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A revision of the species of *Anogdus* LeConte of the United States and Canada (Coleoptera: Leiodidae: Leiodinae: Leiodini)

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A revision of the species of *Anogdus* LeConte of the United States
and Canada (Coleoptera: Leiodidae: Leiodinae: Leiodini)

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Anogdus alachua Peck and Cook, n. sp.

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A revision of the species of *Anogdus* LeConte of the United States and Canada (Coleoptera: Leiodidae: Leiodinae: Leiodini)

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Abstract. A review of the genus *Anogdus* LeConte (Coleoptera: Leiodidae: Leiodinae: Leiodini) of North America finds 16 species. Ten of these were previously described and there are no new synonyms. Six are named as new species: *A. alachua* n. sp., of Florida; *A. cochise*, n. sp., of Arizona; *A. huachuca* n. sp., of Arizona; *A. rileyi* n. sp., of Texas; *A. texanus* n. sp., of Texas and Oklahoma; and *A. tridens* n. sp., of Arkansas, Arizona, Illinois, Indiana, Oklahoma, and Texas. A key is provided to aid identification of the species.

Introduction

The genus *Anogdus* was erected by LeConte (1866) (Coleoptera: Leiodidae: Leiodinae: Leiodini) to contain the species *Anogdus capitatus* LeConte, 1866. A second species, *A. dissimilis*, was added by Blatchley (1916). The genus was reviewed by Brown (1937b), who also erected the genus *Neocyrtusa* Brown (1937a) with the type species *Pallodes obsoletus* Melsheimer, 1844, which was later synonymized by Daffner (1988) into *Anogdus*. Additional species were described in *Anogdus* by Blatchley (1916), Fall (1925), and Brown (1937b). Species placed in the genera *Neocyrtusa* (Brown 1932, 1937a; Hatch 1957), *Pallodes* (Melsheimer 1844, Zimmermann 1869) and *Cyrtusa* (Fall 1910) were transferred to *Anogdus* in a revision by Daffner (1988). *Anogdus* belongs in the “*Cyrtusa* genus group”, in which the mesosternum is vertical between the middle coxae, a character first recognized by Brown (1937a). The genus is keyed in the “*Cyrtusa* group” by Daffner (1988) and by Peck (2001) in a key to the genera of Leiodidae of America north of Mexico. The genus is known only from the Nearctic (Newton 1998) but there is unstudied material from Mexico and Central America. The North American fauna was recognized to have 10 species before the start of this study. The adult legs are apparently modified for digging and it is assumed that adults and larvae feed on subterranean fungi, but no explicit records are known. The species are usually associated with mesic forests on sandy soils.

Since the revision of *Anogdus* by Daffner (1988), which was based on comparatively few specimens, much additional material has become available. This led to the present revision, as a contribution to a continuing study of the Leiodidae of North America.

Materials

This study is based on the examination of over 706 specimens from the Nearctic Region, many of which were collected by the authors. Few other collections have many specimens. It is our intention to focus this study upon previously unexamined specimens and collections not reported in the work of Daffner (1988). Specimens were borrowed from the following collections and curators. Most collection addresses are given in full in Arnett et al. (1997).

ABSC	Archbold Biological Station, Lake Placid, FL (M. Deyrup)
CMNC	Canadian Museum of Nature Collection of Insects, Aylmer, PQ, Canada (F. Genier)
CNCI	Canadian National Collection of Insects, Agriculture Canada, Ottawa, ON, Canada (A. Smetana, A. Davies)
CSCA	California State Collection of Arthropods, California Department of Agriculture, Sacramento, CA (F. G. Andrews)

EMEC	Essig Museum of Entomology, University of California, Berkeley, CA (J. A. Chemsak)
FMNH	Field Museum of Natural History, Chicago, IL (A. F. Newton)
FSCA	Florida State Collection of Arthropods, Gainesville, FL (M. E. Thomas, P. Skelley)
JCIC	Joyce Cook Insect Collection, North Augusta, ON, Canada
MCZC	Museum of Comparative Zoology, Harvard University, Cambridge, MA (P. D. Perkins)
SBPC	Stewart B. Peck Collection, Ottawa, ON, Canada (to be placed eventually in CMNC)
TAMU	Department of Entomology Collection, Texas A & M University, College Station, TX (E. G. Riley)
USNM	United States National Museum of Natural History, Washington, DC (D. Furth)
WSUC	James Entomological Collection, Department of Entomology, Washington State University, Pullman, WA (R. S. Zack)

Methods

Most of the specimens seen during this study were taken by us, by E. G. Riley (TAMU), and by the late Karl Stephan of Red Oak, Oklahoma with the use of flight intercept traps (FIT) in forests (Peck and Davies 1980). Also productive is the use of nets mounted on a vehicle (car nets) driven slowly along forest roads at dusk (Peck and Cook 1992). Sweeping of low forest understory vegetation in the evening was used successfully by the late W. J. Brown of the CNCI, Ottawa, and by us. A few specimens have been taken by other methods including light traps, and pitfall traps. These are indicated in the bionomics section of individual species discussions.

For holotype, lectotype, or paratype specimens we report label data as they appear on the specimen labels. We have not edited or altered this data for uniformity, but have quoted it to aid in recognition of type specimens seen by us. For non-type specimens label data are summarized to obtain generalizations about distributions, field notes, habitats, and seasonality. Full label data for specimens not listed in Brown (1932, 1937a, 1937b) and Daffner (1988) are listed in the section on “New material examined”. Not all specimen labels contained full information on locality, date, or habitat.

To confirm identifications it is necessary to examine the aedeagus of male specimens. Females are difficult or impossible to place to species with certainty in the absence of males or in series where males of more than one species are present. Male specimens were dissected after being relaxed and removed from points or a card. Relaxing was by immersion for one day in a commercial household ammonia-based window cleaning solution. The specimen was then dissected in 70% ethyl alcohol. The aedeagus was examined, dehydrated in anhydrous ethyl alcohol and placed in euparal mounting medium on a small acetate-plastic microslide. External characters were examined with a stereomicroscope from 10X to 200X magnification. Structures for illustration were photographed with a digital camera mounted on a stereomicroscope. Aedeagal details were observed with a compound microscope and then added to outline illustrations made from the digital photographs. Illustrations of the aedeagus include features of the armature of the inverted internal sac.

We have used the criteria of priority and alphabetical order to arrange the taxa in this paper. We have not attempted a phylogenetic understanding of the relationships for the species considered here. The number of new species in the new material suggests that many additional new species remain to be discovered with additional sampling of a wider geographic range of localities, especially in the southern United States, Mexico, and Central America. The terminology used in this paper follows in general that used in Peck and Cook (2011). Distribution maps were prepared using all material cited in this study and that reported in previous studies if the identifications were considered to be correct.

Results and discussion

A total of 16 species are now recognized, distributed across southern Canada, and through the United States south to Florida, Texas, Arizona, and California. There are comparatively few or no records from the Great Plains states and Rocky Mountains.

Systematics

Anogdus LeConte, 1866

Anogdus LeConte 1866: 369. Type species: *Anogdus capitatus* LeConte, 1866; by monotypy. Brown 1937b: 170. Daffner 1988: 271.

Neocyrtusa Brown 1937a: 161. Type species: *Pallodes obsoletus* Melsheimer, 1844; by original designation. Synonymy by Daffner 1988: 271.

Diagnosis. Body convex, oval to elongate-oval. Antennae with 11 antennomeres, with a club composed of 5-antennomeres, and the club interrupted at the 8th antennomere, which is narrow and disk shaped. Left mandible with a large and sharp tooth in the middle, right mandible with a small tooth in the middle. Ventral side of head without antennal grooves. Mesosternum vertical between the mesocoxae and with a distinct median longitudinal carina. Protibiae with tarsal grooves, their outer margins with strong spines; mesotibiae with a dense double row of spines; the outer margin of the metatibiae with short, strong spines. Tarsal formula 5-5-4 in both sexes. Males are distinguished externally by weakly expanded protarsi and moderately expanded mesotarsi, slightly curved mesotibiae bearing a stout process on the inner apical margin, and by a toothlike expansion near the apex of the lower margin of the metafemur.

