

# A REVIEW OF THE NORTH AMERICAN SPECIES OF TEXANANUS (HOMOPTERA—CICADELLIDAE) NORTH OF MEXICO

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The genus *Texananus* was established by Ball in 1918 and *Phlepsius* (*Texananus*) *mexicanus* was designated as the genotype. In characterizing this group Ball stated, "... with head narrower than pronotum, front rather broad, convex, widening above the antennae and approaching the eyes. Vertex bluntly conical, the margin to the front rounding. Pronotum large, broadly and evenly rounding in front; the lateral margin long, oblique and definitely carinate."

The species occurring in the United States have been described in various journals (partly as *Phlepsius*). An attempt has been made here to bring together all this material from various sources, illustrate the diagnostic characters of both sexes in so far as these are known, establish further synonymy and present a key for their separation. *T. areolatus* with its sharp margined vertex and genitalic structures seems to be distinct from the other species. A new subgenus *Aridanus* is suggested for it.

Certain groups of closely related species are found in this genus. The short robust species of the *ovatus* group are represented by *ovatus*, var. *distinctus*, *denticulus*, *biatus*, *gladius*, *latipex*, *lathropi*, *delicatus*, *pergradus*—probably the same as *delicatus*—*sonorus* and *deversus*, a new species described below. Four species, *superbus*, *angus*, *vermiculatus* and *oregonus*, represent another small group. *T. excultus*, *doroithyae*, *incurvatus* and *neomexicanus* comprise another group of closely related species. A fourth group is composed of *graphicus*, *marmor*, *monticolus* and *cumulatus*, which are quite similar in form. *T. decorus* and *dolus* are similar and are closest in form to the *ovatus* group. *T. rufusculus* is rather distinct in type of genitalia. It is probably most closely related to *decorus*.

## KEY TO SUBGENERA

1. Vertex convex above, sloping to margin which is thick although angled with the front.....Subgenus *Texananus*
- 1'. Vertex depressed on disc behind margin, definitely excavated, the margin sharp, foliaceous. The face is more flattened.....Subgenus *Aridanus*

### Subgenus *Aridanus* nov.

This group is characterized by a vertex narrower than the pronotum and which is definitely depressed or excavated on the disc, margin of vertex sharply angled with front, thin and foliaceous. The aedeagus of the male is composed of a single process with a broad erect basal portion.

Genotype *Texananus areolatus* (Baker).

### *Texananus areolatus* (Baker)

*Phlepsius areolatus* Baker. Can. Ent. 30: 30, 1898.

A broad, robust species, ivory white, tessellate with brown fuscous and black. Length 6 mm.

Vertex broad, about one-third longer on middle than next the eyes. Color—entire insect mottled or tessellate, anterior margin of vertex alternating with ivory and black spots. Irrorations of elytra often forming definite areolar spots.

Female seventh sternite with posterior margin broadly, shallowly emarginate; a short V-shaped notch at apex, a brown spot on either side. Male plates short, broad, rounded, almost semicircular. Aedeagus composed of a basal portion which is enlarged dorsally and produced, bearing a narrowed, anteriorly curved, dorsal process. A long ventral process is narrow and produced caudally. Pygofer short, broadly truncate posteriorly.

This species was originally described from specimens collected in Kansas. It is a typical prairie species and has been found only in areas of prairie in the central states, particularly those in the Mississippi and Missouri valleys.

Subgenus *Texananus* Ball.

The vertex margin is angled with the front but thickened. Vertex convex above, sloping to the margin.

KEY TO SPECIES OF SUBGENUS *TEXANANUS*

1. Ninth segment with a tubular ovipositor (female)..... 2
- 1'. Ninth segment without a tubular ovipositor, but with two triangular or rounded plates (male)..... 14
2. Median portion of seventh sternite produced beyond the posterior margin of the lateral angles..... 3
- 2'. Median portion of seventh sternite either excavated or notched, not as long as lateral margins..... 4
3. Posterior margin of seventh sternite roundedly produced from base to form a pair of median approximate rounded teeth..... *rufusculus*
- 3'. Posterior margin of seventh sternite with four distinct teeth on median half. The outer tooth on each side separated from the inner pair by a rounded notch.... *denticulus*
4. Seventh sternite short, posterior margin concavely rounded, notch at middle appearing square with lateral margins parallel..... *lathropi*
- 4'. Seventh sternite without parallel margined notch or, if U-shaped, without concave posterior margin..... 5
5. Posterior margin of seventh sternite broadly excavated without a median notch..... 6
- 5'. Posterior margin of seventh sternite either not broadly excavated or, if so excavated, with a median notch..... 10
6. Lateral portions of preceding sternite conspicuous at lateral margins or along posterior lateral margin of excavation of seventh sternite..... 7
- 6'. Without visible lateral portions of preceding sternite in excavated portion of seventh sternite..... 9
7. Lateral portions of sixth sternite decidedly produced on posterior lateral margin of seventh sternite..... *dorothyae*
- 7'. Visible lateral portions of sixth sternite smaller, less conspicuous, usually not produced posteriorly..... 8
8. Seventh sternite long with a rather deep and more narrowed excavation.... *neomexicanus*
- 8'. Seventh sternite shorter, more broadly excavated..... *incurvatus, excultus*
9. Seventh sternite broadly roundedly notched almost to base..... *vermiculatus*
- 9'. Seventh sternite with shallow excavation reaching not more than half way to base, *superbus, angus, oregonus*
10. Posterior margin of seventh sternite with a deep, rather broad, V-shaped notch at the base of which on either side is a distinct rounded notch. The V-shaped median notch separated from the lateral rounded notches by a distinct tooth..... 11
- 10'. Median notch broad and shallow or with rounded apex..... 12
11. Posterior margin of seventh sternite rounding from base without distinct lateral angles..... *cumulatus, graphicus*
- 11'. Posterior margin of seventh sternite with more distinct lateral angles. *monticolus, marmor*
12. Seventh sternite with definite produced lateral angles..... 13
- 12'. Lateral margins of seventh sternite rounded from base to produced posterior margin—without lateral angles..... *decorus, dolus*
13. Seventh sternite short, median notch shallow, very narrow at apex, *ovatus, pergradus, latipex, distinctus*
- 13'. Seventh sternite rather long, lateral angles strongly produced, broadly rounded. Median notch extending more than half way to base, notch U-shaped, broad at apex.... *sonorus*
14. The aedeagus with a basal portion, dorsally produced and connected to ventral portion by a narrow, usually elongated process..... 18

