

A SYNOPSIS OF THE GENUS IOWANUS IN NORTH AMERICA INCLUDING MEXICO

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While discussing the Phlepsiids of Mexico and Central America in 1918, Ball¹ erected several new subgenera, one of which he named *Iowanus*. He cited as the genotype *Phlepsius (Iowanus) handlirschi* Ball, a Mexican species occurring in the state of Guerrero. Other species placed in this subgenus by Ball are *majestus* O. & B., *elongatus* Ball, *hebraeus* Ball and *spatulatus* V. D.

In characterizing this genus Ball states, "Resembling *Phlepsius* but with head much narrower than pronotum, vertex narrow, disc flat, front long and narrow, but slightly widening above. Pronotum large, pushed forward between the eyes, the lateral margins long and strongly oblique. Elytra very long and narrow over one-third their length beyond clavus; central apical cell long, curved, narrow at base. Surface of elytra regularly inscribed with vermiculate lines."

In 1939 the senior author² described four species of this genus which are closely related to *majestus* under *Texananus*. A study of this material in comparison with *Texananus* indicates that *Iowanus* should be given generic rank. Ten previously described species are being placed in the genus and two new species are being described and placed in the genus in this synopsis.

KEY TO SPECIES

- 1 Body narrow, not widened at middle; female segment strongly produced, extending almost to apex of pygofer; sides concavely rounded to narrow sharp pointed apex; male unknown. (Species known only from Mexico)..... **elongatus**
- 1' Body broader, definitely broadened at about half its length; female segment either truncate or slightly produced, not nearly as long as pygofer..... 2
- 2(1') Vertex with a definite black or dark brown transverse band, usually interrupted at middle, between anterior margins of eyes..... 3
- 2' Vertex with brownish mottling forming an irregular band between anterior margins of eyes..... 12
- 3(2) Apical half of vertex (portion anterior to black band) white, unmarked; female segment shallowly emarginate either side of a pair of short broad separated median teeth. (Known only from Mexico)..... **apicalis**
- 3' Apical half of vertex same color as basal portion, usually with a pair of small approximate spots..... 4
- 4(3') Vertex bluntly produced, almost half as long at middle as basal width between eyes; female segment roundedly produced from lateral margins to form a broad bifid apical tooth which occupies the median fifth of the posterior margin; male pygofer without caudal spines..... **sabinus**
- 4' Vertex more broadened, rounded at apex, scarcely angled; female segment almost truncate, not forming a produced median tooth; male pygofer with caudal spines.... 5
- 5(4') Color rather dark brown; female segment slightly produced at middle with a median rather broad, shallow notch; male aedeagus composed of a single process which is long and slender..... **hebraeus**
- 5' Color more chestnut brown; female segment with a deep or narrow median incision or both; male aedeagus composed of an upper and a lower portion..... 6

¹Ball, E. D. *Annals Ent. Soc. Amer.*, 9: 381-389, 1918.

²DeLong, D. M. *Ohio Jour. Sci.*, 39: 235-238, 1939.

- 6(5') Ventral portion of aedeagus cleft for more than half of the apical part forming a pair of long slender processes which are lyre shaped in ventral view..... **lyratus**
- 6' Ventral portion of aedeagus not cleft or cleft for only a short distance of apical portion..7
- 7(6') Male styles slender at apical half and tapered to a pointed apex..... **handlirschi**
- 7' Male styles broader, blunt at apex, aedeagus notched or cleft at apex.....8
- 8(7') Apex of each apical fork of ventral portion of aedeagus bifid..... **dicentrus**
- 8' Apex of each apical fork of ventral portion of aedeagus pointed not bifid.....9
- 9(8') Ventral aedeagus portion sharply bent ventrally and produced for more than one-third its length at apex..... **borrori**
- 9' Ventral portion of the aedeagus with the apical portion not sharply bent ventrally, or with bent portion very short.....10
- 10(9') Apical pygofer lobe broadly rounded, as broad as long, constricted at base; dorso-anterior lobe of dorsal portion of aedeagus broadened apically, constricted at base, **bullatus**
- 10' Apical pygofer lobe elongate or short, not constricted at base; dorso-anterior lobe of dorsal portion of aedeagus narrowed at apex, not constricted basally.....11
- 11(10') Apical pygofer lobe appearing short in lateral view, bent inwardly, not constricted basally; apical branches of ventral aedeagus slender, elongate, in lateral view appearing bent twice..... **caducus**
- 11' Apical pygofer lobe elongate, ovate; apical branches of ventral aedeagus short, thick and curved ventrally..... **majestus**
- 12(2') Male plates elongate, sloping on outer margins to bluntly pointed apices.... **spatulus**
- 12' Male plates longer, more narrow, the apical half narrow and tapered to slender, acutely pointed apices; pygofer longer..... **ultratus**

