Say)

5'. Juga distinctly extending beyond the tylus by a distance equal to or greater than the mean width of the tylus (Pl. II, Fig. 18); the last two antennal segments usually blackish; connexivum not at all or very narrowly exposed ........................................E. servus subsp. euschistoides (Vollenhoven)

Euschistus ictericus (Linnaeus)

Cimex ictericus Linnaeus, 1763, p. 16; Fabricius, 1775, p. 702.
Euschistus ictericus (Linnaeus), Dallas, 1851, 1:206; Walker, 1867, 2:26.
Aceratodes ictericus (Linnaeus), Walker, 1868, 3:451.
Euschistus ictericus (Linnaeus), Stål, 1872, 10(4):26; Van Duzee, 1904, 30:47.
Pentatoma rubofusca (Palisot de Beauvois), 1805, p. 185, Pl. 11 (Hemip.) Fig. 3.
Euschistus (?) cognatus Dallas, 1851, 1:204.

Elongate oval body, tapering behind humeri. Color above reddish-brown or reddish-yellow; fairly dense, uneven, coarse, fuscous punctures above (sparser on the corium). Side margines of pronotum, the narrowly exposed edges of the connexivum, and the tip of the scutellum pale yellow; the tip of the scutellum with some concolorous sparse punctures. underside dull yellow or brown; spiracular rings fuscous. Antennae reddish-yellow; head tapering in front of the middle. Basal half of scutellum transversely rugose; apical pronotal side margines coarsely crenulate. Male genital plate broadly emarginate medially on the ventral apical border (Pl. IV, Fig. 58) and a dorsal thin plate of hypopygium with a broad V-shaped notch (Pl. IV, Fig. 52). Length, 10.5-12.0 mm; width, 6.5-8.5 mm.
Host: Grasses near water (Blatchley, 1926, p. 129).
Distribution: Medina Co., Ohio and Sandusky Co., Ohio, May 21-August 13. Recorded from northern Indiana (PU) and central and southern Michigan (MU and MSU).
Euschistus variolarius (Palisot de Beauvois)
(Pl. III, Fig. 34; Pl. IV, Fig. 58)

Pentatoma variolarius Palisot de Beauvois, 1805, p. 149, Pl. 10 (Hemipt.), Fig. 6.
Euschistus variolarius (Palisot de Beauvois), Stål, 1872, 10(4):26; Uhler, 1878, 19:374; Van
Duzee, 1904, 30:47.
Euschistus punctipes (Say) Dallas, 1851, 1:207.
Pentatoma sordidus (Herrich-Schäffer), 1842, 6:70, Fig. 637.
Pentatoma sordidus (Herrich-Schäffer), 1844, 7:95.
Euschistus sordidus (Herrich-Schäffer), 1853, Verz. p. 96.
Cimex ictericus (Herrich-Schäffer), 1842, 7:70, Fig. 637.
Pentatoma ictericus (Herrich-Schäffer), 1844, 7:95.
Euschistus ictericus (Herrich-Schäffer), 1853, Verz. p. 95.

Elongate oval body. Color above grayish, reddish or greenish-yellow or brown and marked with coarse, uneven, quite sparse, fuscous punctures. Apical part of the scutellum and the disc of the pronotum with sparse punctuation except denser around its margins. The edge of the pronotal side margins and the tip of the scutellum colored yellow; pronotal side margins broadly concave and apically finely crenulate; humeri acute or sub-spinose. Ventrally, color usually dull yellow or light brown with coarse, concolorous, thoracic punctures and abdominal sternites almost smooth. Connexivum usually not exposed. Male genital plate with a broad gradual emargination in the ventral apical margin and with a dorsal thin plate of the hypopygium with a broad U-shaped notch. Spiracular rings pale. Length, 11 - 15 mm; width, 7 - 9 mm.

Host: Peach, goldenrod, mullein, mustard, clover, ironweed, elderberry, alfalfa, soybeans, black walnut, tulip tree, cherry, maple, oak, sassafras, elm and aster. Also corn, beans, asparagus, cotton, rye, tobacco, tomato and onions (Esselbaugh, 1948, p. 18).†

Distribution: Collected in all the counties of Ohio, February 19-November 8; one of the most common pentatomids in Ohio.

Euschistus tristigmus (Say)

KEY TO THE OHIO VARIATIONS OF EUSCHISTUS TRISTIGMUS (SAY)∗

1. Humeri broad, subtriangular, their tips obtusely angled (or slightly acute); antennal segment five and the apical part of segment four black, piceous or darkened; undersurface yellow .......................................................................................... E. tristigmus var. tristigmus (Say)

1'. Humeri narrower, more inclined upward and backward (recurved), their tips acutely angled or spinose (Pl. III, Fig. 36); antennae entirely pale; undersurface white or very light ........................................................................... E. tristigmus var. pyrhocerus (Herrich-Schäffer)

∗ Blatchley (1926, p. 135-136) refers to a third variation liridus Dallas, but from all the specimens that I have examined, I have found many intergrades between this and the typical tristigmus (Say) and some contradictions in the morphological characters given. Also Blatchley bases much of this separation on the geographical life zones, but I have both variations from several zones. Therefore, I am considering it invalid as a variety or race. It is possible that E. tristigmus and E. liridus are more distinct in other geographical regions. Since they are interbreeding, all intergradations do exist; however, in Ohio these variations cannot be distinguished using most of Blatchley's characters. The only trait which may separate some is the fourth and fifth antennal segments fuscous in E. liridus and absent in typical tristigmus, but a much larger series is needed to verify this.

Euschistus tristigmus var. tristigmus (Say)
(Pl. IV, Figs. 49, 50, & 59; Pl. V, Fig. 75)
Pentatoma tristigma Say, 1831, p. 4; Fitch reprint, p. 75; Compl. Writ., 1:314.
Euschistus tristigmus (Say), Uhler, 1861, 1:23; Stål, 1872, 10(4):26; Van Duzee, 1904, 30:47;
Euschistus inconspicua (Westwood, 1837, 1:42; Dallas, 1851, 1:206.