Variation. The following external characters of *Anogdus* are variable within species: size and density of punctation, width of antennomeres, pronotal shape, and sexually dimorphic leg characters. Identifications must be based on aedeagal characters. Females of most species can be identified only by association with males.

Remarks. The genus *Anogdus* was established chiefly because of the stated “10-segmented” antennae. However, Daffner (1988) found the type species to have antennae with 11 antennomeres, and an antennal club of 5 antennomeres, interrupted at antennomere 8, which is disk shaped and barely visible in the type species because of the other very large club antennomeres. Brown (1937a) established the genus *Neocyrtusa* on the basis of an antenna with 11 antennomeres and otherwise found no differences, so Daffner (1988) synonymized *Neocyrtusa* under *Anogdus*.

The genus is Nearctic in published distribution, with unpublished material known from the Neotropics. “*Anogdus trimeni* Champion (1925) of South Africa is wrongly assigned to this genus (Newton 1998: 87) and the species belongs instead to a genus in the “*Leiodes* genus group” (Peck 2003: 125) but males are needed for accurate generic placement.

Key to males of species of *Anogdus* LeConte of North America north of Mexico

1. Antennal club robust, greatest width of club more than one-half length; elytral intervals, at least posterolaterally, with irregular transverse strigae. **2**
- Antennal club more slender, greatest width of club not more than one-half length; elytral intervals without transverse strigae. **4**
- 2(1). Antennomere 7 broad, at least five-sixths width of antennomere 9. ***A. capitatus* LeConte**
- Antennomere 7 narrower, less than two-thirds width of antennomere 9. **3**
- 3(2). Median lobe of aedeagus short and broad; apex in lateral view short with a rounded lobe (Fig. 3, 4). ***A. dissimilis* Blatchley**
- Median lobe of aedeagus more slender; apex in lateral view elongate, flattened dorsoventrally (Fig. 21, 22). ***A. alachua* Peck and Cook n. sp.**
- 4(1). Paramere apices not or weakly widened apically (e.g. Fig. 11, 12). **5**
- Paramere apices distinctly swollen (Fig. 5, 9, 27, 29, 31). **12**

- 5(4). Median lobe of aedeagus in dorsal view with paired apical lobes widely separated (Fig. 11, 19). **6**
 – Median lobe of aedeagus in dorsal view with paired apical lobes adjacent, at least apically. .. **7**
- 6(5). In lateral view, apex of median lobe acute (Fig. 12). ***A. potens* (Brown)**
 – In lateral view, apex of median lobe broadly rounded (Fig. 20). ***A. superans* (Fall)**
- 7(5). Elytra setose; internal sac of aedeagus with elongate flagellum (Fig. 15, 16).....
 ***A. sculpturatus* (Fall)**
 – Elytra glabrous; internal sac of aedeagus without a flagellum..... **8**
- 8(7). Median lobe of aedeagus in dorsal view narrowing apically (Fig. 7, 13, 17); range: widely distributed. **9**
 – Median lobe of aedeagus in dorsal view rounded apically (Fig. 23, 25); range: Arizona. **11**
- 9(8). Internal sac of aedeagus with distinctive narrow, curved structure (Fig. 17, 18).....
 ***A. secretus* (Brown)**
 – Armature of internal sac otherwise. **10**
- 10(9). Median lobe of aedeagus fusiform in dorsal view, sides rounded, narrowing from middle to apex (Fig. 7). ***A. insolitus* (Brown)**
 – Median lobe of aedeagus with sides parallel in dorsal view, narrowing to apex in apical one-fourth (Fig. 13). ***A. puritanus* (Fall)**
- 11(8). Large species, length of pronotum + elytra nearly 3 mm; internal sac of aedeagus with an elongate, narrow, heavily sclerotized V-shaped structure (Fig. 23, 24).
 ***A. cochise* Peck and Cook, n. sp.**
 – Small species, pronotum + elytra less than 2 mm in length; internal sac without a heavily sclerotized V-shaped structure (Fig. 25, 26). ***A. huachuca* Peck and Cook, n. sp.**
- 12(4). In dorsal view, paired apical lobes of aedeagus distinctly inflexed apically (Fig. 27, 29). **13**
 – In dorsal view, paired apical lobes of aedeagus not or weakly inflexed apically (Fig. 5, 9, 31)...
 **14**
- 13(12). Parameres in dorsal view extending well beyond apex of median lobe (Fig. 27).
 ***A. rileyi* Peck and Cook, n. sp.**
 – Parameres in dorsal view not extending well beyond apex of median lobe (Fig. 29).
 ***A. texanus* Peck and Cook, n. sp.**
- 14(12). Paired apices of median lobe, in dorsal view, apically broad (Fig. 5)..... ***A. fusciclavus* (Fall)**
 – Paired apices of median lobe, in dorsal view, apically narrow (Fig. 9, 31). **15**
- 15(14). Internal sac of aedeagus in dorsal view with a distinctive heavily sclerotized tri-lobed structure in apical one-half (Fig. 31). ***A. tridens* Peck and Cook n. sp.**
 – Internal sac of aedeagus lacking a distinctive tri-lobed structure (Fig. 9).
 ***A. obsoletus* (Melsheimer)**

***Anogdus capitatus* LeConte, 1866**

(Fig. 1, 2, 33)

Anogdus capitatus LeConte, 1866: 369; Horn 1880: 283; Brown 1937b: 170; Daffner 1988: 274. Holotype female in MCZC, type number 3170, designated by Daffner 1988: 274; seen by us. Type locality: USA: FLORIDA (no additional locality data).

Diagnosis. Length (pronotum + elytra) = 2.64–3.00 mm; greatest width = 1.88–2.04 mm. Head strongly, densely punctate. Antennal club distinctly robust, greatest width of club more than one-half its length; antennomere 7 broad, at least five-sixths width of 9; antennomere 8 narrow, disk-like; apical antennomere shorter and narrower than 9 and 10. Sides of pronotum and posterior angles broadly rounded. Pronotum minutely, sparsely punctate. Elytral stria punctures round and deep, separated by one diameter or less; interstria punctures fine, joined by transverse strigae. Elytral epipleura with pale setae. Metasternum anteriorly with a row of deep, round punctures with diameter about equal to that of shallow punctures at sides of metasternum. Protarsi and mesotarsi of male with elongate setae ventrally. In both sexes, outer protibial spine distinctly wider than inner spine. Male mesotibia curved, widened apically; mesotibial process slender, shorter than large mesotibial spine. Metatibia and metafemur more slender than in *A. dissimilis*. Male metafemur with small, acute tooth-like expansion near the apex of the lower margin. Abdominal sternites III–VII with a row of small, deep punctures at anterior margin; these punctures not always clearly visible in mounted specimens. Median lobe of aedeagus elongate, broad, apical one-third somewhat flattened dorsoventrally (Fig. 1, 2). Parameres slender, reaching almost to apex of median lobe. Armature of internal sac as in Fig. 1, 2.

Distribution. Known only from the southeastern states of Florida and Georgia (Fig. 33). Previously published distributional data: Florida (no additional data).

New material examined (n=4). USA: FLORIDA: Walton Co.: 6.5miW US-90 & Rt. 187, 29.I.1993, P. Skelley, M. Thomas, R. Turnbow (1, FSCA); GEORGIA: Tattnall Co.: Reidsville, Gordonville-Altamaha State Park, 10.XI.1983, W. Steiner, A. Gerberich, J.E. Lowry (3, USNM).

Seasonality. Adults are known only from the months of November and January, suggesting that the species is active in the cooler months.

Bionomics. We assume that the species inhabits warm temperate forest habitats.

***Anogdus dissimilis* Blatchley, 1916**

(Fig. 3, 4, 33)

Anogdus dissimilis Blatchley, 1916: 93; Brown 1937b: 170; Daffner 1988: 274. Holotype male in Purdue University (PURC), designated by Daffner 1988: 275; type specimen not seen, not available. Type locality: USA: FLORIDA: Dunedin.

