

STUDIES OF THE MEXICAN DELTOCEPHALINAE II.
SEVEN NEW SPECIES OF *NORVELLINA*
(HOMOPTERA: CICADELLIDAE)^{1, 2}

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ABSTRACT

The Mexican species of *Norvellina* Ball are largely unknown or undescribed. Lindsay (1940) published a study of the 28 species and one variety of *Norvellina* known to occur in the United States, five of which, *flavida* Lindsay, *seminuda* (Say), *mildredae* (Ball), *pulchella* (Baker), and *texana* (Ball) have already been found in Mexico. No doubt others will be found there eventually. In this paper, seven new species of *Norvellina* are described: *N. acuspina*, *N. uncata*, *N. adunca*, *N. denotata*, *N. forficata*, *N. cincta*, and *N. recepta*. Other species, undoubtedly new, are represented by female specimens only, so these are not described, because the male specimens possess the best diagnostic characters for species separation. All holotypes and allotypes are in the DeLong Collection. Paratypes will be deposited in the collection of the United States National Museum.

***Norvellina acuspina*, new species**

(figures 1-3)

Length.—5.0-5.2 mm.

Coloration.—Ground color white with pale and dark brown markings; facial color yellow with irregular pale brown mottling on clypeus, clypellus, lorae, and inner portion of genae; outer portion of genae with dark brown mottling, apical portion of clypellus darker brown; a brown dot beneath each ocellus. Crown with four small dark brown spots above margin between ocelli, the central two being larger (and triangular) and the outer spots being transverse; rest of crown with irregular markings on basal two-thirds, these light brown with pale areas, particularly next to each eye, at base, and on either side of a broad, somewhat darker, median brown area. Pronotum with dark brown, irregular mottling; anterior margin somewhat paler. Scutellum with pale brown mottling; white spots on outer basal angles, median side margins, and apex. Forewing with ramose brown pigment lines; more intensified pigment forming a band extending from costa to apical half of clavus; darker brown spots on clavus along commissure and on apical costal margin.

Structure.—Crown produced, scarcely angled, more than twice as broad as long, a distinct transverse furrow above margin.

Male genitalia.—Aedeagus large at base, narrowed to form a long, rather stout shaft which is slightly enlarged at apex, narrowed and curved dorsoanteriorly to form a split, sharp pointed apex; a pair of slender processes arise at base, extend along shaft almost to apex and are tapered to form narrow, pointed apices. Pygofer bearing a ventrocaudal process each side which extends dorsocaudally from caudal margin. Process slightly broadened at middle, narrowed at two-thirds its length; apex rapidly narrowed to form a sharp pointed tip.

Female genitalia.—Posterior margin of seventh sternum with a U-shaped notch each side of a pair of small, median teeth which are produced to the segment margin.

Types.—Holotype male, Vergel, Chiapas, V-25-35, A. Dampf. Allotype female, Vergel, Chiapas, V-21-35.

Notes.—The form of the pygofer spine and the enlarged dorsally pointed apex of aedeagal shaft separate this species from the other described species.

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Norvellina uncata, new species

(figures 4-6)

Length.—4.2-5.0 mm.

Coloration.—Ground color white with yellow and pale brown markings; face yellow, unmarked. Anterior coronal margin pale with four faint brown dots above margin between ocelli; rest of crown mottled with pale brown, leaving a pale area near eyes and either side of midline. Pronotum marked with irregular mottling of pale brown and yellow. Scutellum mottled, with pale brown basal angles and apex tinted with yellow. Forewing white with broad brown transverse band from distal third of clavus to costa, narrowing toward costa, and central apical and antepical cells marked with ramose pigment, leaving paler areas on either side; basal third of clavus embrowned.

Structure.—Crown produced and broadly rounded, more than twice as wide between eyes at base as median length.