Pentatoma tristigmus (Herrich-Schäffer, 1844, 7:95, 101, Fig. 787; Dallas, 1851, 1:207.

Euschistus luridus Dallas, 1851, 1:207, Pl. 7, Fig. 6.

Color above dull grayish or yellowish with the dense fuscous punctation giving the dorsum a dark brown appearance; densely marked above with coarse, uneven, fuscous punctures; sparser and more even on the corium. Pronotum with narrow edge of side margins yellow, its side margins broadly concave, finely crenulate in the male and more coarsely in the female; disc of the pronotum with punctures denser near the margins. Dorsum of the scutellum rugose and rough. Undersurface light yellow and usually with scattered fine reddish marks of various sizes and shapes. Middle of the abdomen ventrally with from one to four black spots, the one on the sixth segment the largest, oval or oblong, and rarely absent, the others varying in size and often absent. Connexivum often narrowly exposed. Tylus equalling juga and may very feebly surpass them. Male ventral apical border of genital plate with medial broad emargination which ends on each side with a short obtuse tooth or bump (Pl. IV, Fig. 49); the thin plate projecting from the caudal margin of the dorsal plate of the hypopygium is produced here into a blunt tooth rather than emarginated as in some other species in this genus (Pl. IV, Fig. 50).

Length, 8.0 - 11.5 mm; width, 6.0 - 7.5 mm.

Host: Cherry, goldenrod, mullein, peach, elderberry, raspberry, ironweed, honeysuckle, oak, hawthorn, maple and hackberry.

Distribution: Recorded in most of the geographical areas of Ohio, April 23-November 21. Also common in Indiana (PU), Michigan (MU), and Kentucky (UK).

Euschistus tristigmus var. pyrrhocerus (Herrich-Schäffer)

Cimex tristigmus variation pyrrhocerus Herrich-Schäffer, 1842, 6:61, Fig. 638.

Euschistus tristigmus variation pyrrhocerus (Herrich-Schäffer), Uhler, 1872, p. 396; Van Duzee, 1904, 30:47.

Similar in most ways to E. t. var. tristigmus (Say) except for the key characters and smaller size. Color above more fuscous and shiny; undersides often lighter dull white. Abdominal sternites three and four with black spots more often lacking; sternites five and six with spots smaller and more oblong. Male genital plate as in E. t. var. tristigmus (Say).

Length, 9.0 - 10.5 mm; width, 5.5 - 7.0 mm.

Host: Raspberry, cottonwood, honeysuckle, grasses; others as in E. t. var. tristigmus (Say).

Distribution: Ohio counties: Franklin, July 28-August 25 (OM-OSU); Licking, August 27; Hocking, May 23-September 13; Athens, April 28-October 18 (OU); Washington, August 14; Scioto, June 9; Delaware, August 2; Adams, July 14-August 11 (OSU-OM); Rupels (Co.), August 15; Fairfield, July 26 (OM); Jackson, May 30-September 23 (OU-OM); Ross, August 19 (OM); Champaign, September 8 (OM); Muskingum, July 25 (OM); Carroll, July 8 (OU); Vinton, October 2 (OU); Meigs, August 16 (OU); Butler, June 22-September 11 (DGF); Hamilton, September 12 (DGF); Mercer, July 26 (MU).
This variation is from the southern and central part of Ohio; also from southern Indiana (PU) only. There are two recorded in a southernmost county of Michigan (MSU), Hart (1919, p. 192), and Blatchley (1926, p. 137) both refer to this as a southern variety of *E. t. tristigmus* (Say). The southern distribution seems to correlate with other workers and I believe that it is definitely a variety or race, but unlike Esselbaugh (1949, p. 161), I have collected these in June and early September and I have data for this variation collected from April 28 to October 18. I believe that further rearing studies must be carried out for *E. t. tristigmus* (Say) and variation *pyrrhocerus* (Herrich-Schäffer) from more northerly areas.

**Euschistus politus** Uhler

*(Pl. IV, Figs. 51 and 52)*

_Euschistus politus_ Uhler, 1897, 39:117; Van Duzee, 1904, 30:46.

Small, oval body. Color above dull yellow or reddish-brown. Densely and almost evenly punctate on the pronotum and scutellum with coarse fuscous punctures; corium with finer even punctures. Basal third of the costal borders of the hemelytra smooth and pale, and narrow basal edges of the juga lined with dense, coarse, black punctures. The narrow tip of the scutellum pale and impunctate; the scutellum rough and rugose with small vaguely whitish smooth elevated areas. Undersurface pale yellow without mid-abdominal black dots. Juga equal to tylus. Connexivum not usually exposed. Male genital segment as in the key and with a median U-shaped emargination in the thin plate which projects from the caudal margin of the upper plate of the hypopygium (Pl. IV, Fig. 52). Length, 8.5-10.0 mm; width, 5 - 6 mm.

Host: Peaches, hazel and goldenrod (Blatchley, 1926, p. 133-134); and scrub oak (Olsen, 1912, p. 52).

Distribution: Ohio counties: Hocking, May 10-June 19; Lucas, June 4; Scioto, June 9-17; Muskingum, August 27 (OM); Fairfield, September 6 (OM); Adams, August 11 (OM); Jackson, June 6 (OM); Wayne, June 8 (W0); Athens, April 18 (OU); and Vinton, September 30 (OU). Recorded from Indiana (PU) and Michigan (MU-MSU).

**Euschistus servus servus** (Say)

*(Pl. II, Fig. 17; Pl. V, Fig. 63)*

_Pentatoma serva_ Say, 1831, p. 4; Fitch reprint, p. 759; Compl. Writ., 1:314.

_Euschistus servus_ (Say), Stål, 1872, 10(4):26; Uhler, 1878, 19:375; Van Duzee, 1904, 30:45.

_Pentatoma (?) harrissii_ (Westwood), 1837, 1:41.

