

## THE CICADELLINAE OF INDIANA (CICADELLIDAE, HOMOPTERA)

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The insects composing the family Cicadellidae are commonly called leafhoppers. They are all distinctly plant feeders and since there are so many species of them, most of which contain thousands of individuals, they damage growing crops considerably. Indeed some of them, as the potato leafhopper, do such severe injury that they are the limiting factor in the profitable production of the crop they attack.

The family may be characterized as follows: antennae minute, bristle-like, inserted in front of and between the compound eyes; hind tarsi three-segmented; two ocelli or none; pronotum normal, not prolonged over the abdomen; and the hind tibiae armed with a double row of spines throughout their length.

The leafhopper occurring in Indiana includes five distinct subfamilies which may be separated as follows:

### KEY TO SUBFAMILIES OF INDIANA CICADELLIDAE

1. Veins of fore-wings branch near base, then extend without branching to cross veins which form the apical cells; no anteapical cells present. Ocelli usually wanting or inconspicuous—Typhlocybinae.

1'. Veins of fore-wings branching on the disc; anteapical as well as apical cells usually present. Ocelli, present.....2.

2 (1') Ocelli on front below margin of vertex.....Bythoscopinæ

2' (1') Ocelli not on front, either on border between the vertex and front or on the vertex.....3.

3 (2') Ocelli on margin of vertex, or between the vertex and front .....Jassinæ

3' (2') Ocelli on disc of vertex, usually distant from its margin...4

4 (3') Body robust, depressed or flattened.....Gyponinæ

4' (3') Body cylindrical, not depressed or flattened...Cicadellinæ

### SUBFAMILY CICADELLINAE VAN DUZEE

The subfamily Cicadellinae contains those leafhoppers which have the ocelli located on the disc of the vertex and the body elongate and cylindrical. Each antenna arises from a rather deep cavity which is overhung by a more or less prominent ledge formed by the margin of the vertex. The species are usually large, in fact some of the largest of our leafhoppers belong here.

<sup>1</sup>This is the first of a series of papers on the leafhopper fauna of Indiana. The writer wishes to express his appreciation to Dr. R. W. Sampson for assisting him in making the photographs herein included.

Van Duzee (5)\* lists 12 genera, 48 species and 10 varieties of this subfamily that occur in America north of Mexico. Some half dozen species have been added to the list since Van Duzee's catalogue was published. But two of the species (*Cicadella occatoria* and *Kolla bifida* Say) of this subfamily have been recorded as occurring in Indiana although some of the others have been reported from the neighboring states. Van Duzee (5) ignores Say's (4) record that the two above mentioned species were described from Indiana.

Although no extensive or intensive collections have been made of the Cicadellinae in Indiana, the writer has examined specimens of nine genera, 13 species and one variety of the subfamily which have been taken in the state. He has seen no specimens of *C. occatoria* which have been taken in Indiana. Five other species, *Draeculacephala noveboracensis* (Fitch), *D. inscripta* (Van Duzee), *D. minor* (Walker), *D. angulifera* (Walker) and *Kolla geometrica* (Signoret) in all probability occur here.

The county has been chosen as the collection unit. Although some species have been taken only in one or two counties, they doubtless occur in others and the writer plans to publish other collection records as they come to his attention. The plants from which the specimens were captured are given when known. However, these plants may not be the true hosts, for as Ball (2) points out, the true host may be an entirely different plant from the one on which the insect is taken.

The various collectors of the material examined are indicated after the dates of capture by their initials. These collectors and their initials are as follows: J. M. A.—J. M. Amos; H. L. C.—H. L. Cook; J. J. D.—J. J. Davis; H. O. D.—H. O. Deay; G. E. G.—G. E. Gould; R. R. H.—R. R. Heaton; W. D. M.—W. D. Miller; B. E. M.—B. E. Montgomery; L. I. M.—L. I. Musgrave; P. S. C.—all specimens collected by the students in the various entomological classes at Purdue University and deposited in the student collection are indicated by the initials P. S. C. Most of these specimens have been taken in Tippecanoe County, but a goodly number have been taken in Clark County at the Forestry camp. H. K. R.—H. K. Riley; L. B. S.—L. B. Steiner; F. H. T.—F. H. Test; and A. W. T.—A. W. Trippel

The nomenclature used is that of Van Duzee (5)

Representatives of all the species that have been taken in Indiana are deposited in the Purdue Entomological collection.