Male genitalia.—Aedeagal shaft long, curved, narrowed on apical third just before enlarged apex which is curved dorsally, slightly narrowed, apically pointed, and split. Paired processes arise at base and extend along shaft almost to its apex; processes rapidly narrow on ventral margin at two-thirds their length to form slender, pointed apices. Pygofer process arising on ventrocaudal margin, extending dorsally, narrower on basal half, enlarged at about half its length, then gradually tapered to a slender, sharp, pointed apex.

Female genitalia.—Posterior margin of seventh sternum broadly angularly excavated between the lateral angles, about one-fourth the distance to base, a slight notch at middle.

Types.—Holotype male, Tamazunchale, San Luis Potosi, IX-25-41, DeLong, Good, Caldwell. Allotype female, one paratype female, and four paratype males, Iguala, Guerrero, IX-11-39, DeLong. Other paratypes: one male, Coyuca-Catalan, Guerrero, VIII-24-30, J. Parra; one male, Chetla, Puebla, VII-20-30, A. Dampf, (M.F. 1707); one female, Huetamo, Michoacan, VIII-27-33, A. Dampf.

Notes.—The narrowed, curved apex of the aedeagal shaft and the abruptly narrowed and extended narrow apices of the basal aedeagal processes distinguish this from the other described species.

Norvellina adunca, new species

(figures 7-9)

Length.—4.5-5.0 mm.

Coloration.—Ground color pale yellow with brown markings; face pale yellow, unmarked. Anterior coronal margin pale with four brown spots above margin between ocelli; basal two-thirds of crown with irregular brown mottling, except pale areas proximal to eyes and one each side of median brown area. Pronotum with mottling of dark brown except white lateral margins. Scutellum with paler brown mottling. Forewing with clavus and apical half of wing marked with dark brown ramose pigment. The basal half, including a narrow strip on the anterior fourth of the clavus, is white to the diagonal pigment line from middle of clavus to a point beyond middle of costa. The pigment beyond the apex of clavus is more sparse.

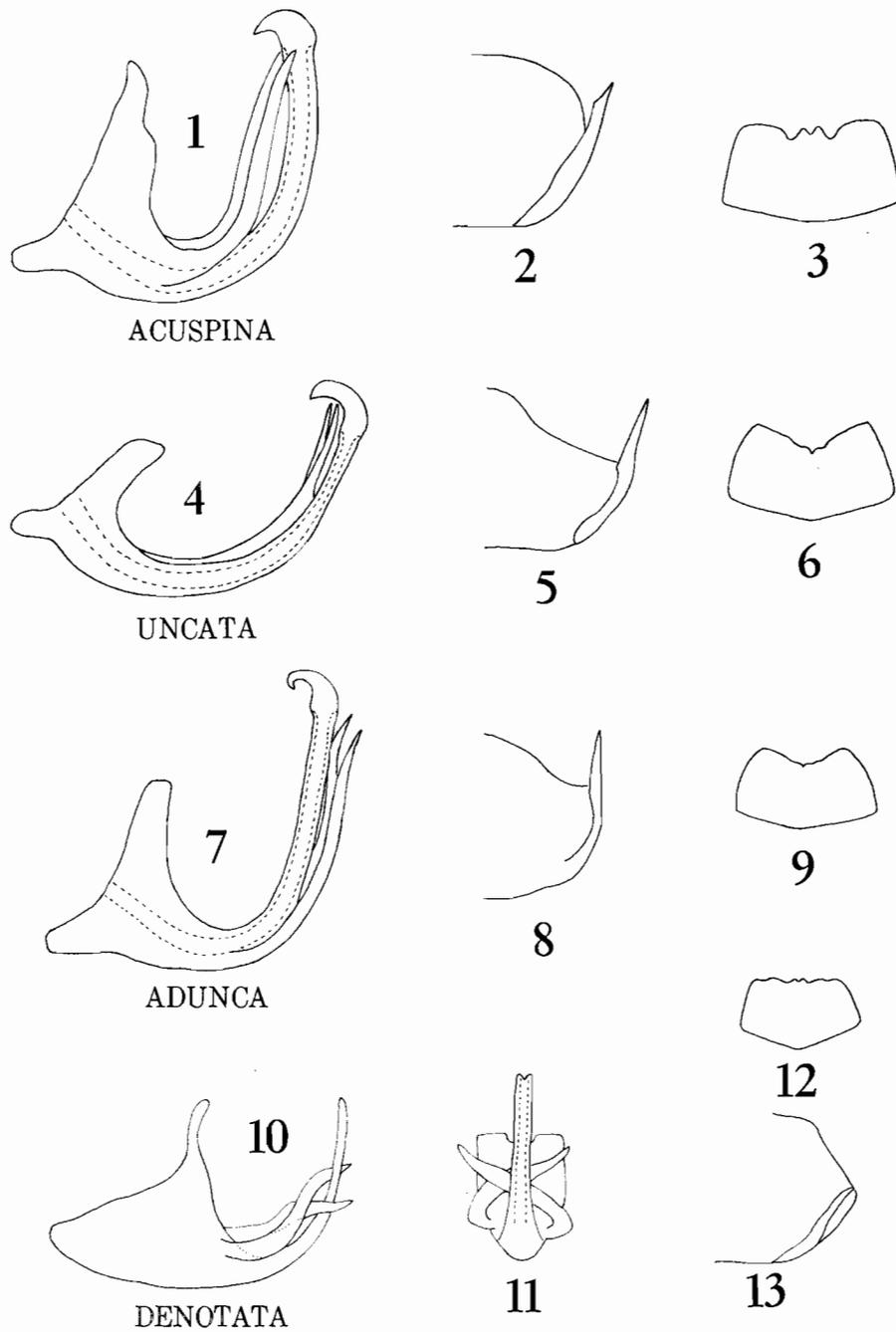
Structure.—Crown blunt, more than twice as wide between eyes at base as median length.