_Euschistus harrissi_ (Westwood), Van Duzee, 1904, 30:52.

_Pentatoma spilota_ (Westwood), 1837, 1:42.

Broadly oval body. Color above dull yellow or light brown; densely and unevenly marked with coarse fuscous punctures above. Scutellar tip pale yellow. Membrane often with small scattered fuscous dots. Connexivum coarsely punctate, its segment's edges with a fuscous bar across each end of the segment and a pale spot in the middle. Anterior side margins of the pronotum finely and evenly crenulate. Black dots at the anterior ends of the ventral abdominal incisures large and usually the posterior edge of the incisures with some black dots on them. Male genital plate with medial emargination in the ventral apical border evenly rounded off and having a distinct wide, V-shaped, median notch in the
also from southern and central Ohio. Recorded from southern Indiana (PU); Kentucky (UK-UL); Pennsylvania (UL); and two records from the extreme south of Michigan (MSU).

Euschistus servus subsp. euschistoides (Vollenhoven)

in. Densely with coarse third of the basal edges arrow tip of the exuvium not h a median . the caudal length, 8.5-

Euschistus servus servus Say except anterior side margins of the pronotum coarsely and unevenly crenulate. Black dots at the anterior end of the ventral abdominal incisures smaller and not continued anteriorly to the next segment. See key for other differences. Length, 11 - 14 mm; width, 6.5 - 9.0 mm.

Host: Peach, mullein, goldenrod, honeysuckle, oak, raspberry, maple, elm, grape, sumac, ironweed, wild cherry and elderberry.

Distribution: Collected from all of the geographical areas in Ohio, April 2-October 14. Recorded from Indiana (PU); Michigan (MU); and Kentucky (UK).

Genus Mencelles Stål


There is only one species known: Mencelles insertus (Say).

Mencelles insertus (Say)

(Pl. III, Fig. 35)

Medium sized, elongate, and broadly oval body; head not wider across the eyes than long and apically more broadly rounded than Coenus Dallas; juga equalling tylus with their side margins reflected somewhat, tylus not raised. Abdomen wider at one point than the widest part of the pronotum. Color above grayish-yellow or brown with coarse, dense but fairly even punctures (on the venter of the thorax also); corium with finer punctures; abdominal sternites with finer, much denser punctuation than above and with a median row of large black dots. Pronotum anteriorly very deeply emarginated with side margins arcuate and flattened (Pl. III, Fig. 35). Scutellum almost reaching the tip of the corium, the outer apex of
which is pointed. Veins of the membrane anastomosing with its cells larger than those of *Coenus* Dallas. Connexivum broadly exposed with dense punctation on the exposed segments and fuscous bars at the inci- sures. Rostral segment two as long as segments three and four together (not longer). Median, light, impunctate line from anterior margin of the pronotum to the apex of scutellum. Genital plate of male with apical broad V-shaped emargination and with the side margins not concave. Length, 11 - 14 mm; width, 6 - 8 mm.

Host: Arboreal and nocturnal [feeding] (Park and Strohecker, 1936).†

Distribution: Ohio counties: Athens, January 8-October 24 (OU); Hamilton, November 3 (Cinci. Mus.); Franklin, January 9-November 19 (OM); Delaware, April 2-October 1; Fulton, June 24; Hocking, March 16-October 9; Summit, June 10 (OM); Gallia, June 30 (OM); Ross, June 20 (OM); Morgan, September 5 (OM); Columbiana, September 9 (OM); Cuyahoga, May 9 (CM); and Ashland, June 24 (RH). Recorded from Indiana (PU); Michigan (MU); and Kentucky (UK).

Genus *Coenus* Dallas

*Coenus* Dallas, 1851, 1:194, 230; Stål, 1867, 24:526; Zimmer, 1912, 11:222.

There is only one species known: *Coenus delius* (Say).

*Coenus delius* (Say)

(Pl. II, Figs. 16 & 23)

*Pentatoma delia* Say, 1831, p. 8; Fitch reprint, p. 765; Compl. Writ., 1:320.

*Coenus delius* (Say) Stål, 1867, 24:526; Uhler, 1878, 19:375; Van Duzee, 1904, 30:49.

*Hymenarcys aeruginosa* Amyot and Serville, 1843, 1:125; Walket, 1867, 2:282.

*Coenus tarsalis* Dallas, 1851, 1:230, Pl. 8, Fig. 5.

*Coenus punctatissimus* Vollenhoven, 1868, Ser. 2, p. 183.

Body oval; head wider across the eyes than long and apically narrowly rounded. Entire dorsum and venter of the thorax with coarse, uneven and sparse black punctures; abdominal sternites with denser and finer punctation. Color above dull yellow. Pronotum with the narrow edges of the side margins straight and impunctate and its anterior margin deeply emarginated. Tylus as long as juga. Veins of the membrane anastomosing. Connexivum not exposed; the corium apically subtrun- cate. Ostiole with a short auricle; rostrum extending to the hind coxae and its segment two longer than three and four together. Antennae usually piceous or dark reddish-brown. Genital plate of male apically broadly emarginated with a medial, prominent, pointed spine. Impunctate, light colored, median line from the apex of the tylus to midpronotum, then often continued less distinctly to the posterior tip of the scutellum. Length, 8.5 - 10.5 mm; width, 4.5 - 6.0 mm.

Host: Wheat, mullein, clover, grasses, and timothy (Stoner, 1920, p. 88).†

Distribution: Collected in all of the geographical areas in Ohio, March 1-October 20.
Genus Neottiglossa Kirby

Neottiglossa Kirby, 1837, 4:276; Stål, 1872, 10(4):18.
Eysarcoris Spinola, 1837 (1840), p. 310.
Aelioidea Dohrn, 1860, 21:101; Mulsant and Rey, 1866, Pent. p. 142.
Platysoi Fieber, 1861, p. 82, 353.

