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A SYNOPSIS OF THE CICADIDAE OF ARKANSAS (HOMOPTERA)

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The cicadas, or "locusts" as they are sometimes called, are among the largest and most conspicuous of North American insects. In addition to their size, the loud piercing song of the males attract attention even when the insects are unseen. Each species has a distinctive song and they can be identified in this way as accurately as one identifies song birds. The sound producing organs are located at the base of the abdomen.

The periodical cicadas of the genus **Magicada** are unique in their inordinately long developmental period, seventeen years in the northern U. S. and thirteen years in the south. The seventeen year form extends into extreme northern and western Arkansas. Most of those found in the state are of the thirteen year type. Three pairs of sibling species make up the two series. For example, **M. septendecim** is indistinguishable from **M. tredecim**. They are identified only by the locality and the year of emergence which indicates the brood to which they belong. They are considered as valid species because of the temporal separation which isolates them except for sympatric coemergence every 221 years.

The large green and black "dog-day" cicadas belonging to the genus **Tibicen** have a much shorter life cycle and are present every year. This group is preyed upon by the largest of our wasps, the cicada killer, **Sphecius speciosus**. The female wasp paralyzes the cicadas and places two or three in an underground cell. A single egg is deposited upon the last victim to be placed in each cell. The cicadas are fed upon by the wasp larvae, secure in its private dining room.

Cicadas, particularly the periodical ones, cause measurable damage to young orchards and ornamental plantings as a result of their egg laying habits. The eggs are placed deep in the tissue of small branches. The twigs are frequently damaged so severely that the terminals are killed. The young nymphs fall to the ground immediately after hatching. They burrow into the soil where they feed on the roots of the trees. Accumulating evidence suggests that large numbers of them contribute to a condition known as "decline" in apple orchards.

KEY TO THE CICADIDAE OF ARKANSAS

1. Veins M and Cu of forewing separate at base 2
 Veins M and Cu of forewing united at base (Fig. 1)
 **Melampsalta calliope** (Wlk.)
2. Pronotum with prominent lateral carina extending nearly or
 all of its length; hind collar of pronotum variable 5

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Pronotum with rounded sides; hind collar of pronotum projecting abruptly outward — Magიცicada	3
3. Prothoracic pleura reddish; abdominal sternites reddish brown to yellow; 27-33 mm. — M. septendecim or M. tredecim	
Prothoracic pleura black; 19-28 mm.	4
4. Apical tarsal segment black at tip; abdominal sternites black or with narrow apical band reddish-brown to yellow, at times interrupted medially	M. cassini or M. tredecassini
Apical tarsal segment entirely reddish or with a narrow black band covering no more than 1/3 of the segment; abdominal sternites black basally with broad, uninterrupted reddish apical bands	M. septendecula or M. tredecula
5. Abdomen translucent from beneath; prothoracic carina becoming obsolete anteriorly; veins of forewings clouded at tip	Cicada heiroglyphica (Say)
Abdomen opaque; prothoracic carina reaching anterior margin; veins of forewings not clouded	6
6. Humeral angles of pronotum produced as a quadrate lobe; head narrower than front margin of pronotum	Okanagana viridis
Humeral angles of pronotum not expanded; head as wide or wider than anterior margin of pronotum	7
7. Front wings with two anterior crossveins perpendicular to longitudinal veins, the anterior one placed at center of preceding cell (Fig. 2)	Diceroprocta vitripennis (Say)
Anterior crossveins of forewing oblique forming about a 45° angle with longitudinal veins; the anterior one placed before middle preceding cell — Tibicen	8
8. Hind collar of pronotum nearly or completely black	9
Hind collar of pronotum almost wholly pale	10
9. Color fulvous and black; mesonotum fulvous, central area and irregular lines at margin black; abdominal sternites with wide, polished median spots; 31-34 mm. T. lyricen (De G.)	
Color green and black; mesonotum black with narrow pale lines and spots; median vitta of sternites small or absent; 32-36 mm.	T. chloromera (Wlk.)
10. Apical 1/3 of forewing fuscous; color chiefly greenish buff with few black marks on mesonotum; 30-33 mm.	
.....	T. superba (Fitch)

