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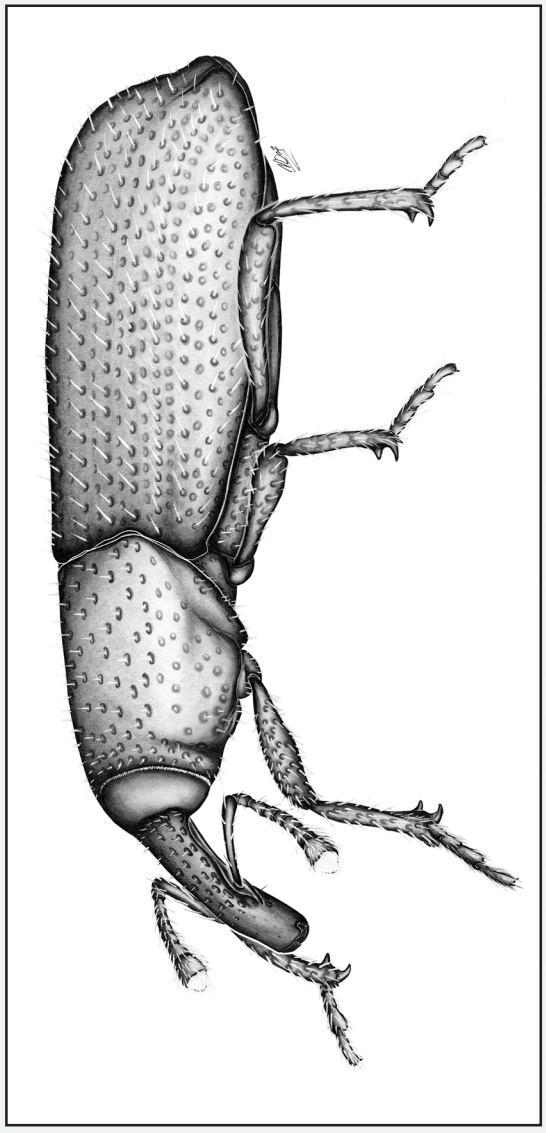

Studies on the **CAVE AND ENDOGEAN FAUNA** of North America **Part V**

Edited by James C. Cokendolpher
and James R. Reddell

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STUDIES ON THE CAVE AND ENDOGEAN FAUNA OF NORTH AMERICA, PART V

Edited by

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Cover, The first troglobitic weevil in North America, *Lymantes*
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NEW CAVE PSELAPHINAE AND RECORDS FROM TEXAS, WITH A DISCUSSION OF THE RELATIONSHIPS AND DISTRIBUTIONS OF THE TEXAS TROGLOBITIC PSELAPHINAE (COLEOPTERA: STAPHYLINIDAE: PSELAPHINAE)

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ABSTRACT

Continuing cave surveys at Fort Hood in central Texas have produced four undescribed members of Pselaphinae, family Staphylinidae. All are members of the genus *Batrisodes*: *B.* (*Babnormodes*) *dentifrons*, *B.* (*Babnormodes*) *incisipes*, *B.* (*Babnormodes*) *fanti*, *B.* (*Babnormodes*) *pekinsi*. A fifth undescribed species was taken at Camp Bullis, Texas: *B.* (*Excavodes*) *shadeae*. Two other morphospecies from Fort Hood are represented by females (probable members of *Babnormodes*), and another from southern Texas in the subgenus *Declivodes* represents another morphospecies. An unplaced member of *Thesium* was also taken. New collection records are given for twelve species previously recorded from Texas caves. All species taken from Texas caves are treated in a revised key, and the relationships and distributions of the Texas troglobitic species are discussed for the first time.

RESUMEN

Los continuos muestreos en cuevas en Fort Hood, centro de Texas, han generado cuatro nuevas especies de Pselaphinae, familia Staphylinidae. Todas pertenecen al género *Batrisodes*: *B.* (*Babnormodes*) *dentifrons*, *B.* (*Babnormodes*) *incisipes*, *B.* (*Babnormodes*) *fanti*, y *B.* (*Babnormodes*) *pekinsi*. Una quinta nueva especie fue colectada en Camp Bullis, Texas: *B.* (*Excavodes*) *shadeae*. Dos otras morfoespecies de Fort Hood son representadas

por hembras (miembros probables de *Babnormodes*), y otra del sur de Texas en el subgénero *Declivodes* representa otra morfoespecie. Se colectó una especie de *Thesium* no identificada. Se dan nuevos registros de doce especies registradas previamente de cuevas de Texas. Se presenta una clave dicotómica de todas las especies colectadas de cuevas de Texas, y las relaciones y distribuciones de las especies troglobias de Texas se discuten por primera vez.

INTRODUCTION

The cave-associated Pselaphinae fauna continues to grow since the treatments by Chandler (1992, 12 species), and Chandler and Reddell (2001, 19 species). Continuing inventory work in the caves along the eastern perimeter of the Edwards Plateau has focused on two military reservations, Fort Hood in central Texas to the west of Temple, and Camp Bullis to the south near San Antonio, and also in Williamson County where the ranges of two federally listed threatened and endangered species occur. Twelve species of Pselaphinae have been taken during the surveys of military reservations, with five of these species being described as new in this paper. The total fauna of described Pselaphinae known from Texas caves now totals 25 species, with 14 of these being troglobites. These troglobites are characterized by the eyes being reduced to a few granulate facets, and often have abnormally long legs, maxillary palpi, and antennae. Two additional troglobitic morphospecies were taken that are represented solely by females: *Batrisodes* (subgenus *Babnormodes*) sp. A and sp. B, and a third morpho-species, represented by a single female, is a probable myrmecophile or troglophile in the subgenus *Declivodes* Park. These morphospecies are not described, but are treated in the following discussion. Six additional species were taken from other cave areas in Texas, and these records are included here. Particularly important were specimens taken by Pierre Paquin and colleagues in their search for specimens of *Batrisodes cryptotexanus* Chandler and Reddell and *Batrisodes texanus* Chandler in order to compare these close species using molecular techniques.

The 14 species of trogobitic Pselaphinae from Texas are all members of the tribe Batrisini (13 *Batrisodes* species and *Texamaurops reddelli* Barr and Steeves, 1963). Two other species of *Batrisodes* taken from caves have reduced eyes: *B. clypeonotus* (Brendel, 1893) and *B.* (*Declivodes*) sp. These are known or presumed to be associated with ants (all described *Declivodes* are associated with ants). The Fort Hood fauna is surprisingly rich in troglobites: seven troglobitic members of the genus *Batrisodes* are now known and are endemic to this area, plus the two undescribed species that are represented solely by females.

The genus *Batrisodes* now holds 119 described species, with 83 species known from North America and 36 Palaearctic species known from Europe to Japan. The North American total is definitely low, since there are also about 30 additional undescribed species from the eastern United States, with the area of major diversity being the southern Appalachian Mountains and their adjacent karst areas. This large Holarctic genus is currently divided into eight subgenera, with seven of these created by Park for the North American fauna (Park, 1951, 1953). Two of Park's subgenera are now applied to species from the Far East of Eurasia and Japan: *Excavodes* Park and *Pubimodes* Park (Löbl and Besuchet, 2004), with the nominotypical subgenus *Batrisodes* restricted to the Palaearctic region. None of the European species are noted to occur in or around caves. In North America, 23 of the 32 species in the subgenus *Babnormodes* Park are known only from cave entrances or within caves, as are 7 of the 19 species of *Excavodes* Park. Most of the undescribed North American species are members of these two subgenera, and many of these have been collected only in or near caves. The other subgenera lack cave-associated members.

While many of the eastern U.S.A. *Batrisodes* species are collected in and around caves, they have somewhat reduced but apparently functional eyes, and none are troglobites. The few troglobites formerly housed in *Batrisodes* have been placed with some free-living species in *Batriasymmodes* Park. The most complex subgenus is *Babnormodes*, where based on male features of the head and antennae it appears that there are several species groups, each with a mixture of species that are free-living or that prefer the areas around cave entrances (Chandler and Carlton, revision in progress). The basic configuration of male features typical for each species group is suggestive in terms of relationships to the Texas cave species, but not certain. The relationships of the Texas cave species to their eastern counterparts are yet to be determined for either subgenus, but some observations are noted here:

subgenus *Excavodes*:

a) *B. reyesi* Chandler, *B. texanus*, and *B. cryptotexanus* form a group united by the sharp and prominent vertexal carinae, which are not shared with any of the eastern U.S.A. species. These three species appear to form a monophyletic group.

b) *B. grubbsi* Chandler shares the broadly subtruncate frontal apex with *B. venyivi* Chandler, and a number of eastern species centered on *B. clypeonotus* and *B. lineaticollis* (Aubé).

c) *B. shadeae*, n.sp., has a frontal morphology

that is not strongly suggestive of any of the known species.

subgenus *Babnormodes*:

a) *B. fanti,* n.sp., *B. pekinsi,* n.sp., and *B. feminiclypeus* Chandler and Reddell have a smooth, concave front merging into the clypeus that is suggestive of some species such as *B. henroti* Park, from Kentucky.

b) *B. gravesi* Chandler and Reddell and *B. incisipes,* n.sp., have the front angularly protruding above the clypeus, that is shared with a number of other species near *B. uncicornis* (Casey).

c) *B. dentifrons,* n.sp., and *B. wartoni* Chandler and Reddell, 2001 have a subtruncate frontal apex that is shared with several Midwestern species

Interestingly the species found from the southern portion of the karst areas (San Antonio to Georgetown) are members of the subgenus *Excavodes*, while those from the northern area at Fort Hood are members of *Babnormodes* (see Fig. 30). However, the variation in male frontal forms suggests that there was not one introduction and subsequent radiation of a single ancestral species for each of the two subgenera. The most likely scenario supports concurrent or perhaps sequential introductions of members from various species groups during more hospitable times. Eastern species are typically found in moist, thick leaf litter or in rotten wood (in/near caves or from the forest floor), conditions uncharacteristic of the Texas Hill Country today.