Small, oblong-oval body. Color above yellowish-brown or grayish-yellow with black or fuscous punctures which are arranged densely, coarsely and unevenly. Abdomen ventrally all black marked with a finer, dense, even punctation; legs pale yellow in color. The narrow edges of the connexivum, the side margins of the pronotum, the basal third of the costal border of the hemelytra, and the basal sublateral corners of the scutellum pale yellow and impunctate; a pair of submedial, pale yellow, raised, smooth spots in the middle of the pronotum; pronotum with median, pale yellow, impunctate line, in some continuing to the tip of the tylus or to the tip of the scutellum. Antennal segments one and three subequal, with segment two longer and with segments four and five longer, thicker and more fuscous than any of the other segments. Prothorax ventrally with its anterior border, on each side of the median, produced as a thin plate, reflexed slightly and produced medially as a lobe. Ostiole with a tiny auricle or a short raised canal. Genital plate of male subvertical, semicircular and hind margin truncate with a small median notch; Blatchley (1926, p. 148-151) only mentions it in N. undata (Say), but careful examination reveals its presence in all of the Ohio species.

KEY TO THE OHIO SPECIES OF NEOTTIGLOSSA KIRBY

1. Head triangular, its sides nearly straight and narrowed toward the apex, its dorsal surface convex (Pl. II, Fig. 19); juga not inflated or puffed up (tumescent) within their margins; ostioles continued outward as a short ridge or tiny auricle. N. undata (Say)

1'. Head broadly oval with side margins not straight but rather sinuate or notched strongly in front of the eyes (Pl. II, Figs. 20 & 21); dorsal surface of the head moderately or greatly concave, not convex at all; juga inflated or puffed up within their margins; ostioles continued as a raised, distinct ridge

2. Head spoon-shaped and deeply concave, forming a deep basin in which the tylus is not elevated, apex of head broadly and evenly rounded (Pl. II, Fig. 21); scutellum without a median, Y-shaped, dark stripe, punctuation on scutellum evenly arranged

2'. Head moderately concave, forming a shallow basin in which the tylus is distinctly elevated, apex of head narrowly rounded and somewhat pointed (Pl. II, Fig. 20); scutellum with a median, black, or fuscous, Y-shaped stripe in which the widest part of the stripe is at the base of the scutellum, punctuation on the scutellum unevenly arranged

Neottiglossa undata (Say)
(Pl. II, Fig. 19; Pl. III, Fig. 39)

Neottiglossa undata (Say), Uhler, 1871, 14:96; Van Duzee, 1904, 30:50.
Aelia americana (Provancher), 1886, 3:38.

Larger than the other species. Color dorsally light golden brown or yellow and not as densely punctate as the others. Yellow median, imp-
punctate line from the apex of the tylus to near the apex of the scutellum. Side margins of the pronotum straighter. Head subtriangular apically. Legs pale yellow, femora with three subapical, irregular-shaped, brownish spots. Length, 4.5 - 6.0 mm; width, 3.0 - 3.5 mm.

Host: Mullein, clover, grape, timothy and blue-grass (Stoner, 1920, p. 93).

Distribution: Ohio counties: Franklin, April 12-October 2; Delaware, August 24; Fulton, June 24; Logan, August 13 (OM); Lucas, August 13 (OM); Knox, July 9 (OM); Stark, July 9 (OM); Holmes, July 15 (OM); Columbiana, September 10 (OM); Shelby, September 9 (OM); Portage, July 8-29 (OM); Madison, June 27 (OM); Wayne, August 9 (WO); Erie, July 27-August 6 (CM); and Cuyahoga, May 16-July 29 (CM). Recorded from Indiana (PU) and Michigan (MU).

Neottiglossa cavifrons Stål
(Pl. II, Fig. 21)

Neottiglossa cavifrons Stål, 1872, 104:18; Van Duzee, 1904, 30:50.

Similar to N. sulcifrons Stål except that color above is darker, almost black or piceous with some dull yellow or reddish-brown areas. Femora pale yellow without any fusaceous spots (immaculate). Depressed dorsal part of the head with finer and denser punctation. Length, 4 - 5 mm; width, 2.5 - 3.0 mm.

Host: Poa pratensis (bluegrass) and Agrostis alba (Esselbaugh, 1948, p. 28); Pycnanthemum (mountain mint) (Hart, 1919, p. 187); and Lespedeza (bush clover) (Blatchley, 1926, p. 151).†

Distribution: Not yet recorded from Ohio or Michigan. Recorded from southern Indiana (PU), April 24-July 5, and Kentucky (UL).

Neottiglossa sulcifrons Stål
(Pl. II, Fig. 20)

Neottiglossa sulcifrons Stål, 1872, 104:18.
Melanostoma sulcifrons (Stål), Uhler, 1876, 1:284; ibid., 1877, 3:492.
Neottiglossa sulcifrons (Stål), Uhler, 1893, 2:368; Van Duzee, 1904, 30:50.

Color above reddish-yellow, darker than N. undata (Say). Head, anterior and lateral parts of the pronotum, narrow inner edges of the corium, and the basal corners and median stripe of the scutellum colored black or dark fusaceous brown. Head apically subtriangular. Pale yellow, impunctate, median line on the pronotum only and the pronotal side margins feebly concave. Legs pale yellow, femora usually with a short, fusaceous, dorsally apical band on each side and some smaller dots more proximad. Smaller than N. undata (Say). Length, 4 - 5 mm; width, 2 - 3 mm.

Host: Oak, timothy and grasses (Blatchley, 1926, p. 150).†

Distribution: Ohio counties: Delaware, May 21; Fairfield, September 15 (OM); and Athens, May 26. Recorded from southern Indiana (PU) and Kentucky (UL), but not recorded from Michigan.

Genus Cosmopepla Stål

Cosmopepla Stål, 1867, 24:525; Van Duzee, 1904, 30:50.

There is only one species in this part of the country: Cosmopepla bimaculata (Thomas).
Cosmopepla bimaculata (Thomas)

_Pentatoma bimaculata_ Thomas, 1865, 5:455.