***Iowanus elongatus* (Ball)**

Phlepsioides (*Iowanus*) *elongatus* Ball, Annals Ent. Soc. Amer. 11: 382, 1918.

Resembling *majestus* but narrower with a long pointed female segment. Length 10 mm.

Vertex angled, about one-third longer at middle than next the eyes, about one-half wider than long. The transverse band covers almost the anterior third of the vertex leaving a pale anterior margin and a median line. Pronotum with three rather distinct dark brown spots near anterior margin behind each eye.

The female last ventral segment tapering from the lateral angles to a long pointed apex which extends almost to the apex of the pygofers.

This species is known from the female holotype specimen only which was collected in Guerrero, Mexico.

***Iowanus majestus* (Osborn and Ball)**

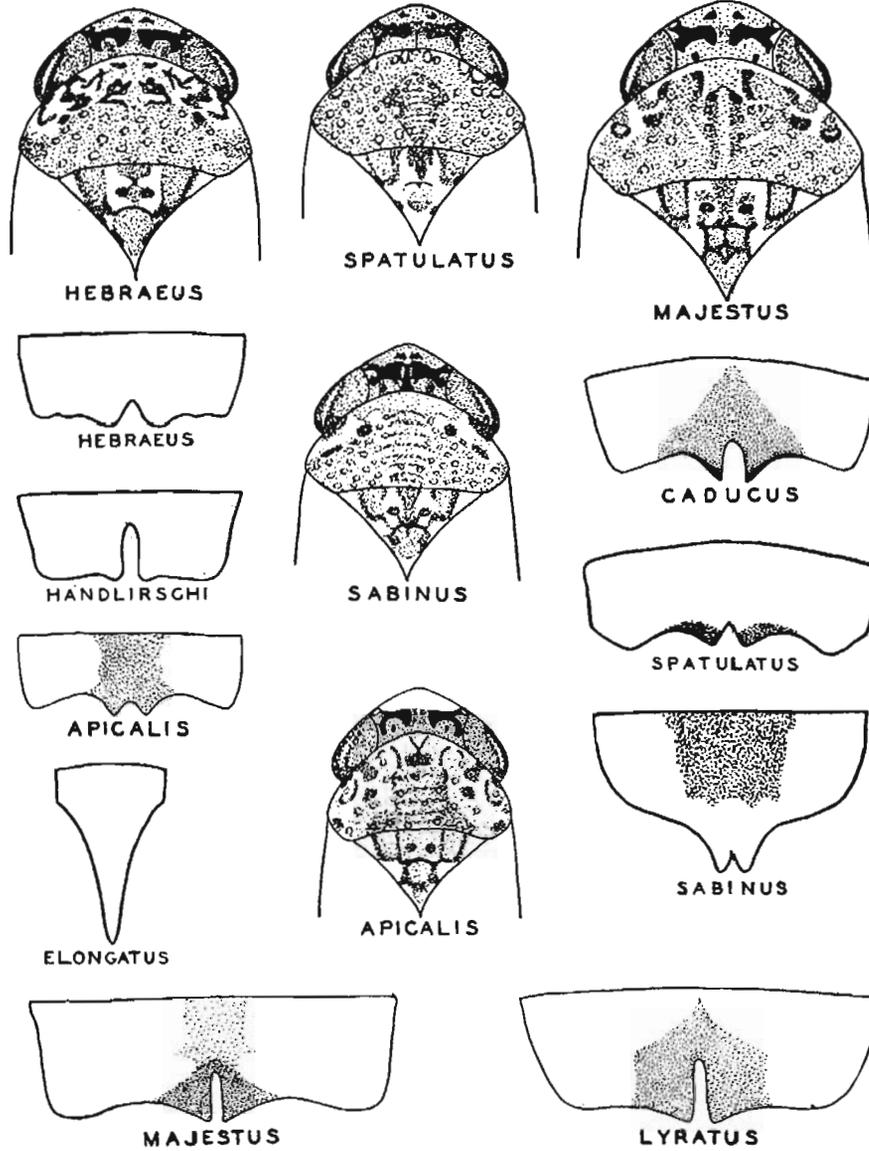
Phlepsioides *majestus* Osborn and Ball. Proc. Ia. Acad. Sci. 4 : 229, 1897.