#### KEY TO THE INDIANA GENERA OF CICADELLINAE

1. Ocelli near front margin of vertex.....*Evacanthus*.
- 1'. Ocelli near center of certex.....2.
- 2 (1'). Fore-wings not covering lateral margins of abdominal segments. Antennal sockets overhung by a distinct ledge. Head and pronotum deflexed. ....3.
- 2' (1'). Fore-wings covering lateral margins of abdominal segments. Ledge on margin of vertex above antennal sockets small, not projecting beyond curve of head. Head and pronotum not deflexed.....4.

\* Numbers in parentheses refer to papers listed in references cited.

- 3 (2). Pronotum roundingly six-angular, posterior margin rounding with a slight median excavation. Vertex longitudinally furrowed. .... *Aulacizes*.
- 3' (2). Pronotum four angular, anterior and posterior margins nearly parallel. Vertex not longitudinally furrowed.....*Oncometopia*.
- 4 (2'). Fore-wings reticulately veined, at least on apical third. Head triangularly produced, often longer than pronotum.....  
..... *Draeculacephala*.
- 4' (2'). Fore-wings not reticulately veined on apical third. Head not greatly produced.....5.
- 5 (4'). Scutellum less than half as long as pronotum.....  
..... *Helochara*.
- 5' (4'). Scutellum more than half as long as pronotum.....6.
- 6 (5'). Vertex flat, margin distinct, acutely angled with the front.  
..... *Graphocephala*.
- 6' (5'). Vertex margin rounded, front inflated.....7.
- 7 (6'). Lateral margins of vertex somewhat rounded not in a definite line with the outer margins of the compound eyes.....*Cicadella*.
- 7' (6'). Lateral margins of vertex in a continuous line with the outer margins of the compound eyes.....8.
- 8 (7'). Vertex short and blunt, twice as wide as long, half as long as pronotum. .... *Kolla*.
- 8' (7'). Vertex longer and more pointed, only about  $1\frac{1}{4}$  times as wide as long, as long as pronotum.....*Pagaronia*.

## GENUS ONCOMETOPIA STOL

The members of this genus have large eyes which make the head wider than the pronotum. The margins of the vertex form distinct ledges over the antennal sockets. The pronotum is comparatively short, four angled; the anterior margin is concavely arcuate, the posterior margin is emarginate and nearly parallel to the anterior. The fore-wings are longer than the abdomen but narrower, the lateral margins of the abdominal terga being exposed.

But two species of this genus are found in the United States, both of which occur in Indiana.

## KEY TO SPECIES

1. Vertex black, irrorate with yellow. Not over 8 mm. long.  
..... *lateralis*.
- 1'. Vertex rusty orange with black markings. Over 12mm. long.  
..... *undata*.

*Oncometopia undata* (Fabr.)

Fabricius, J. C. Entomologia Systematics 4 : p. 32. 1794, *Cicada*.

These are large, parallel-sided leafhoppers. Length to tip of fore-wings, 13 mm.

The front is orange yellow with black median and lateral lines. The vertex rusty orange with an irregular black circle on disc from which radiates 6 or 8 black lines. Anterior portion of pronotum orange

yellow, posterior portion varying in color from slaty blue to brown or red. The scutellum is orange yellow marked with dark lines. The color of the fore-wings varies from slaty blue to brown or red.

The last ventral segment of the female is longer than the preceding, slightly narrowed posteriorly; the posterior margin 3 lobed, the lateral ones distinctly longer than the median. The plates of male form a triangle which is about as long as wide; the pygofers are nearly twice the length of the plates and bear an upturned chitinous process on the posterior margin.

#### COLLECTION DATA

Knox Co., Aug. 8, Sept. 20 (B.E.M.); Lawrence Co., July 16 (L.F.S.); Aug. 16, 21 on mulberry (L.I.M.); Porter Co., Sept. 2 (B.E.M.); Tippecanoe Co., May 4, 16, 24 on grape, Sept. 19 (P.S.C.); July 20 on willow (A.W.T.).

#### *Oncometopia lateralis* (Fabr.) (Fig. 1)

Fabricius, J. C. Entomologia Systematics, Suppl. p. 524, 1798, *Cercopis*.

Robust insects shorter than *undata*. Length to tip of fore-wings, 7-8 mm.