_Cimex carnifex_ (Fabricius), 1798, p. 535.

_Eusarcoris carnifex_ (Fabricius), Hahn, 1834, 2:117; Dallas, 1851, 1:225; Walker, 1867, 2:274.

_Pentatoma carnifex_ (Fabricius), Kirby, 1837, 4:275; Herrich-Schäffer, 1853, Verz, p. 153.

_Cosmopepla carnifex_ (Fabricius), Stål, 1867, 24:525; Van Duzee, 1904, 30:51.

_Cosmopepla tintneriana_ Kirkaldy, 1909, 1:80.

Broadly oval body, small; head slightly declivent; antennae pubescent, segments two and three subequal, four and five longer and thicker. Pronotum anteriorly declivent with its side margins fairly straight and the frena one fifth the length of the scutellum. Color above and below shiny black, with dense, coarse, uneven punctuation above and abdominal sternites with finer sparser punctuation. Impunctate (or very sparsely punctate), red or orange colored areas on: the lateral, apical, large subtriangular spots on the scutellum; the connexival borders and narrow lateral edges of the venter of the abdomen; the basal half of the costal borders of the hemelytra; and the "±" pattern on the pronotum. The basal half of the scutellum with transverse, raised, smooth ridges. Genital plate of male subvertical and its apical margin flattened, reflexed, and broadly emarginated and sulcate above. Length, 4-7 mm; width, 3.0-4.5 mm.

Host: Goldenrod, grasses, peach, mullein, raspberry, blackberry, thistle, mint, ragweed, oak, etc. General feeders.

Distribution: Collected from all the geographical areas in Ohio, April 27-October 19.

Subtribe III of Pentatomini (Stål)

KEY TO THE OHIO GENERA OF SUBTRIBE III OF PENTATOMINI (STÅL)

1. Juga not surpassing the tylus, or, if slightly so, not contiguous in front of it .......... 2
1'. Juga surpassing the tylus and usually contiguous in front of it; small, length not more than 8 mm; oval and uniform brown color .......................... _Dendrocoris_ Bergroth

2. Larger, length 14 mm or more; second antennal segment more than one half the length of the fifth segment (Pl. V, Fig. 70); color usually clear green ... _Acrosternum_ Fieber
2'. Smaller, length not more than 11 mm; second antennal segment less than one half the length of the fifth segment (Pl. V, Figs. 1 & 72); color olivaceous green or brownish ... ................................. _Banasa_ Stål

Genus _Dendrocoris_ Bergroth

_Dendrocoris_ Bergroth, 1891, 10:228; Barber, 1905, 1:262; Bergroth, 1914, 83:438, 439.

_Liotropis_ Uhler, 1877, 3:399; Van Duzee, 1904, 30:62.

Atizes Distant, 1893, 1:456.

There is only one species found in this area of the country: _Dendrocoris humeralis_ (Uhler).

_Dendrocoris humeralis_ (Uhler)

_Liotropis humeralis_ Uhler, 1877, 3:400.

_Dendrocoris humeralis_ (Uhler), Bergroth, 1891, 19:228, 229; Uhler, 1904, 27:351; Bergroth, 1914, 83:440.

_Liotropis humeralis_ (Uhler), Van Duzee, 1904, 30:62.
Small, broadly oval body; head porrect with its apex rounded; juga longer than the tylus, contiguous in front of it and slightly reflexed. Rostrum extending to the hind coxae with segment two longer than segment three. Antennal segment three longest, longer than segments one and two together, segment one longer and thicker than segment two, and segments four and five subequal but shorter than segment three. Pronotum slightly declivent, its side margins concave; humeri prominent and obtusely rounded. Scutellum broad and sinuate at the middle. Connexivum broadly exposed, its edges distinctly raised to the level of the wings above the rest of the dorsum of the abdomen. Ostiolar canal long and tapered to a point beyond the middle of the metasternal plate. Color above grayish or reddish-brown, dull yellow or bronzed; underside lighter color, golden, reddish-brown or pale yellow. Head, pronotum and scutellum having dense, coarse, fuscous punctures; pronotum fairly evenly punctate with head and scutellum unevenly so with oval, smooth areas medial to each eye; corium with sparser and finer punctation. Basal corners of the scutellum and two lateral, subapical spots with coarse dark punctures forming dark spots. Dorsum of the abdomen underneath the hemelytra often orange or red. Abdomen with black spots on both sides of the incisures ventrally and dorsally. Abdominal sternites very finely and sparsely punctate, almost smooth. Antennae mostly reddish-brown and legs completely pale yellow or reddish-brown. Males smaller-sized, with the ventral abdominal spine almost absent or with an obtuse bump on the second abdominal sternite; this spine fairly prominent in the females. Male genital plate with a deep U-shaped emargination from the middle of which projects an oblong lobe with a V-shaped median notch; the basal genital plates of the female are concealed beneath the sixth abdominal sternite. Length, 6 - 8 mm; width, 4 - 5 mm.

Host: Oak, raspberry, peach, elderberry, locust and hickory; predaceous on tent caterpillars and gypsy moth larvae (Kirkland, 1897, p. 57).

Distribution: Ohio counties: Athens, September 11; Highland, September 12 (DGF); Lucas, September 8 (DGF); Darke, September 13 (DGF); Lawrence, May 27; Sandusky, July 7-August 31; Delaware, May 13-August 27; Hocking, May 20-October 1 (OSU-OM); Greene, May 30-July 25; Ashland, May 27-July 1; Vinton, September 23; Erie; Clifton, Greene, May 21-August 19; Scioto, June 9; Fairfield, August 21-September 2; and Wayne, May 18-June 2 (WO-DGF).

Genus Acrosternum Fieber

Acrosternum Fieber, 1861, p. 79, 331; Stål, 1872, 104(2):41; ibid., 1878, 5:63, 90; Bergroth, 1914, 57:25.