Male genitalia.—Aedeagus enlarged at base; shaft long, erect, slightly enlarged near apex, then curved dorsally, rapidly narrowed to a slender, curved, split tip with a hooked apex. Paired processes arise ventrally at base, extend along shaft and are tapered near apex to form narrow, pointed apices. The pygofer process arises ventrocaudally, is rather straight and slender, extending dorsally well beyond the dorsal margin, and is sharply pointed at apex.

Female genitalia.—Posterior margin of seventh sternum broadly concavely excavated between the lateral angles about one-fifth the distance to base, slightly incised at middle.

Types.—Holotype male, allotype female, sixteen paratype males, Iguala, Guerrero, X-25-41, DeLong, Good, Caldwell, and Plummer. Other paratypes: seven males, one female, same locality, IX-11-39, DeLong; one male, Vergel, Chiapas, VI-25-35, A. Dampf; one male, El Mante, Tamaulipas, X-26-30, A. Dampf.

Notes.—The tapered, curved, hooked, apical portion of the aedeagal shaft easily separate this from all related species.



FIGS. 1-13. *Norvellina acuspina*, n. sp. Fig. 1, aedeagus, laterally; fig. 2, apical portion of male pygofer, laterally; fig. 3, female seventh sternum. *Norvellina uncata*, n. sp. Fig. 4, aedeagus, laterally; fig. 5, apical portion of male pygofer, laterally; fig. 6, female seventh sternum. *Norvellina adunca*, n. sp. Fig. 7, aedeagus, laterally; fig. 8, apical portion of male pygofer, laterally; fig. 9, female seventh sternum. *Norvellina denotata* n. sp. Fig. 10, aedeagus, laterally; fig. 11, aedeagus, posteriorly; fig. 12, female seventh sternum; fig. 13, apical portion of male pygofer laterally.

Norvellina denotata, new species

(figures 10-13)

Length.—3.7-4.0 mm.