Diagnosis. Length (pronotum + elytra) = 2.00–2.80 mm; greatest width = 1.32–1.92 mm. Head strongly, densely punctate. Antennal club distinctly robust, greatest width of club more than one-half its length; antennomere 7 narrow, less than two-thirds width of 9; antennomere 8 narrow, disk-like; apical antennomere shorter and narrower than 9 and 10. Sides of pronotum roundly angulate near middle, posterior angles roundly obtuse. Pronotal punctation variable, fine to coarse, moderately sparse to moderately dense. Elytral stria punctures round and deep, separated by \pm one diameter; interstria punctures fine to coarse, joined by transverse strigae posteriorly; elytral epipleura with pale setae. Metasternum anteriorly with a row of deep, round punctures with diameter about equal to or smaller than that of shallow punctures at sides of metasternum. Protarsi and mesotarsi of male with elongate setae ventrally. In both sexes, outer protibial spine significantly wider than inner spine. Male mesotibia and metatibia evenly widened to apex; mesotibial process slender, shorter than large mesotibial spine. Metafemur robust; males may have an acute tooth-like or simple rounded expansion near the apex of the lower margin. Abdominal sternites III–VII with a row of small, deep punctures at anterior margin; these punctures are not always clearly visible in mounted specimens. Median lobe of aedeagus robust; apex short, lobed, not flattened dorsoventrally (Fig. 3, 4). Parameres slender, reaching almost to apex of median lobe. Armature of internal sac as in Fig. 3, 4.

Distribution. Known widely in the United States from New Jersey to Illinois and Nebraska and south to New Mexico, Texas and Florida (Fig. 33). Previously published distributional records in Daffner (1988: 274): USA. FLORIDA: Pinellas Co., Dunedin. ILLINOIS: no additional locality data. NEW JERSEY: Stone Harbor.

New material examined (n=84). USA: FLORIDA: Alachua Co.: 2.5miSW Archer, 11–18.III.1988, P. Skelley, window trap in old pasture of sandhill (1, FSCA); Gainesville, SE Kincaid Rd.~1miN Paynes Prairie, 4–13.IV.1998, B. Sutton, 6m Malaise trap, old field-dry oak hammock (2, FSCA); Highlands Co.: Archbold Biol. Station, Lake Placid, 5.IV.1973, Rosenberg Collection (1, USNM); 23.XI.1979, H.V. Weems, Jr., Thomas A. Webber, insect flight trap (1, FSCA); 6.I.1974, W. Suter, at light (1, FMNH); 4.IV.1988, M. Deyrup, Malaise trap, SSo (1, ABSC); 11.XI.1983, M. Deyrup, Malaise trap, trail 2, SSo (1, SBPC); 21.III.1984, M. Deyrup, Malaise trap, trail 2, SSo (1, SBPC); 15.XI.1983, M. Deyrup, Malaise trap, trail 1, SSo (1, SBPC); 21.XII.1984, M. Deyrup, Malaise trap, trail 2, SSo (1, TAMU); 22.II.1988, M. Deyrup, Malaise trap, SSo (1, ABSC); 28.III.1988, M. Deyrup, Malaise trap, SSo (1, ABSC); 10.III.1983, M. Deyrup, Malaise trap, trail 1, SSo (1, ABSC); 5.XI.1983, M. Deyrup, Malaise trap, trail 1, SSo (1, ABSC); 5.III.1988, M. Deyrup, Malaise trap, SSo (1, ABSC); 7.XII.1983, M. Deyrup, Malaise trap, trail 2, SSo (1, ABSC); 25.IV.1988, M. Deyrup, Malaise trap, SSo (2, ABSC); 6.IV.1983, M. Deyrup, UV light trap (1, ABSC); Archbold Exp. Sta., 19.III.68, C.E. White, blacklight trap (1, FSCA); Jackson Co.: 0.8miN Calhoun Co. line on Hwy. 167, 11.II.1995, P. Skelley (1, FSCA); Polk Co.: Lk. Marrion Creek Estates, 15.II–6.III.2001, R. Morris, FIT (2, SBPC); Walton Co.: 6.5miW US-90 & Rt. 187, 29.I.1993, P. Skelley, M. Thomas, R. Turnbow (1, FSCA); GEORGIA: Camden Co., Little Cumberland I., 3.X.1982, W.E. Steiner (4, USNM); NEBRASKA: Cherry Co.: Big Alkali Lake, 27.VI.1992, E.G. Riley (1, TAMU); NEW MEXICO: Chaves Co.: Mescalero Sands, 35miE Roswell, 31.V.1987, Robert Gordon (3, USNM); Otero Co.: 24kmSW Alamogordo (rt. 82), 24.VIII.1992, H. & A. Howden, Lt. (5, SBPC; 1, FSCA); TEXAS: Aransas Co.: 10kmSE Austwell, Aransas NWR, N28°16.8' W96°48.3', 1–7.IV.2004, 4 m, S. & J. Peck, 04-35B, red bay-live oak forest, FIT (3, SBPC); 17.II–10.III.2004, 4m S. & J. Peck, 04-34, red bay-live oak forest, FIT (19, SBPC); 10–31.III.2004, 4m, S. & J. Peck, 04-35A, red bay-live oak forest, FIT (12, SBPC); Brazos Co.: College Sta., Lick Ck. Pk., 30.56234°N, 96.21333°W, II.2001, E.G. Riley, FIT-ground (2, TAMU); Burleson Co.: 2.2miN Caldwell, 23.III.1995, E.G. Riley, 48 (1, TAMU); Crane Co.: Jct. 1053 & 1233, sand hills, 10–26.V.1997, J.E. Wappes (2, TAMU); Freestone Co.: Old Spring Seat Church, nr. Donie, 6.V.1995, E. Riley, 89, UV (2, TAMU); Milam Co.: 4miN Gause nr. Sugarloaf Mt., 8.V.1993, E.G. Riley (1, TAMU); Nueces Co.: Padre Id., Nueces County Pk., 1.XII.1978, P. Perkins, J. Doyen, P. Opler (1, EMEC). Refugio Co.: Goose Is. State Park, 12.IV.1992, W.F. Chamberlain, at light (1, TAMU); Ward Co.: Monahans Sandhills State Park, 13.VI.1993, W.F. Chamberlain, at light (1, TAMU).

Seasonality. Adults are known mostly from the months of October through to April, suggesting that the species is active in the cooler months, especially in the southern parts of its range.

Bionomics. The records are usually from scrubby or mixed forest habitats, and usually on sandy soils. Specimens were caught mostly with malaise and flight intercept traps.

Anogdus fusciclavus (Fall, 1925)

(Fig. 5, 6, 34)

Anisotoma fusciclava Fall, 1925: 311. Type male in MCZC, type number 24020, designated by Daffner 1988: 277; seen by us. Type locality: USA: CALIFORNIA: Ojai.

Neocyrtusa sternita Hatch, 1957: 28. Synonymy with *A. fusciclavus* by Daffner 1988: 277. Type male in USNM. Type locality: USA: OREGON: Forest Grove.

Anogdus fusciclavus (Fall); Daffner 1988: 277.

Diagnosis. Body elongate-oval, convex, reddish-brown. Length (pronotum + elytra) = 2.22–2.40 mm; greatest width = 1.40–1.42 mm. Head punctures moderately coarse, irregularly spaced. Antennal club slender; antennomere 7 distinctly narrower than 9 and 10; antennomere 8 distinct, narrow; apical

antennomere distinctly narrower than 9 and 10. Sides of pronotum rounded, posterior angles obtuse. Pronotal punctures fine and distantly spaced, coarser and denser posterolaterally. Elytral stria punctures round and deep, separated by ± 1 diameter; interstria punctures fine, distantly spaced. Elytral epipleura inconspicuously setose. Metasternal anterior margin with a row of large, deep punctures; metasternum with large shallow punctures, laterally with microsculpture. Protarsi and mesotarsi of male widened, bearing dense white setae ventrally. Male mesotibia curved, inner margin serrate; mesotibial process broad at base, short, triangular. Metafemur moderately slender; male with a triangular expansion near the apex of the lower margin. Abdominal sternites III–VII each with a row of round deep punctures at anterior margin; punctures on sternites IV–VII may not be visible in dry specimens. Median lobe of aedeagus (Fig. 5, 6) elongate, cylindrical, curved dorsoventrally, with flattened apex; paired apices weakly inwardly curved. Parameres slender, apically expanded, reaching about to apex of median lobe. Inverted internal sac (Fig. 5, 6) with elongate, curved structures in basal one-half and a pair of clusters of setae in apical one-half.

