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SOME NEW SPECIES OF CICADELLIAN LEAFHOPPERS
WITH FOOD PLANT NOTES ON OTHERS.¹

BY E. D. BALL,
University, Tucson, Arizona.

The partially completed monograph of this group by the late Dr. Melichar in which he breaks the "Tettigonia" of Signoret into 154 genera will ultimately require a number of changes in the generic references of our species. The writer has only had time to work out and assign these for the first subdivision *Proconiaria*. Before any stable nomenclature for our species can be established in the other division, it will be necessary to work out the synonymy of the Biologia material with the more northern forms.

Homalodisca liturata Ball.

The writer has taken this species in washes and along river beds in southern Arizona and adjacent California and down into Sonora, Mexico. They are most common on willows in Arizona, but by the Salton Sea, where willows are scarce, they were abundant on the Smoke Tree, a spiny gray-white legume (*Parosela spinosa*) and at Kino Bay, Sonora, they were abundant on a fleshy-stemmed legume in a lagoon back of the sand dunes.

Homalodisca elongata Ball, n. sp.

Resembling *insoleta* Walker in the coriaceous elytra. Form of *liturata* Ball nearly, longer and still more slender than either. Purple, head pronotum and scutellum literate with black and white, veins and faint markings on elytra darker. Length 11 mm., width of pronotum 1.8 mm.

Vertex, as in *liturata*, much narrower at base, thus appearing less tapering at apex. As seen from side apex is thicker, almost as thick as wide. Elytra very long and narrow, coriaceous throughout. Female segment very slightly roundly emarginate with a slight, black-marked, median projection. The pygofers flattened for two-thirds their length. Male plates

¹All types in the collection of the writer unless otherwise specified.

together one-half the width of the segment, equilaterally triangular one-third the length of the broad pygofers.

Color: Ground color purple, evanescent on head and pronotum, where the literate black and white marking of *liturata* predominate. Face pale irregularly maculate on sides, a black crescent below the apex, an irregular spot below this and a definite spot at apex of front. Scutellum black with light submarginal markings. Elytra purple, the nervures dark or dark margined, the costal and apical nervures light. The apical cells and appendix black.

Holotype ♀, allotype ♂ and ten paratypes together with large nymphs taken by the writer from a mountain grass in White House Canyon, Santa Rita Mountains, Arizona, October 20, 1929. This very distinct species would run in Melichar's key to *insolita*, but is much more closely related to *liturata* except for the pigmented elytra. It has also been taken in the Huachuca Mountains and at Nogales, Arizona.

Oncometopia alpha Fowler.

This pretty lavender-colored species described from Durango, Mexico, has been found in all the higher mountain areas of Arizona from Prescott south to the border; the nymphs are found on pines while the adults are more widely distributed.

Cuerna lateralis Fabr.

This species is rather rare in the desert regions but occurs abundantly in Arizona and Nevada both as nymphs and adults on the Joshua Tree (*Yucca brevifolia*). After discovering this habit, the writer tried the tall Yucca (*Yucca elata*) and found them occurring on this plant but in lesser numbers.

Aulacizes pollinosa Fowler.

After several years collecting in Florida, the writer was unable to find any intergrading of this form with *irrorata* and now believes it to be distinct. It only occurs in the extreme southern part from Miami south. The writer found a number of them on a low growing plant (probably an Ambrosia) near Homestead.

Cicadella monticola Fowler.

This short, stout black and red species with white panniers, described from 9500 feet in Guerrero, Mexico, has been taken in Madero Canyon, Santa Rita Mountains, Arizona, by Oman, Beamer, Ball and Bryant. The few specimens taken were swept one at a time from damp situations under pines where the brake fern was abundant.

Cicadella multilineata Fowler.

This large handsome yellow, black and white striped species has been reported from Arizona by Olsen. It is found by the thousands, nymphs

and adults, on the tree *Arbutus* (*Arbutus arizonicus*) in the Chiricahua, Huachuca and Santa Rita Mountains. Where the nymphs are abundant on a tree, the fine drops of honey dew fall like a mist and everything beneath becomes sticky or sugary. When the sun is in the right position a rainbow appears in the mist like the ones seen in the mists of a waterfall. In the recent drought years, so much sap was taken from these trees that the leaves wilted and fell.

Cicadella huachucana Ball, n. sp.

Resembling *multilineata* Fowler in color and somewhat in pattern, but only about half the size, size of *confluens* nearly, broader with a narrower vertex. Blue-green, washed and lined with lemon yellow, abdomen and legs scarlet. Length ♀ 8 mm., width 2 mm.

Vertex and head about as in *hieroglyphica*, definitely wider than in *multilineata*, almost the length of pronotum, bluntly conical. Elytra somewhat shorter and broader than in the other species. Pattern of venation similar but dark-lined and distinct as in *multilineata* instead of obscure as in *hieroglyphica*. Male plates triangular with attenuate apices, as long as pygoferes.

