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THE GENUS NEOKOLLA
(HOMOPTERA, CICADELLIDAE)

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The genus *Neokolla* was erected by Melichar² in 1926. China³ in 1938 designated the type as *Tettigonia heiroglyphica* Say.

The major characteristics of the genus are: Head as wide as or wider than pronotum, anterior margin rounded or bluntly subangular; crown broad, median length greater than length next eye. Pronotum broad, lateral margins short and carinate, disk transversely striated. Forewing with central antepical cell parallel sided, inner antepical cell closed but short, first apical cell long and membranous. Female seventh sternite with posterior margin usually angularly produced. Male plates elongate, triangular. Connective T-shaped, shaft short. Aedeagus symmetrical, compressed; base of aedeagus usually broad with a pair of basal processes extending along the shaft.

Three species have been placed in the Nearctic fauna. Two of these are southwestern in distribution and one of them was described partially from Mexican material. Five others which have been collected in Mexico and show relationship to *aridella* are being described at this time.

All types are in the DeLong collection unless otherwise designated.

Neokolla heiroglyphica (Say)

Tettigonia heiroglyphica Say, J. Acad. Nat. Sci. Phila. 6: 313, 1830

Tettigonia gothica Signoret, Anns. Ent. Soc. Fr. 2: 345, 1854

Tettigonia similis Woodworth, Bul. Ill. St. Lab. Nat. Hist. 3: 25, 1890

The crown of *heiroglyphica* is bluntly produced, about three fourths as long at the middle as the basal width between the eyes. Length 5.5 to 6.5 mm.

Color yellowish to gray, often reddish, with black markings on the basal half of the crown in the form of two "horseshoes" with the open end basally. There is a black spot at apex and a black line either side enclosing the reflexed portions. A black line extends from the inner end of the suture posterior to the arcs through the ocellus to the base.

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² Anns. Mus. Nat. Hungarici 23: 343, 1926

³ Anns. Mag. Nat. Hist. 11th ser. 2: 182, 1938

The female posterior margin of the seventh sternite is angularly produced. Male plates elongate, tapering to pointed apices. The style is long, scarcely narrowed at apex and bluntly rounded. The aedeagus consists of an erect caudal portion which is broad in lateral view with a sharp pointed erect spine-like structure on either side at about the middle; it is as long as the broad portion and proximal to it on each side. The cephalad portion is composed of a pair of broad structures which are some distance apart.

This is the common eastern form and extends west of the Mississippi River, probably to the Rocky Mountains in certain states.

The larger size and internal genital structures will easily separate it from the western species.

***Neokolla pusilla*, n. sp.**

Resembling *heiroglyphica* in form and appearance but smaller and with distinct male genital structures. Length of male 5 mm.

Crown appearing rather well produced and bluntly angled, about a third wider between eyes at middle than median length.

Color similar to *heiroglyphica*. Crown pale with the same pattern of dark markings as in *heiroglyphica*, with a narrow V-shaped dark marking either side of a pair of proximal median longitudinal lines. The V-shaped markings extend almost to the base of the head. Pronotum with anterior and lateral margins broadly pale. The discal and posterior portions are darker with pale mottling. Scutellum pale, with a dark angular line extending across each basal angle. Fore wings dark with pale mottling.

Male plates long, gradually tapered to bluntly pointed apices which curve outwardly. Styles gradually narrowed at half their length to bluntly pointed apices, which are bent inwardly. The aedeagus is divided dorsoventrally on the apical half. In lateral view it appears rather short and broad with a narrow basal spur which extends dorsally. A pair of dorsal pygofer spines extend from base of pygofer to half its length and form narrow spine-like hooks at the tips which curve inwardly.

Holotype male collected at Ixmiquilpan, Hidalgo, Mexico, September 27, 1941, by D. M. DeLong, E. E. Good, and J. S. Caldwell.

***Neokolla mesolinea*, n. sp.**

Resembling *heiroglyphica* in form and size but with a median dark conspicuous line on crown and with distinct male genitalia. Length of male 4.75 mm., female 5.25 mm.