Distribution. Widely distributed in the western states of California, Nevada, Oregon, and Washington (Fig. 34). Previously published distributional records in Daffner (1988: 277): USA. CALIFORNIA: Sacramento Co., Sacramento; Ventura Co., Ojai; Los Angeles Co., Pomona; Mendocino Co., 15 mi E. Fort Bragg. NEVADA: Clark Co., Las Vegas. WASHINGTON: Thurston Co., Olympia. **Note.** The record in Daffner (1988: 277, and figs. 17, 18) from TEXAS: Kerr Co., Kerrville is a misidentification and represents a specimen of *A. texanus* n. sp., see below.

New material examined (n=1). USA: CALIFORNIA: Orange Co.: Rt. 74, 20kmSW L. Elsinore, Lower San Juan Picnic Area, 11.III–4.IV.1999, 430m, S.& J. Peck, 99-87, canyon forest FIT (1, SBPC).

Seasonality. Adults are known only from the months of April, June and October suggesting that the species may be most active in the cooler months.

Bionomics. The predominant habitats seem to be in forests.

Note. *Anogdus sternita* was synonymised by Daffner (1988: 277) but we suspect that it is probably a distinct species because the antennal club and aedeagus illustrated by Hatch (1957: 28) differ from those of *A. fusciclavus*. We prefer to wait until more extensive material is available from coastal western Oregon and neighbouring regions before making a formal decision on this, and we have not included this distributional record.

***Anogdus insolitus* (Brown, 1937)**

(Fig. 7, 8, 34)

Neocyrtusa insolita Brown, 1937b: 170. Holotype male in CNCI, type number 4157; seen by us. Type locality: CANADA: BRITISH COLUMBIA: Penticton.

Anogdus insolitus (Brown); Daffner 1988: 276.

Diagnosis. Length (pronotum + elytra) = 1.74–2.68 mm; greatest width = 1.10–1.64 mm. Punctures of head moderate in size, irregularly spaced. Antennal club slender to moderately broad; antennomere 7 distinctly narrower than 9 and 10; antennomere 8 narrow, disk-like; apical antennomere slightly smaller than 9 and 10. Pronotum with sides obtusely angled at posterior two-fifths, posterior angles obtuse. Pronotum finely, sparsely punctate. Elytral stria punctures round and moderately deep, spacing ± 1 diameter; interstria punctures slightly finer and more sparse than pronotal punctures; elytral epipleura lack distinct setae. Metasternum at anterior margin with a row of indistinct punctures, smaller than the lateral dense, shallow punctures. Protarsi and mesotarsi of male densely setose ventrally. Male mesotibia weakly curved; mesotibial process broad at base, slender, shorter than large tibial spine. Metafemur moderately robust; males lack a distinct toothlike expansion but may have a weakly rounded expansion near the apex of the lower margin. Abdominal sternites III–VII lack a row of distinct punctures on anterior margin. Median lobe of aedeagus fusiform; dorsal lobes flattened and

acutely narrowed apically (Fig. 7, 8). Parameres narrow with weakly widened apices. Armature of internal sac as in Fig. 7, 8.

Distribution. Canada and USA. Distributed in western North America from the southern parts of western Canada, southwards to California, Nevada, and Colorado (Fig. 34). Previously published distributional records in Brown (1937b: 170) and Daffner (1988: 276): CANADA: BRITISH COLUMBIA: Richmond; Penticton; Nelway (misidentified record of *A. potens* (Brown) in Daffner 1988: 281); SAS-KATCHEWAN: Saskatoon.

New material examined (n=7). USA: CALIFORNIA: Tuolumne Co.: Strawberry L., 25.VII.1964, W.E. Simonds (1, CSCA); COLORADO: Alamosa Co.: Sand Dunes National Monument, 12.VIII.1973, Fred G. Andrews (1, CSCA); NEVADA: Esmeralda Co.: Fish Lake Valley Dunes, 24.VIII.1976, D. Giuliani, Blacklight (2, CSCA); WASHINGTON: Benton Co.: Hanford site, ALE. rd up to Rattlesnake Mtn., N46°22.757' W119°31.07', 23.V–1.VI.1998, C. Looney, pitfall trap, no fire zone (1, WSUC); same data except: 1–8.V.1998 (1, WSUC); same data except: 14–28.V.1998, Looney & Zack (1, WSUC).

Seasonality. Adults are known from the months of May through August.

Bionomics. The predominant habitat seems to be scrubby vegetation, usually on sand, and several specimens were caught in pitfall traps.

Anogdus obsoletus (Melsheimer, 1844)

(Fig. 9, 10, 33)

Pallodes obsoletus Melsheimer, 1844: 107. Lectotype female in MCZC, type number 3203, designated by Daffner 1988: 278; seen by us. Type locality: USA: PENNSYLVANIA (no additional locality data). *Neocyrtusa obsoleta* (Melsheimer), Brown 1937a: 163.

Cyrtusa blandissima Zimmermann, 1869: 250; Horn 1880: 294; synonymy in Brown 1937a: 163; Daffner 1988: 278. Type female in MCZC, type number 3193. Type locality: USA: NORTH CAROLINA (no additional locality data).

Anogdus obsoletus (Melsheimer); Daffner 1988: 278.

Diagnosis. Length (pronotum + elytra) = 1.54–2.10 mm; greatest width = 0.98–1.42 mm. Punctuation of head moderately fine to moderately coarse and dense. Antennal club moderately slender; antennomere 7 narrower than 9 and 10; antennomere 8 narrow, disk-like; apical antennomere slightly narrower than 9 and 10. Sides of pronotum weakly sinuate before obtuse posterior angles. Pronotum finely, sparsely punctate. Elytral stria punctures round, deep and closely spaced; interstria punctures finer and sparser than pronotal punctures; elytral epipleura with scattered short setae. Metasternum at anterior margin with a row of large, deep punctures which are larger in diameter than lateral punctures. Protarsi and mesotarsi of male with dense setae ventrally. Male mesofemur with or without a rounded expansion ventrally near apex; male mesotibia curved; mesotibial process broad, triangular, distinctively curved with apex passing behind large tibial spine. Male metafemur slender, often with a tooth-like expansion near the apex of the lower margin. Abdominal sternite III with a row of deep, round punctures at anterior margin; sternites IV–VII each with a median row of punctures of about same size as on sternite III. Median lobe of aedeagus (Fig. 9, 10) elongate, dorsoventrally flattened apically; paired dorsal lobes apically acute. Parameres slender with strongly expanded apices, nearly reaching apex of median lobe. Armature of internal sac as in Fig. 9, 10.

Distribution. Distributed widely in southeastern Canada and the eastern United States, south to Virginia, Alabama, and Texas (Fig. 33). Previously published distributional records in Brown (1937a: 163) and Daffner (1988: 278): CANADA. ONTARIO: Constance Bay. USA. MASSACHUSETTS: Middlesex Co.: Lincoln; NORTH CAROLINA: no additional data; ILLINOIS: Champaign Co.: Mahomet; KEN-

TUCKY: Edmonson Co.: Horse Cave; OKLAHOMA: Latimer Co; PENNSYLVANIA: no additional data; Bucks Co.: Wisahickon. TEXAS: Gonzales Co.: Palmetto State Park.