Coloration.—General ground color white tinted with yellow, rather heavily marked with dark brown. Facial color pale yellow; clypeus, clypellus, and lora rather uniformly marked with mottling of brown pigment, with portions of six pairs of arcs on clypeus; genae with a pale area beneath each eye containing a dark brown spot; a brown area just above each antenna next to eye. Crown with four prominent brown spots above margin between ocelli; irregular dark brown markings forming a transverse band behind spots, with paler brown coloration extending to base; pale areas next to each eye and on either side of median longitudinal band. Pronotum with irregular dark brown mottling, anterior margin and lateral portions somewhat paler. Scutellum washed with pale brown, basal angles darker. Forewing white with ramose pigment; dark brown spots along commissure of clavus, a spot on disc, a larger one on costa just beyond middle, a small spot on costa at cross vein to outer antepical cell and one at apex of inner apical cell; basal third of wing between costa and clavus with fewer markings.

Structure.—Crown bluntly angled, almost twice as wide between eyes at base as median length.

Male genitalia.—Aedeagus with large, basal portion almost as long as slender shaft, which is notched at apex in ventral view at the opening of the gonopore. Paired processes arise at base dorsal to shaft, extend about two-thirds the length of shaft, taper to slender pointed apices, and cross each other. Pygofer process, arising ventrally, is slender, extending only to caudal margin of pygofer; apex narrow, pointed.

Female genitalia.—Posterior margin of seventh sternum almost truncate, undulated, with a pair of proximal, minute, scarcely produced teeth at middle.

Types.—Holotype male, San Jacinto, Distrito Federal, I-12-33, A. Dampf. Allotype female, Morelia, Michoacan, IX-30-45, Plummer, DeLong, Hershberger, Elliott. Paratypes: one male, same as holotype except IX-10-23, Dampf; one male, Chapingo, Distrito Federal, I-23-24, Dampf; one male, Mexico City, Distrito Federal, IX-4-36, Dampf; one male, Chapingo, Distrito Federal, III-7-24, Dampf; one female, same as male except III-17-24, Dampf; one male (M. B. 401), Distrito Federal, I-26-32, A. Dampf; two females, Penon, Marquez, Distrito Federal, V-11-24, A. Dampf; one paratype female, Iguala, Guerrero, X-25-41, DeLong, Good, Caldwell, Plummer; one female, Desierto de Los Leones, Distrito Federal, X-9-45, DeLong, Hershberger, Elliott.

Notes.—The large base of aedeagus, slender shaft, and short pointed, paired aedeagal processes easily separate this from all allied species.