14 <sup>l</sup> .	The aedeagus consisting of one process or with the basal portion broadly attached to body of aedeagus.....	15
15.	Pygofer almost twice as long as plates.....	<i>neomexicanus</i>
15 <sup>l</sup> .	Pygofer shorter than or not more than one-half longer than plates.....	16
16.	Pygofer shorter than plates.....	<i>dorothyae</i>
16 <sup>l</sup> .	Pygofer longer than plates.....	17
17.	Aedeagus conspicuously thicker on base and at middle than apical portion; pygofer slightly exceeding plates.....	<i>excultus</i>
17 <sup>l</sup> .	Aedeagus tapered at base and at apex, slightly broadened at point of attachment to connective; pygofer exceeding plates by about one-half their length.....	<i>incurvatus</i>
18.	The ventral portion of the aedeagus composed of a pair of divergent processes, the dorsal portion single.....	19
18 <sup>l</sup> .	The ventral and dorsal portions of the aedeagus each composed of a single process.....	22
19.	Ventral aedeagus processes blunt at apex, enlarged by dorsal and ventral finger-like processes.....	<i>oregonus</i>
19 <sup>l</sup> .	Ventral aedeagus processes elongate, slender at apex.....	21
20.	Ventral processes long, curved with a branched portion arising at about half their length.....	<i>vermiculatus</i>
20 <sup>l</sup> .	Ventral processes shorter, straight, or slightly curved at apex.....	21
21.	Male plates short and broadly rounded, greatly exceeded in length by pygofers.....	<i>superbus</i>
21 <sup>l</sup> .	Male plates triangular, bluntly pointed at apices, almost as long as pygofers.....	<i>rufusculus</i>
22.	Ventral portion of aedeagus straight, pointed on ventral margin at apex with a pair of pointed teeth on dorsal margin just before apex.....	<i>ovatus</i> & var. <i>distinctus</i>
22 <sup>l</sup> .	Ventral portion of aedeagus bent or, if straight, without teeth or other projections.....	23
23.	Ventral portion of aedeagus bent abruptly ventrally then narrowed and pointed at apex.....	<i>deversus</i>
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24.	Dorsal aedeagus with the apex bifid.....	<i>latipex</i>
24 <sup>l</sup> .	Dorsal aedeagus curved to form a pointed apex.....	25
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28.	Base of dorsal aedeagus portion broadened and thickened.....	29
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- 34'. Styles elongate, apical half narrowed and produced, apices narrow, blunt. . . . . *graphicus*  
 35. Ventral aedeagus curved upward at apex, dorsal aedeagus elongated; plates short, rounded, greatly exceeded by pygofer. . . . . *monticolus*  
 35'. Ventral aedeagus more slender, straight, dorsal aedeagus shorter, thicker at base; plates more elongate, blunt at apex, exceeded less by pygofer. . . . . *cumulatus*

***Texananus rufusculus* (Osborn & Lathrop)**

*Phlepsius rufusculus* Osb. & Lath. Anns. Ent. Soc. Amer. 16: 340, 1923.

A rather large robust reddish brown species resembling *superbus* in general form. Length 7-7.25 mm.

Vertex one-fourth longer on middle than next the eyes. Color yellowish with reddish brown irrorations, anterior border of vertex ivory yellow.

Female seventh sternite broadly, roundedly produced from base to a pair of short, broadly rounded teeth separated by a narrow notch. Male plates rather long, triangular, with bluntly pointed apices. Aedeagus with a pair of ventral lateral processes which are divergent, and a median process which is enlarged at the base, abruptly tapered to a long, slender, tapering process.

Originally described from Ohio and Missouri, it has since been collected in southern Illinois. It has been collected only in moist woodland or wooded floodplain areas on rank growing herbaceous vegetation.

***Texananus neomexicanus* (Baker)**

*Phlepsius neomexicanus* Baker. Psyche 7: 13, 1895.

Related to *excultus* and *incurvatus* but with a much longer pygofer. Length 7-8 mm.

Vertex produced and bluntly angled, almost two-thirds as long at middle as basal width between the eyes.

Color: Pale with few dark markings on vertex, pronotum and scutellum. Elytra with brown veins and rather heavily marked with brown pigment lines.

Genitalia: Female seventh sternite with broad, prominently produced lateral angles between which the posterior margin is broadly, deeply, concavely excavated almost to base. Portions of the preceding segment are visible at either side. Male plates rather long, apical half tapered to pointed apices. Style rather broad, the apex with a curved finger-like process arising on inner margin, curved outwardly. Aedeagus attached to connective at about its middle. The median portion broadened. The basal portion narrowed and extending dorsally, the apical third narrowed, recurved on basal portion and tapered to a slender apex. The pygofer is extremely long, almost twice as long as plates.

This was described from New Mexico and is found only in the southwestern states.

***Texananus excultus* (Uhler)**

*Jassus excultus* Uhler. Bull. U. S. Geol. & Geog. Surv. 3, 467, 1877.

Related to and resembling *superbus* in general form and size. Length 6-6.5 mm.

Vertex about one-fourth longer on middle than next the eyes. In color the vertex, pronotum and scutellum are tawny yellow, the elytra are darker brownish.

Female seventh sternite broadly excavated two-thirds the distance to base. Not far from the lateral margins on each side, the sides of the sloping lateral margin are slightly produced and rounded. Portions of the underlying segment are exposed at the sides of the excavation. Male plates broad, triangular, apices bluntly pointed. Aedeagus with a basal, dorsally produced process which is tapered and bluntly pointed dorsally. Apical portion narrowed, tapered to a slender pointed apex which is curved dorsally and anteriorly, almost touching the basal portion. Pygofer short and pointed, not exceeding plates.