Color: Vertex with a *hieroglyphica*-like pattern, a basal white band, a median white line supporting an emarginate, apical triangle. Whole pattern black-margined, with a black spot in the triangle and another at tip. The reflexed portions and a line on either side from behind the eyes, extending obliquely on to the disc, yellow. Pronotum with disc blue-green, the anterior crescent washed with orange, irregular transverse vermiculate black lines cover the entire disc, posterior margin narrowly light, bordered with dark. In *multilineata* the pronotum has four irregular longitudinal stripes and the median stripe of vertex is black. Elytra with the margins and claval sutures blue green, discs washed with orange emphasized in two stripes, one down the middle of clavus and the other similarly placed on the corium. The nervures narrowly dark-lined and less definite lines in the middle of the cells. Face orange with black marks, legs and abdomen scarlet.

Holotype ♀, Huachuca Mountains August 2, 1931, paratype ♂ Chiricahua Mountains July 26, 1935. Both picked up by the writer in general sweeping at about 6000 foot elevation.

Cicadella confluens Uhler.

This somber colored species is found abundantly on willows from the San Bernadino Mountains of California north to British Columbia and Saskatchewan.

Cicadella hieroglyphica Say.

Several varieties of this protean species have been found to have quite definite hosts in the Southwest, but until the synonymy of a number of Biologia references has been worked out, it will not be possible to give permanent names to some of these forms.

Cicadella harti Ball.

The writer found this species on a scurfy gray spurge (*Crotonopsis linearis*) in Florida. This plant has almost exactly the same distribution as the insect.

Cicadella taosa Ball, n. sp.

Resembling the female of *harti* Ball but larger with a longer and more definitely angled vertex and with dark nervures in both sexes. Length ♀ 5 mm., width 1.8 mm.

Vertex but little longer than in *harti* but much more definitely angled, much longer than in *marathonensis* Olsen. Face in profile not nearly as much inflated as in *harti* and therefore less angled with clypeus and more definitely angled with vertex. The apex rounding. Venation as in *harti*, the outer sector not forming a closed apical as in *marathonensis*. Genitalia about as in *harti*, the posterior emargination of the female segment less pronounced and lacking the dark lines running back from the outer margins.

Color: Female, vertex straw-color, the apex, circles around the ocelli and a pair of crescents connecting the circles with the apex creamy; a round black spot either side at apex and a pair on the bases slightly closer to each other than the brown ocelli. Front straw, a narrow median light line bordered by a pair of brown ones uniting above. Outside of these, entirely covered with brown lines becoming concentric on the broadly reflexed areas on vertex. Pronotum pale straw, an abbreviated brown spear on median line and an irregular brown area either side. Scutellum yellow, a transverse line and basal triangles brown. Elytra uniform smoky brown. The white nervures and margins in sharp contrast. Male very similar, slightly darker throughout, the white nervures disappearing towards the apex.

Holotype ♀, allotype ♂ and one paratype female. Albuquerque, New Mexico. The male taken December 5th. The female was included in *harti* when that species was described but a large amount of additional material has served to establish more definite specific limits.

Cicadella cucurbita Ball, n. sp.

Similar to *taosa*, slightly larger with a much longer, parabolic vertex. A broad median, black-margined white line from apex of vertex to apex of scutellum. Nervures and margins of elytra white margined with black. Length ♀ 6 mm., width 2 mm.

Vertex fully as long as the pronotum, three times as long as against the eye, the apex paraboloid. As seen from side the front is more inflated above than below while in *harti* this is reversed. Apex conical, without an angle in the outline below. Pronotum broadly rounding behind with a median emargination. Venation as in *harti* no closed cell in the fork of the outer sector. Female segment triangularly produced; male plates long triangular with attenuated points about three times as long as in the allied species.

Color of sexes almost alike. Vertex, pronotum and scutellum straw color with a trace of orange towards the margins. Vertex with a pair of

white crescents setting off the very long reflexed portion, these tied together at a little more than 1/3 the distance from apex, a pair of black-bordered white lines arising on the ocelli, another pair between these and the eyes both running back across the pronotum separating posteriorly. Elytra gray, the nervures and margins white with narrow black borders, a secondary white line outside the inner margin. Face and below as in *taosa*.

Holotype ♀ and allotype ♂ taken by the writer 12 miles west of Congress Junction Ar., August 19, 1933, eleven paratypes, together with nymphs, taken by Oman, Beamer and Ball in the Mustang Mountains, Ar., June 12, 1933, and two paratypes taken by Beamer west of Wickenburg., Ar. All that the writer has taken were from the small divided-leaf gourd (*Cucurbita digitata*) growing in Tobosa grass (*Hilaria mutica*). No specimens have been taken in the grass where there were no melons nor on melon vines where there was none of the grass. Holotype, allotype and paratypes in the writer's collection, paratypes in collections of P. W. Oman and R. H. Beamer.

Cicadella sidana Ball, n. sp.

Similar to *harti* but smaller and with a still blunter head with two black points at apex. Creamy and orange, the elytra smoky black with the nervures and a heavy triangle on each clavus creamy. Length ♀ 4.2 mm., width 1.4 mm. Male much smaller.