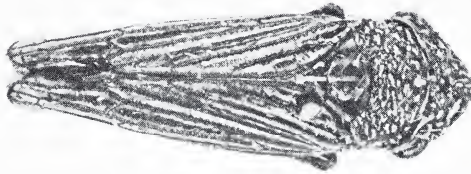


Fig. 1. *Oncometopia lateralis* (Fabr.), X 6½.

Front, vertex, pronotum and scutellum are black irrorate with yellow. The fore-wings reddish to slaty blue with the veins and linear areas black, frequently with light or yellow margins. A narrow lateral yellow stripe extends from each eye across the thorax and along the margin of abdomen to the pygofers.

The last ventral segment of the female is about twice as long as the preceding; the posterior margin has a broad median incision which reaches about one-fourth of the way to the base. The plates of the male form a triangle which is longer than wide; the pygofers are long and narrow, exceeding the plates.

*Collection data:*

Clark Co., July 31 on grass and sumac (P. S. C.). Tippecanoe Co., Oct. 13 on turnips (P. S. C.).

The variety *limbata* (Say), which differs from above in having the fore-wings shining black has not been observed in Indiana by the writer.

Genus *Aulacizes* Amyot and Serville

In this genus the margins of the vertex form distinct ledges over the antennal sockets. The vertex is moderately produced with its apex bluntly rounded and with a distinct median furrow. The pronotum is roundingly 6-angled with the posterior margin slightly emarginate. The fore-wings are longer than abdomen; narrow, not covering lateral margins of the terga.

One of the two species which have been recorded from the United States occurs in Indiana.

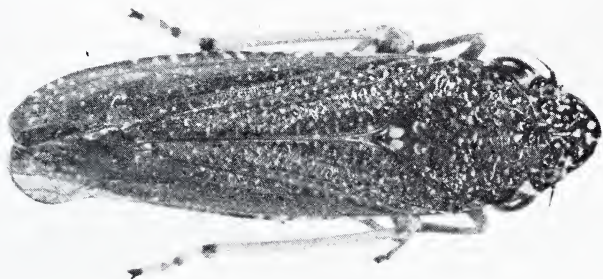


Fig. 2. *Aulacizes irrorata* (Fabr.), X 6½.

*Aulacizes irrorata* (Fabr.) (Fig. 2)

Fabricius, J. C. Entomologia Systematics 4: p. 33. 1794, *Cicada*.

The members of this species are large, elongate cylindrical insects. Length to apex of fore-wings, 11-12.5 mm.

The general color varies from light to reddish brown, irrorate with yellow, and with black splotches on vertex and scutellum. The front irregularly black below, yellow above with 4 black spots. Costal margins of fore-wings yellow. Abdomen red above, yellow below.

Head is a little wider than pronotum; vertex has a deep median longitudinal furrow and one next each ocellus. Surface of vertex coarse and pronotum coarsely pitted. Last ventral segment of the female about as long as preceding, much narrowed caudally; posterior margin broadly rounded to a shallow median notch. Valve of male very small, nearly

hidden by last ventral segment; plates form a triangle which is a little broader than long; the pygofer short and broad about equal to the plates in length.

*Collection data:*

Clark Co., June 28 (P. S. C.); Morgan Co., July 14, Aug. 7, Oct. 21 (L. I. M.); Parke Co., Sept. 11 (G. E. G.); Ripley Co., Oct. 15 on walnut (H. O. D.); Tippecanoe Co., May 3, 13, Sept. 20, Nov. 21 (P. S. C.), Sept. 26 on willow (R. R. H.), Oct. 8 on willow (A. W. T., H. O. D.), on maple (W. D. M.); Warren Co., Oct. 12 on grass (P. S. C.).

GENUS *Cicadella* Latreille

In this genus the head is bluntly conical; the lateral margins of the vertex do not form a continuous curve with the curve of the eyes; the eyes and ledge over the antennal sockets are not prominent. Pronotum is less than twice as long as the scutellum. The fore-wings are longer than the abdomen and cover the lateral margins of the abdominal terga; venation simple, not reticulate.

The writer has seen two species and one variety of this genus that have been taken in Indiana. Say (4) in his original description of *occatoria* states that it "inhabits Indiana" as well as Florida and Louisiana.