Norvellina forficata, new species

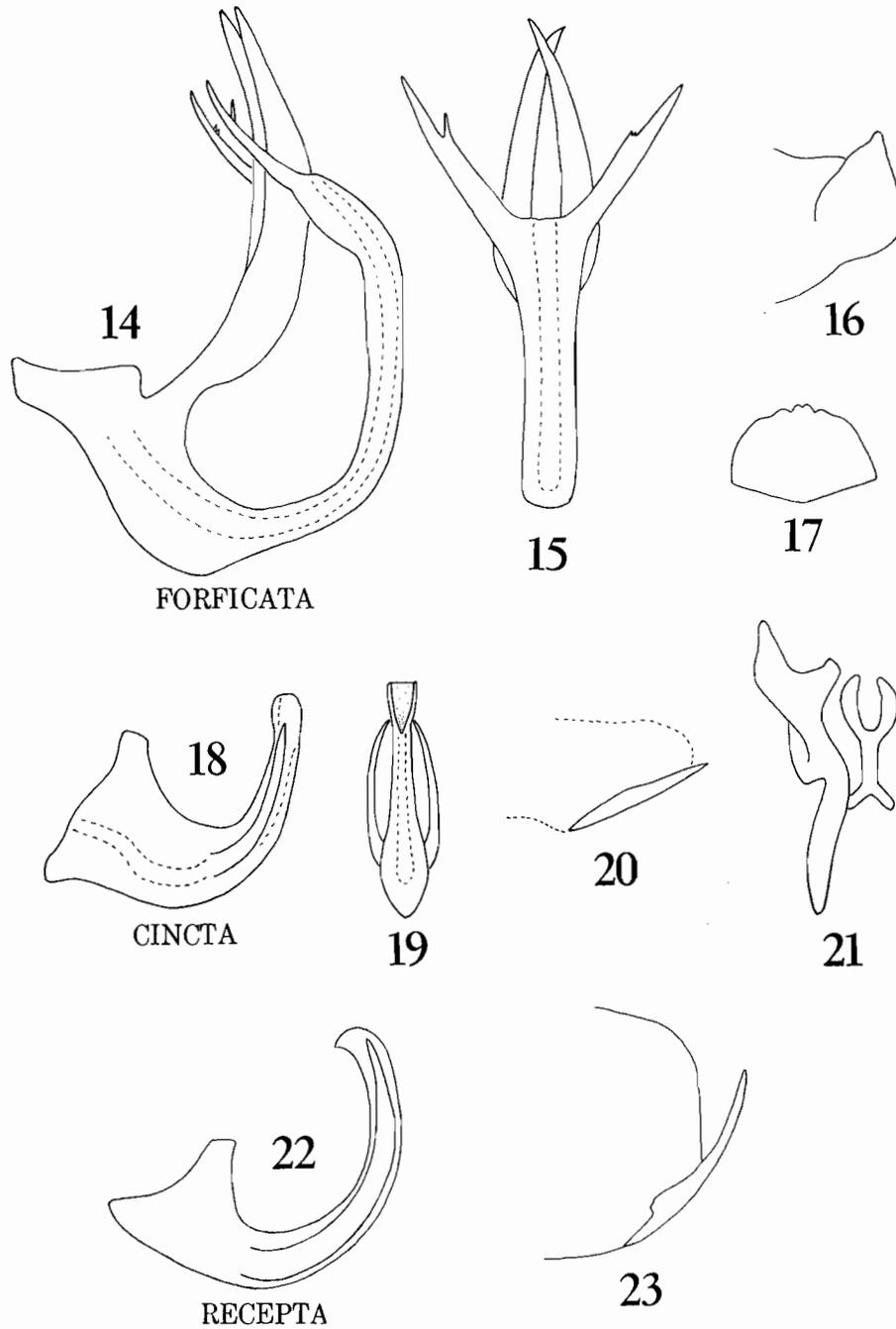
(figures 14-17)

Length.—5.0 mm.

Coloration.—Ground color buff with a few brown markings; upper portion of clypeus with faint traces of arcs; gena with a dark dot just beneath eye and a smaller spot on the lower outer portion next the lorum. Crown with or without an irregular pale brown area on each side, halfway between eye and median line and halfway between anterior and basal margins. Pronotum without strong markings, sometimes vaguely mottled. Scutellum unmarked or with basal angles lightly embrowned. Forewing gray subhyaline, tinted with pale brown, a diagonal dark brown spot on middle of clavus changing to a narrow, diagonal, dark brown stripe extending from middle of costa to apex of clavus. Dark markings form a pale diamond-shaped spot on combined clavi. A second diagonal brown stripe from costa, parallel to the one to apex of clavus, extends across base of outer antepical cell.

Structure.—Crown bluntly pointed, more than twice as wide between eyes at base as median length.

Male genitalia.—Aedeagal shaft in lateral view elongate, slender, curved; in posterior view Y-shaped with the apical portions divergent and slender, each bearing a spur on inner margin at two-thirds its length. Two blade-like processes arise at base and extend beyond the apex



FIGS. 14-23. *Norvellina forficata*, n. sp. Fig. 14, aedeagus, laterally; fig. 15, aedeagus, posteriorly; fig. 16, apical portion of male pygofer, laterally; fig. 17, female seventh sternum. *Norvellina cincta*, n. sp. Fig. 18, aedeagus, laterally; fig. 19, aedeagus, posteriorly; fig. 20, apical portion of male pygofer, laterally; fig. 21, connective and style, dorsally. *Norvellina recepta*, n. sp. Fig. 22, aedeagus, laterally; fig. 23, apical portion of male pygofer, laterally.

of the shaft, normally passing between the arms of the "Y". Pygofer with an enlarged flattened portion at apex.