New material examined (n=184). CANADA: ONTARIO: Pelee Island, 28.VI.1940, W.J. Brown (6, CNCI); Bronte Creek Provincial Park, 7.VII.1983, B.V. Brown, FIT (1, SBPC); Guelph, 28.VII–9.VIII.1983, B.V. Brown, FIT (2, SBPC); Hamilton, 28.VI–14.VII.1982, M. Sanborne (2, CNCI); same data except: 23–30.VIII.1981 (1, CNCI); same data except: 30.VI–8.VII.1981 (4, CNCI); same data except: 31.VII.1980 (1, CNCI); same data except: 10–23.VIII.1982 (1, CNCI); same data except: 2–7.VIII.1981 (1, CNCI); same data except: 7.VI.1981 (1, CNCI); Kemptville forest, 16.VII.1994, S. Peck, 94–20, forest evening car net (2, SBPC); same data except: 29.VII.1994, 94–24 (3, SBPC); Limoges, LaRose Provincial Forest, N45°22.703' W75°15.244', 1–30.VIII.2001, 63m, S. & J. Peck, 01–7, mixed forest FIT (1, SBPC); Ottawa, IX.1989, S. Peck (1, SBPC); Ottawa, 15kmW N. Gower, Marlborough Forest roads, 18.VII.91, S. & J. Peck, 91–300, evening car net (1, SBPC); Ottawa, Mer Bleue Bog, N45°23.260' W75°31.134', 1–30.VI.2001, 116m, S. & J. Peck, 01–1, mixed forest FIT (1, SBPC); same data except 1–30.VII.2001, 01–2 (1, SBPC); Pakenham Mt. Rd., 27.VII.1994, S. Peck, 94–23, forest evening car net (1, SBPC); Rideau Lakes, Rideau Ferry to Portland, 26–27.VII.1991, S. & J. Peck, 91–302, evening car net (1, SBPC); Shirleys Bay, 15kmW Ottawa, 1–15.VII.1984, M. Kaulbars, FIT (9, SBPC); same data except: 16–31.VII.1984 (4, SBPC); same data except: 1–15.VIII.1984 (7, SBPC); same data except 15–30.VI.1984 (3, SBPC); Grenville Co.: L3C6 Wolford Twp., 44°52'03"N 75°43'50"W, 3–6.IX.1999, J. Cook, mature mixed forest, FIT (1, JCIC); same data except: 20–23.VIII.1999 (1, JCIC); same data except: 25–28.VI.1999 (1, JCIC); same data except: 9–12.VII.1999 (4, JCIC); same data except: 6–9.VII.1999 (1, JCIC); same data except: 2–6.VIII.1999 (1, JCIC); same data except: 13–16.VIII.1999 (1, JCIC); same data except: 28.VI–2.VII.1999 (1, JCIC); same data except: 16–19.VII.1999 (2, JCIC); same data except: 18–21.VI.1999 (1, JCIC); same data except: 15–19.VI.1998 (2, JCIC); same data except: 6–10.VII.1998 (1, JCIC); same data except: 23–26.VII.1999 (1, JCIC); same data except: 28.VII–5.VIII.1991 (2, JCIC); same data except: 1–3.VIII.1990 (1, JCIC); same data except: 7–14.VII.1991 (1, JCIC); same data except: 1–9.VIII.2004 (1, JCIC); same data except: 17–24.VIII.1998 (1, JCIC); same data except: 5–12.VII.2002 (1, JCIC); same data except: 7–14.VIII.2000 (1, JCIC); same data except: 11–21.VII.2004 (3, JCIC); same data except: 9–15.VIII.2004 (2, JCIC); same data except: 13–20.VI.2004 (1, JCIC); same data except: 27.VI–4.VII.2004 (1, JCIC); same data except: 4–11.VII.2004 (1, JCIC); same data except: 14–21.IX.2003 (1, JCIC); same data except: 20–27.IX.1999 (1, JCIC); Wolford Township roads, 5.VII.1993, J. Cook, evening carnetting (1, JCIC); Leeds-Grenville Co.: 7kmSE Westport, N44°37.727' W76°21.545', 4.VI–9.VII.2005, 134m, S. Peck, 05–02, 4 maple sugar bush FITs (3, SBPC); same data except 1–30.IX.2005, 05–05 (4, SBPC); same data except: 18.VI–23.VII.2006, 06–07 (7, SBPC); same data except: 1–31.X.2006, 06–10 (1, SBPC); same data except: 1–31.VII.2003, 03–06, 2 maple sugar bush FITs (4, SBPC); same data except: 1–30.VI.2003, 03–04 (1, SBPC); same data except: 1–31.VIII.2005, 05–04, 4 maple sugar bush FITs (8, SBPC); same data except: 1–30.IX.2006, 06–09 (1, SBPC); same data except: 9–31.VII.2005, 05–03 (20, SBPC); QUEBEC: Gatineau Co: Chelsea, Adamson Rd., 12.X–23.XI.2003, H. & J. Douglas, *Acer saccharum*, *Pinus strobus* forest, FIT (1, SBPC); USA: ALABAMA, Jackson Co.: 5 mi N Garth, 19.V.1972, S. Peck, Ber. #239 (1, SBPC); ILLINOIS: Cook Co.: Chicago, Eggers Woods, 41°41.0'N, 87°31.8'W, 23–24.VIII.2002, FMNH Bioblitz, hardwood forest on sand, FIT (2, FMNH); Union Co.: Pine Hills Field Station, 15–22.V.1967, J.M. Campbell (1, CNCI); INDIANA: Monroe Co.: Bloomington, 29–30.VII.1983, F.N. Young, BLT (1, FSCA); MARYLAND: Montgomery Co., Plummer's I., 25.VI.1911, E.A. Schwarz (1, USNM); MICHIGAN: Kalamazoo Co.: Hickory Corners, Gull Lake, 11–14.VI.1981, R. Anderson, intercept (1, SBPC); NORTH CAROLINA: Cove Creek, 17.VI.1963, K. Stephan (1, FSCA); TEXAS: Brazos Co.: College Station, Lick Creek Park, 16–24.IV.1996, E.G. Riley, 291, bottomland forest, FIT (5, TAMU); same data except: 288, upland forest (3, TAMU); same data except: 13–16.IV.1996, 272, bottomland forest (6, TAMU); same data except: 26.V–8.VI.1996, 355 (1, TAMU); College Station, Lick Creek Park, 30.55841°N 96.20866°W, 12–24.IX.2010, H. Blackburn, R. Mendez, E. Riley, bottomland forest, FIT-elevated (1, TAMU); same locality, 21.III–7.IV.2011, E.G. Riley, bottomland forest ground-level FIT (1, TAMU); Fort Bend Co.: Brazos Bend State Park, 29.V–18.VI.1999, B. & B. Raber, E. Riley, buckeye-sycamore forest, FIT (1, TAMU); same data except: 18.IV–29.V.1999, B. Raber, E. Riley (2, TAMU); Wood Co.: Godwin Woods, 3.5 mi. SW Hainesville, 32°42'30"N, 95°24'36"W,

29.V–27.VI.2000, Wm. Godwin, FIT (1, TAMU); same data except: 23–30.IV.2000 (1, TAMU); VIRGINIA: Fredrkgb., 26.V.1900, id. H.C.F. 1267 (1, USNM); Bath Co.: 9.6kmN Clifton Forge, 13.V–21.VIII.1983, S. & J. Peck, *Tsuga-Fagus* forest, FIT (1, SBPC); Franklin Co.: Blue Ridge Parkway, mi. 154, Smart View, 31.V–20.VIII.1981, 2560', S. Peck, intercept trap (10, SBPC); Bakersfield, forest roads, 25.VII.1992, S. & J. Peck, 92–311, evening car netting (1, SBPC).

Seasonality. Adults are known mostly from the months of April to September and this suggests that the species is most active in the summer months.

Bionomics. Most collections are from mixed forest on a variety of soils, mostly from flight intercept traps and evening car netting.

***Anogdus potens* (Brown, 1932)**

(Fig. 11, 12, 33)

Leiodes potens Brown, 1932: 205. Holotype male in CNCI, type number 3227; seen by us. Type locality:

CANADA: QUEBEC: Thunder River

Neocyrtus potens (Brown); Brown 1937a: 165.

Anogdus potens (Brown); Daffner 1988: 281.