A large brownish species, resembling a member of the *Gyponinae* in general appearance. Length 9 to 10 mm.

The vertex is bluntly angled, about one-third longer on the middle than next the eyes, margin blunt. Vertex with a conspicuous, irregular, transverse fuscous band on the middle and usually two fuscous spots before it and above apex. Anterior portion of pronotum with dark vermiculate markings. Elytra heavily inscribed with chestnut brown pigment.

The female last ventral segment is three times as broad as long, the lateral angles broadly rounded. A narrow median incision half way to the base forms a rounded tooth on either side. The margin is broadly, shallowly emarginate either side between these and the lateral angles. Male plates rather long and narrow, apices broad, blunt and rounded. Aedeagus composed of a long curved, ventral process which is bifid at apex and a dorsal process which has a long, curved, tapered ventral portion and a shorter, broader dorsal portion, narrowed to a slender, apical finger process. Pygofer concavely rounded, dorsally and ventrally, and produced into a round pointed apex.

This species was described from specimens taken in Philadelphia, Pennsylvania, and has since been recorded for several of the eastern states. The types have been examined but specimens for all of the localities for which recorded have not been checked.



Heads and female genitalia of species of *Iowanus* as labeled.

Iowanus caducus (DeLong)

Texacanus caducus DeLong, Ohio Jour. Sci. 39 : 238, 1939.

Resembling *majestus* in form and coloration but with the apical lobe of the pygofer short, blunt, and not indented dorsally or ventrally at the base. Length male 8 mm.; female 9-9.5 mm.

The vertex is bluntly produced, more than half as long at middle as basal width between the eyes. The interrupted band between the eyes is interrupted at middle and enlarged at either end.

The female last ventral segment is scarcely concave between the lateral angles and a slightly produced blunt tooth either side of a rather narrow U-shaped notch reaching one-third the distance to the base. The male plates are long, tapered to rather narrow, rounded apices which exceed the pygofers in length. The pygofers with very short rounded caudal lobes which are not constricted or notched at base. The ventral portion of the aedeagus is long, apical fourth bent abruptly ventrally and cleft, forming two apical processes which are more slender than basal aedeagus body and are separated. The dorsal portion with a ventral, long, curved, slender process from the base of which arises a short, broader dorsal process.

This species is known to occur in Oklahoma, Tennessee and Illinois.

Iowanus borrori (DeLong)

Texananus borrori DeLong, Ohio Jour. Sci. 39 : 237, 1939.

Resembling *majestus* in form and coloration but different due to a bent terminal process of the aedeagus which is more than one-third as long as the basal portion and with a longer terminal lobe of the pygofer. Length 9.5 mm.

The vertex is quite broad and blunt, almost twice as wide between eyes at base as the median length. The dark transverse band between eyes is interrupted at the middle.

The female last ventral segment with prominent rounded lateral angles between which the posterior margin is concavely rounded either side of a rather long, sharp, pointed tooth which is produced on each side of a U-shaped notch which extends half way to the base of the segment. The male plates are long and slender, about as long as the pygofers which bear a long rather broad caudal lobe. The ventral portion of the aedeagus is short and robust. The apical third is bent abruptly ventrally, is cleft and forms two long apical widely separated spines. The dorsal portion consists of a long slender, curved ventral process from which arises an elongate, broader dorsal process at the base.

This species is known to occur in Ohio, Illinois and Minnesota.