DISTRIBUTION OF TEXAS TROGLOBITIC PSELAPHINAE

Figure 31 is based on all records of troglobitic Pselaphinae known from Texas published by Chandler (1992), Chandler and Reddell (2001), and in the present paper. Each location is represented by a dot, and locations harboring the same species are used to roughly outline a distributional range. To date, 14 species are known from Texas and four undescribed trogloblitic morphospecies are also reported (species A to D). These taxa are known from female specimens only and males are needed in order to provide reliable taxonomic characters for species descriptions and diagnoses, though based on subtle features the two morphospecies from Fort Hood (species A and B) are probable members of the subgenus *Babnormodes*, and the two from Sutton (*Batrisodes* sp. C) and Edwards Counties (*Batrisodes* sp. D) are probable members of *Excavodes*. While some species are only known from a single cave and a single specimen, it seems likely that additional collecting in adjacent localities will yield additional specimens and locations, at least in the areas that have not been surveyed well. However, it is surprising that in areas that have been intensely monitored, such as Fort Hood in Bell and Coryell Counties, there are still several species represented by a single specimen or are known from a single location.

Most species have well-defined distributions that do not overlap with others. For instance, *B. cryptotexanus*, *B. texanus* and *B. reyesi* show an impressive geographic cohesion in their distribution. Similarly, all the localities known for *T. reddelli* are found on the Jollyville plateau, a geological isolate in Travis County. Surprisingly, no records of eyeless Pselaphinae are known between the ranges of *T. reddelli* and *B. cryptotexanus* / *texanus*, despite numerous caves and suitable habitat occupied by many other troglobitic species in an area that has been thoroughly surveyed. The absence of troglobitic Pselaphinae from large areas, such as the southern portion of Travis County, could be due to sampling bias, but that seems unlikely given the intensity of monitoring. Their absence from particular areas may be real. However, the recent discovery of *B. shadeae* on Camp Bullis, an intensively studied area, indicates that new species may be found in other well-studied areas.

The geographic cohesion observed for most species highly contrasts with the situation observed on Fort Hood, where the range of *B. gravesi* overlaps with several other species. Remarkably, only Buchanan Cave harbors two troglobitic species: *B. pekinsi* and *B. gravesi*. The co-occurrence of two species in the same cave, and the overlapping ranges of that particular area may be the result of different invasions of the same cave system by different surface ancestors. The best evolutionary scenario for these two species is: *B. pekinsi* and *B. gravesi* belong to different species groups that are likely derived from different surface ancestors. The relationships within the genus are still poorly known, but several species appear related to surface members occurring on the surface east of Texas.

This is also known for other Texas troglobites such as *Cicurina* (subgenus *Cicurella*) spiders (Gertsch, 1992), and the eyeless weevil *Lymantes nadineae* Anderson (Paquin and Anderson, 2009). There are *Rhadine* beetles (Carabidae) for which pairs of species (one highly troglobitic and the other one less troglobitic) have been reported in the same cave at several localities (Barr, 1974). There are some indications of such a pairing with the more elongate and slender antennae found in *B. gravesi* when compared with cohabitant *B.*

pekinsi, suggesting that they may occupy different ecological niches, but nonetheless, they may also represent different speciation/invasion events as hypothesized for *Rhadine*. Finally, *B. feminiclypeus* Chandler and Reddell is the first species for which a disjunct distribution is documented, with one record from a cave that is not adjacent to the other known locations, leaving a distribution gap filled by other species, particularly *B. gravesi,* the most widely-distributed troglobitic pselaphine of the Fort Hood area.

DISPOSITION OF THE SPECIMENS

Holotypes of the species described here will be placed in the Field Museum of Natural History, Chicago, Illinois. The paratypes and other specimens are split between the Texas Memorial Museum, Austin, Texas (TMMC) and the collection of the senior author (DSC), with most specimens of the non-troglobitic species held in the TMMC.

KEY TO SPECIES

As the numbers of species in cave inhabiting *Batrisodes* have grown, it has become impossible to construct a simple key that includes the females due to lack of strong characters, and lack of associated females for several species. For this reason only males are keyed starting at couplet 16. Males of subgenus *Excavodes* may be recognized by the presence of sulci and tubercles on the head between the antennal insertions, simple protibiae and mesotarsi, while for male *Babnormodes* the protibiae are flattened and twisted in the apical half, the second tarsomeres are notched near the base, and the head may have the area between the antennal insertions sulcate or tuberculate. Males have the last sternite medially impressed in both subgenera. Females have this sternite broadly rounded or nearly flat, and they lack all the modifications of the head and legs.

---

1. Abdominal segments II-IV with acute lateral margins 2

   Abdominal segments II-IV lacking lateral margins, abdomen round in cross section (Fig. 10) (Batrisitae, Batrisini) 9

2. (1) Last segment of maxillary palpi laterally angulate, previous two segments with spine on outer face (Fig. 2) (Pselaphitae, Tmesiphorini) .....*Tmesiphorus costalis*

   Last segment of maxillary palpi lacking lateral angulations or spines on previous segments (Figs. 1, 3-8) 3

3. (2) Last segment of maxillary palpi elongate, penultimate segment angulate on mesal margin (Fig. 1) (Goniaceritae, Tychini) .....*Cylindrarctus bicornis*

   Last segment of maxillary palpi enlarged, penultimate segment much smaller (Figs. 3-8) 4

4. (3) Last segment of maxillary palpi enlarged, nearly half as long as head, with longitudinal membraneous sulcus on mesal margin (Fig. 3); tarsi with two equal claws (Pselaphitae, Tyrini) .....*Hamotus electrae*

   Last segment of maxillary palpi smaller, no more than one-third head length, smoothly sclerotized on mesal margin (Figs. 4-8); tarsi with only one claw visible (Euplectitae) 5

5. (4) Pronotum with apical lobe formed by strong constriction; first antennomeres elongate, one-third antennal length, antennae geniculate (Fig. 4) (Trogastrini) .....*Rhexius stephani*

   Pronotum broadly rounded at apex (Figs. 5-7); first antennomeres short, no more than twice length of second antennomeres 6

6. (5) Pronotum abruptly constricted near base (Fig. 5); head venter with prominent Y-shaped carina Jubini) .....*Sebaga ocampi*

Pronotum slightly and smoothly constricted near base, or margins nearly straight to near base (Figs. 6-7); head venter with faint median longitudinal carina (Trichonychini) 7

7. (6) Antennal club formed by large last antenno-mere (Fig. 8); pronotum with lateral margins smoothly but distinctly constricted adjacent to lateral foveae ....*Trimioarcus musamator*

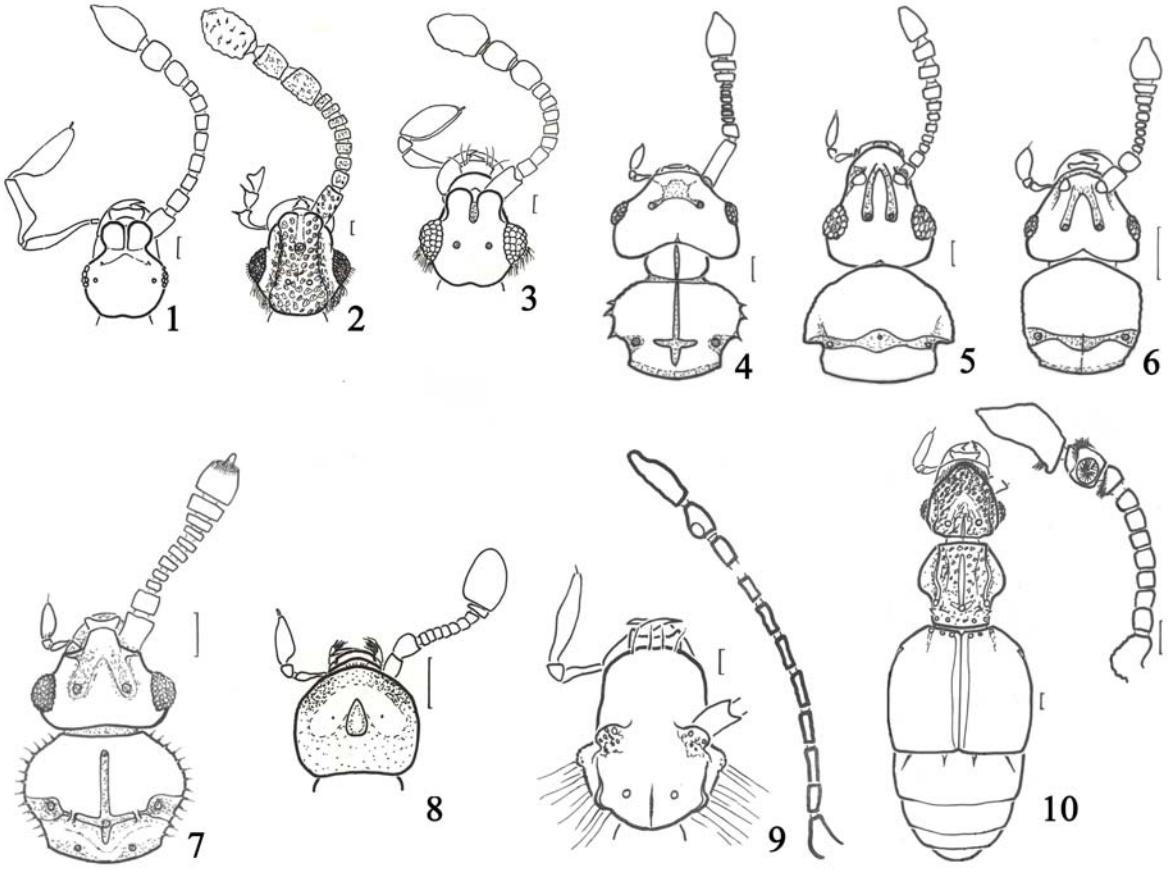
Antennal club smaller, formed by last 2-3 antennomeres (Figs. 6-7); pronotum with lateral margins nearly straight through most of length, or smoothly rounded to base 8