KEY TO THE INDIANA SPECIES OF CICADELLA

1. Vertex as long as wide, head narrower than pronotum ..... *occatoria*.
- 1'. Vertex wider than long, head wider than pronotum.....2.
- 2 (1'). Head pattern complex, transversely marked; no straight longitudinal median lines.....*hieroglyphica*.
- 2' (1'). Head pattern simple, made of longitudinal stripes..*gothica*.



Fig. 3. *Cicadella hieroglyphica* (Say). X 6½.

*Cicadella hieroglyphica* (Say). (Fig. 3)

Say, Thomas, Jour. Acad. Nat. Sci. Phila. 6: p. 313, 1831, *Tettigonia*.

Rather stout, medium sized, reddish insects. Length to apex of fore-wings, 6-7 mm.

The general color varies from a brick red to greenish and slaty blue. Vertex with a black spot at apex, encircled by whitish yellow; the rest

of vertex ornamented with distinct black markings which enclose a light colored T on the basal half. Pronotum light anteriorly, posteriorly brownish marked with light. Central portion of scutellum yellowish. Veins of fore-wings dark; pale bands along costal, claval and sutural margins.

Posterior margin of pronotum shallowly emarginated. Last ventral segment of female less than 3 times longer than preceding; posterior margin triangularly produced, apex rounded. Last ventral segment of the male less than twice as wide as long; plates long and tapering to acute apices.

*Collection data:*

Decatur Co., Oct. 15 on willow (H. O. D.); Jennings Co., Oct. 15 sweeping weeds and shrubs along stream (H. O. D.); Johnson Co., Oct. 15 (H. O. D.); Marion Co., Oct. 15 sweeping roadside weeds (G. E. G., H. O. D.); Morgan Co., Oct. 3 on clover (L. I. M.); Tippecanoe Co., Sept. 25 on grass, Sept. 26, Oct. 21 (P. S. C.); Sept. 26 on willow (R. R. H.); Oct. 8 on lamb's quarter (A. W. T.), Oct. 25 on willow (H. O. D.).

*Cicadella hieroglyphica* var. *dolobrata* (Ball)

Ball, E. E. *Proc. Ia. Aca. Sci.* 8: p. 18. 1901, *Tettigonia*.

The male of this variety is smaller than typical *hieroglyphica*. The color is typically black, but a few of the light markings of *hieroglyphica* are retained on the front, vertex, pronotum and scutellum, and generally the claval sutures are light.

The females are more like typical *hieroglyphica* except the black markings on the head are not so prominent and the general color is slaty gray.

Lawson (3) points out that this variety is really the summer generation of typical *hieroglyphica* which produce the overwintering "reddish" generation. The Indiana collecting dates bear out this contention.

*Collecting data:*

Clark Co., July 1 (P. S. C.); Morgan Co., July 13 on weeds along river (R. R. H.); Tippecanoe Co., July 23 on willow (H. O. D.).

*Cicadella gothica* (Sign.) (Fig. 4)

Signoret, V. *Ann. Soc. Ent. Fr.* ser. 3. 2: p. 354, 1854, *Tettigonia*.

This species has much the same form as *hieroglyphica* but is smaller. Length to the tip of fore-wings, 5.5-6 mm.

The general color varies from light reddish to grayish green with dark mottlings. The markings on the vertex is in the form of parallel longitudinal lines on the disc and simple outer lines. The scutellum has distinct black marks.

The posterior margin of the pronotum is truncate. The last ventral segment of the female is three times longer than the preceding segment; posterior margins triangularly produced. Last ventral segment of the male about twice as wide as long; plates very long and slender.

*Collection data:*

Harrison Co., Aug. 30 (J. J. D.); Morgan Co., Oct. 21 (L. I. M.); Parke Co., July 26 on *Eupatorium urticaefolium* (F. H. T.); Porter Co., Aug. 6 (J. J. D.); Tippecanoe Co., July 22 (G. E. G.).

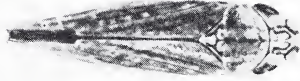


Fig. 4. *Cicadella gothica* (Sign.), X 6½.

*Cicadella occatoria* (Say)

Say, Thomas. *Jour. Acad. Nat. Sci. Phila.* 6: p. 311. 1831. *Tettigonia*.

This is a slender species. Length to tip of fore-wings, 6 mm.

The general color is yellow striped with brownish black lines above. The vertex has four longitudinal brownish black lines, the pronotum five, and each fore-wing about six.