Iowanus bullatus (DeLong)

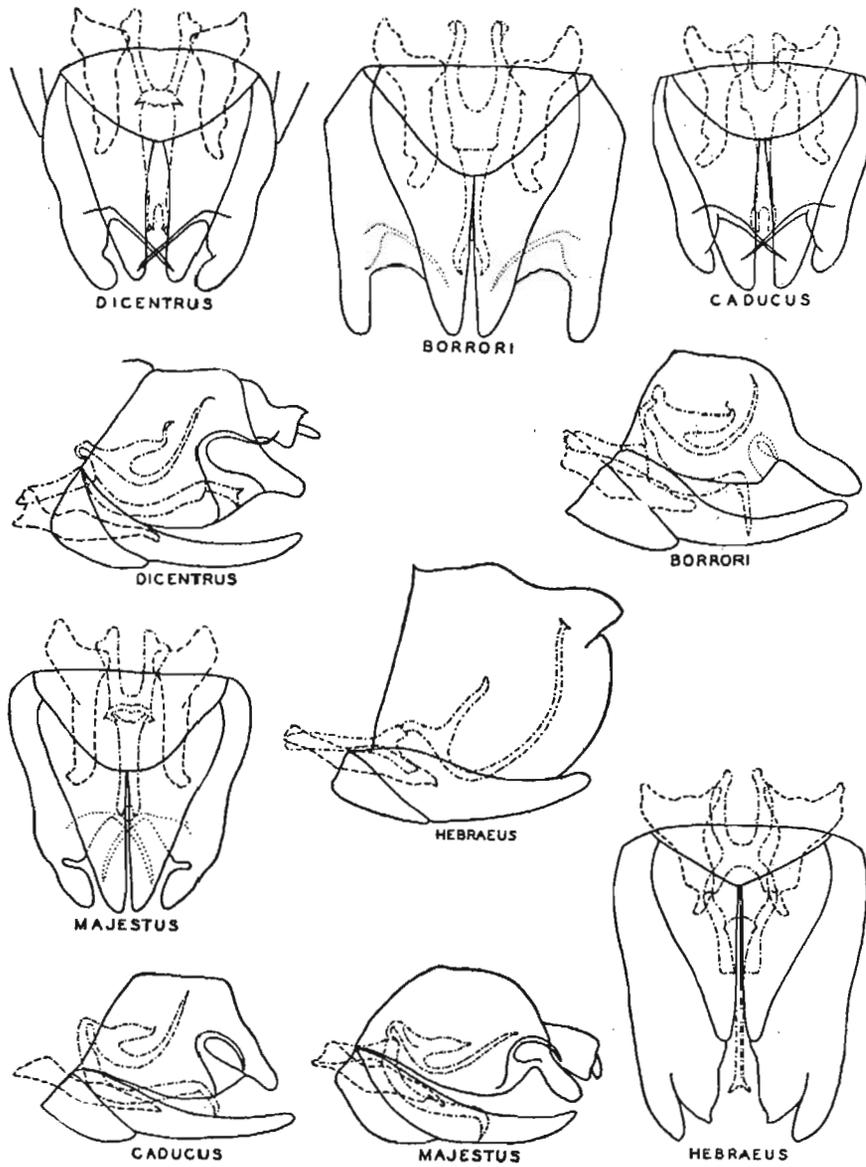
Texananus bullatus DeLong, Ohio Jour. Sci., 39 : 237, 1939.

Resembling *majestus* in form and coloration but distinguished from it by the broader, shorter, convexly rounded male plates and with a broadened basal lobe of aedeagus. Length male 9 mm.; female 10 mm.

Vertex broad, bluntly produced, length at middle more than half the basal width between the eyes. The vertex is marked with a pair of dark points above the apex and a broad straight interrupted dark band between the eyes.

The female last ventral segment is rather deeply broadly emarginate either side of a pair of approximate produced median teeth separated by a deep narrow incision extending half way to the base. The male plates are shorter than the pygofer and almost half as broad as long. The ventral portion of the aedeagus is cleft for a short distance at apex, forming a pair of blunt teeth which are slightly curved ventrally. The dorsal portion of the aedeagus with a long slender process curving caudally then dorsally from which arises a dorsal process at base which is rather broad, forming a rounded lobe. The caudal process of the pygofer is short and broad and broadly rounded.

This species is known from New Mexico only.



Ventral and lateral views of male genitalia of species of *Iowanus* in situ as labeled.