8. (7) Pronotum with lateral margins smooth to granular, never distinctly denticulate; three antennomeres forming antennal club, 10th to 9th thin, progressively narrower (Fig. 6) .....*Bibloplectus comanche*

Pronotum with lateral margins clearly denticulate, with small spaced teeth; two antennomeres forming antennal club, 10th antennomere trapezoidal and large, nearly as wide or as wide as apical antennomere (Fig. 7) .....*Thesium* sp.

9. (1) Ocular area bluntly protruding, lacking distinct eyes (Fig. 9); apex of metatibiae lacking elongate pencil of appressed setae; Travis County .....*Texamaurops reddelli*

Ocular area with eyes distinct (Figs. 10-11) or lacking, if with eyes lacking or very reduced then ocular area not bluntly protruding (Figs. 12-14); apex of metatibiae with elongate pencil of appressed setae (*Batrisodes*) 10



Figs. 1-10.—1, *Cylindrarctus bicornis*, head; 2, *Tmesiphorus costalis*, head; 3, *Hamotus electrae*, head; 4, *Rhexius stephani*, head and pronotum; 5, *Sebaga ocampi*, head and pronotum; 6, *Bibloplectus cherokee*, head and pronotum; 7, *Thesium* sp., head and pronotum; 8, *Trimioarcus musamator*, head; 9, *Texamaurops reddelli*, head and antenna; 10, *Batrisodes uncicornis*, body and antenna. Line equals 0.1 mm. Antennal figures in lateral view, with apical three-four antennomeres rotated into ventral view.

10. (9) Pronotal disc with sharply defined median sulcus to near apex (Fig. 10); eyes distinct, with 10 to 50 facets grouped together, or may be small and somewhat protruding in *B. clypeonotus* (Fig. 12) 11

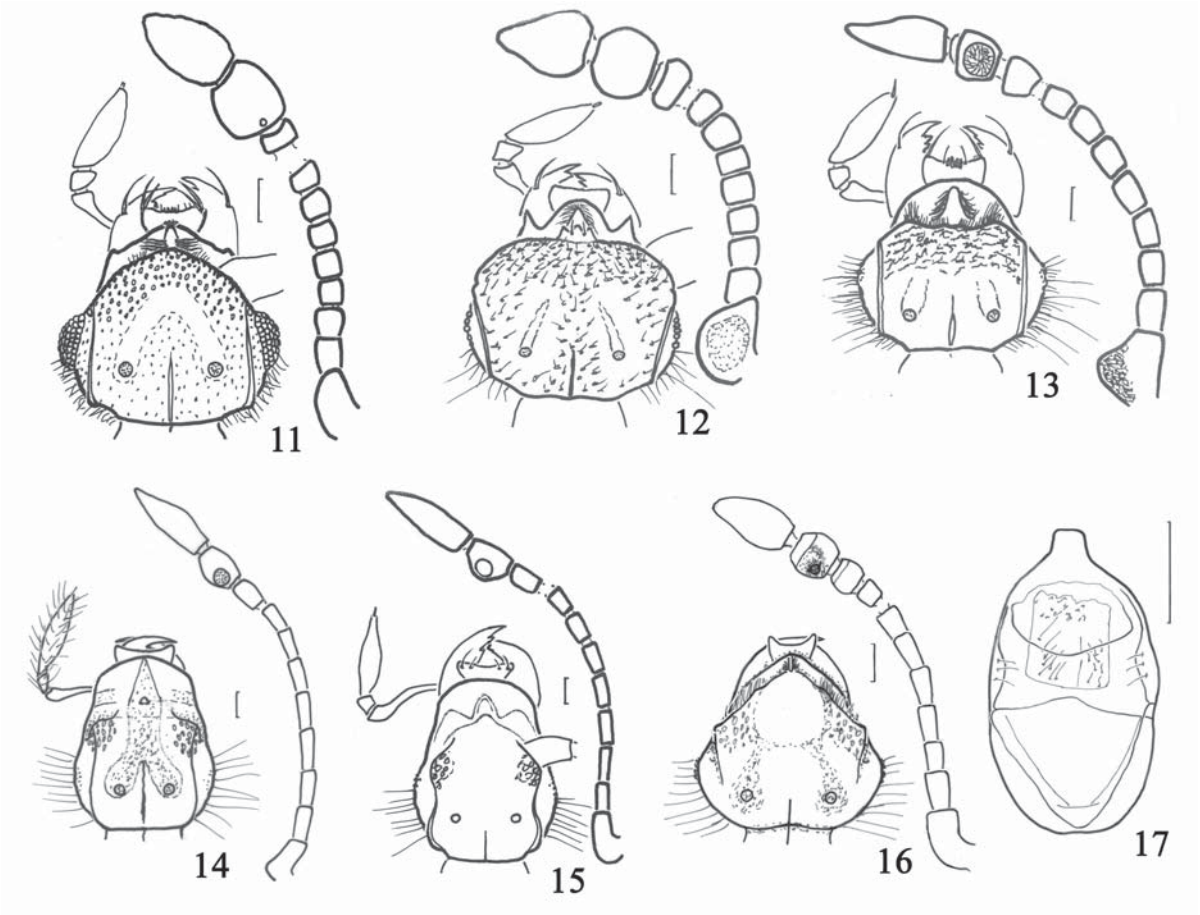
Pronotal disc convex or with faint median impression to middle; eyes apparently absent, possibly up to 10 disassociated pale granules in area where eyes should be, ocular area broadly to narrowly rounded (Figs. 13-16) 13

11. (10) Head dorsum and anterior portion of pronotum coarsely punctate; males with anterior margin of frons angulate (Fig. 10); common, wide-spread .....*Batrisodes* (*Babnormodes*) *uncicornis*

Head posterior to vertexal foveae and anterior portion of pronotum smoother, not coarsely punctate; males with anterior margin of frons subtruncate to broadly rounded (Figs. 1-12); females with frons at most coarsely punctate on antennal tubercles, area between vertexal foveae smooth or sparsely granulate; rarely taken 12

12. (11) Males with anterior margin of frons broadly rounded, penultimate antennomere with small fovea at base (Fig. 11); females with large eyes of more than 40 facets..... .....*Batrisodes* (*Excavodes*) *lineaticollis* (formerly *B. globosus*)

Males with anterior margin of frons broadly subtruncate, penultimate antennomere lacking basal fovea (Fig. 12); females with small eyes of approximately 15 facets, ocular area angularly protruding .....*Batrisodes* (*Excavodes*) *clypeonotus*



Figs. 11-17.—11, *Batrisodes lineaticollis*, head and antenna; 12, *Batrisodes clypeonotus*, head and antenna; 13, *Batrisodes reyesi*, head and antenna; 14, *Batrisodes texanus*, head and antenna; 15, *Batrisodes cryptotexanus*, head and antenna; 16, *Batrisodes shadeae*, head and antenna; 17, *Batrisodes shadeae*, male genitalia. Line equals 0.1 mm. Antennal figures in lateral view, with apical three-four antennomeres rotated into ventral view; male genitalia in dorsal view.

13.(10) Head with prominent lateral and median vertexal carinae, area between carinae deeply and smoothly concave (Figs. 13-15); lateral vertexal carinae sloping anterodorsally to form carinate outer margins of prominent antennal tubercles, best seen in lateral view 14

Head with lateral and median vertexal carinae low, one or both often weakly defined or lacking (Figs. 16, 18-19), area between vertexal foveae convex with small median vertexal carina at summit; in lateral view antennal tubercles only weakly projecting above plane of vertex, lateral carinae never strongly forming outer margin (key to males only from this point) 16

.....