Crown produced and bluntly angled, a little wider between eyes than median length.

Color: Crown pale yellow marked with pale and dark brown. The dark markings are a spot at apex and a conspicuous median longitudinal stripe on basal two-thirds which is broadened at the anterior end to form a spot just anterior to the disk. The paler markings are variable. Usually a paler longitudinal spot extending from apex caudad, a diagonal elongate spot either side of middle at base, a broken line just above vertex margin between apex and each eye. Three broken concentric arc-like lines are on each side of apex above the margin. Pronotum pale, straw color with a pale brown mottling, Scutellum pale with a dark spot in each basal angle. Fore wings with a dark brown stripe along basal half of claval vein, interrupted at about the middle by a paler area. Claval portion paler than costal area, giving the dorsal portion a zigzag longitudinal pale saddle area.

Female seventh sternite with the posterior margin truncate at apex or slightly emarginate. Male plates long and narrow gradually tapered to narrow, blunt apices. Styles abroad at base, apical third sickle-shaped with the apices pointed and curved outwardly. Aedeagus with a basal portion which is erect and bears a pair of short dorsal processes. A pair of long slender processes arise on the caudal side at the base and curve upward and caudally to the terminus of the pygofer. In ventral view they appear to curve outwardly from the base converging at their apices.

Holotype male, allotype female and male and female paratypes collected at Caropan, Michoacan, Mexico, near Kilometer 432, October 2, 1941, by DeLong, Good, Caldwell, and Plummer. Female paratypes from Zacapu Michoacan, Mexico, October 4, 1941, collected by the same collectors; Toluca Rd., Mexico, collected November 24, 1938, by J. S. Caldwell. Male paratypes collected at Mexico City, D. F., Mexico, on the Toluca Rd., Sept. 26, 1945, by DeLong, Elliott and Hershberger.

***Neokolla lurida*, n. sp.**

Resembling *heiroglyphica* in form and general appearance but with paler coloration and distinct male genital structures. Length of male 5 mm., female 5.5 mm.

Crown rather strongly produced, about one fifth wider between eyes than median length.

Color: Crown pale yellowish or greenish with pale brownish markings. A black spot at apex and a black line next each ocellus. The color pattern of *heiroglyphica* on vertex is faint and marked with pale brown, especially the two proximal longitudinal lines on the base of the vertex and the transverse marks on the disk anterior

to the ocelli. The areas either side of apex are pale brown. Pronotum pale on anterior and lateral margins with pale brownish markings, disk and posterior portion dark gray to green. Fore wings pale brownish with light mottling, claval vein paler.

Female seventh sternite with posterior margin roundedly produced, male plates long, tapered to narrow, proximal, pointed apices. Styles short, rather broad, narrowed on the apical fourth to narrow blunt apices which are directed inwardly. Aedeagus simple, U-shaped with the caudal portion longer than the cephalad arm.

Holotype male collected at Chilpancingo, Guerrero, Mexico, Sept. 10, 1939, by DeLong and Plummer. Allotype female and paratype female collected at Taxco, Guerrero, Mexico, Sept. 9, 1939, by DeLong and Plummer. Female paratype collected at Uruapan, Michoacan, Mexico, October 1, 1941, by DeLong, Good, Plummer and Caldwell.

Neokolla severini DeLong

Neokolla severini DeLong, Pan. Pac. Ent. 24: 142, 1948

In form and coloration resembling *heiroglyphica* but smaller, and with a blunter head and with distinct genital structures. Length 5.5 to 6 mm.

Crown produced and bluntly angled, almost one third wider between the eyes than the median length.

Color similar to that of *heiroglyphica*. The crown ground color is grayish often tinted with reddish. There is a black spot at the apex. On each margin, about half way between the apex and the eye, there is an area separated from the disk by a black line; it encloses several dark arc-like lines. A black line extends from the inner basal margin of this area to the ocellus which is enclosed in a black ring. A black line extends forward from the ocellus, curves on the disk to meet the curved line from the opposite side, from which point both are directed basally for a short distance as contiguous lines. There is also a black dash near the base on either side between the ocellus and the eye. The anterior third of the pronotum is pale with black markings. The posterior two thirds is black. The scutellum is gray, often tinted with red, with black lines extending from either side at about the middle to the pronotum. The elytra are usually dark with a few pale markings and the veins are inconspicuous, often obscured. The face is pale with traces of faint arcs.