Diagnosis. Length (pronotum + elytra) = 2.44–2.80 mm; greatest width = 1.56–1.60 mm. Punctuation of head moderately fine, variably spaced. Antennal club variable, of slender to moderate width; antennomere 7 smaller than 9 and 10; antennomere 8 narrow, disk-like; apical antennomere smaller than 9 and 10. Pronotum with sides rounded, posterior angles obtuse. Pronotal punctuation similar to or finer than punctuation of head. Elytral stria punctures round and deep, separated by ± 1 diameter; interstria punctures fine, scattered; elytral epipleura usually setose. Metasternal anterior margin with a row of small, inconspicuous punctures; metasternum in anterior one-half and laterally with shallow, dense punctures. Protarsi and mesotarsi of male bearing white setae ventrally. Male mesotibia variably curved on inner margin; mesotibial process broad at base, narrowing to acute apex, shorter than large mesotibial spine. Male metafemur moderately robust with a narrow to broad tooth-like expansion near the apex of the lower margin. Abdominal sternites III–VII with a row of small punctures at anterior margin; these are inconspicuous on sternite III and not usually visible on sternites IV–VII in dry specimens. Median lobe of aedeagus (Fig. 11, 12) broad and deep. Parameres slender, nearly reaching apex of median lobe. Armature of internal sac as in Fig. 11, 12.

Distribution. Widely distributed in southeastern Canada and the northeastern United States (Fig. 33). Previously published distributional records in Daffner (1988: 281): CANADA: NEW BRUNSWICK: Bathurst (erroneously reported by Daffner as in Ontario); ONTARIO: Algoma Co., Lake Superior Provincial Park; Arnprior; Brent, Algonquin Provincial Park; Mattagami River, Gogema; Pelee Islands. QUEBEC: Thunder River (Riviere-au-Tonniere). USA: MAINE: Paris. NORTH DAKOTA: Pembina.

Note. The record for Nelway, British Columbia in Daffner 1988: 281 is a misidentification of *A. insolitus* (Brown).

New material examined (n=18). CANADA: ONTARIO: 28km N Cloyne, Brouns Lake Rd., 2.VII.1995, S. & J. Peck, 95–10, forest evening carnet, 40km (1, SBPC); 6.5km NW Almonte, 45°16'N 76°08'W, 24–25.V.1993, F.W. Grimm, sand dune PT (9, SBPC); Barry's Bay to Bonnechere Road, 7.IX.1991, S. & J. Peck, 91–321, forest road day car netting (1, SBPC); Kemptville forest, 29.VIII.1994, S. Peck, 94–24, evening forest road car net (3, SBPC); USA: MAINE: Somerset Co.: N. New Portland, 24.VII.1992, S. & J. Peck, 92–310, forest road evening car netting (2, SBPC); MICHIGAN: Cheboygan Co.; Indian River, 18.VI.1972, E.J. Kiteley (1, CNCI); Chippewa Co.: 3 Lakes Camp, 8kmSE Strongs, 25.IX.1993, S. Peck, 93–82, evening car net (1, SBPC).

Seasonality. Adults are known from the months of June through September suggesting that the species is active in the summer months.

Bionomics. The collections are from mostly mixed forest, sometimes on sand soils, and taken with pit traps and car netting.

***Anogdus puritanus* (Fall, 1925)**

(Fig. 13, 14, 35)

Anisotoma puritana Fall, 1925: 310. Lectotype female in MCZC, type number 24022, designated by Daffner 1988: 280, seen by us. Type locality: USA: MASSACHUSETTS: Tyngsboro. *Neocyrtusa puritana* (Fall); Brown 1937a: 164.

Anogdus puritanus (Fall); Daffner 1988: 280.

Diagnosis. Length (pronotum + elytra) = 2.08–2.36 mm; greatest width = 1.32–1.48 mm. Punctures of head moderately fine, irregularly spaced. Antennal club moderately slender; antennomere 7 distinctly narrower than 9 and 10; antennomere 8 narrow, disk-like; apical antennomere smaller than 9 and 10. Sides of pronotum weakly angulate at middle, posterior angles broadly obtuse. Pronotum finely punctate. Elytral stria punctures round and deep, separated by ± 1 diameter; interstria punctures round, scattered; elytral epipleura setose. Metasternal anterior margin with a row of small, inconspicuous punctures; metasternum laterally with dense, shallow punctures. Protarsi and mesotarsi of male with white setae ventrally. Male mesotibia curved or weakly sinuate; mesotibial process broad at base, tapering to acute apex, shorter than large mesotibial spine. Metafemur of moderate width; males may have an acute tooth-like or small right-angled or rounded expansion near the apex of the lower margin. Abdominal sternite III with an inconspicuous row of small punctures at anterior margin; sternites IV–VII each with a row of punctures anteriorly that may not be visible in dry specimens. Median lobe of aedeagus (Fig. 13, 14) elongate, broad, strongly curved dorsoventrally. Parameres slender, with apices sometimes weakly swollen, reaching nearly to apex of median lobe. Armature of internal sac as in Fig. 13, 14.

Distribution. North America. Widely distributed across southern Canada east of the Rocky Mountains and the eastern United States from Massachusetts south to North and South Carolina (Fig. 35). Previously published distributional records in Brown (1937a: 164) and Daffner (1988: 289): CANADA. ONTARIO: Arnprior; Carleton Place. QUEBEC: Gatineau Park. USA. MASSACHUSETTS: Bedford; Dracut; Tyngsboro. NORTH CAROLINA: Avery Co.: Linville Falls; Buncombe Co.: Great Craggy Mts. SOUTH CAROLINA: Oconee Co.: Walhalla.

New material examined (n=84). CANADA. MANITOBA: Spruce Woods Provincial Park, Spirit Sands, 17.VI–21.VII.1988, S. & J. Peck, mesic forest on sand, FIT (1, SBPC); ONTARIO: Heckston, 20km SE Kemptville, 24.VI–21.VII.1984, M. Kaulbars, FIT (15, SBPC); same data except: 15.V–24.VI.1984 (2, SBPC); same data except: 15.VIII–9.IX.1984 (1, SBPC); Limoges, LaRose Provincial Forest, N45°22.703', W75°15.244', 1–30.VII.2001, 63m, S. & J. Peck, 01–6, mixed forest, FIT (3, SBPC); same data except: 1–30.VI.2001, 01–5 (4, SBPC); Ottawa, Mer Bleue Bog, N45°23.260', W75°31.134', 1–30.VII.2001, 116m, S. & J. Peck, 01–2, mixed forest FIT (4, SBPC); same data except: 1–30.VI.2001, 01–1 (10, SBPC); Grenville Co.: L3C6 Wolford Twp, 44°52'03"N 74°43'50"W, 17–24.VII.2000, J. Cook, mature mixed forest, FIT (1, JCIC); same data except: 19–22.VI.1998 (1, JCIC); same data except: 23–30.VI.1991 (1, JCIC); same data except: 14–21.VI.1993 (1, JCIC); same data except: 9–13.VIII.1999 (1, JCIC); same data except: 21–25.VI.1999 (1, JCIC); same data except: 28.VI–2.VII.1999 (1, JCIC); same data except: 26–30.VII.1999 (1, JCIC); same data except: 19–23.VII.1999 (1, JCIC); same data except: 11–14.VI.1999 (1, JCIC); same data except: 9–12.VI.1999 (1, JCIC); same data except: 15–19.VI.1998 (1, JCIC); same data except: 10–17.VII.2000 (1, JCIC); same data except: 13–20.VII.2003 (1, JCIC); same data except: 24–31.VII.2000 (2, JCIC); same data except: 27.VI–4.VII.2004 (2, JCIC); same data except: 11–21.VII.2004 (2, JCIC); same data except: 4–11.VII.2004 (1, JCIC); same data except: 15–22.

VI.2003 (1, JCIC); same data except: 5–11.VIII.2003 (1, JCIC); same data except: 29.VI–6.VII.2003 (1, JCIC); same data except: 6–13.VII.2003 (1, JCIC); same data except: 9–16.VII.2006 (1, JCIC); same data except: 21–28.VI.2002 (1, JCIC); same data except: 24–27.VII.1998 (2, JCIC); same data except: 13–17.VII.1998 (1, JCIC); same data except: 3–6.VII.1998 (1, JCIC); same data except: 22–26.VI.1998 (1, JCIC); same data except: 27–31.VII.1998 (1, JCIC); same data except: 22–29.VI.2003 (2, JCIC); Wolford Township roads, 5.VII.1993, J. Cook, evening car netting (1, JCIC); QUEBEC: Johnville, 5.VII.1989, C. Levesque (1, CNCI); Gatineau Park nr. Pinks Lake, 8.VIII.1979, S. Peck & A. Davies, forest, Malaise trough (1, SBPC); Joliette Co.: Lac Cloutier, 23.VIII.1987, Genier & Bertrand, FIT malaise (1, SBPC); same data except: 19.VII.1987 (1, SBPC); same data except: 21.V.1987 (2, SBPC); same data except: 5.VII.1987 (1, SBPC); same data except: 14.VI.1987 (1, SBPC).