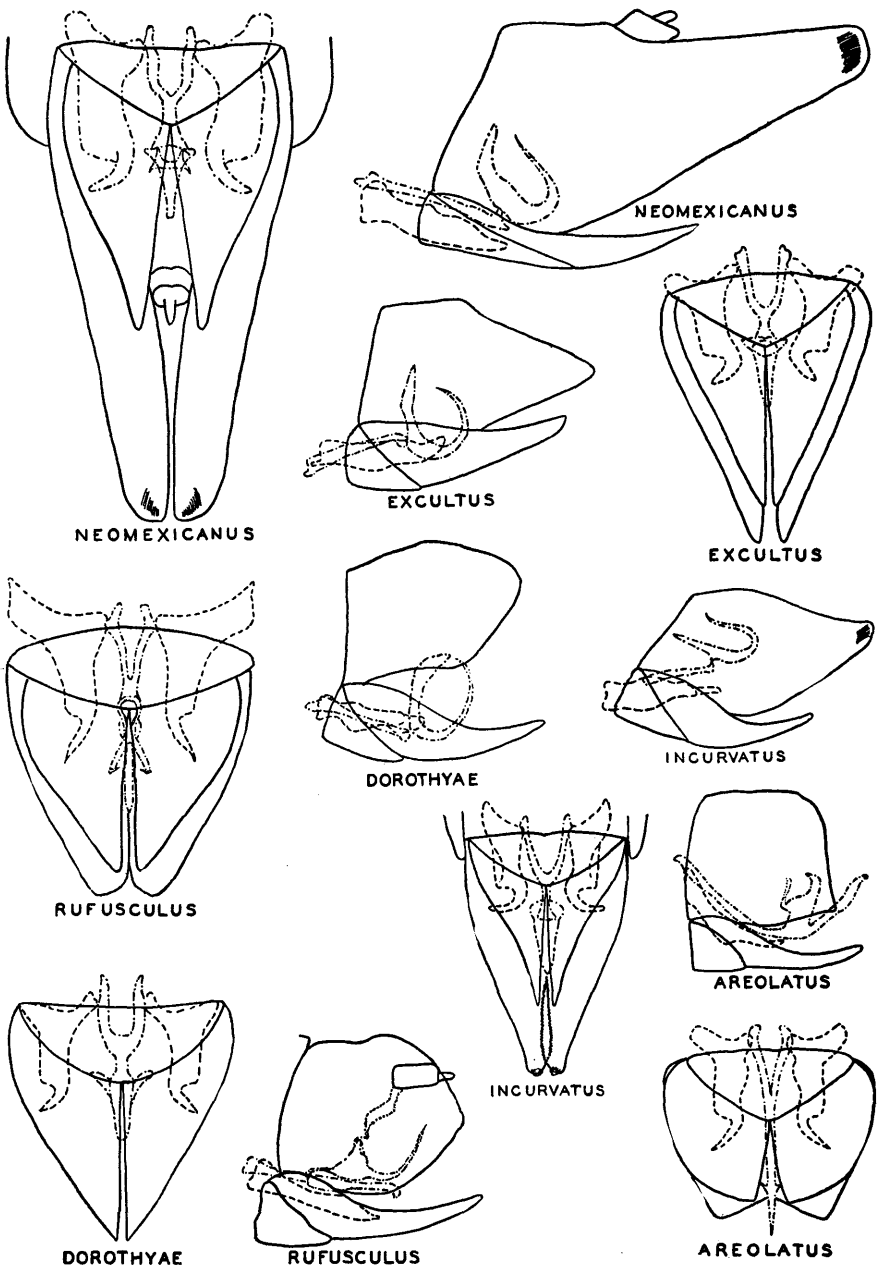
Originally described from the southern states, it occurs throughout the eastern and central states.

***Texananus dorotheae* DeLong**

*Texananus dorotheae* DeLong. Anal. Esc. Nac. de Cien. Biol. 1: 387, 1939.

Related to *excultus* and *incurvatus*. Length 6.5 mm.

Vertex bluntly angled, almost one-half longer at middle than next the eyes, less than twice as wide between eyes as median length. Color yellowish with pale brownish markings.



Lateral and ventral views of male genitalia of species of *Texananus* as named.

Female seventh sternite short, broadly concavely excavated almost to base; the lateral portions of the underlying segment conspicuous for their entire width beyond the seventh sternite. Male plates rather broad, triangular, apices pointed. Plates as long as or exceeding pygofer, which are bluntly produced and rounded at apex. Aedeagus similar to *excultus*, U-shaped with the dorsal ends curved inwardly, sometimes proximal. The basal, dorsal end is broadest, gradually tapered to a slender pointed apex.

It occurs in the southwestern states. The types are from Texas, Arizona and Mexico.

***Texananus incurvatus* (Osborn & Lathrop)**

*Phlepsius incurvatus* Osb. & Lath. Anns. Ent. Soc. Amer. 16: 346, 1923.

A species with the head distinctly angulate, related to *neomexicanus*. Length 5.5–5.7 mm.

Vertex a little wider than length at middle, nearly twice as long at middle as next the eyes. Color gray, irrorate with fuscous.

Female seventh sternite rather short, broadly, deeply, roundedly excavated almost to the base. The lateral portions of the preceding segment visible at either side of the excavation. Male plates elongate, triangular, with acutely pointed apices, about two-thirds as long as the pygofer. The style is rather short and broad with an outwardly curved finger-like process at apex originating on the inner margin. The aedeagus is U-shaped. As compared to *neomexicanus*, the portion of the aedeagus is more narrowed at the point of contact with the connective than in *neomexicanus*. In *incurvatus* the pygofer exceeds the plates by about one-half their length, in *neomexicanus* the pygofer exceeds the plates by about their length.

This species was originally described from Arizona specimens. It occurs in the southwestern United States and Mexico.

***Texananus oregonus* Ball**

*Texananus oregonus* Ball. Pan-Pac. Ent. 8: 85, 1931.

Related to *superbus* but with distinct male genital structures. Length 6.5 mm.

Vertex bluntly angled, about two-thirds as long at middle as basal width between the eyes. Color brown with black markings at ends of claval veins along posterior margins of elytra.

Female seventh sternite with lateral margins sloping to posterior margin which is broadly, rather shallowly excavated, less than half the distance to the base. Male plates short and broad, together semicircular in shape, exceeded in length by the pygofer. The dorsal median process of the aedeagus is broad at base, narrowed, and curved apically. The two ventral, lateral processes are broadened dorsoventrally and in lateral view are broadened at the apex and notched producing fingerlike processes which extend dorsally, ventrally and caudally.

This species was originally described from Oregon, Washington and California and has since been taken in Arizona.

***Texananus vermiculatus* DeLong**

*Texananus vermiculatus* DeL. Ohio Jour. Sci. 38: 42, 1938.

Related to *superbus* which it resembles in general appearance. Length 6 mm.

The vertex is blunt, almost twice as wide between eyes as the median length. Color yellowish with brownish and black markings.

The female seventh sternite is deeply and rather sharply excavated almost to base, forming a broad V-shaped notch with the apex widened. Male plates short and broad, broadly rounded, together appearing semicircular in shape. The aedeagus with three processes. The median portion is short, enlarged at base and curved dorsally. The two lateral processes are long, slender, curved dorsally then ventrally at apex. A short branched process arises at about one-third the distance to apex. The pygofer is long and blunt at apex.