Large, broadly oval body; head porrect and broadly rounded in front with tylus equalling juga or only slightly shorter. Color above light to dark clear green; underside lighter green. Antennae pale green with apical tip of the third segment and the apical half of the fourth and fifth segments fuscous. Punctuation above fine, dense, rugose and concolorous. Abdominal sternites almost smooth with some punctures scattered and very shallow. Posterior tip of the abdominal sternites with black point at the incisures. The narrowly exposed edges of the connexivum, the basal third of the costal border of the hemelytra, and narrow edges of the side margins of the pronotum and the juga are smooth and light colored.
Ostiolar canal long and tapering and almost reaching the lateral border of the metasternum. Ventral abdominal spine distinct and extending between the hind coxae. Genital plate of male with the hind margin shallowly and broadly emarginated and with a median notch.

KEY TO THE OHIO SPECIES OF ACROSTERNUM FIEBER

1. Short, oval, broad in general body form; side margins of the pronotum strongly arcuate (Pl. III, Fig. 37); head wider across the eyes than it is long (Pl. II, Fig. 22); juga slightly surpassing the tylius (Pl. II, Fig. 22); margins of the connexivum concolorous; rostrum scarcely reaching the middle coxae; venter of the abdomen without a median ridge. .................................................. A. pennsylvanicum (De Geer)

1'. Elongate, oval body; side margins of the pronotum almost straight; head not as wide as it is long, or only a little wider; the juga equalling the tylius but not surpassing it; narrow margins of the abdomen and the connexivum fulvous (colored brown or orange); rostrum extending usually to or past the hind coxae; venter of the abdomen with a median ridge ............................................ A. hilare (Say)

Acrostennum pennsylvanicum (De Geer)

Pl. II, Fig. 22; Pl. III, Fig. 37

Cimex pennsylvanicum De Geer, 1773, 3:330, Pl. 34, Fig. 5.
Pentatoma pennsylvanicum (De Geer), Palisot de Beauvois, 1805, p. 186, Pl. 11 (Hemips.). Fig. 5.
Rhaphigaster pennsylvanicum (De Geer), Uhler, 1871, 14:98.
Acrostennum pennsylvanicum (De Geer), Stål, 1872, 104:42; Uhler, 1886, p. 8; Van Duzee, 1904, 30:58.
Pentatoma abrupta (Say), 1831, p. 6; Fitch reprint, p. 761, Compl. Writ., 1:317.
Rhaphigaster porinus (Dallas), 1851, 1:278; Kirkaldy, 1909, 1:121.

Diffsers from A. hilare (Say) as stated in the key, and scutellum tapered less and more broadly rounded. Male genital plate with broader median notch (more U-shaped) in the hind margin. Length, 12.5 - 14.5 mm; width, 8.0 - 9.5 mm.

Host: Ceanothenus (Jersey-tea) (Torre-Bueno, 1939, p. 236).

Distribution: Ohio counties: Fulton, June 24; Lucas, July 20-September 21 (OM-MU); and Wood, April 13 (WO). Recorded from a few southern counties in Michigan (MU-MSU) and from northwestern Indiana (PU-MU). Rather rare.

Acrostennum hilare (Say)

(Pl. I, Fig. 3; Pl. V, Figs. 64 & 70)

Pentatoma hiliaris Say, 1832, ibid., 1831, p. 5; Fitch reprint, p. 761; Compl. Writ., 1:304, 316.
Rhaphigaster hiliaris (Say), Walker, 1868, 3:566.
Nemst hiliaris (Say), Uhler, 1878, 19:368; Van Duzee, 1904, 30:58; Zimmer, 1912, 11:233.
Acrostennum hiliaris (Say), Van Duzee, 1914, 2:5.
Rhaphigaster sarpinus (Dallas), 1851, 1:276.
Rhaphigaster pennsylvanicus (Fitch), 1856, 16:389.
Acrostennum hiliaris (Say), Blatchley, 1926, 161.

Diffsers from A. pennsylvanicum (De Geer) as stated in the key, and scutellum tapered more and narrowly rounded. Male genital plate with the median notch in the hind margin more V-shaped. Length, 13-19 mm; width, 7 - 10 mm.
Host: Grape, hawthorn, apple, hackberry, honeysuckle, cherry, raspberry, elderberry, oak, maple, peach, ironweed, ash, clover, plum, corn, etc. General feeder.

Distribution: Collected in every county in Ohio, February 21-November 1. Probably the most common pentatomid in Ohio.

Genus Banasa Stål


Medium sized, elongate oval with sides of the body subparallel. Juga equaling tylus and the head about as wide as long. Pronotum usually anteriorly declivent with its side margins straight and the humeri not prominent and obtusely rounded. Scutellum tapering to a narrowly rounded tip, frena three-fourths of its length. Connexivum very narrowly or not at all exposed. Color above light to reddish-brown, or pale yellow to olive green; underside light brown (yellow) or light green. Punctuation on the corium and the basal half of the pronotum coarse, dense, uneven and fuscous; scutellum and apical half of the pronotum with sparser and finer punctures, the tip of the scutellum pale yellow or green and impunctate. Underside of the abdomen with very shallow, sparse, concolorous punctation, almost a smooth surface. Antennae with the second segment shorter than the third, the third and fourth segments subequal, the fifth segment a little longer. Ostiolar canal broad, long, tapering, and forming a ridge which almost reaches the outer front angle of the metasternal plate. Rostrum extending to the second abdominal segment.

KEY TO THE OHIO SPECIES OF BANASA STÅL

1. Front portion of the pronotum strongly declivent and pale yellow or pale green but distinctly contrasting with the darker green, purplish or reddish-brown hue of the posterior portion; the outer hind angles of the ends of the ventral abdominal segments, especially the last one, acute or ending in minute spines (Pl. IV, Figs. 60 & 62); punctation usually more dense on the basal half of the pronotum than on the apical half...
1'. Front portion of the pronotum not strongly declivent and with its hue usually concolorous with that of the hind portion; the outer hind angles of the ends of the ventral abdominal segments, especially the last one, obtusely rounded (Pl. IV, Fig. 61)...