***Iowanus dicentrus* (DeLong)**

Texananus dicentrus DeLong, Ohio Jour. Sci. 39 : 236, 1939.

In form, general appearance and coloration this species resembles *majestus*. Length male 8.5 mm.

Vertex bluntly angled, about three-fifths as long at middle as width between the eyes. The vertex is marked with a pair of brown spots just above apex. There is a transverse band between eyes interrupted at middle and forming a right triangular spot on either side, with the base of triangle along the median line.

The male plates are long, narrowed to bluntly rounded apices. The pygofer are shorter than the plates, the caudal lobe is elongate and narrow. The ventral portion of the aedeagus is forked for about one-fourth of its length at apex and each branch is conspicuously bifid at the apex, bearing a prominent dorsal and a ventral tooth. The dorsal portion of the aedeagus is composed of a long slender process which curves caudally then dorsally almost to the dorsal wall of the pygofer and a shorter dorsal process arising at the base and tapered to a blunt apex.

This species is known only by the type collected in Illinois. The aedeagus of the male is distinct.

***Iowanus lyratus* n. sp.**

Resembling *majestus* in form and coloration but with male genitalia distinctive. Length 9-11 mm.

Vertex broad, scarcely angled, almost parallel margined, not quite twice as wide between eyes at base as median length.

Color of vertex pale, a pair of oblique pale brownish lines extending from beneath the ocelli across margin of vertex and terminating in a pair of proximal spots just above margin at apex. A broad black transverse band just back of ocelli interrupted at middle by a brownish longitudinal line. A pair of brownish dashes on base nearer each eye than middle. Pronotum with darker markings on anterior half. Elytra with ramose pigment lines and a few darker spots.

Female last ventral segment with posterior margin slightly emarginate between humeral angles and median produced portion which is narrowly incised nearly half way to the base. This incision forms a pair of approximate slightly produced, pointed teeth. The median third of segment embrowned. Male plates rather broad and short, bluntly pointed at apex. Styles rather broad at base, narrowed on apical two-thirds. Aedeagus with a ventral process which is long, slender and bifid for more than two-thirds its length; its two arms forming a lyre-shaped structure. The dorsal portion bears a basal process which is rather thick and shorter. The ventro-apical process is longer, slender, curved apically and dorsally.

Holotype male, Atlanta, Ga., September 14, 1939; allotype female same, August 27, 1939, and male paratype same locality, September 2, 1939; all collected by P. W. Fattig.