The posterior margin of the female seventh sternite is strongly angularly produced to a blunt apex. Male plates elongate, con-

cavely narrowed on the inner margins to form narrow rather blunt apices. Plates about four times as long as the width of each at base. Styles rather short, broad at base and curved inwardly to form a blunt apex, Aedeagus simple; in ventral view the apex appears slightly enlarged and notched at middle forming two rounded apical lobes. At the base is a pair of dorsally directed processes.

This species is western in distribution, originally described from Larkmeade, California, and several localities in central and southern Arizona. Many records are at hand from Arizona and two specimens referred to this species were collected at Laramie, Wyoming, in July.

Neokolla severini hamula, n. subsp.

Resembling *severini* in form, color, size and general structural characters but with conspicuous curved pygofer hooks on the middle dorsal portion of the pygofers.

In specimens of *severini* there is an indication of a small dorsal caudal spur but in *hamula* this is present as a curved pygofer hook.

There seem to be no intermediate forms. It is, therefore, designated as a subspecies of *severini*.

Holotype male and paratype male collected at Huachuca Mts., Arizona, July 28, 1907. Male paratypes from Congress Jct., Arizona, June 14, 1937, and from Baboquivari Mts., Arizona, July 10, 1937, both collected by D. J. and J. N. Knull.

Neokolla aridella DeLong

Neokolla aridella DeLong, Pan. Pac. Ent. 24: 144, 1948

Resembling *heiroglyphica* in form and appearance, but a little smaller and with distinct male genital structures. Male 5 mm.; female 5.5 mm.

Crown bluntly angularly produced, about two thirds as long at middle as the basal width between the eyes.

Color: Crown, anterior portion of pronotum, and scutellum tawny marked with black; posterior portion of pronotum and elytra gray. The vertex has a black spot at the apex surrounded by a pale ring, the reflexed portion is heavily marked with black and a black line extends from the inner end of the impressed groove through the ocellus to base. The two loops or "horseshoes" usually found on the basal portion are fused on the inner margin so as to form a median black longitudinal line on the basal two thirds. The anterior portion of the pronotum is rather heavily marked with black. The scutellum appears mostly black, with tawny margins, a few spots at base and a conspicuous median apical spot on pos-

terior half. Elytra dark gray with pale veins on apical portion. Face black with white mottling.

The posterior margin of the seventh sternite of the female is strongly produced, sloping on each side to form a blunt angle at apex. The male plates are long, concavely tapered on outer margin to form narrow, pointed apices. The styles are rather short and the apices are bluntly pointed. The aedeagus is composed of a pair of long blade-like processes that extend caudally. These are well separated and are sharply pointed. At the base of these structures is a pair of erect processes which are shorter and extend dorsally. Between these is a single median process which extends dorsally and slightly caudally and appears to attach to the margin of the tube.

This species was originally described from specimens collected in the Chiricahua Mts., Arizona, and in Tasquillo, Hidalgo, Mexico. Many records are at hand from Mexico including Mexico City, D. F., and on the Toluca Road west of Mexico City.