This species was described from specimens collected in Arizona and Texas.

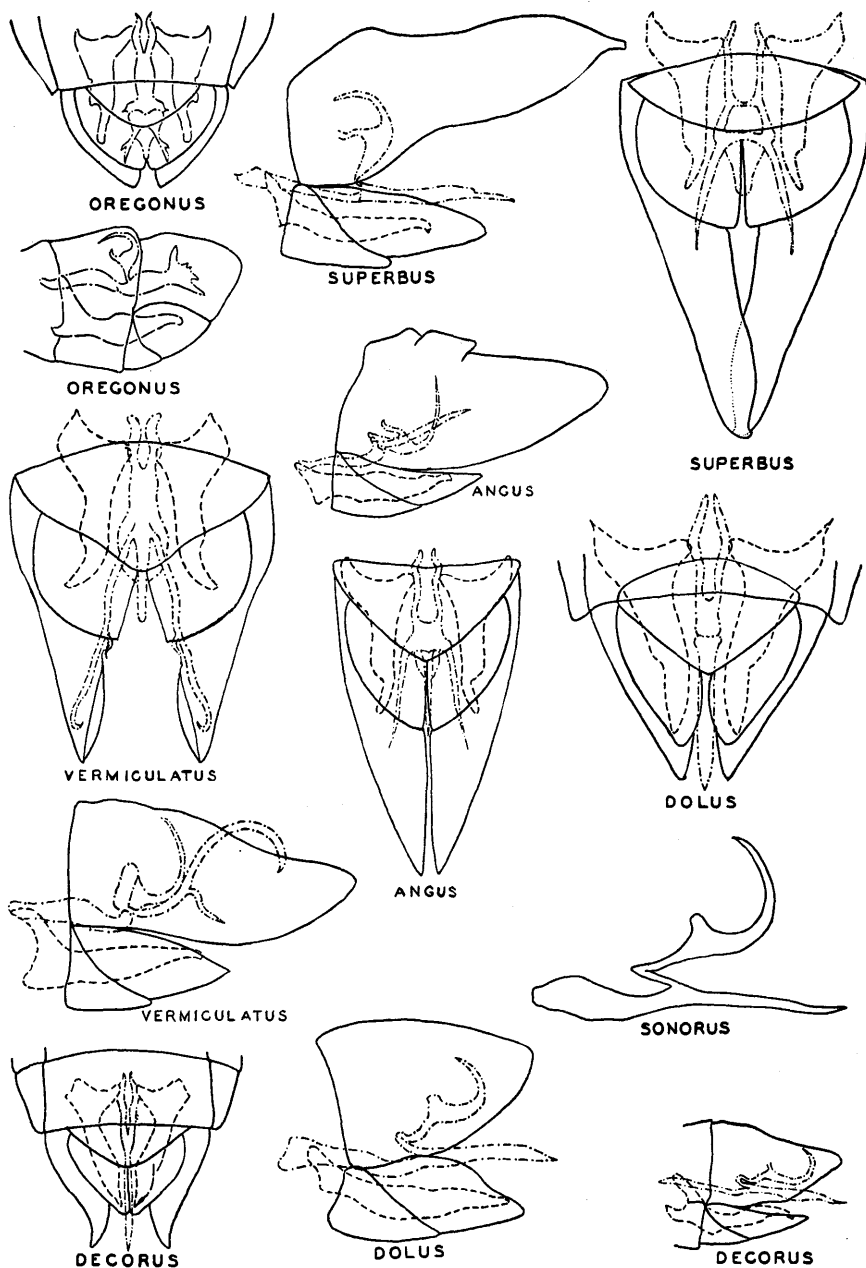
***Texananus superbus* (Van Duzee)**

*Phlepsius superbus* Van Duzee. Trans. Amer. Ent. Soc. 19: 81, 1892.

This species is broad, narrow headed and robust. Length 6 mm.

Vertex roundedly angulate, about two-thirds longer on middle than next the eyes. Color pale brown irrorate with black and dark brown.

The female seventh sternite is broadly excavated half way to the base. The apex of emargi-



Lateral and ventral views of male genitalia of species of *Texananus* as named except *sonorus* which is lateral view of aedeagus only.

nation occupying about one-third of the entire width between the lateral angles is truncate. Male plates short, broad, together semicircular. Aedeagus with a pair of long ventral processes which are abruptly narrowed on dorsal margin near apex and produced in narrow pointed apices. Dorsal process short, sickle-shaped, with the curved apex directed dorsally and anteriorly. Pygofer long, tapered, concavely narrowed on ventral margin to a rather pointed apex.

Originally described from specimens from North Carolina and Arizona, it is a rather widely distributed species occurring throughout the southern United States and in several of the more northern states it occurs on grasses in meadows and pastures.

#### ***Texananus angus* DeLong**

*Texananus angus* DeLong. Ohio Jour. Sci. 38: 42, 1938.

Related to *superbus* and the Mexican species *curtus* but with distinct male genital characters. Length 6-6.5 mm.

Vertex bluntly angled, about one-third longer at middle than length next the eyes. Color brownish with darker brown markings.

Female seventh sternite broadly, angularly excavated more than half way to base; the apex of excavation rounded. Male plates broad, rather short and bluntly pointed, almost rounded, at apex. Aedeagus with three processes as in *superbus*, a pair of straight processes between which is a median portion with an enlarged base and an elongate slender apical two-thirds which is curved upward. The pygofer is elongate and blunt at apex, about twice as long as plates, but shorter than *superbus*.

Described from specimens collected in Texas, Oklahoma and Kansas.

#### ***Texananus decorus* (Osborn & Ball)**

*Phlepsius decorus* Osb. & Ball. Proc. Ia. Acad. Sci. 4: 230, 1897.

A rather short, robust species with flaring elytra. Length 6 mm.

Vertex broadly, roundedly angulate, about one-third longer on middle than against the eyes. Color white marked with tawny, a transverse pale band on vertex. Elytral commissural line on clavus with ivory white lobate spots.

Female seventh sternite with lateral margins rounded to posterior margin which is almost truncate; median third broadly, deeply excavated, with a broad, but not rounded, apex at the middle extending two-thirds the distance to the base. Male plates short and narrow, triangular apices roundedly angled. Aedeagus with a long, slender, blade-like ventral process and a rather long, slender, dorsal process with apical third curved dorsally.