2. Second segment of the antennae usually half as long but less than two thirds as long as the third antennal segment (Pl. V, Fig. 71); the incisures at the ends of the ventral abdominal segments with no or minute black spots; if minute, then they are present on the spinose tip of the angle but rarely present on the anterior corner of the next segment (Pl. IV, Fig. 62); male genital segment with a prominent acute tubercle projecting dorsally from the ventral side of the genital cup (Pl. IV, Fig. 54)...

2'. Second segment of the antennae two thirds or three quarters as long as the third antennal segment (Pl. V, Fig. 72); the incisures at the ends of the ventral abdominal segments with prominent black spots which are usually present on the anterior corner of the next segment (Pl. IV, Fig. 60); male genital segment without prominent tubercle projecting from the ventral side of the genital cup but a rather large obtusely rounded hump (Pl. IV, Fig. 53)...

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Banasa sordida (Uhler)

(Pl. IV, Fig. 61)

*B. sordida* Uhler, 1871, 14:98.
*B. sordida* (Uhler), Stål, 1872, 10(4):44; Van Duzee, 1904, 30:50.

Color above dull yellow or green and very densely marked with coarse, fairly even, fuscous punctures on the head, pronotum, scutellum and corium, thus appearing dark brown in color. Sometimes punctured so that there are raised, smooth, transverse ridges on the pronotum and scutellum. Rostrum reaching the third abdominal sternite. Second antennal segment three quarters the length of the third antennal segment. Abdominal sternites very finely and sparsely marked with fuscous punctures; two median rows of transverse, narrow black spots on the posterior margins of sternites two to four with the spots on segments three and six oval and located in the middle of the segment; two submedial rows of larger black spots the length of each sternite; the incisions with black dots covering the tips (anterior and posterior) of both sternites. Side and front margins of the pronotum, basal third of hemelytra, border of connexivum and the tips of the scutellum, smooth and pale yellow. Length, 10.0 - 11.5 mm; width 6.0 - 7.5 mm.

Host: Unknown.


Banasa dimidiata (Say)

(Pl. IV, Figs. 54 & 62; Pl. V, Fig. 71)

*Pentatoma dimidia* Say, 1831, p. 7; Fitch reprint, p. 763; Compl. Writ., 1:318.
*Banasa dimidia* (Say), Stål, 1872, 10(4):43; Van Duzee, 1904, 30:60.
*Banasa calva* Provancher, 1886, 3:46.
*Banasa euchloria* Provancher, 1886, 3:46.
*Banasa dimiata* Kirkaldy, 1909, 1:122.

Very few differences from *B. calva* (Say) except for male genitalia as illustrated in Fig. 54. Usually with a paler color above. Two black or dark, fuscous, small dots on the venter of the thorax, one medial on the anterior border of the mesosternum and the other in the middle of the metasternum just lateral to the evaporative area. Length, 9 - 10 mm; width, 5 - 6 mm.

Host: Honeysuckle, ash, hazel and chokeberry (Blatchley, 1926, p. 165), birch (Torre-Bueno, 1939, p. 238), peach, cherry and raspberry.

Distribution: Ohio counties: Lake, September 3 (DGF); Wayne, May 7-June 12 (OM-DGF); Geauga, July 18-August 4 (WO-CM); Columbiana, June 15 (WO); Clifton, Greene, May 21-July 25; Erie, September 5-October 8; Greene, May 12-June 2; Delaware, June 2; Hocking, May 23-October 15; Champaign, June 18; and Jackson, September 2 (OM). Recorded from Indiana (PU) and Michigan (MU).

Banasa calva (Say)

(Pl. IV, Figs. 53 & 60; Pl. V, Fig. 72)

*Pentatoma calva* Say, 1832, p. 7; Fitch reprint, p. 763; Compl. Writ., 1:318; Lethierry and Severin, 1893, 1:198.
*Banasa calva* (Say), Uhler, 1876, 1:291; ibid., 1877, 3:404; ibid., 1894, 4:232; Torre-Bueno, 1910, 18:23.
**Atomosira calva** (Say) Uhler, 1878, 19:379.
**Rhaphigaster catinus** (Dallas), 1851, 1:282.
**Banasa catinus** (Dallas), Torre-Bueno, 1910, 18:23.
**Banasa dimidiata** (Say), Provancher, 1886, 3:46.

Very few differences from *B. dimidiata* (Say) except for male genitalia as illustrated in Pl. IV, Fig. 53. Color above darker and more greenish. No evident thoracic sternal dots. Length, 8.5 - 11.0 mm; width, 5.0 - 6.5 mm.

Host: Honeysuckle, maple and holly (Say, 1832, p. 7).

Distribution: Ohio counties: Belmont, October 19 (DGF); Franklin, March 20-October (RH-OSU); Wayne, June 10-July 27 (WO); Ashland, June 4-July 1 (WO-OSU); Licking, June 30 (WO); Greene, June 5; Delaware, May 30-June 21; Clifton, Greene, June 5; Champaign, July 27-December 3 (OM-DGF). Recorded in Michigan (MU-MSU), Indiana (PU), and Kentucky (UK).
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EXPLANATION OF PLATES

PLATE I

Fig. 1. General dorsal view, *Apateticus bracteatus* (Fitch) (from Parshley, 1923)
Fig. 2. Head, ventrolateral view, *Podisus maculiventris* (Say)
Fig. 3. Head, ventrolateral view, *Acrosternum hilare* (Say)
Fig. 4. Head, left lateral view, *Mineus strigipes* (Herrich-Schäffer)
Fig. 5. Head, dorsal view, *Rhacognathus americanus* Stål
Fig. 6. Head, dorsal view, *Apateticus cynicus* (Say)
Fig. 7. Head, dorsal view, *Podisus maculiventris* (Say)
Fig. 8. Head, dorsal view, *Brochymena arborea* (Say)
Fig. 9. Head, dorsal view, *Brochymena quadripustulata* (Fabricius)
Fig. 10. Head, dorsal view, *Brochymena carolinensis* (Westwood)
Fig. 11. Head, dorsal view, *Brochymena punctata* Van Duzee
Fig. 12. Head, left lateral view, *Mormidea lagena* (Fabricius)
Fig. 13. Head, dorsal view, *Trichopepla semivittata* (Say)
Fig. 14. Head, dorsal view, *Trichopepla atricornis* Stål
PLATE II