The last ventral segment of the female is scarcely twice the length of the preceding, posterior margin obtusely rounded. Male plates broad, triangular, much shorter than pygofers.

Say, in his original description, records this species from Indiana. The writer has seen no specimens of this species and there is no record that it has been taken in Indiana since Say's time.

*Genus Kolla* Distant

In this genus the vertex is short and blunt, but half as long as pronotum and twice as wide as long, narrowed subconically apically, and with the lateral margins in a continuous line with the curve of the compound eyes. The eyes and the ledge over the antennal sockets are not prominent. The pronotum is less than twice as long as the scutellum. The fore-wings cover the lateral margins of the abdominal terga, the venation is simple.

Two species of this genus have been collected in Indiana and a third, *geometrica* (Signoret), doubtless occurs in the southern part of the state as it has been taken in Ohio, Illinois and Kentucky. It may be distinguished from the two species known to occur here by the characters given in the key.



## KEY TO INDIANA SPECIES OF KOLLA

1. Color brownish gray or blackish.....*hartii*.  
 1'. Color greenish with conspicuous bands across the vertex and pronotum .....2.  
 2 (1'). Fore-wings with conspicuous black lines along the veins ..... *bifida*.  
 2 (1'). Fore-wings deep uniform green.....*geometrica*.

*Kolla bifida* (Say). (Fig. 5)

Say, Thomas. *Jour. Acad. Nat. Sci. Phila.* 6: p. 313, 1831. *Tettigonia*.

Moderately robust, blunt headed greenish insects, with white transverse bands on head and pronotum and veins of fore-wings black. Length to tip of fore-wings, 5.5-6 mm.



Fig. 5. *Kolla bifida* (Say), X 6½.

General color green and black. Vertex black with two white spots at apex and a yellowish or white median and basal band. Pronotum greenish, anterior margin black followed by a white band, posterior margin white preceded by a black band. Fore-wings with veins broadly black.

Last ventral segment of female with the posterior margin roundly produced. Male plates short, less than half the length of the long narrow pygofers.

This species was described from Indiana.

*Collection data:*

Decatur Co., Oct. 15 (H. O. D.); Harrison Co., Aug. 30 (J. J. D.); Kosciusko Co., July 15 (G. E. G.); Tippecanoe Co., July 20 (G. E. G.), Oct. 8 (H. O. D.). All specimens swept from grass and weeds in low places.

*Kolla hartii* (Ball)

Ball, E. D. *Pro. Ia. Acad. Sci.* 8: p. 61, 1901, *Tettigonia*.

Rather uniformly brownish gray or blackish insects, smaller than *bifida*. Length to the tip of fore-wings, 3.75-5 mm.

The female is brownish gray. Ocelli and a pair of spots on posterior margin of vertex black. Pronotum with irregular black spots near anterior margin. Scutellum with dark triangular spots in basal angles. Veins of fore-wings pale, claval margins often lined with light blue. The male is shining black, circles around ocelli and apex of scutellum pale. Spot on apex of scutellum white.

Last ventral segment of female truncate, slightly excavated either side of a small median tooth. Male plates wide at base but taper to acute points; very short, less than half the length of pygofers.

*Collection data:*

Harrison Co., Aug. 30 sweeping grass (J. J. D.).

Genus *Helochara* Fitch

In this genus the head is wider than the pronotum, much broader than long; apex conical, obtusely angled, the reflexed portion of front is elevated and prominent. Pronotum is very long, six-angled. Scutellum small, less than half as long as pronotum. Veins of fore-wings distinct; venation simple, three antepical and five apical cells present.

Only one species of this genus is known to occur in the United States.

*Helochara communis* Fitch

Fitch, A. *Homop. N. Y. State Cab.* p. 56. 1851.

A rather small, but robust, green species. Length to tip of fore-wings, male 4-5.5 mm.; female 6-7 mm.

General color green, often fading to pale yellowish, but stripes along claval suture always dark. The whole dorsal surface is distinctly punctate.



Fig. 6. *Helochara communis* Fitch., X 6½.

Last ventral segment of the female is but little longer than the preceding, the posterior margin slightly produced in the middle. Male plates broadly triangular, slightly longer than the pygofers.

*Collection data:*

Tippecanoe Co., July 20 (G. E. G.); Oct. 16 on sedge along edge of pond (H. O. D.).