Originally described from Nebraska and Iowa, it occurs commonly in grassy areas throughout the United States and the Mississippi and Missouri valleys.

#### ***Texananus dolus* DeLong**

*Texananus dolus* DeLong. Pan-Pac. Ent. 14: 186, 1938.

Related to *decorus* but with longer male plates and a broader aedeagus. Length 6.5 mm.

Vertex broadly rounded, about twice as broad between eyes as median length. Color white marked with brown. Elytra with a pale margin and spots along commissural line.

Female seventh sternite short, almost truncate, posterior margin with a V-shaped median notch about two-thirds the distance to base. A small notch on side walls of median notch either side is rounded to posterior margin. Male plates triangular and slightly divergent, apices bluntly rounded. Aedeagus in lateral view with a rather broad ventral portion which is pointed at apex on lower margin, the dorsal sloping to ventral margin; dorsal portion twice curved, the apical portion sickle-shaped, apical half tapered and pointed, curved dorsally and anteriorly.

This species was originally described from Utah and has been taken only in the Rocky Mountain region.

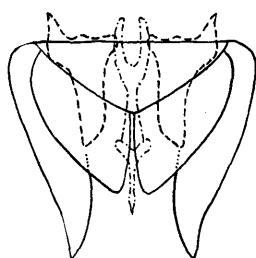
#### ***Texananus sonorus* (Ball)**

*Texananus sonorus* Ball. Bull. Brook. Ent. Soc. 31: 19, 1936.

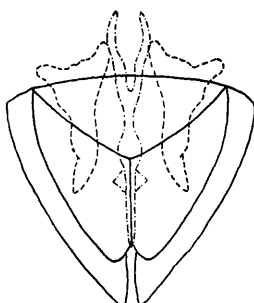
Related to *denticulus* which it closely resembles in type of male genitalia. Length, female, 6 mm.

In coloration it is rather distinct with a pale, conspicuous commissure with the vermiculate lines fine and more numerous along the white commissure. The female seventh sternite is rather

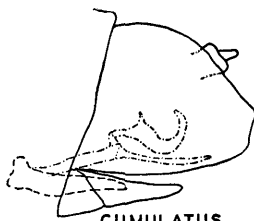




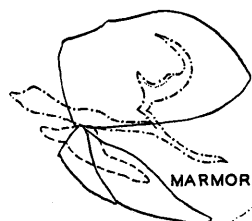
MARMOR



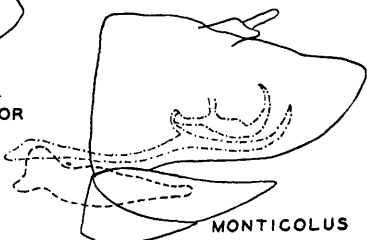
CUMULATUS



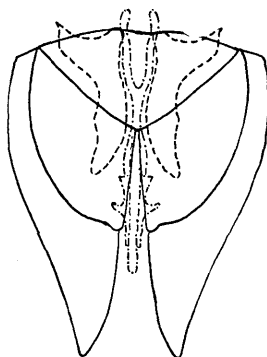
CUMULATUS



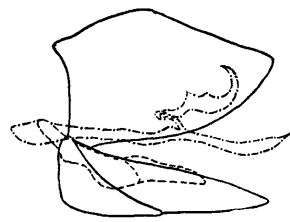
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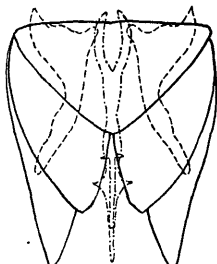
MONTICOLUS



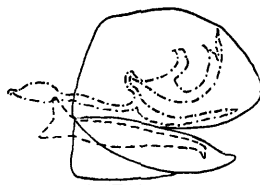
MONTICOLUS



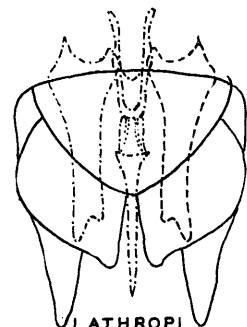
GRAPHICUS



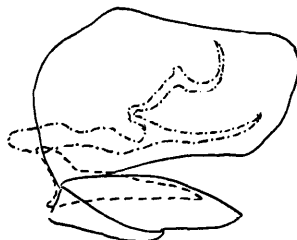
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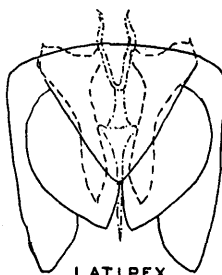
LATIPEX



LATHROPI



LATHROPI



LATIPEX

Lateral and ventral views of male genitalia of species of *Texananus* as named.

long with a rather broad U-shaped notch reaching more than half way to the base. The lateral angles are produced and rounded or bluntly angled. The male plates are broad and short, together appearing semicircular. The aedeagus is composed of two portions. The dorsal portion is sickle-shaped with a rather large base. The ventral portion is almost straight, tapered from base and narrowed to form a pointed apex.

The type specimens in the Ball Collection in the U. S. National Museum have been examined and the accompanying illustrations made from the types.

***Texananus ovatus* (Van Duzee)**

*Phlepsius ovatus* Van Duzee. Trans. Amer. Ent. Soc. 19: 79, 1892.

A small species, broad, short, ovate with a rather uniform brownish color. Length 5 mm.

Vertex bluntly angled, median length one-third to one-half greater than next the eyes. Color dull yellowish with brownish irrorations.

Female seventh sternite with lateral angles rather prominent between which the posterior margin is broadly, rather shallowly excavated. At the apex of the excavation is a small V-shaped notch. Male plates quite short, broadly rounded, broader than long and decidedly exceeded by the pygofer. The inner margins of the plates are divergent. Styles long, the apical two-thirds is narrow and rather broadly, bluntly rounded at the apex. The ventral portion of the aedeagus is straight, and rather heavy, sharply pointed on the ventral caudal margin and with a pair of pointed spines or teeth on the dorsal margin at the point where it begins to slope to the ventral apical pointed tip. The dorsal portion is concavely rounded on the dorsal margin either side of a median, broad, slightly produced tooth. The median portion just beyond tooth thickened; the apex is narrowed to a slender sharp pointed tip which is curved strongly dorsally and anteriorly.

This species was described from specimens collected in Texas and is known to occur only in the southwestern states.

***Texananus ovatus* var. *distinctus* (Lathrop)**

*Phlepsius distinctus* Lathrop. Ohio Jour. Sci. 17: 129, 1916.

The coloration is conspicuous, being ivory white marked with black or dark brown. The elytra are ivory white with dark markings.