14. (13) Antennomeres III-VII only slightly longer than wide; male with first antennomere (scape) broadly projecting ventrally, frons prominent at apex, with deep setose transverse sulcus below apex (Fig. 13); Burnet, Travis, and Williamson Counties .....*Batrisodes* (*Excavodes*) *reyesi*

Antennomeres III-VII twice as long as wide; males with frons declining to clypeus, transverse sulcus weakly indicated, not setose (Figs. 14-15) 15

15.(14) Apical tergite with projection about as long as wide; males with lateral ridges of sternite VI acutely projecting; Williamson County .....*Batrisodes* (*Excavodes*) *cryptotexanus*
Apical tergite with projection about half as long as wide; males with lateral ridges of sternite VI slightly raised; Williamson County .....*Batrisodes* (*Excavodes*) *texanus*

16.(13) Mesotarsomeres all linear; protibiae and mesotibiae lacking difications; Penultimate antennomere (10th) with large, ventral, setose fovea (Figs. 16, 18) (subgenus *Excavodes*) 17

Second mesotarsomere with ventral notch at base, often arcuate or sinuate (Fig. 29 for extreme example); protibiae flattened and twisted in at least apical half; mesotibiae with setose preapical angulation on inner margin; penultimate antennomere lacking ventral setose fovea (Fig. 20) in all but *B. fanti* (Fig. 21) (subgenus *Babnormodes*) 19

17. (16) Frons smoothly declining between antennal insertions to prominent clypeal tubercle that projects well above frontal apex (Fig. 16); Bexar County .....*Batrisodes* (*Excavodes*) *shadeae,* n.sp.

Frons level to broadly subtruncate apex, apex sharply defined ventrally by setose transverse sulcus; clypeal tubercle clearly ventral to frontal apex (Figs. 18-19) 18

18. (17) Frontal apex broadly rounded, slightly emarginate at middle; frons smooth, punc-tation indistinct (Fig. 18); Bexar County .....*Batrisodes* (*Excavodes*) *venyivi*

Frontal apex more subtruncate, lacking emargination at middle; frons coarsely punctate (Fig. 19); Hays County .....*Batrisodes* (*Excavodes*) *grubbsi*

19. (18) Clypeus smoothly concave from antennal insertions to apex, frons smoothly merging with clypeus (Figs. 20-21) 20

Clypeus with setose transverse sulcus or impression at base near antennal insertions, often with frons apex strongly projecting (Figs. 25, 27) 22

20. (19) Penultimate antennomere (10th) symmetrical, about half size of apical antennomere, lacking angular margin and ventral fovea (Fig. 20); Bell County .....*Batrisodes* (*Babnormodes*) *feminiclypeus*
Penultimate antennomere (10th) asymmetrical, nearly as large as apical antennomere, angularly produced on mesal margin (Figs. 21, 23) 21

21. (20) Penultimate antennomere (10th) with large setose fovea covering mesal half of ventral margin (Fig. 21); Bell County .....*Batrisodes* (*Babnormodes*) *fanti,* n.sp.

Penultimate antennomere (10th) lacking fovea on ventral margin (Fig. 23); Bell County.....
.....*Batrisodes* (*Babnormodes*) *pekinsi,* n.sp.

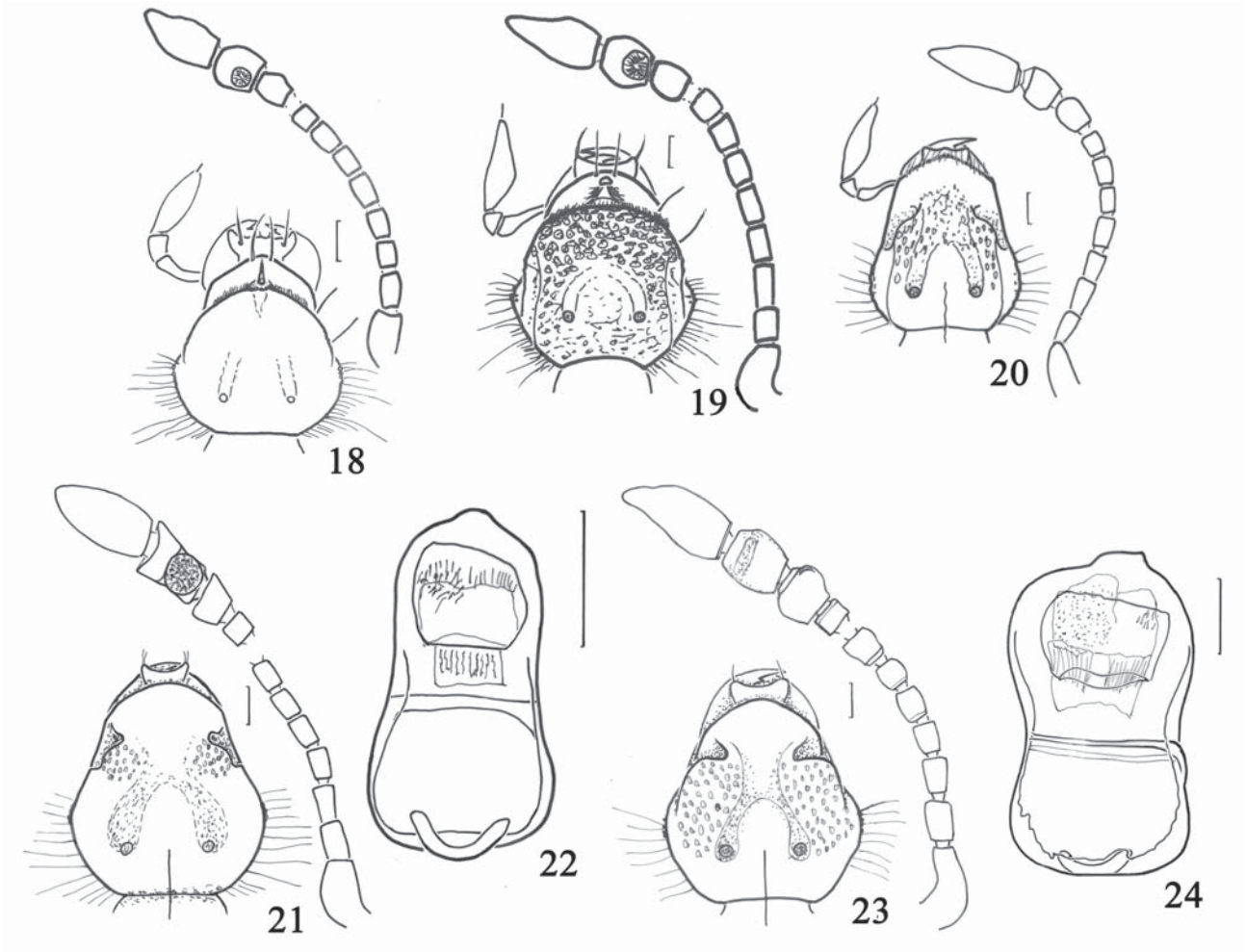
22. (19) Frontal apex broadly subtruncate, apex shallowly emarginate (Figs. 25, 27) 23

Frontal apex narrowing to rounded point (Figs. 28-29) 24

23. (22) Frontal apex with two small teeth at middle; first antennomere (scape) broadly bulging ventrally (Fig. 25); Bell County .....*Batrisodes* (*Babnormodes*) *dentifrons,* n.sp.

Frontal apex truncate, appearing slightly emarginate in dorsal view due to depression at middle; first antennomere (scape) gently convex on ventral margin (Fig. 27); Coryell County.....
.....*Batrisodes* (*Babnormodes*) *wartoni*

24. (22) Antennomere VIII 1.5-2 times as long as wide, antennomeres IV-VII twice as long as wide; frontal apex acutely pointed (Fig. 28); Bell and Coryell Counties .....*Batrisodes* (*Babnormodes*) *gravesi*
Antennomere VIII about as long as wide, antennomeres IV-VII never more than 1.5 times as long as wide; frontal apex roundly pointed (Fig. 29); Bell County .....
.....*Batrisodes* (*Babnormodes*) *incisipes,* n.sp.



Figs. 18-24.—18, *Batrisodes venyivi*, head and antenna; 19, *Batrisodes grubbsi*, head and antenna; 20, *Batrisodes feminiclypeus*, head and antenna; 21. *Batrisodes fanti*, head and antenna; 22, *Batrisdoes fanti*, male genitalia; 23, *Batrisodes pekinsi*, head and antenna; 24, *Batrisodes pekinsi*, male genitalia. Line equals 0.1 mm. Antennal figures in lateral view, with apical three-four antennomeres rotated into ventral view; male genitalia in dorsal view.

DESCRIPTIONS OF NEW SPECIES

Batrisodes (*Babnormodes*) *dentifrons*
Chandler and Reddell, n.sp.
Figs. 25-26

Description.– Length 2.08-2.28. Male head with frons flat, projecting to point anterior to antennal insertions, apical margin broad, shallowly concave in dorsal view, with several short setae projecting along lateral margins of apex, two sharp teeth arising at ventral margin of apex over deep transverse frontal sulcus, coarsely punctate anterior to vertexal foveae; clypeus with carinate median ridge extending from apex to frontal sulcus, ridge densely setose beneath projecting frons; lateral vertexal carinae faintly present near base, median vertexal carina distinct to between vertexal foveae; ocular area with about 10 small granules; postgenal area with about 8 long erect setae visible in dorsal view. Antennae with scape length about one-fourth of head length, broadened dorsoventally, width about two-thirds length, slightly concave on anterior face, antennomere III about twice as long as wide, IV-VII slightly decreasing in length toward apex, club formed by apical 3 antennomeres, IX and X smoothly rounded ventrally, unmodified.

Pronotum with disc convex, lateral longitudinal sulci shallow but distinct, lacking median antebasal fovea, basolateral tubercles short but distinct. Elytron with three small basal foveae, moderately densely and shallowly punctate, lacking subhumeral fovea, epipleural stria present in apical half. Second mesotarsomere notched at base, slightly sinuate; mesotibiae slightly widening apically to point at about two-thirds length, broadly angulate on inner margin, this area densely setose to apex. Protibiae flattened in apical half; metatibiae vaguely and broadly constricted in apical third.