Fig. 15. Head, left lateral view, *Hymenarctys nervosa* (Say)

Fig. 16. Head, left lateral view, *Coenus delius* (Say)

Fig. 17. Head, dorsal view, *Euschistus servus* subsp. *servus* (Say)

Fig. 18. Head, dorsal view, *Euschistus servus* subsp. *euschistoides* (Vollenhoven)

Fig. 19. Head, dorsal-anterior view, *Neottiglossa undata* (Say)

Fig. 20. Head, dorsal-anterior view, *Neottiglossa suicifrons* Stal

Fig. 21. Head, dorsal-anterior view, *Neottiglossa cavifrons* Stål

Fig. 22. Head, dorsal view, *Acrosternum pennsylvanicum* (De Geer)

Fig. 23. Head and pronotum, dorsal view, *Coenus delius* (Say)

Fig. 24. Head and pronotum, dorsal view, *Hymenarctys aequalis* (Say)

Fig. 25. Head and pronotum, dorsal view, *Hymenarctys nervosa* (Say)

Fig. 26. Pronotum, dorsal view, *Meadorus lateralis* (Say)

Fig. 27. Pronotum, dorsal view, *Elasmostethus cruciatus* (Say)

Fig. 28. Pronotum, dorsal view, *Podisus placidus* Uhler

Fig. 29. Pronotum, dorsal view, *Podisus modestus* (Dallas)

Fig. 30. Pronotum, dorsal view, *Podisus maculiventris* (Say)
PLATE III

Fig. 31. Pronotum, dorsal view, *Brochymena arborea* (Say)

Fig. 32. Pronotum, dorsal view, *Brochymena quadripustulata* (Fabricius)

Fig. 33. Pronotum, dorsal view, *Thyanta calceata* (Say)

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Fig. 37. Pronotum, dorsal view, *Acrosternum pennsylvanicum* (De Geer)

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Fig. 39. Hemelytra and scutellum, dorsal view, *Neottiglossa undata* (Say)
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Fig. 40. Male genitalia, posteroventral view, *Elasmostethus atricornis* (Van Duzee)

Fig. 41. Male genitalia, posteroventral view, *Elasmostethus cruciatus* (Say)

Fig. 42. Male genitalia, posterodorsal view, *Apateticus bracteatus* (Fitch)

Fig. 43. Male genitalia, posterodorsal view, *Apateticus cynicus* (Say)

Fig. 44. Male genital plate, posteroventral view, *Thyanta calvata* (Say)
   (from Hart, 1919, pl. 20, fig. 70)

Fig. 45. Male genital plate, posteroventral view, *Thyanta custator* (Fabricius)
   (from Hart, 1919, pl. 19, fig. 75)

Fig. 46. Male genitalia, posteroventral view, *Holcostethus piecens* (Dallas)

Fig. 47. Male genitalia, posteroventral view, *Holcostethus abbreviatus* (Uhler)

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Fig. 49. Male genital plate, ventral-apical margin, *Euschistus tristigmus* (Say)
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Fig. 50. Male genital cup (hypopygium) and dorsal projection, dorsal view, *Euschistus*
   *tristigmus* (Say) (from Hart, 1919, pl. 18, fig. 35)

Fig. 51. Male genital plate, ventral view, *Euschistus politus* Uhler

Fig. 52. Male genital cup and dorsal projection, dorsal view, *Euschistus politus* Uhler
   (from Hart, 1919, pl. 18, fig. 34)

Fig. 53. Male genitalia, posterodorsal view, *Banasa calva* (Say)
   (from Hart, 1919, pl. 18, fig. 26)

Fig. 54. Male genitalia, posterodorsal view, *Banasa dimidiata* (Say)
   (from Hart, 1919, pl. 18, fig. 27)

Fig. 55. Female genitalia, ventral view, *Podisus maculiventris* (Say)

Fig. 56. Female genitalia, ventral view, *Apateticus cynicus* (Say)

Fig. 57. Female genitalia, ventral view, *Apateticus bracteatus* (Fitch)

Fig. 58. Venter of abdomen, *Euschistus variolarius* (Palisot de Beauvois) (male, Rings and
   Brooks, 1958, p. 6)

Fig. 59. Venter of abdomen, *Euschistus tristigmus* (Say)

Fig. 60. Venter of abdomen, *Banasa calva* (Say)

Fig. 61. Venter of abdomen, *Banasa sordida* (Uhler)

Fig. 62. Venter of abdomen, *Banasa dimidiata* (Say)
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PLATE V

Fig. 63. Venter of abdomen, *Euschistus servus* subsp. *servus* (Say)

Fig. 64. Right side, ventrolateral view, *Acrosternum hilare* (Say)

Fig. 65. Venter of abdomen, *Trichopepla semivittata* (Say)

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Fig. 71. Right antenna, *Banasa dimidiata* (Say)

Fig. 72. Right antenna, *Banasa calva* (Say)

Fig. 73. Left fore leg, anterior view, *Perillus exaptus* (Say)

Fig. 74. Left fore leg, anterior view, *Perillus bioculatus* (Fabricius)

Fig. 75. Hind tibia, left lateral view, *Euschistus tristigmus* (Say)

Fig. 76. Membrane of hemelytra, *Hymenacrys aequalis* (Say)

Fig. 77. Membrane of hemelytra, *Hymenacrys nervosa* (Say)
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