Although slightly larger than *ovatus* and with a striking color pattern this form cannot be separated from *ovatus*, having identical male genitalia. In view of the color pattern it has been placed as a varietal form under *ovatus*.

All the specimens that have been observed have been collected in the southeastern portion of the United States.

***Texananus bialtus* DeLong**

*Texananus bialtus* DeLong. Pan. Pac. Ent. 14: 185, 1938.

Closely related to *latipex* and *pergrada*. Length 6.5 mm.

The vertex is bluntly angled, about two-thirds as long at the middle as the basal width between the eyes. The color is dull yellow with dark brown markings, the elytra are creamy white rather sparsely marked.

The male plates are short, together almost semicircularly rounded. Styles broad at base, the apical two-thirds elongate and slender, blunt at apex, pointed on the inner margin. The ventral portion of the aedeagus in lateral view is broadened at the base and tapers to a slender pointed apex. The dorsal portion is sickle-shaped with the base thickened and broadened. The apical half is slender and tapers to a sharp pointed apex.

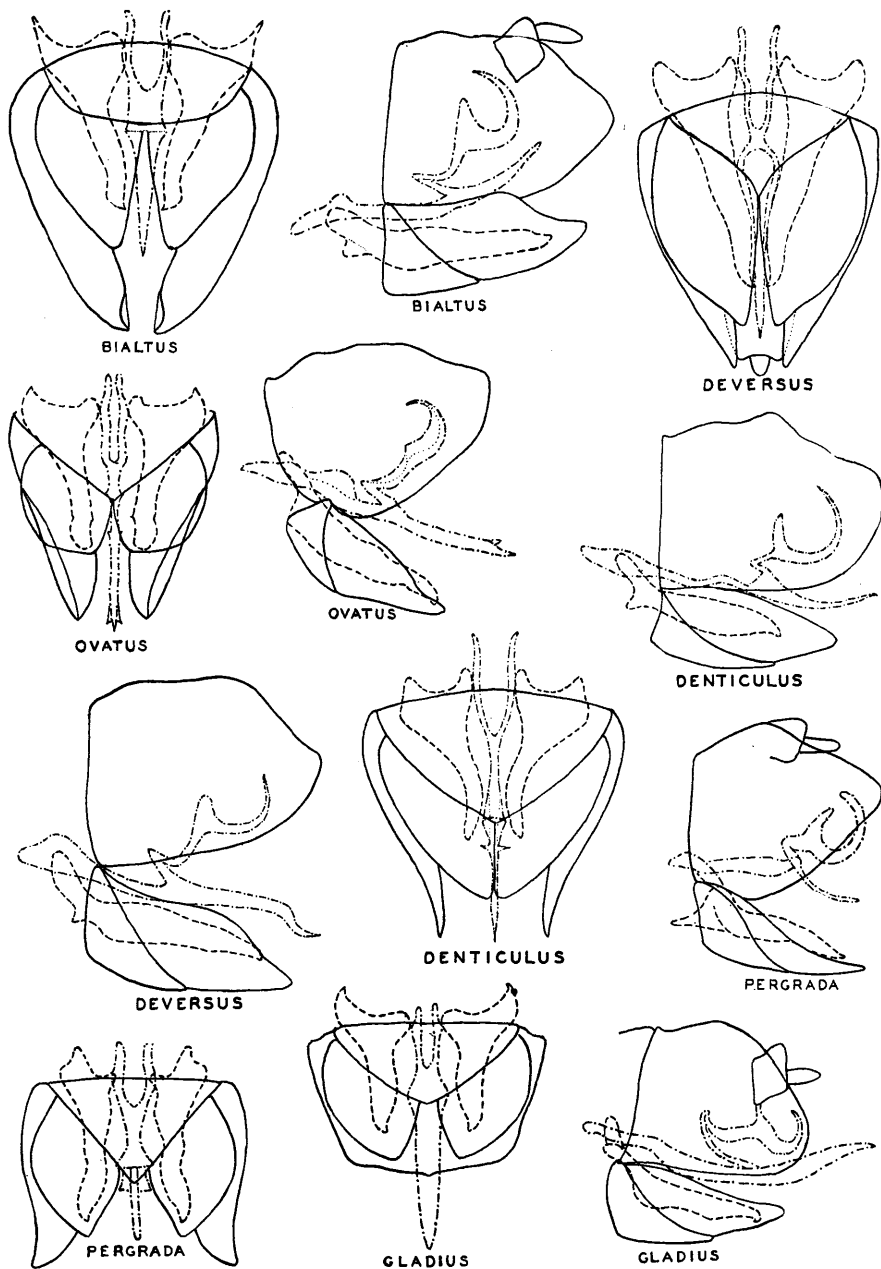
This species was described from material collected in the Davis Mountains of Texas.

***Texananus deversus* n. sp.**

In form, appearance and coloration resembling *ovatus* but slightly larger and with distinct genitalia. Length, male, 5.5 mm.; female, 5 mm.

Vertex blunt, scarcely angled, more than half as long at middle as basal width between the eyes.

Color: Appearing pale brown, gray with ramose brown pigment lines. Vertex with a pale brownish triangular spot just above and either side of apex. A minute black spot just above each ocellus. The basal half of apex rather heavily marked with brownish irrorations. Pronotum



Lateral and ventral views of male genitalia of species of *Texananus* as named.

rather heavily marked with brown. Scutellum pale with three small black dots on central portion, two just back of margin of scutellum. Elytra with a pale border along scutellum and a pale commissural lobate area.

**Genitalia:** The female seventh sternite short, lateral angles rounded, posterior margin broadly concavely angularly excavated from lateral angles to a short median V-shaped notch which extends almost to the base. Male plates short, two-thirds as broad as long, apices bluntly pointed. Styles long and narrow, apices blunt. Dorsal portion of aedeagus with terminal portion sickle-shaped curved upward. Ventral portion elongated, extending caudally with apex curved downwardly, then apically, narrowed and sharply pointed.

Holotype male, allotype female and female paratypes collected at Brownsville, Texas, May 25, 1939, by D. J. and J. N. Knull.

***Texananus denticulatus* (Osborn and Lathrop)**

*Phlepsioides denticulatus* Osb. & Lath. *Ann. Ent. Soc. Amer.* 16: 345, 1923.

A small species resembling *ovatus*, but smaller. Length 4.25 to 4.75 mm.

The vertex is distinctly angulate but blunt at apex, nearly twice as long at middle as length next the eyes. Dull gray to pale brownish marked with darker brownish irrorations.