Abdomen with second through fifth visible sternites broadly convex; sixth visible sternite shallowly concave in basal two-thirds.

Male holotype: antennae 1.20; metafemora 0.68; metatibiae 0.68; metatarsi 0.36.

Specimens examined.—3. Holotype male: TEXAS: *Bell County*: Canyon Floor Cave, Fort Hood, 21 Oct. 2003, J. Reddell, M. Reyes (FMNH). PARATYPES: 1 male, eutopotypical (DSC); 1 male, same locality, 27 March 2004, J. Fant , M. Reyes (TMMC).

Etymology.—The specific name refers to the two teeth at the apex of the frontal projection.

Comments.—The form of the male front is very distinctive, and not shared with other members of *Babnormodes*. The specimens were taken from the underside of a rock.

Batrisodes (*Babnormodes*) *fanti*
Chandler and Reddell, n.sp.
Figs. 21-22

Description.– Length 2.32-2.52. Male head lacking modifications of the frons and clypeus, frontal area smoothly declining between antennal bases to near clypeal apex, clypeus smoothly convex, glabrous; area medial to weak antennal tubercles distinctly punctate, punctate area sometimes extending posteriorly to near vertexal foveae; vertexal sulcus V-shaped, indistinct apically; ocular area with about 8 granules; postgenal area with about 16 long erect setae visible in dorsal view; cervix with thin median vertexal carina extending onto head base to point between vertexal foveae, lacking lateral vertexal carinae. Antennae with scape length about one-fourth head length, scape with margins parallel in lateral view; club formed by apical three antennomeres, IX trapezoidal, widest at apex, apex abruptly truncate, flattened ventrally; X elongate, subrectangular, ventral margin angulate near base, anterior face broadly and shallowly concave, venter with large fovea occupying basal half, slanting from base to protruding carinate rim at middle of ventral side.

Pronotum with faint median longitudinal sulcus that extends anteriorly across most of disc, originating from shallow median antebasal fovea; lateral antebasal tubercles small and pointed; lateral longitudinal sulci faint. Elytra with three small basal foveae, moderately and shallowly punctate, lacking subhumeral fovea, epipleural stria present in apical three-fourths. Protibiae sinuate and slightly twisted, flattened in apical half; mesotibiae gradually widening to point about two-thirds of length, inner margin broadly angulate at this point, densely setose to tibial apex from angulation. Second mesotarsomeres slightly sinuate, notched at base.

Abdomen with second through fifth visible sternites flattened medially, sixth shallowly concave near base, becoming flattened apically at middle.

Female with antennomeres IX and X elongate, X slightly dorsoventrally flattened. Abdomen with sternites slightly flattened at middle; tibiae cylindrical.

Male holotype: antennae 1.16; metafemora 0.88; metatibiae 0.87; metatarsi 0.36.

Specimens examined.— Holotype male: TEXAS: *Bell County*: Blue Green Hole, Fort Hood, 5 April 2007 (J. Fant) (FMNH). PARATYPES: *Bell County*: Blue Green Hole, Fort Hood, 3 May 2005 (J. Fant, J. Reddell), 6 females (DSC, TMMC); Cross Crack Cave, Fort Hood, 3 May 2005 (M. Reyes), 1 female; Hackberry Cave, Fort Hood, 12 June 2004 (M. Reyes, M. Warton)

(DSC), 1 male, 1 female; Slotsky Cave, 19 Sept. 2004 (J. Fant, M. Reyes) (DSC); Plethodon Cave, Fort Hood, 25 Aug. 2004 (J. Fant, M. Reyes) (TMMC).

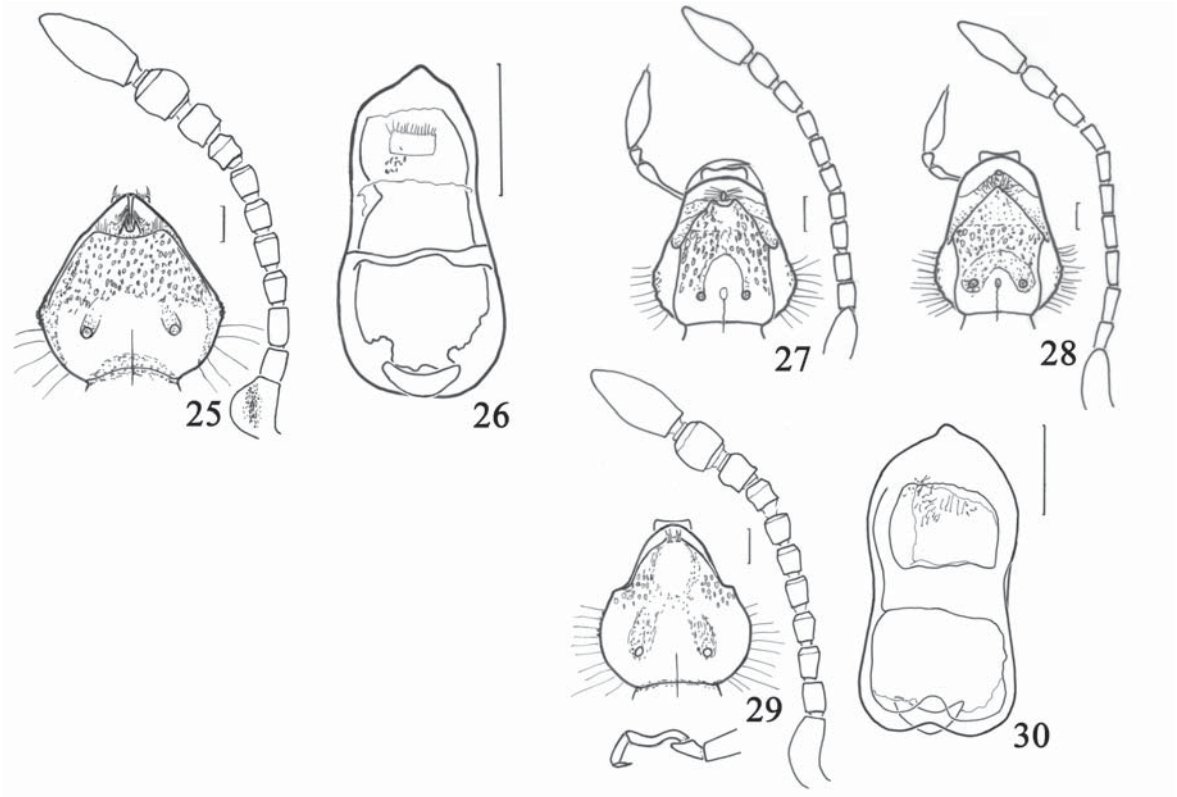
Etymology.—The species is named for Jerry Fant, who collected the holotype and one of the paratypes.

Comments.—The simple front of the male is similar to that of *Batrisodes feminiclypeus* and *B. pekinsi*, both known from caves in Bell County, but the antennae of the first species are unmodified. The male antennal club of *B. fanti* is very strongly modified, and generally similar in form to that of *B. pekinsi*, but possesses a large setose ventral fovea on antennomere X which *B. pekinsi* lacks, and the antennae of *B. pekinsi* are not so strongly angulate in a lateral view. This species was taken from the underside of rocks in both dim twilight and complete darkness.

Batrisodes* (*Babnormodes*) *incisipes
Chandler and Reddell, n.sp.
Figs. 29-30

Description.—Length 2.24. Male head triangular, lacking antennal tubercles, anterior portion of frons deflexed ventrally between antennal bases, center shallowly concave, lateral margins of deflexed portion slightly sinuate at middle, converging to narrowly truncate apex projecting over narrow transverse frontal excavation, with pair of short forked setae at apex; area medial to antennal insertions coarsely punctate, punctures minute and faint on deflexed area, faint V-shaped vertexal sulcus extending anteriorly from vertexal foveae; vertexal foveae small; lacking lateral vertexal carinae, median vertexal carina on cervix extending anteriorly onto head between vertexal foveae; ocular area with about 6 small granules, postgenal area with about 10 short to long setae visible in dorsal view; clypeus narrowly rounded at middle, with small median tuft deep in frontal excavation. Antennae with scape relatively long, about two-fifths of head length, in lateral view ventral margin broadly convex; antennomeres IV-VII same length, apical three antennomeres forming club, antennomeres IX and X unmodified, smoothly rounded on venter, X lacking a fovea.

Pronotum with disc convex, median antebasal fovea faint, median longitudinal sulcus faintly present in basal half, lateral longitudinal sulci shallow but distinct. Elytron with three small basal foveae, lackiing subhumeral fovea, epipleural stria present in apical three-fourths; elytra moderately and shallowly punctate. Second mesotarsomeres strongly sinuate (Fig. 29).



Figs. 25-30.—25, *Batrisodes dentifrons*, head and antenna; 26, *Batrisodes dentifrons*, male genitalia; 27, *Batrisodes wartoni*, head and antenna; 28, *Batrisodes gravesi*, head and antenna; 29, *Batrisodes incisipes*, head and antenna, posterior view left mesotarsus; 30, *Batrisodes incisipes*, male genitalia. Line equals 0.1 mm. Antennal figures in lateral view, with apical three-four antennomeres rotated into ventral view; male genitalia in dorsal view.