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Forewing clear or clouded only about the two anterior cross-veins; abdominal color dark brown to black	11
11. Abdominal segments above with at least posterior margins brownish	12
Abdominal segments above not paler on posterior margins, sometimes with pruinose white markings	13
12. Anterior crossveins covered by brownish clouds; brown of abdominal segments extensive; 32-35 mm. T. resh (Hald)	
Anterior crossveins not surrounded by clouds; brown on abdominal tergites confined to hind margins; 35-40 mm. T. marginalis (Wlk.)	
13. Size larger; forewings 50 mm. or more in length	14
Size smaller; forewings under 50 mm. in length	15
14. Mesonotum ferruginous, marked with black as follows: elongate spot either side of middle anteriorly, a small spot lateral of these, a spot on each side margin and a large transverse spot posteriorly which has a narrow point extending forward along midline; length, 38-40 mm. T. resonans (Wlk.)	
Mesonotum black, lateral margins and inverted V fulvous, latter extended to reach pale cruciform elevation on rear margin; 40-42 mm. T. auletes (Germ.)	
15. Abdomen with median row of pruinose white spots above; markings and mesonotum, entire side margin of abdomen and band across pregenital segment also white pruinose; 31-38 mm. T. dorsata (Say)	
Abdomen without median white spots	16
16. Body length under 29 mm.	17
Body length over 29 mm.	18
17. Pale posterior margin of pronotum broad; mesonotum with two longitudinal pale marks near midline T. aurifera (Say)	
Pale posterior margin of pronotum narrowed by dark band along incision; mesonotum with four longitudinal pale marks	T. canicularis (Harr.)
18. Costa of forewing obtusely bent near middle; inconspicuous lateral white marks on tergate I; 30-33 mm. T. linnei (Sm. & Gross.)	
Costa of forewing not so bent	19

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stripe covering middle $\frac{2}{3}$ of sternites; side margins of sternites also black; 32-36 mm. **T. robinsoniana** Davis

Median stripe on underside of abdomen obsolete or if present not occupying more than middle $\frac{1}{3}$ of segments and tapering conspicuously posteriorly; side margins of sternites pale; 29-35 mm. **T. pruinosa** (Say)

NOTES ON ARKANSAS CICADIDAE

1. **Melampsalta calliope** (Walker) occurs from Virginia and Georgia to Texas and Colorado. It has not been recorded from Arkansas but this is almost certainly due to inadequate collecting.
- 2-7. **Magicicada** contains six species, three each in the northern seventeen-year series and the southern thirteen-year series. All six have been taken in the state. Two broods of 13-year cicadas out in recent years have provided the material on hand. They both cover the state. Brood 19 was out in 1946 and 1959 and will be expected again in 1972. Brood 23 was seen in 1963 and will be expected next in 1976. We have specimens of **M. tredecim** from Craighead County in 1963; **M. tredecassini** from Mississippi County in 1963, and from Washington County in both 1946 and 1959; and **M. tredecula** from the same county and the same years. Alexander and Moore took all three species from Sharp, Fulton, and Independence Counties in 1959. Additional records of **M. tredecim** from Hempstead and Benton are in the literature as is a record of **M. tredecassini** from Crittenden County.

Brood 4 of the seventeen-year series occurs principally to the north and west of the state and occasionally a few individuals are found in Arkansas. **M. septendecim** is recorded from Washington and Sharp Counties, and **M. cassini** and **M. septendecula** are recorded from Washington, Crawford, and Sebastian Counties. This brood was out in 1964 but no collections in the state were made. These cicadas usually appear as adults from mid-May through June.
8. **Cicada heiroglyphica** Say occurs from the eastern seaboard westward to Kansas and Oklahoma. We have recorded it from Washington, Lincoln and Benton Counties during late May and early June.
9. **Okanagana viridis** Davis is a resident of the Mississippi valley and has been recorded from Arkansas by Davis (1930). We have no specimens but would expect this species to be present in south-east Arkansas during late June or July.
10. **Diceroprocta vitripennis** (Say) is a very common cicada throughout the alluvial areas of eastern and southern Arkansas and along the Arkansas River. We have it from Lee, Lincoln, Arkansas, Desha, Hempstead, Little River, Crawford, and Fulton Counties with collection dates ranging from June 12 to July 11.