The female seventh sternite is produced to form blunt but prominent lateral angles. The posterior margin is rather deeply, roundedly excavated between the lateral angles and the median produced half which is notched so as to form four median produced teeth. The outer two are a little longer and more separated than the central pair. Male plates short, rather blunt and rounded at apex. Style elongate, basal half much broader than the apical half. The aedeagus is composed of two portions. The ventral part is rather broad at base and gradually tapers to a narrow, pointed, caudally directed apex. The dorsal portion is sickle-shaped, open upward. The basal dorsally directed part is short and thick; the apical portion is narrow and curved.

The species was described from specimens from Los Banos, California.

***Texananus gladius* DeLong**

*Texananus gladius* DeLong. *Ohio Jour. Sci.* 38, 41, 1938.

Closely related to *ovatus*. Length 5 mm.

The vertex is bluntly angled, two-thirds as long on middle as width between the eyes at the base. Color dull yellowish with dark brown markings and with pale commissural line.

The female seventh sternite is broadly, shallowly excavated with a short V-shaped notch at the center. The male plates are broader than long, broadly rounded. The ventral process of the aedeagus in lateral view is blade-like, protruding beyond the apex of the abdomen, bent upward and narrowed on the apical portion. The dorsal portion is connected to the ventral portion by a long, narrow strip. The dorsal portion is curved twice concavely upward. The basal portion is broadly, shallowly concave; the apical portion is more deeply concave with a slender apical portion which is curved caudally.

This species was described from specimens from Arizona and Texas.

***Texananus delicatus* (Osborn & Lathrop)**

*Phlepsioides delicatus* Osb. & Lath. *Ann. Ent. Soc. Amer.* 16: 347, 1928.

Resembling *ovatus* in form and general appearance. Length 5 mm.

The vertex is broadly, bluntly angled. The color is pale gray or brown with darker irrorations.

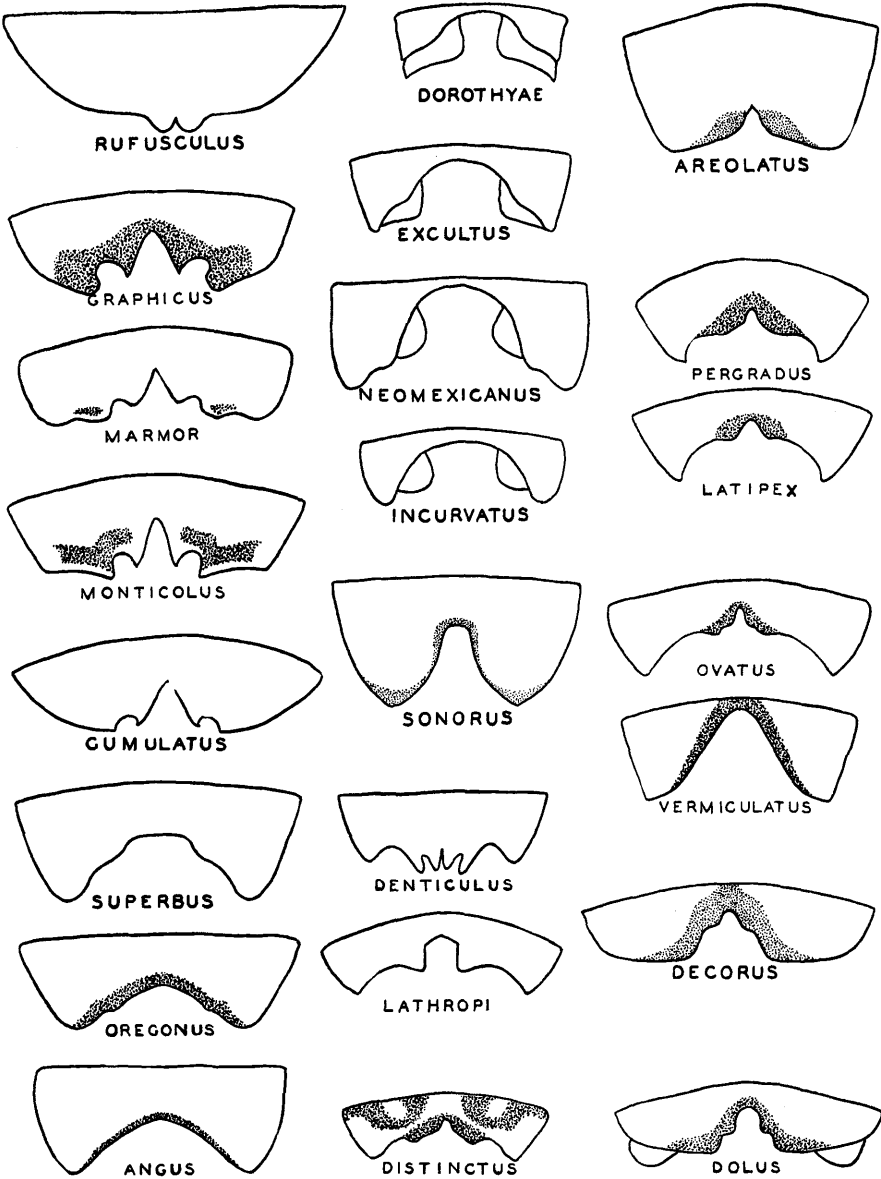
The female seventh sternite is short, the posterior margin is broadly, concavely excavated. Lateral angles produced and prominent.

This species was described from a single female specimen collected at Palm Springs, California. In view of the similarity of the females of this group of small species it has not been possible to definitely determine the identity of the male. It is quite probable that *pergradus* is a synonym of *delicatus*.

***Texananus pergradus* DeLong**

*Texananus pergradus* DeL. *Pan-Pac. Ent.* 14: 185, 1938.

Resembling *ovatus* and closely related to it. The ventral process of the aedeagus is slender and unbranched. Length 4.5 to 5.5 mm.



Seventh sternite of females of species of *Texananus* as named.

The vertex is bluntly angled about two-thirds as long at middle as the basal width between the eyes. Color pale brown with darker brown markings. In well marked specimens with a broken brown band between the eyes on the disc. The three pale commissural spots on elytra distinct.

The female seventh sternite with prominent lateral angles between which the posterior margin is rather strongly and broadly excavated, with a short, brown margined, V-shaped notch at apex of excavation. Male plates broad and short, together appearing semicircular. Styles elongate, broadened at base, constricted near middle with apex bluntly pointed. The ventral portion of the aedeagus is very slender and delicate and is rather short. The dorsal portion is sickle-shaped, the base of which is thickened; the apex of which is more slender and strongly curved dorsally and anteriorly.