Protibiae flattened in apical two-thirds, sides parallel; mesotibiae gradually widening to point at about two-thirds length, broadly angulate on inner margin, densely setose from angulate area to apex; metatibiae slightly and broadly constricted in apical half.

Abdomen with second through sixth visible sternites slightly flattened at middle.

Female unknown.

Male holotype: antennae 1.26; metafemora 0.72, metatibiae 0.70; metatarsi 0.36.

Specimen examined.—Holotype male: TEXAS: *Bell County*: Talking Crows Cave, Fort Hood, 6 June 2000 (J. Reddell, M. Reyes) (FMNH).

Etymology.—The specific name refers to the very deep notch of the second tarsomere for the males of this species.

Comments.—The general structure of the modified male vertex is close to that of *B. gravesi* (also from Bell County), but all parts of the body are generally more compact, with the antennomeres being much shorter. The specimen was collected from the underside of a rock deeply buried in soil near the end of the cave in dim twilight. This biotically rich cave also contains the troglobitic spiders *Cicurina* (*Cicurella*) *hoodensis* Cokendolpher and Reddell and *Neoleptoneta* sp. cf. *paraconcinna* Cokendolpher and Reddell, the troglobitic pseudoscorpion *Tartarocreagris hoodensis* Muchmore, a troglobitic lithobiomorph centipede, and a blind ground beetle of the tribe Anillini.

Batrisodes (*Babnormodes*) *pekinsi*
Chandler and Reddell, n.sp.
Figs. 23-24

Description.—Length 2.48. Male head lacking modifications of the frons and clypeus, frontal area smoothly declining between antennal bases to near clypeal apex, clypeus smoothly convex, glabrous; coarsely punctate from weak antennal tubercles to near vertexal foveae, area between vertexal foveae roughened; vertexal sulcus V-shaped, indistinct apically; ocular area with about 5 granules; postgenal area with about 8 long erect setae on each side visible in dorsal view; cervix with thin median vertexal carina extending onto head base to point between vertexal foveae, lacking lateral vertexal carinae. Antennae with scape length about one-fourth head length, scape with margins nearly parallel in lateral view; club formed by apical three antennomeres, their surface roughly punctured, in lateral view IX widest near middle, X elongate, subrectangular, broadly projecting and smoothly curved on ventral margin, in ventral view portion apical to angulation with slight transverse, broad sulcus, lacking fovea.

Pronotum with faint median longitudinal sulcus that extends anteriorly to middle of disc, originating from shallow median antebasal fovea; lateral antebasal tubercles small and pointed; lateral longitudinal sulci faint. Elytra with three small basal foveae, moderately and shallowly punctate, lacking subhumeral fovea, epipleural stria present in apical three-fourths. Protibiae sinuate and slightly twisted, flattened in apical half; mesotibiae gradually widening to point about two-thirds of length, inner margin broadly angulate at this point, densely setose to tibial apex from angulation. Second mesotarsomeres slightly sinuate, notched at base.

Abdomen with second through fifth visible sternites flattened medially, sixth shallowly concave near middle, becoming flattened apically.

Female: unknown.

Male holotype: antennae 1.20; metafemora 0.72; metatibiae 0.72; metatarsi 0.36.

Specimen examined.—Holotype male: TEXAS: *Bell County*: Buchanan Cave, lower level, Fort Hood, 2 June 2005 (J. Fant, C. Pekins) (FMNH).

Etymology.—The species is named for Charles Pekins, one of the collectors of the holotype.

Comments.—The general form of the modifications of the antennal club is similar to that of *B. fanti*. However, males of that species have a large setose fovea on the ventral surface of antennomere X, while in *B. pekinsi* this antennomere lacks fovea. The simple male front is shared with *B. fanti* and *B. feminiclypeus*, while this last species lacks modified male antennae. The specimen was taken from under a small rock buried in clay in the deepest part of the cave in total darkness.

Batrisodes (*Excavodes*) *shadeae*
Chandler and Reddell, n.sp.
Figs. 16-17

Description.—Length 1.96 mm. Male head with apical portion of frons deflexed between antennal tubercles, concavely impressed through most of width, apex angled upwards to merge with prominent clypeal tubercle, concave area glabrous, with row of short stiff setae along lateral margins of declivity, carina extending from clypeal tubercle to clypeus apex, tubercle setose at apex, punctures most distinct on antennal tubercles, shallow sulci extending anteriorly and convergently from vertexal foveae to base of declivity, postgenal area with about 10 long setae visible in dorsal view, ocular area with about 8 small granules; with faint median vertexal carina that extends from cervix anteriorly to point even with vertexal foveae on head, lacking lateral vertexal carinae. Antennae with scape length about one-fifth head length, club formed by antennomeres IX-XI, X globose, venter with large subtriangular impression covering over

half of surface, small setose fovea present near mesal margin.

Pronotum with disc convex, median antebasal fovea punctiform, antebasal tubercles low and blunt, lateral longitudinal sulci indistinct. Elytra with three basal foveae, disc faintly punctate only near base, most of disc smooth; lacking subhumeral fovea, epipleural stria distinct in apical three-fourths. Second mesotarsomeres linear. All tibiae thin and cylindrical.

Abdomen with second through sixth visible sternites flattened medially.

Male holotype: antennae 1.16; metafemora 0.88; metatibiae 0.88; metatarsi 0.48.

Specimen examined.—Holotype male: TEXAS: *Bexar County*: Darling's Pumpkin Hole, Camp Bullis, 7 Jan. 2005 (J. Fant, B. Shade) (FMNH).

Etymology.—The specific name is in recognition of the participation by Bev Shade in collecting this specimen.

Comments.—The front between the antennal insertions declines to a smooth, concave impression, with the apex smoothly merging with the base of a prominent, acute clypeal tubercle. This frontal morphology is not suggestive of any of the previously described species.

NEW RECORDS

Batrisodes (*Babnormodes*) *feminiclypeus*
Chandler and Reddell, 2001

Records.—*Bell County*: Hope Well Sink, Fort Hood, 2 April 2006 (J. Fant, M. Reyes), 1 female; Skeeter Cave, 25 Aug. 2003 (C. Pekins, J. Reddell), 1 female; Afternoon Cave, Fort Hood, 9-10 Oct. 2004 (J. Fant, C. Murray, M. Reyes, M. Warton), 1 male.

Batrisodes (*Babnormodes*) *gravesi*
Chandler and Reddell, 2001

Records.—*Bell County*: Buchanan Cave, Fort Hood, 8 Nov. 1995 (D. Allen), 1; Buchanan Cave, Fort Hood, 13 June 2000 (J. Krejca, P. Sprouse), lower level, 2 females; Buchanan Cave, Fort Hood, 14 Dec. 2001 (J. Reddell, M. Reyes), 1; Buchanan Cave, upper level, Fort Hood, 2 June 2005 (J. Reddell, M. Reyes), 2 males,

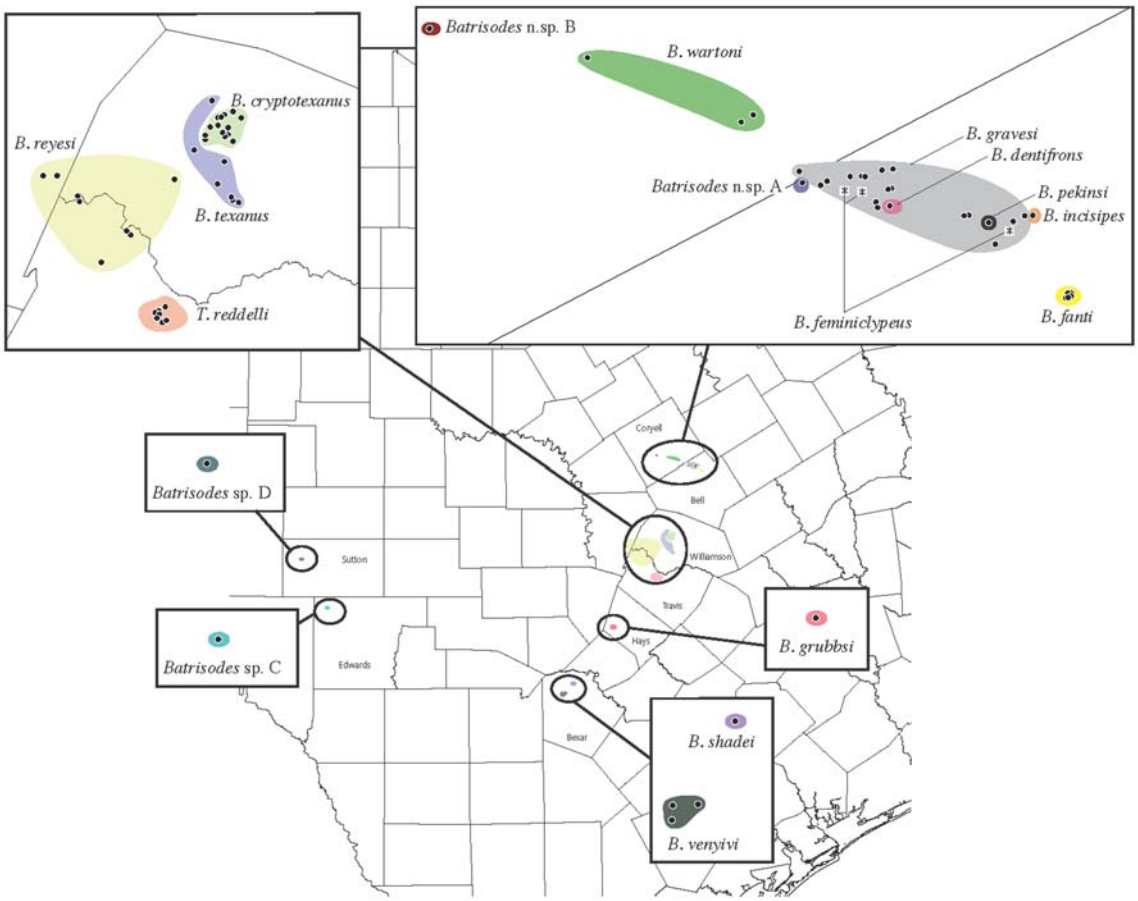


Fig. 31.—Distributional map of troglobitic Texas Pselaphinae.