Vertex definitely obtusely rounding, only a little over half as long as its basal width. As seen from side very bluntly conical. Face inflated about evenly throughout, the front and clypeus in a uniform curve. Pronotum with the anterior third definitely depressed. The posterior margin broadly rounding. Elytra, venation and genitalia as in *harti*.

Color: Creamy with the anterior portion of pronotum and scutellum irregularly orange, the eyes blue-green. A pair of dots on apex of vertex. The front with faint lines widely broken by an ivory median line. The elytra smoky or black shading out towards the costal margin, a broad creamy triangle bordering each claval area and the veins narrowly light.

Holotype ♀, allotype ♂ and 8 paratypes Baboquivari Mountains, Arizona, August 11, 1931, and six paratypes from Patagonia, Arizona, in June and August. All taken by the writer. This pretty little species has been found feeding exclusively on a low, spreading mallow (*Sida diffusa*) that grows in under the range grasses. Examples have been taken as far south as Hermosillo, Mexico.

Cicadella mollicula Fowler.

This pale brown-striped species resembling *tripunctata*, described from Central Mexico, is common in suitable locations along the extreme southern border of Arizona, especially at Patagonia, where it was found in low, damp, shaded places feeding exclusively on the mat amaranth (*Alternanthera repens*).

Cicadella luculenta Fowler.

This red lined species was described from Guerrero, Mexico. The writer took a single male on Mt. Lemmon at about 9500 feet July 1, 1933. On

July 15, 1935, Robert Flock took three females at the same place, which he thinks came from a species of cone flower.

Graphocephala cythura Baker.

This lined and spotted green species is found in abundance both nymphs and adults on the cockle bur-like plant of our sandy washes (*Franseria ambrosioides*).

Graphocephala ignava Ball, n. sp.

Resembling the green variety of *versuta* but with a slightly shorter and more pointed head and a much broader reflexed area. Blue-green with reddish brown on vertex and pronotum and with the apical third of claval areas white. Length ♀ 5.5 mm., width 1.3 mm.

Vertex sloping, the reflexed portion broad and elevated, forming a triangle between. In profile the front is more inflated and the apex conical instead of angled as in *versuta*. Genitalia and venation of the *versuta* pattern. Three closed anteapical cells in elytra.

Color of *cythura* nearly. Disc of pronotum and elytra blue-green with smoky clouds instead of green as in that species. Vertex, anterior part of pronotum and scutellum creamy, a round dot on apex of vertex, a narrow bounding line of the reflexed portions with projections to the ocelli, and a pair of narrow lines margining the white median line, black. Scutellum with the basal triangles, the transverse suture, two dots in front of it, and usually narrow margins of the apical white line, black. Well colored examples have a long triangle in the vertex and a series of irregular clouds on anterior portion of pronotum rusty red. Front creamy, lined or mottled with faint brown. Below and legs mostly pale, tergum black. Elytra with the apical third of claval areas and a narrow apical band creamy white. The nervures mostly very narrowly pale.

Holotype ♀, allotype ♂ and four paratypes September 13, 1931, and six paratypes September 5, 1933. All taken by the writer from a clump composite (*Brickellia wrightii*) in the Santa Rita Mountains, Arizona.

Kolla geometrica var. *plutoniella* Ball, n. var.

Size and form of the species. Whole insect shining black with a coppery reflection except the legs, the antennae, the ledge above the antennal sockets, a pair of approximate dots back of the point of vertex, a pair of crescents in front of the ocelli, the tip of scutellum, and oblique dashes across the outer apical cells of elytra.

Holotype ♀, allotype ♂ and one paratype Biscayan Bay, Florida (Mrs. Slosson). One paratype Estero, May 14, 1928, three Homestead, May 16, 1928, and three from Sanford various dates. All except the first set taken by the writer in damp meadows in Florida. This is a striking and very constant variation of this well-marked species. An occasional example will show traces of the marginal white lines on the posterior margin of head and pronotum.

Carneocephala gillettei Ball.

The writer reported this species as taken from saline areas in Colorado where *Dondia* and *Sarcobatus* grew. On September 4, 1934, two males and a nymph were taken from near the Grand Canyon Bridge on a clump grass, and June 24, 1935, a number of adults were taken on this same grass. This is an alkaline area and the grass (*Sporobolus flexulosus*) is no doubt the true host of this rare species.

Carneocephala triguttata Nottingham.

The writer has found this species swarming on salt grass (*Distichlis spicata*) growing in alkaline areas at St. George, Utah, Bunkerville, Nevada, Sacaton and Yuma, Arizona, and Calexico, California.

Carneocephala flaviceps Riley.

As restricted by Nottingham, this species is the one that swarms on the Bermuda grass areas of the Cotton States, as far west as Kansas, Texas and S. E. New Mexico. One wonders if the Wisconsin record is not a mistake in labeling.

Carneocephala fulgida Nottingham.

This longer headed species has been taken by the writer in numbers from Bermuda grass at Guadalupe, Salinas, Watsonville and San Francisco, California.

Carneocephala nuda Nottingham.

This small, short-headed species swarms on Bermuda grass in damp or shaded situations in southern Arizona.