The type specimens of this species are from New Mexico, Texas and Utah. Its distribution is through the southwestern states.

***Texananus latipex* DeLong**

*Texananus latipex* DeLong. Bull. Brook. Ent. Soc. 38: 124, 1943.

Related to *ovatus* and *lathropi* but with distinct genital structures. Length 6 mm.

The vertex is bluntly angled and almost twice as wide between the eyes at the base as its median length. The color is pale brown with dark brown markings. Elytra heavily marked with dark brown, the three pale commissural spots distinct.

Female seventh sternite with posterior margin rather deeply, broadly excavated between the prominent lateral angles. Male plates short with blunt apices. The styles are elongate, rather slender, broadened at base, constricted at middle, bluntly pointed at apex. The ventral portion of the aedeagus is rather long and slender, tapered to an acute tip. Dorsal portion broad at base with a dorsally curved basal process and a long curved sickle-like apical portion which is bifid at apex forming two prominent teeth.

This is a rather common and widespread species in the western United States. Specimens in the type series are from Arizona, Idaho, and Nevada. It has since been reported for California.

***Texananus lathropi* (Baker)**

*Phlepsius lathropi* Baker. Phil. Jour. Sci. 27: 159, 1925.

*Phlepsius annulatus* Osborn & Lathrop. Anns. Ent. Soc. Amer. 16: 342, 1923 (homonym).

A small species belonging to the *ovatus* group. Length 5-5.5 mm.

Vertex blunt, a little longer on the middle than length next the eyes. The vertex, pronotum and scutellum are yellowish with brown irrorations. The elytra are white or pale with dark irrorations and dark pigment lines.

The female seventh sternite is quite short. The lateral angles are prominent, produced, between which the posterior margin is broadly, shallowly excavated with a deep quadrangular excavation more than half way to the base at the middle. The male plates are very short and broad, slightly bluntly produced at the apex. Styles rather narrow, slightly enlarged at base. Apex appearing notched at middle with a short, blunt, produced tooth on inner margin and a more produced blunt process on outer margin. The basal portion of the aedeagus is straight and rather slender, slightly enlarged at base. The dorsal portion is sickle-shaped with a long basal handle-like process.

This species was described from Oregon.

***Texananus marmor* (Sanders & DeLong)**

*Phlepsius marmor* Sand. & DeL. Proc. Ent. Soc. Wash. 25: 152, 1923.

Resembling *graphicus* in general appearance but more conspicuously marked and easily separated by the shorter, broader male styles. Length 5.5-6 mm.

Vertex roundedly produced, two and one-half times as wide as long. Elytra short and broad.

Color: Dirty white, vertex with fuscous mottling near the apex and a pair of darker spots at base near eyes. Pronotum with anterior margin marked with dark brown, posterior portion unmarked. Elytra pale with faint markings giving a mottled appearance.

Genitalia: Female seventh sternite similar to *graphicus*. The lateral angles are more produced and rounded. The posterior margin is angularly excavated on the median half so as to form a median broad V-shaped notch and a smaller rounded notch on either side between this and posterior margin. The male plates are short and broad, bluntly pointed at apex. The styles are short, broad at base and while narrowed are rather broad at apex which is bluntly pointed on the outer margin. The ventral portion of the aedeagus is shorter and more narrowed than *graphicus*. The dorsal portion is sickle-shaped with the ventral portion broad or thickened, the apical half slender.

This species was described from specimens collected at Onah, Manitoba, July 24, 1919, from *Juniperus horizontalis*. It has not been recorded for other localities.

#### ***Texananus cumulatus* (Ball)**

*Phlepsius cumulatus* Ball. Can. Ent. 32: 202, 1900.

*Phlepsius notatipes* Osb. & Lath. Anns. Ent. Soc. Amer. 16: 343, 1923.

A very short, broad species with the vertex scarcely longer at middle than at the eyes. Length 6–6.5 mm.

The color is dark brown or reddish brown due to numerous irrorations and reticulations.

The female seventh sternite is roundedly produced from base to a narrow, rather shallow, emargination either side of a broad V-shaped notch which extends half way to base. Male plates broad, short, triangular with bluntly pointed apices; aedeagus with a rather long, slender ventral process and a dorsal process which is rather broad at base, narrowed apically and curved dorsally. Pygofer short and with apices bluntly rounded.

This species was described from Colorado. It has been collected in several of the western states and occurs on bearberry, *Arctostaphylos*, where this plant is growing on sandy areas along the Great Lakes.

#### ***Texananus graphicus* (Ball)**

*Phlepsius graphicus* Ball. Can. Ent. 32: 201, 1900.

Similar to *cumulatus* in general form and appearance. Length 7 mm.

Vertex broad, scarcely longer at middle than length next the eyes. Color dull straw yellow with brownish irrorations. The pale commissural line on elytra distinct.

Female seventh sternite long, lateral margins sloping to posterior margin which is deeply, roundedly excavated either side of a deep V-shaped median notch. These form a sharp pointed tooth on each side of notch and a blunt tooth on edge of anterior margin at each side. Male plates short, bluntly pointed on apices. Styles long, broad at base, the apical half quite narrow. Aedeagus with the ventral portion narrow, blade-like with the apex pointed. The dorsal process narrow at base, thickened on middle half, narrowed on apical third and curved dorsally. The pygofer is bluntly angled at apex.

It was described from Colorado and Nebraska.

#### ***Texananus monticolus* DeLong**

*Texananus monticolus* DeLong. Bull. Brook. Ent. Soc. 38: 125, 1943.

Related to *cumulatus* but with different genital characters. Length 6.5 mm.

Vertex more than twice as wide at base as median length, broadly, bluntly angled. Elytra short and broad. Color pale yellowish marked with brown.

Female seventh sternite similar to *graphicus* but the lateral angles are more produced. The posterior margin is excavated by three notches. The median notch is broadly V-shaped extending more than half way to the base, on either side of which is a rounded notch next posterior margin. Male plates strongly convexly rounded, apices blunt and rounded, inner margins straight to the apices. Styles elongate, rather broad, with blunt apices. Aedeagus with the dorsal process elongate, apex narrowed and curved dorsally, enlarged at middle. The dorsal portion appears to lie in the concavity of the long slender ventral portion which curves dorsally caudally to the dorsal portion.

Originally described from specimens collected in New Mexico and Utah.