Genus *Graphocephala* Van Duzee

Leafhoppers with the head narrower than the pronotum; vertex flat, apex obtusely rounded, margin distinct and acutely angled with the front; the front not inflated. The pronotum is narrowed anteriorly, not over twice the length of the scutellum. The fore-wings are long and opaque, the veins indistinct but simple.

Two of the three species known to occur in the United States have been taken in Indiana.

## KEY TO THE INDIANA SPECIES OF GRAPHOCEPHALA

1. Vertex marked with black lines; not over 6 mm. long.....*versuta*.  
 1'. Vertex unmarked except for the black border; over 8 mm. long  
 .....*coccinea*.

*Graphocephala coccinea* (Forst.) (Fig. 7)

Forster, J. R. *Novae Species Insectorum*; Centuria I. 1771, *Cicada*.

The members of this species are rather large, cylindrical, elongated red and blue striped insects. Length to tip of fore-wings, 8-9 mm.



Fig. 7. *Graphocephala coccinea* (Forst.), X 6½.

The head is bright yellow or orange with anterior margin of vertex black. The pronotum is reddish with anterior and posterior and a broad median stripe deep green or blackish. The forewings with brilliant red and green stripes.

*Coccinea* is one of our most beautiful and easily recognized leafhoppers.

*Collection data:*

Bartholomew Co., Oct. 15 (H. O. D.); Clark Co., July 4 (P. S. C.), 15 (B. E. M.); Lawrence Co., June 27 (L. F. S.), Aug. 21 on mulberry (L. I. M.); Morgan Co., June 28, Aug. 7 (L. I. M.), July 13 (R. R. H.); Parke Co., June 25 on *Impatiens pallida* (F. H. T.); Porter Co., Aug. 11 (J. J. D.), Sept. 1, 2, 4 (B. E. M.); Rush Co., June 26, 30 on swamp grass, Sept. 1 on shrubs (R. R. H.); St. Joseph Co., Aug. 22 on wild grape and honey locust (A. W. T.); Tippecanoe Co., May 7 (P. S. C.),

June 26 (G. E. G.), July 7-20 (J. J. D.), 19 on swamp weeds, 20 on willow (A. W. T.), Aug. 21 (G. E. G.), Sept. 25 on honey locust (A. W. T., B. E. M.), Oct. 1 on willow (A. W. T.), 8 on maple (A. W. T., W. D. M.).

*Graphocephala versuta* (Say). (Fig. 8)

Say, Thomas. *Jour. Acad. Nat. Sci. Phila.* 6: p. 311. 1831, *Tettigonia*.

This species has much the same form as *coccinea* but is smaller. Length to tip of fore-wings, 5-6 mm.

The vertex is pale yellow with a black stripe bordering on its margin and a pair of black median parallel lines which connect in front to a pair of interrupted lines which parallel the margins of vertex and



Fig. 8. *Graphocephala versuta* (Say), X 6½.

extend to the posterior margin of the vertex; the space between the parallel lines whitish. The pronotum is yellowish anteriorly, greenish posteriorly, often with red stripes. Scutellum yellowish or red, with black markings. Fore-wings greenish blue, claval suture blue either side of which is a broad red or yellowish stripe which often extend over the pronotum and meet on the vertex.

*Collection data:*

Bartholomew Co., Oct. 15 on alfalfa (H. O. D.); Clark Co., July 15 (B. E. M.); Decatur Co., Oct. 15 (H. O. D.); Dubois Co., Sept. 11 (G. E. G.); Lawrence Co., July 1, Aug. 21 on mulberry (L. I. M.); Marion Co., Oct. 15 (G. E. G., H. O. D.); Ripley Co., Oct. 15 (H. O. D.); Tippecanoe Co., July 20 (J. J. D.), Oct. 8 (H. O. D.).

Genus *Draculacephala* Ball

In this genus the vertex is long and acutely angled. The pronotum with lateral margins parallel, either narrower than or equal in width to the eyes. The fore-wings are long, narrowing apically, green, and with apical and antepical cells irregularly reticulately veined.

Five species of this genus *angulifera* (Walker), *mollipes* (Say), *minor* (Walker), *novaeboracensis* (Fitch), and *inscripta* (Van Duzee) should occur in Indiana as they have been found in the adjoining states. However, the writer at the present time has specimens of only one species, *mollipes*, that have been taken here.