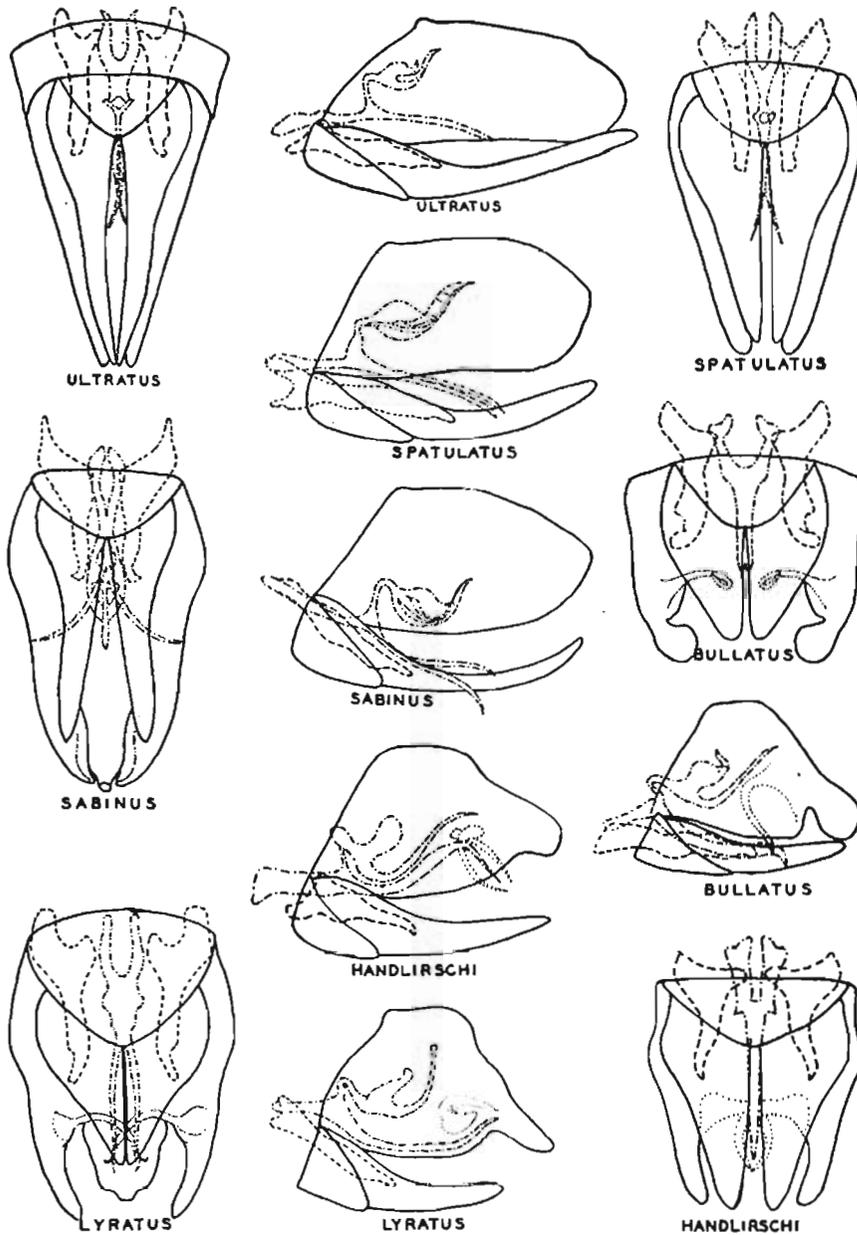
***Iowanus handlirschi* (Ball)**

Phlepsius handlirschi Ball, Annals Ent. Soc. Amer. 11: 383, 1918.

Resembling *majestus* in form and coloration, but differing by having a different aedeagus, shorter blunter apical lobes on the pygofer and styles that are short, narrowed and sharply pointed at the apex. Length 9-10 mm.

Vertex blunt, transverse. The transverse dark band between the eyes is widened on the disc and interrupted in the middle. A pair of proximal spots are just above apex. Pronotum with coarse brown irrorations.

The female last ventral segment is almost truncate on posterior margin with a narrow U-shaped notch extending more than half way to the base. Male plates rather long, narrowed to bluntly pointed apices. Styles short, broad at base, rapidly narrowed at about half their length to form on the inner margin narrow, produced, sharply pointed apices. The aedeagus with a ventral and a dorsal process. The ventral portion is long, slender, curved dorsally, the



Ventral and lateral views of male genitalia of species of *Iowanus* in situ as labeled.

apical fourth bent ventrally and very narrow. The dorsal portion with a pair of dorsal, basal lobes from which a long, slender, tapering process extends ventrally then curves caudally and extends caudo-dorsally, and shorter than ventral portion. The apical lobes of pygofer short and broad, not constricted at base.

This species is known from Mexico only. It was originally described from Mexican material from Guerrero and has since been collected in other localities. The types have been examined and the illustrations made from Mexican material compared with the types.

***Iowanus apicalis* n. sp.**

Resembling *handlirschi* in form and general appearance but with anterior half of vertex ivory white unmarked and with female genital segment more produced like *sabinus*. Length, female, 8 mm.

Vertex broad, bluntly angled, about one-half wider between eyes at base than median length.

Color pale with ramose pigment lines and dark spots or marks. Vertex with a broad black bar between the anterior margins of eyes broken at middle. The ends next the eyes narrower and split into divergent portions, one extending to ocellus and one directed posteriorly. Portion of vertex anterior to transverse bar, ivory white. Pronotum rather evenly mottled with dark brown. Scutellum with a few pale spots, elytra rather heavily marked with dark brown ramose pigment lines and spots.

Female last ventral segment almost truncate to median fifth which is produced and broadly shallowly notched at apex forming a pair of short pointed apical teeth.

Holotype female and paratype female collected at Mexcala, Gro., October 22, 1941 (K. 247) by Good and DeLong. A female specimen collected by Dr. Dampf at Tierra Blanca, Veracruz, July 29, 1932 (MF 2655) is also considered to belong to this species.