1 female; Buchanan Cave, lower level, Fort Hood, 2 June 2005 (J. Fant, C. Pekins), 1 male, 1 female; Buchanan Cave, Fort Hood, 19 Oct. 2007 (J. Reddell, M. Reyes), 1 male, 2 females; Dual Sinks, Fort Hood, 22 Nov. 2005 (J. Fant, M. Reyes), 1 female; Endless Pit Cave, Fort Hood, 15 Oct. 2004 (J. Fant, C. Pekins, J. Reddell, M. Reyes), 1 male; Falling Turtle Cave, Fort Hood, 20 March 2004 (J. Fant, R. Ralph, J. Reddell, M. Reyes, M. Warton), 1; Fire Break Cave, Fort Hood, 17 Jan. 2008 (J. Fant, M. Reyes), 8 males, 3 females; Legless Visitor Cave, Fort Hood, 17 Oct. 2007 (J. Reddell, M. Reyes), 1 female; Molly Hatchet Cave, Fort Hood, 8-9 Oct. 2005 (J. Fant, M. Reyes), 1 male; Molly Hatchet Cave, Fort Hood, 19 May 2007 (J. Fant, J. Reddell, M. Reyes), 4 females; Price Pit Cave, Fort Hood, 18 Oct. 2007 (J. Reddell, M. Reyes), 1 male; Sanford Pit Cave, Fort Hood, 2 June 2005 (J. Fant, C. Pekins), 1; Streak Cave, Fort Hood, 18 Oct. 2007 (J. Reddell, M. Reyes), 1 male; Tres Dedos Cave, Fort Hood, 28 Nov. 2007 (M. Reyes), 1 male. *Coryell County*: Big Red Cave, Fort Hood, 3 Feb. 2003 (J. Krejca), ex: bedrock and clay wall at cave end, 1.

Comments.— This species has distinctive variation in relative lengths of the antennomeres which seem to be associated with groups of caves. Of the specimens on hand, individuals from Price Pit, Fire Break, Streak, Keyhole, Legless Visitor, and Tres Dedos Caves have the antennomeres relatively short, with antennomere VIII being no more than twice as long as wide, and sometimes a bit shorter, and antennomeres IV-VII being about twice as long as wide. Specimens from Buchanan, Molly Hatchet, and Bumelia Caves have the antennomeres longer and appearing much thinner, with VIII being clearly more than twice as long as wide, and antennomeres IV-VII about three times as long as wide. A specimen from Triple J Cave is intermediate in these features. The male head characters and the genitalia are identical for both long- and short-antennal forms.

Batrisodes (*Babnormodes*) *uncicornis*
(Casey, 1897)

Records.—*Bexar County*: 40mm Cave, Camp Bullis, 25 Oct. 2003 (J. Reddell, M. Reyes), 1; 50 Bucket Cave, Camp Bullis. 6 March 2008 (P. Sprouse, K. McDermid), 1 female; 50 Bucket Cave, Camp Bullis, 8 May 2008 (P. Sprouse, K. McDermid), 1 male, 1 female; Accident Sink, Camp Bullis, 26 Oct. 2004 (C. Thibodaux, C. Murray), 1; 9 May 2005 (J. Reddell, M. Reyes), 1; B-52 Cave, Camp Bullis, 26 Oct. 2005 (J. Krejca, R. Myers), 1; Canyon Ranch Shelf Cave. 9 Aug. 2002 (C. Collins, K. White), 1; Cowbell Cave, no date (A. Grubbs), 6; Cross the Creek Cave, Camp Bullis. 1 Nov. 2001 (J. Reddell, M. Reyes), 2; Darling's Pumpkin Hole, Camp Bullis, 7 Jan. 2005 (J. Fant, B. Shade), 2; 9 May 2005 (J. Reddell, M. Reyes), 1; Elm Springs Cave. no date (A. G. Grubbs), 1; Hectors Hole, Camp Bullis. 15 April 2002 (J. Reddell, M. Reyes, G. Veni), 10; Hectors Hole, Camp Bullis, 11 April 2006 (J. Fant, A. Gluesenkamp), 1; Hold Me Back Cave, Camp Bullis, 20 May 2004 (J. Krejca, P. Sprouse), 1; Hold Me Back Cave, Camp Bullis. 2 Oct. 2007 (K. McDermid), 1 male, 1 female; Hold Me Back Cave, Camp Bullis. 8 May 2008 (P. Sprouse, K. McDermid), 1 female; Persimmon Pit. no date (A. G. Grubbs), 5; Platypus Pit, Camp Bullis. 8 May 2008 (K. McDermid), 1 female; Porcupine Pit, 24 Feb. 2000 (A. G. Grubbs, P. Pearse), 1; Root Toupee Cave, Camp Bullis, 16 June 2006 (J. Krejca), 1; Stahl Cave, Camp Bullis. 1 Nov. 2001 (J. Reddell, M. Reyes), 1; Strange Little Cave, Camp Bullis, 31 July 2005 (R. Myers), 1; Toad Cave. no date (A. G. Grubbs), 2; Wedge Cave, Camp Bullis, no date, (P. Sprouse), 1; Wedge Cave, Camp Bullis, 15 Nov. 2006 (P. Sprouse), 1. *Hays County*: Academy Cave, Texas State Campus, San Marcos. 26 Aug. 2005 (P. Sprouse), 1 male; Snake Cave, San Marcos. 20 Nov. 2001 (J. Reddell, M. Reyes), 2. *Kendall County*: Charley's Downclimb Cave, Sattler/Hoffman Ranch, 4 March 2005 (J. Krejca, V. Loftin), 1; Charley's Downclimb Cave, Sattler/Hoffman Ranch, 4 Mar. 2006 (J. Krejca, V. Loftin), 1; Hoffman Ranch Windmill Cave, 4 March 2005 (A. Gluesenkamp), 2. *Travis County*: Airman's Cave, 12 Jan. 2005 (P. Paquin), 1; Get Down Cave, 7 Jan. 2005 (P. Paquin, M. Sanders), 80% darkness inside cave, 1; Lost Oasis Cave, 22 May 2005 (P. Sprouse), 1; Maple Run Cave, 8 Nov. 2004 (M. Sanders), 1. *Williamson County*: Ballroom Cave no. 2, 27 Oct. 2008 (P. Paquin, B. Parker), 1; Beck Rattlesnake Cave, 10 Nov. 2000 (J. Reddell, M. Reyes), 3; Blessed Virgin Cave, 2.2 mi. W Round Rock, 14 Nov. 2002 (J. Fant, A. Grubbs), 2; Brown's Cave, 4 Mar. 2005 (P. Paquin), 100% darkness inside cave, 1; Cat Hollow No. 1 Cave, 10 Mar. 2005 (P. Paquin), inside cave, 2; Critchfield Bat Cave, 13 Mar. 2008 (C. Crawford), 1; Fossil Garden Cave, 11 Mar. 2005 (P. Paquin), 100% darkness inside cave, 4; Gullet Cave, 20 Nov. 2002 (J. Reddell, M. Reyes) 1; LakeLine Cave, 6 July 2003 (J. Krejca, P. Sprouse), 1; LakeLine Cave, 3 Mar. 2005 (P. Paquin), 100% darkness inside cave, 1; Lizard's Lounge Cave, 3.3 mi. W Georgetown, 14 July 2003 (J. Fant, A. Grubbs), 1; Mongo Cave, 14 Mar. 2005 (P. Paquin), inside cave, 1; Pencil Cactus Cave, 4.6 mi. SW Round Rock, 15 Oct. 1993 (A. G. Grubbs), 1; Poison Ivy Cave, 9 June 2005 (J. Reddell, M. Reyes), 1; Raccoon Lounge Cave, 2.2 mi. W Round Rock, 15 Jan. 2003 (J. Fant, A. Grubbs), 6; Rock Ridge Cave, 14 Mar. 2005 (P. Paquin), 100% darkness inside cave, 1; Three Mile Cave, 30 Oct.

2008 (P. Paquin, C. Crawford, B. Parker), 1; Waterfall Canyon Cave, 30 July 2008 (P. Paquin, C. Crawford, B. Parker), under rocks, clayish soil, 4; Waterfall Canyon Cave, 31 Oct. 2008 (P. Paquin, C. Crawford, B. Parker), under rocks, clayish soil, 1 female.

Batrisodes (*Babnormodes*) spp.

Records.—*Bell County*: Born Again Cave, Fort Hood, 3 March 2005 (J. Fant), 1 female; Endless Pit Cave, Fort Hood, 9 March 2005 (J. Fant), 1 female; Hammer Crack Cave, 11 Jan. 2005 (J. Fant, M. Reyes), 1 female; Plethodon Pit Cave, Fort Hood, 24 Mar. 2004 (J. Fant, C. Pekins, J. Reddell, M. Reyes), 1 female.