***Neokolla remina*, n. sp.**

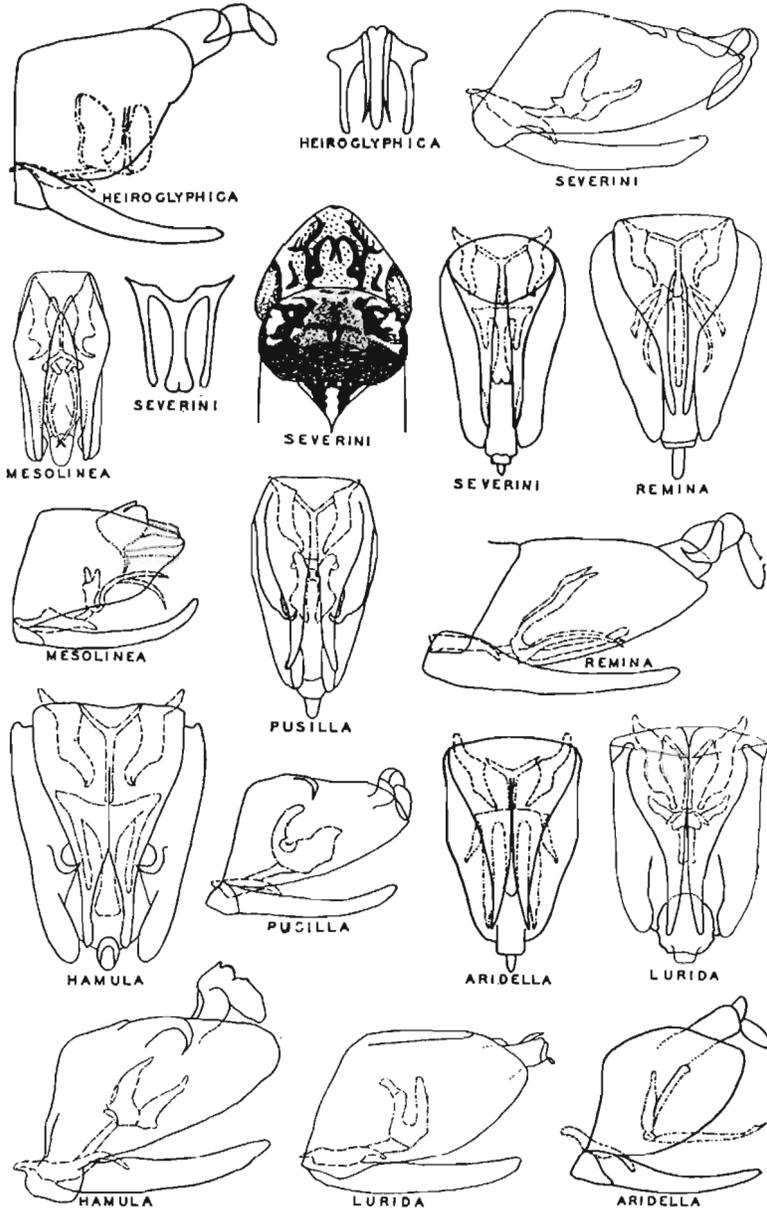
Closely related to *aridella* but with a blunter head and distinct male genital structures. Length of male 5.5 mm.

Crown bluntly angled, almost one-third wider between eyes at base than median length.

Color: Crown pale yellow, a dark spot at apex, a heavy dark circle enclosing a large yellow area about equidistant between apex and eye on either side and extending down over margin. A pair of dark proximal median longitudinal lines on disk, the anterior ends of which curve outwardly and caudally and terminate just medially to the ocelli. There is a dark marking at the basal inside margin of each eye and a black curved marking from each ocellus to base which then curves forward to the median line. Pronotum pale on basal and lateral third with vermiculate dark markings. Basal portion dark, slightly mottled. Fore wings dark, smoky subhyaline, without regular pale markings in male; in female, posterior half of pronotum and fore wings green with darker veins.

Female seventh sternite with posterior margin pointedly produced. Male plates long, apices narrowed and produced as slender tips. Styles rather short narrowed at about half their length, curved inwardly and caudally with pointed apices. Aedeagus with a ventral basal process which extends caudally. Two ventral and two dorsal processes arise at base. The ventral processes extend caudally and outwardly on each side of the ventral process. The two dorsal processes are stouter and extend dorsocaudally, and outwardly.

DELONG AND CURRIE



Holotype male, allotype female and paratype male and females collected at Rio Tuxpan, Michoacan, Mexico, Sept. 25, 1945, by DeLong, Plummer, Hershberger and Elliott. Male and female paratypes collected at Mexico City, D. F., Mexico, 18 Km west, September 1, 1939, by DeLong and on the Toluca Road between Mexico City and Toluca, Nov. 24, 1938, by J. S. Caldwell.