Seasonality. Adults are known from the months of June through September suggesting that the species is active in the summer months.

Bionomics. The collections are from mostly mature mixed forest, often on sand soils, and are almost entirely from flight intercept traps.

***Anogdus sculpturatus* (Fall, 1910)**

(Fig. 15, 16, 34)

Anisotoma sculpturata Fall, 1910: 6. Holotype female in MCZC, type number 24023, designated by Daffner 1988: 284, seen by us. Type locality: USA: ARIZONA: Flagstaff.

Anogdus sculpturatus (Fall); Daffner 1988: 282.

Diagnosis. Length (pronotum + elytra) = 1.82–2.22 mm; greatest width = 1.10–1.40 mm. Head punctures moderately fine, irregularly spaced. Antennal club of moderate width; antennomere 7 distinctly to slightly narrower than 9 and 10; antennomere 8 narrow and disk-like; apical antennomere slightly narrower than 9 and 10. Sides of pronotum rounded, posterior angles broadly obtuse. Pronotal punctures fine, irregularly spaced. Elytral stria punctures closely spaced and bearing short, semi-erect, pale setae; interstriae with irregular transverse microsculpture which gives the surface a sculptured texture, and with punctures bearing short, appressed setae; elytral epipleura inconspicuously setose. Metasternal anterior margin with a row of round, deep punctures; punctures not larger in diameter than the shallow lateral punctures of the metasternum. Protarsi and mesotarsi of male bearing white setae ventrally. Male mesotibia curved; mesotibial process broad at base, triangular, shorter than large tibial spine. Metafemur slender, male with a broad, triangular expansion near the apex of the lower margin. Abdominal sternite III with a row of indistinct, moderately small punctures at anterior margin; sternites IV–VII each with a row of larger punctures near anterior margin. Median lobe of aedeagus (Fig. 15, 16) elongate, evenly curved dorsoventrally, with apex rounded in dorsal view. Parameres slender, not expanded apically, reaching near to apex of median lobe. Internal sac (Fig. 15, 16) with elongate flagellum.

Remarks. A male specimen identified by H. Daffner as this species (in CNCI) lacks elytral microsculpture and setae, and the partly everted internal sac lacks the distinctive flagellum we have found to be characteristic of this species.

Distribution. United States. Known only from Arizona (Fig. 34). Previously published distributional records in Daffner (1988: 282): USA: ARIZONA: Coconino Co., Flagstaff; Pima Co., Santa Catalina Mts., Bear Canyon.

New material examined (n=2). USA: ARIZONA: Pima County, St. Catalina Mts., Bear Cyn., 1.VIII.1972, K. Stephan (2, FSCA).

Seasonality. Adults are known from the months of July and August, suggesting that the species is active in the rainy summer months.

Bionomics. The known habitats are mixed forests in canyons.

***Anogdus secretus* (Brown, 1937)**

(Fig. 17, 18, 36)

Neocyrtusa secreta Brown 1937a: 163. Holotype male in CNCI, type number 4156; seen by us. Type locality: Arnprior, Ontario.

Anogdus secretus (Brown); Daffner 1988: 278.

Diagnosis. Length (pronotum + elytra) = 1.66–2.20 mm; greatest width = 1.12–1.44 mm. Punctuation of head moderately fine, punctures irregularly spaced. Antennal club slender, antennomere 7 distinctly narrower than 9 and 10; antennomere 8 narrow, disk-like; apical antennomere slightly narrower than 9 and 10. Sides of pronotum weakly sinuate before broadly obtuse posterior angles. Pronotum finely punctate; punctures distant on disk, more closely spaced laterally. Elytral stria punctures round and deep, separated by less than one diameter; interstria punctures finer than pronotal punctures, distantly spaced; elytral epipleura inconspicuously setose. Metasternal anterior margin with a row of large, round, deep punctures about equal in size to the strong, densely spaced lateral punctures. Protarsi and mesotarsi of male with white setae ventrally. Male mesotibia weakly curved; mesotibial process broad at base, acute apically, shorter than large mesotibial spine. Metafemur of moderate width; males with a broad tooth-like expansion near the apex of the lower margin. Abdominal sternites III–VII each with a row of round, deep punctures at anterior margin; these punctures are not clearly visible in all specimens. Median lobe of aedeagus (Fig. 17, 18) cylindrical in basal one-half, dorsoventrally curved, flattened and narrowed apically. Parameres slender, reaching about to apex of median lobe. Internal sac with characteristic elongate, curved sclerite (Fig. 17, 18).

Distribution. Widely distributed from southeastern Canada and southwards into the United States through New York and Virginia to Oklahoma and Texas (Fig. 36). Previously published distributional records in Brown (1937a: 163) and Daffner (1988: 278): CANADA: ONTARIO: Arnprior; Leamington; Mer Bleue bog; Ottawa. QUEBEC: Gatineau Park. USA: NEW YORK: Tompkins Co., Ithaca. OKLAHOMA: Latimer Co.

New material examined (n=21). CANADA: ONTARIO: Ottawa, Constance Bay, 20–23.VII.1977, M. Sanborn (1, SBPC); same data except: 12.VIII.1977 (1, SBPC); Leeds-Grenville Co.: 7km SE Westport, N44°37.727' W76°21.545', 4.VI–9.VII.2005, 134m, S. Peck, 05–02, 4 maple sugar bush FITs (1, SBPC); same data except: 1–31.VIII.2005, 05–04 (1, SBPC); USA: OKLAHOMA: Latimer Co.: IV.1987, K. Stephan (1, TAMU); same data except: V.1989 (2, TAMU); same data except: IV:1990 (1, TAMU); TEXAS: Bastrop Co.: 2–5 mi. E jct. 95 on hwy 21, nr. Bastrop, 31.III.1990, E. Riley (1, TAMU); Bastrop State Park, 24.V–16.VIII.1983, M. Kaulbars (1, SBPC); Brazos Co.: Koppe's Bridge, 5 mi SW College Station, 10–17.IV.1987, R. Anderson, riparian ravine, FIT (1, SBPC); Lick Creek Park, College Station, 17.IV–18.V.1987, R. Anderson, riparian ravine, FIT (2, SBPC); Lick Creek Park, College Station, 7–17.IV.1987, Heraty/Wooley, post oak savannah (3, SBPC); Montgomery Co.: Jones State Forest, 9 mi S Conroe, 12.XI.1987, Wharton, Wang, Praetorius, Malaise trap (1, TAMU); Robertson Co.: 8 mi E Hearne, 21–27.IV.1991, M. Hallmark (1, TAMU); VIRGINIA: Arlington Co.; Four Mile Run, 22–24.V, J.D. Hood Coll. (1, USNM).

Seasonality. Adults are mostly known from the months of May through September suggesting that the species is active in the summer months.

Bionomics. The collections are from mostly mixed forest, riparian ravines, and post-oak savannah, and were mostly made with flight intercept traps.

***Anogdus superans* (Fall, 1910)**

(Fig. 19, 20, 36)

Cyrtusa superans Fall, 1910: 7. Holotype male in MCZC, type number 24025, designated by Daffner 1988: 284; seen by us. Type locality: USA: MASSACHUSETTS: Tyngsboro.

Neocyrtusa superans; Brown 1937a: 164.

Anogdus superans (Fall); Daffner 1988: 284.