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The genus **Tibicen** contains the large green and black species which are so common over much of North America during the summer and early fall. We have thus far recorded only eight of the sixteen species which may reasonably be expected to occur in the state. We expressly solicit specimens from all parts of the state.

11. **T. lyricen** (DeG.) known only from one Washington County specimen taken in October.
12. **T. chloromera** (Walker) Washington County—July to October; Poinsett County June 25 and Lincoln County July 2.
13. **T. superba** (Fitch) is recorded from Arkansas by Davis (1930) and should be present in the western portion of the state.
14. **T. resh** (Haldeman) is also a western species and has been taken in Hempstead and Crawford Counties during July and August.
15. **T. auletes** (Germar) and **T. resh** are our largest species with wing lengths in excess of 50 mm. We have three specimens of **T. auletes** collected in Washington County during October.
16. **T. aurifera** (Say) is known from Washington County in September and Nevada County in October.
17. **T. canicularis** (Harr.) is represented by a single specimen from Washington County taken in October.
18. **T. linnei** (Sm. and Gross.) is likewise represented by a single specimen taken in Washington County in September.
19. **T. pruinosa** (Say) is our most common "dog-day" cicada, "locust", or "jar fly" as some call them. It certainly occurs abundantly over much of Arkansas. We have material from Washington, Benton, Hempstead and Lee Counties with collection dates ranging from June 29 to September 30.

T. davisi (Sm. and Gross.) and **T. figurata** (Walker) have been recorded from extreme southeast Arkansas by Davis (1930). **T. similaris** (Sm. and Gross.) is known from Mississippi and may also occur in that part of the state. **T. robinsoniana** Davis is known from southern Missouri and should be included in our fauna. The lack of specimens or of adequate descriptions prevents the inclusion of these species in the present key. **Pacarina puella** Davis is known from Louisiana, Oklahoma and Texas and should be sought in the southwestern portion of Arkansas. This very small species is about $\frac{3}{4}$ inch long, and either a deep brown or green in color. It is sufficiently distinctive that it will not be mistaken for any other cicada which we expect to encounter.

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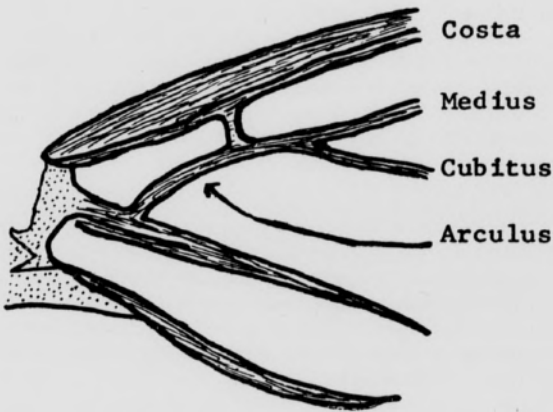


Fig. 1. Base of forewing of **Melampsalta**

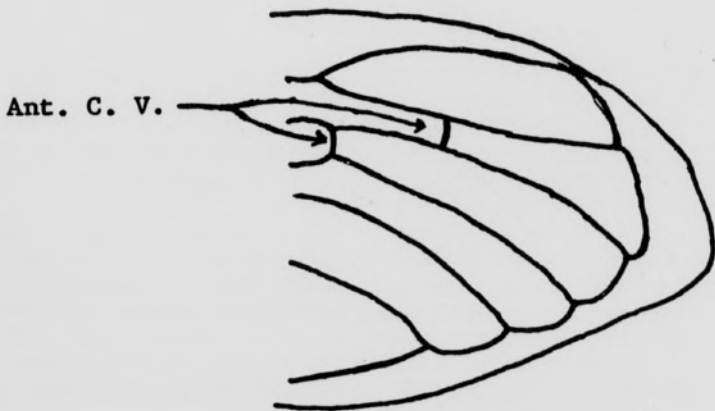


Fig. 2. Tip of forewing of **Diceroprocta**