Comment.—These specimens cannot be placed to species without examination of associated males.

Batrisodes (*Babnormodes*) sp. A

Records.—*Coryell County*: Lucky Day Cave, Fort Hood, 12 March 2004 (J. Fant, M. Reyes), 1 female; 4 June 2003 (J. Reddell, M. Reyes), 3 females; 4 April 2007 (J. Fant, J. Reddell, M. Reyes), 1 female.

Comment.—This appears to be an undescribed species but cannot be described without a male.

Batrisodes (*Babnormodes*) sp. B

Records.—*Coryell County*: Sperry Cave, Fort Hood, 5 June 2006 (C. Pekins, J. Reddell, M. Reyes), 2 females; 12 May 2007 (J. Fant, J. Reddell, M. Reyes), 1 female.; 5 June 2006 (C. Pekins, J. Reddell, M. Reyes), 2 females.

Comment.—This appears to be an undescribed species but cannot be described without a male.

Batrisodes (*Declivodes*) sp.

Record.—*Travis County*: Midnight Cave, Austin. 29 Jan. 2004, M. Sanders, 1 female.

Comments.—This individual has about 12 lightly colored eye facets to each side, and is not conspecific with any of the described species. The somewhat broad head and robust form, small eyes, and densely punctate frons and clypeus indicate placement in the subgenus *Declivodes*. The described North American species in this subgenus are typically associated with ants. Published ant associations are for members of *Formica exsectoides* and *F. subsericea*, with one record for the ant *Lasius claviger* (Chandler, 1997).

Batrisodes (*Excavodes*) *cryptotexanus* Chandler and Reddell, 2001

Records.— *Williamson County*: Blow Hole Cave, 2 Apr. 2007 (P. Paquin, C. Thibodaux, B. Larsen), 2 females; Corn Cobbs Cave, 15 Oct. 2008 (P. Paquin, B. Parker, L. Baird), under rocks, clayish soil, 1 female; Dragonfly Cave, Sun City, 29 May 2001 (M. Reyes), 3; Electro-Mag Cave, 27 Dec. 2006 (P. Paquin, K. White, C. Crawford), hand collecting, 1 female; Hourglass Cave, 5 June 2001 (L. J. Graves, M. Reyes), 1 female; Rattlesnake Inn Cave, 1 June 2001 (L. J. Graves, J. Reddell, M. Reyes), 2 females;-Rattlesnake Inn Cave, 27 Dec. 2006 (P. Paquin, C. Crawford), hand collect, 1 male, 1 female; Shaman Cave, Sun City, 12 Dec. 2006 (J. Reddell, M. Reyes), hand collect, 1 male; Ventilator Cave, 28 April 2002 (J. Reddell, M. Reyes), 2 females.

Batrisodes (*Excavodes*) *texanus* Chandler, 1992

Records.—*Williamson County*: Cobb Cavern, 3 Feb. 2003 (J. Reddell, M. Reyes), 1 female; Cobb Cavern, 30 March 2004 (M. Warton), 1 male; Cobb Cavern, 24 Nov. 2004 (P. Paquin), 1 male; Inner Space Cavern, 1 Mar. 2007 (P. Paquin, C. Collins, K. White, C. Crawford), 1 male, 1 female; Sunless City Cave, 28 Feb. 2007 (P. Paquin, et al.), 1 female; Sunless City Cave, 8 Jan. 2008 (K. White), 1; Waterfall Canyon Cave, 31 Oct. 2008 (P. Paquin, B. Parker), under rocks, clayish soil, 1 male, 1 female.

Comments.—*Batrisodes texanus* is included on the federal list of endangered species (U.S.F.W.S., 1993). However, the common name used for this species is the Coffin Cave mold beetle, which is incorrect. The species found in Coffin Cave (Williamson County) is *Batrisodes cryptotexanus* (see Chandler and Reddell, 2001). To correct this situation, we propose the common name *"*Inner Space Cavern mold beetle" for *B. texanus*, based on the type locality of that species.

Batrisodes (*Excavodes*) sp. C

Two female specimens from Edwards County were placed as *B. reyesi* in Chandler and Reddell (2001). Since this record represented a surprisingly distant range extension for an otherwise very local species (see figure 31), the specimens were re-examined and found to be representatives of an undescribed species, with their lateral vertexal carinae much less prominent than in *B. reyesi*. This species is probably a member of the subgenus *Excavodes*. The single female *Batrisodes* from Caverns of Sonora, Sutton County (Chandler and Reddell, 2001) is another probable member of the

subgenus *Excavodes*, and is treated for the purposes of the map as *Batrisodes* (*Excavodes*) sp. D.

Record.—*Edwards County*: Wyatt Cave, 21 Sept. 1963 (J. Reddell, D. McKenzie), 2 females.

Hamotus (*Hamotoides*) *electrae* Park, 1942

Records.—*Bexar County*: Canyon Ranch Shelf Cave. 9 Aug. 2002 (C. Collins, K. White), 1. *Hays County*: Taylor Bat Cave, 7 Mar. 2005 (P. Paquin), 100% darkness inside cave, 2 males; *Mason County*: James Bat Cave. 6 July 2003, 1 male; *Sutton County*: Felton Cave. 27 Feb. 2008 (J. Krejca), 4 females; *Val Verde County*: Judge's Chamber Cave, just upriver from confluence of Devil's River and Dry Devil's River, 15 Oct. 2005 (M. Sanders), 1 male.

Rhexius stephani Chandler, 1990

Record.—*Bexar County*: Camp Bullis, surface above Headquarters Cave, 28 May 2007 (Zara Environmental staff), berlese leaf litter, quadrat HZ 38, 1 female.

Sebaga ocampi Park, 1945

Record.—*Bexar County*: Up the Creek Cave, Camp Bullis, 11 May 2005 (J. Reddell, M. Reyes), 1.

Comment.—This species was taken on the underside of a rock in total darkness.

Texamaurops reddelli Barr and Steeves, 1963

Records.— *Travis County*: Gallifer Cave, 7 Jan. 2005 (P. Paquin), under rocks, hand collect, 1 female; Kretschmarr Cave, 3 Apr. 2007 (P. Paquin, K. O'Connor), 2 females; Tardus Hole, 6 Apr. 2007 (P. Paquin, K. O'Connor), 2 males.

Tmesiphorus costalis LeConte, 1849

Records.—*Bell County*: Chupacabra Pit Cave, Fort Hood, 3 May 2005 (J. Fant, M. Reyes), 1; Loma Bonita Sink, Fort Hood, 1 April 2006 (J. Fant, M. Reyes), 1; Lost Chasm Cave, Fort Hood, 4 May 2005 (J. Fant, J. Reddell, M. Reyes), 1; Nolan Creek Cave, Fort Hood, 20 May 2007 (J. Fant, J. Reddell, M. Reyes), 1; Plethodon Cave, Fort Hood, 3 May 2005 (J. Fant, J. Reddell, M. Reyes), 1; Pump House Cave, Fort Hood, 28 Aug. 2004 (J. Fant, M. Reyes), 2; Talking Crows Cave, Fort Hood, 18 Aug. 2003 (C. Pekins, J. Reddell, M. Reyes), 2; Talking Crows Cave, Fort Hood. 21 July 2008 (J. Reddell, M. Reyes), 1; Thumbs Up Cave, Fort Hood, 12 Nov. 2005 (M. Reyes), 1; Tres Dedos Cave, Fort Hood, 10 June 2005 (J. Fant), 1. *Hays County*: Taylor Bat Cave, 7 Mar. 2005 (P. Paquin), 100% darkness, inside cave, hand collecting, 1 male. *Travis County*: Gallifer Cave, 10 Apr. 2007 (P. Paquin, M. Sanders, K. O'Connor), 1 male. *Williamson County*: Karst Feature F-5, The Sanctuary, 3.3 mi. W Georgetown, 3 Nov. 2003 (A. G. Grubbs), 1; Poison Ivy Cave, 9 June 2005 (J. Reddell, M. Reyes), 1; Salt Lick Cave, 3.3 mi. W Georgetown, 2003 (A. G. Grubbs), 1.

Comment.—This probable troglophile has been found on the underside of rocks in both the twilight zone and total darkness.

Thesium sp.

Record.—*Williamson County*: Ventilator Cave, 28 April 2002 (J. Reddell, M. Reyes), 1.

Comments.—*Thesium* is a large Neotropical group, with only a single species known from the United States. The single specimen taken from Ventilator Cave is not the widespread eastern *Thesium cavifrons* LeConte, and very likely is one of the described but poorly known Neotropical species. Species placement cannot be resolved at this time.

Trimioarcus musamator Chandler, 1992

Records.—*Bell County*: Cuchilla Cave, Fort Hood. 11 Dec. 2002 (M. Reyes), Berlese of leaf litter, 33. *Coryell County*: Porter Cave, Fort Hood, 31 March 2004, C. Pekins, J. Reddell), Berlese of leaf litter, 1. *Williamson County*: Prospectors Cave, Brushy Creek Reserve, 11 Feb. 2002 (M. Reyes, M. Warton), 1. Rock Ridge Cave, 21 Dec. 2006 (P. Paquin, K. White, C. Crawford), 1.

Comment.—This Texan species has always been taken from leaf litter in or at the mouths of caves. There are now a number of records from leaf litter samples that were not taken near caves.

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