*Draculacephala mollipes* (Say). (Fig. 9)

Say, Thomas. *Jour. Acad. Nat. Sci. Phila.* 6: p. 312. 1831, *Tettigonia*.

Bright green insects with vertex long and acutely angled. Length to tip of fore-wings, 6-9 mm.

Vertex, anterior part of pronotum and scutellum yellow. Vertex with two small apical dots, lines on reflexed portion of front, a median and pair of lateral lines brown. Face yellow to fuscous. Disc of pronotum and fore-wings bright green, the veins and margins light.

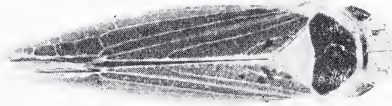


Fig. 9. *Draculacephala mollipes* (Say), X 6½.

The vertex very long in female, distinctly longer than broad. The last ventral segment of the female with posterior margin sinuate on either side of angularly produced median lobe. Male valve short and broad, angularly produced.

This is a very common species on many of the grasses and occurs throughout the state.

*Collection data:*

Bartholomew Co., Oct. 15 (H. O. D., G. E. G.), Decatur Co., Oct. 15 (H. O. D.); Johnson Co., Oct. 15 (H. O. D.); Jennings Co., Oct. 15 (H. O. D.); Kosciusko Co., Aug. 8 (G. E. G.); Lawrence Co., July 20, (H. O. D.); Morgan Co., July 13 (R. R. H.), Oct. 10, 21 on clover, Nov. 7 (L. I. M.); Parke Co., July 25 (F. H. T.); Porter Co., Aug. 6-10 (J. J. D.); Ripley Co., Oct. 15 (H. O. D.); Rush Co., June 18, 30 (R. R. H.); St. Joseph Co., June 16, Aug. 21 (A. W. T.); Tippecanoe Co., May 9, June 21 (H. O. D.), July 23 (G. E. G.); Aug. 5 at light (J. J. D.), Sept. 26 (R. R. H.); Oct. 6 (R. R. H.), 8 (H. O. D.).

Genus *Pagaronia* Ball

In this genus the head is conical; the vertex as long as pronotum and nearly as long as wide, with the lateral margins in a continuous line with the curve of the compound eyes. The pronotum is less than twice the length of the scutellum. Venation of fore-wings is simple.

One species of this genus occurs in Indiana.

*Pagaronia tripunctata* (Fitch). (Fig. 10)

Fitch, A. *Homop.* N. Y. *St. Cab.* p. 55. 1851, *Tettigonia*.

A whitish species with veins of fore-wings black. Length to tip of fore-wings, 5 mm.

This species resembles the members of the genus *Kolla* very much. The general color is light yellowish white with the veins of the fore-wings and three distinct spots on the vertex black.



Fig. 10. *Pagaronia tripunctata* (Fitch.), X 6½.

The last ventral segment of the female is nearly twice as long as the preceding, the posterior margin slightly rounded. The male plates broad at base, narrowed posteriorly, almost as long as pygofers.

*Collection data:*

Decatur Co., Oct. 15, sweeping brush along creek (H. O. D.).

Genus *Evacanthus* Le Peletier and Serville

In this genus the head is broad and short, the vertex is wider than long; the ocelli are located close to the margin of vertex. The pronotum is short and the fore-wings are without anteapical cells.

One species of this genus has been taken in the state.

*Evacanthus acuminatus* (Fabr.) (Fig. 11)

Fabricius, J. C. *Entomologia Systematics* 4: p. 36. 1794, *Cicada*.

Broad, plumb leafhoppers. Length to tip of fore-wings, 5-6 mm.

The face and body are black beneath. Male is black above, with spots on vertex and veins and a stigmal spot on fore-wings whitish. Female is testaceous above with spots on vertex, anterior border of pronotum, and disc of scutellum black.

There is a median keel on vertex and a less elevated one crossing it near the apex. The fore-wings are comparatively short, reaching the apex of abdomen. The last ventral segment of the female is long, with posterior margin truncate and slightly sinuate at center. Male valve short, and broad.

This species is northern in distribution.

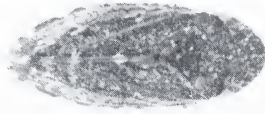


Fig. 11. *Evacanthus acuminatus* (Fabr.), X 6½.

*Collection data:*

St. Joseph Co., Aug. 12 on blue grass (A. W. T.).

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