***Iowanus sabinus* (Sanders & DeLong)**

Phlepsius sabinus Sanders and DeLong, Penna. Dept. Agri. Bur. Plant Ind. Bull. 3: 15, 1920.

Resembling *spatulatus* in general form but more heavily marked with black and brown and with distinct genitalia. Length 6.5-7 mm.

Vertex bluntly, broadly angled, white anteriorly with two dark triangular spots just above apex. The transverse band between eyes is broad, irregular, extending to pronotum at middle and is black in color. The pronotum is pale, variously mottled with brown.

The female last ventral segment with posterior margin almost truncate to a median broad brown-tipped produced bifid tooth which is nearly one-third the length of the segment. Male plates long, rather narrow, bluntly pointed at apex. Styles tapered to form narrow apical half. Aedeagus with a long narrow bifid ventral portion and a dorsal portion which consists of three approximate processes. The ventral and median processes are long, narrow and curved. The dorsal process is broadened and shorter and lies within the concavity formed by the other processes.

Allotype male, Globe, Arizona, June 13, 1935, collected by F. H. Parker. This species was originally described from Arizona and has not been reported for other states.

***Iowanus spatulatus* (Van Duzee)**

Phlepsius spatulatus Van Duzee, Trans. Amer. Ent. Soc. 19: 78, 1892.

This species is variously marked but without the definite black transverse bar between the eyes. Length 7-7.5 mm.

Vertex broad, bluntly produced, scarcely angled, more than one and one-half times as wide between eyes at base as median length.

Color pale, white to buff with dark brown markings. Vertex with a pair of approximate brown spots just above margin of vertex. An indefinite brownish transverse band between

the anterior margins of the eyes. Pronotum mottled with brown. Elytra pale with brown ramose pigment lines and spots.

Female last ventral segment with a distinct notch at middle of the posterior margin. This forms a blunt produced tooth each side of notch, between which and the humeral angle on each side the posterior margin is shallowly excavated. Male plates long, gradually tapered to acute apices. Styles broad at base, narrowed at about half their length and produced as narrow, almost parallel margined apices. The aedeagus has a pair of long slender ventral processes and a dorsal process composed of two parts—a ventral curved process and a shorter dorsal process.

This is a common and widely distributed species abundant in the herbaceous habitats in the southwestern U. S.

Iowanus ultratus (DeLong)

Texanonus ultratus DeLong, Bull. Brook. Ent. Soc. 38: 126, 1943.

Resembling *spatulatus* in general form and appearance but with vertex more broadly rounded. The male plates are extremely long and narrow. Length, male, 7-8 mm.

The vertex is broadly and very bluntly angled, almost twice as wide between the eyes at base as median length. In color the vertex is pale yellow with the irregular brown irrorations forming a broken transverse band between the eyes. The pronotum is rather uniformly irrorate with brown.

The male plates are distinctly narrowed at one-third the distance from base, and produced as long narrow apical processes with pointed tips. Plates more than twice as long as combined basal width. The styles are long and narrow with blunt apices. The ventral portion of aedeagus with a pair of long slender apical processes which extend about one-half the length of the plates. The dorsal portion shorter with a ventral elongate process and a dorsal broader and shorter process.

This species is known from Arizona and Arkansas only.

Iowanus hebraeus (Ball)

Phlepsius hebraeus Ball, Annals Ent. Soc. Amer. 11: 383, 1918.

A large, rather distinctly marked species resembling *majestus* in general appearance. Length 8.5-9 mm.

Vertex about twice as wide as long, a little longer on middle than next the eyes. Vertex with the pair of small spots above apex and the dark transverse band interrupted at middle. Pronotum with several dark spots along anterior margin.

The female last ventral segment with a posterior margin which is slightly produced either side of a short broad median notch. Male styles narrow, decidedly shorter than pygofer, gradually tapered to bluntly pointed apices. Styles short, gradually narrowed to form short apical finger-like apices. Aedeagus long, slender, slightly bifid at apex. A short narrow process extends dorsally near base.

The male structures are quite different in type from those of the *majestus handlirschi* group.

This species was described from Mexico and has not been found in the United States.