Female genitalia.—Posterior margin of seventh sternum slightly produced from lateral, rounded angles to form a narrow, median produced tooth, slightly notched at middle, with a small, rounded lobe, each side.

Types.—Holotype male, Jalapa Road, Veracruz, (Km. 207), X-13-45, Shaw, DeLong, Hershberger. Allotype female and paratype male, Puebla, Puebla (K. 78), X-18-41, DeLong, Good, Caldwell, Plummer.

Notes.—The long, forked aedeagal shaft with the slender apical portions, the blade-like processes arising at the base, and the broad, blunt pygofer tip combine to separate this species from all others. The brown markings of the forewings are variable in intensity; they are best developed in the holotype, less so in the male paratype, and nearly absent in the female allotype.

Norvellina cincta, new species

(figures 18-21)

Length.—5.0 mm.

Coloration.—Ground color white with pale and dark brown markings; facial markings mostly pale brown, vermiculate; darker brown spot in each antennal socket and along ventral margin, across genae, lorae, and clypellus. Crown with four small, faint, orange-brown spots just above margin between ocelli; a transverse brown line across middle is bent basally on each side of median line and again next to each eye, with the basal end enlarged and darker. Pronotum, the anterior half between the eyes with a few pale brown spots, the remainder rather heavily marked with dark brown mottlings, which merge, forming dark brown irregular areas. Scutellum mostly marked with pale and dark brown; basal angles, apical angle, and a triangular spot on middle, each side, white. Forewing white with dark brown vermiculate markings, which are less abundant on basal half than on apical third. A broad, transverse, pale brown band extends from costa across apical half of clavus. A brown spot occurs at end of each claval vein along commissure.

Structure.—Head blunt, more than twice as wide between eyes at base as median length.

Male genitalia.—Style with apical portion almost as long as basal half, connective moderately long. Aedeagus in lateral view quite broad on basal half; shaft short and stout. In posterior view, aedeagal shaft appears to taper almost to apex, then to broaden at apex at the opening of the gonopore. The paired processes arising at base extend along the sides of the shaft almost to apex, and are slender, tapered, and pointed. Pygofer process arising on ventral margin and extending almost caudally. Process straight, broadened at middle, tapered, and sharply pointed apically.

Type.—Holotype male, Puebla, Puebla, X-18-41, DeLong, Good, Caldwell, and Plummer.

Notes.—The shape of the aedeagus and ventral processes of the pygofer provide the distinctive features of *N. cincta*.

Norvellina recepta, new species

(figures 22-23)

Length.—4.0 mm.

Coloration.—Ground color white tinted with yellow, with pale brownish markings, following general color pattern of *N. snowi* Ball. Facial color white with yellow tinting. Crown with four pale brown dots above margin between ocelli; basal half with pale vermiculate brown markings. Pronotum with irregular, but rather uniform brown mottling. Scutellum with paler uniform mottling. Forewing white, marked with vermiculate brown lines, except basal half, between costa and claval veins and slightly into clavus on basal half, and a diagonal color margin extending from two-thirds the length of claval vein to costa at more than one-half its length. Brown coloration stronger on base of clavus, tip of wing, and small spots at apex of clavus, along basomedium portion of claval vein and on disc along diagonal color border.

Structure.—Crown bluntly angled, more than twice as wide between eyes at base as median length.

Male genitalia.—Aedeagal shaft rather long, stout, strongly curved dorsally, apex rapidly narrowed, curved convexly on ventral margin to form a pointed apex. Paired processes arising at base extending along and almost to apex of shaft, narrowed on apical fifth, and tapered to narrowed pointed apices. Pygofer process arises on ventrocaudal margin, is enlarged close to base, then is narrowed and slender to a pointed apex.

Types.—Holotype male, Hermosillo, Sonora, III-23-27, A. Dampf.

Notes.—*N. recepta* can be distinguished only by the combination of the features of the male genitalia.

LITERATURE CITED

- Lindsay, D. R. 1940. The Genus *Norvellina* (Homoptera, Cicadellidae). Kansas Univ. Sci. Bull. 26: 169-213.