Diagnosis. Length (pronotum + elytra) = 2.14–2.74 mm; greatest width = 1.36–1.80 mm. Punctuation of head moderately coarse and dense. Antennal club moderately robust; antennomere 7 distinctly narrower than 9 and 10; antennomere 8 narrow, disk-like; apical antennomere slightly narrower than 9 and 10. Sides of pronotum weakly sinuate before broadly obtuse posterior angles. Pronotum finely punctate, punctures separated by 1–3 diameters. Elytral stria punctures round and deep, separated by less than one diameter; interstria punctures finer than pronotal punctures, distantly spaced; elytral epipleura with short setae. Metasternal anterior margin with a row of moderate-sized, densely spaced punctures; mesosternum laterally rugose. Protarsi and mesotarsi of male bearing white setae ventrally. Male mesotibia weakly sinuate on inner margin, widened apically; mesotibial process triangular, acute apically, about one-half length of large mesotibial spine. Metafemur moderately to strongly robust; males with a small, acute tooth-like expansion near the apex of the lower margin. Abdominal sternite III with a row of indistinct, small punctures at anterior margin; punctures irregularly spaced on sternites IV–VII. Median lobe of aedeagus (Fig. 19, 20) cylindrical, curved. Parameres slender, nearly reaching apex of median lobe. Internal sac characterized by a median longitudinal sclerotized structure (Fig. 19, 20).

Distribution. Widely distributed in southern Canada east of the Rocky Mountains and south to Colorado, and in New England, and Florida, Georgia, and Mississippi (Fig. 36). Previously published distributional records in Brown (1937a: 164) and Daffner (1988: 284): CANADA: ALBERTA: Manyberries; MANITOBA: Aweme; ONTARIO: Arnprior; Constance Bay; Mer Bleue bog, near Ottawa; Normandale; Ottawa. USA: MASSACHUSETTS: Middlesex Co., Lincoln; Needham; Sherborn; Tyngsboro. NEW HAMPSHIRE: Rumney.

New material examined (n=113). CANADA: ALBERTA: 11 km S Empress, sand dunes, 4.VIII.1981, R.S. Anderson, light (1, SBPC); MANITOBA: E. of Richer, Sandilands Provincial Forest, Forest Rd. 19, 16.VII.1993, Peck & Roughley, 93–66, car net (14, SBPC); Sandilands Provincial Forest, 2 km E Marchand, 10–12.VI.1987, H. & A. Howden, night, 10pm (1, SBPC); Ste. Rita, Agassiz Provincial Forest, 21.VII.1993, Peck & Roughley, 93–69, evening car net (7, SBPC); Tolstoy-Vita, Rt. 209, 17.VII.1993, Peck & Roughley, 93–67, tallgrass prairie savanna, evening car net (12, SBPC); ONTARIO: Hawthorne, 22.VII.1936, W.J. Brown (3, CNCI); same data except: 27.VII.1936 (7, CNCI); Pelee Island, 28.VI.1940, W.J. Brown (3, CNCI); 40 km E Ottawa, Limoges, Larose Forest, 10.VII.1992, S. & J. Peck, 92–300, forest road evening car netting (6, SBPC); Constance Bay, 24. VI.1959, H.F. Howden, malt trap (1, CNCI); Kemptville forest, 16.VII.1994, S. Peck, 94–20, evening car net, forest (2, SBPC); Limoges forest, 18.VII.1994, S. Peck, 94–21, forest evening car net (3, SBPC); Limoges Provincial forest, 31.VII.1994, S. Peck, 94–25, evening forest rd. car net (4, SBPC); Nepean, Bruce Pit sands, 1–6.IX.1993, L. Masner, PT (2, SBPC); QUEBEC: Johnville, 25.VI.1989, C. Levesque (1, CNCI); USA: COLORADO: Larimer Co.: Pawnee National Grassland, 16.VI.1987, Robert Gordon (1, USNM); FLORIDA: Alachua Co.: Gainesville, 16.X.1973, R.E. Woodruff, black light trap (1, FSCA); W. of Gainesville, Pierce's Homestead, 24.III.1976, W.H. Pierce, Malaise trap (1, FSCA); same data except: 20.III.1976 (1, FSCA); same data except: 21.III.1976 (1, FSCA); Citrus Co., Brooksville, 27.III.1972, E.J. Kiteley (1, CNCI); Highlands Co.: Archbold Biological Station, Lake Placid, 12.V.1983, M. Deyrup, UV light trap (1, ABSC); same data except: 6–7.XII.1983, Malaise trap (1, ABSC); same data except 28.XII.1984 (1, ABSC); same data except: 5.XI.1983 (1, ABSC); same data except: 17.X.1984 (1, ABSC); same data except: 5.III.1988 (1, ABSC); same data except: 3.XII.1984 (1, ABSC); Highlands Hammock State Park, 14.III.1977, D. Platt, E. Riley, blacklight (2, TAMU); same data except 13.III.1977 (1, TAMU); Lee Co., Estero, 10.III.1965,

B.K. Dozier (1, FSCA); Okaloosa Co., Fort Walton Beach, 10.III.1975, E.J. Kiteley (1, CNCI); same data except: 22.III.1975 (1, CNCI); same data except 27.III.1975 (1, CNCI); same data except: 24.II.1981 (1, CNCI); same data except: 19.III.1982 (1, CNCI); same data except: 17.II.1981 (2, CNCI); same data except: 26.II.1982 (1, CNCI); same data except: 3.II.1979 (2, CNCI); same data except: 8.IV.1975 (2, CNCI); same data except: 8.III.1981 (2, CNCI); same data except: 25.III.1975 (1, CNCI); Osceola Co., Kissimmee, 22.II.1980, E.J. Kiteley (1, CNCI); GEORGIA: Chatham Co.: Tybee Island, 8–9.III.1992, P. Skelley, swimming pool (2, FSCA); McIntosh Co.: Sapelo Island, IV–V.1987, BRC Hym. Team, MT, open sand dunes (3, SBPC); MASSACHUSETTS: Northampton, 31.VII.1969, E.J. Kiteley (1, CNCI); same data except: 28.IV.1971 (1, CNCI); Middlesex Co., Lincoln, 13–27.VII.1982, E.T. Armstrong, window trap (2, FMNH); same data except: 27.VII–10.VIII.1982 (3, FMNH); MISSISSIPPI: Jackson Co., Ocean Springs, 7.XII.1930, H. Dietrich (1, FSCA).

Seasonality. Adults are known throughout most of the year from the months of February to December, and are mostly summer active in the northern part of the distribution, and in the cooler fall to spring months in the south.

Bionomics. The collections are from mostly mixed forest and some from tallgrass prairie savanna, and most frequently on sand soils. Most were collected by malaise trap, flight intercept trap and evening car netting.

Anogdus alachua Peck and Cook, new species

(Fig. 21, 22, 35)

Diagnostic description. Length (pronotum + elytra) = 2.08–2.76 mm; greatest width = 1.44–1.96 mm. Head moderately strongly, irregularly punctate. Antennal club distinctly robust, greatest width of club more than one-half its length; antennomere 7 narrow, about two-thirds width of 9; antennomere 8 narrow, disk-like; apical antennomere shorter and narrower than 9 and 10. Sides of pronotum weakly angled near middle; pronotum widest at obtuse posterior angles. Pronotum minutely, sparsely punctate. Elytral stria punctures round and deep, separated by one diameter or less; interstria punctures fine, joined by transverse strigae posteriorly. Elytral epipleura with short pale setae. Metasternum anteriorly with a row of deep, round, irregularly separated punctures with diameters about equal to the shallow punctures at sides of metasternum. Protarsi and mesotarsi of male with elongate setae ventrally. In both sexes, outer protibial spine wider than inner spine. Male mesotibia variably curved, narrower than in *A. dissimilis*; mesotibial process variable in shape, shorter than large mesotibial spine. Metatibia and metafemur more slender than in *A. dissimilis*. Male metafemur with small, acute tooth-like expansion near the apex of the lower margin. Abdominal sternites III–VII with a row of small, deep punctures at anterior margin; these punctures are not always clearly visible in mounted specimens. Median lobe of aedeagus more slender than in *A. dissimilis*; apex elongate, flattened dorsoventrally (Fig. 21, 22). Parameres slender, reaching almost to apex of median lobe. Armature of internal sac as in Fig. 21, 22.

Type material (n=29). Holotype, male in FSCA, with following label data: FLORIDA: Alachua Co./ 29°34½'N, 82°29'W/ 7.III.1995 // Randall W. Lundgren/ flight-barrier trap/ in hardwood hammock. Paratypes (28), same data as holotype (22, FSCA; 6, SBPC).

Distribution. Known only from the United States in the southeastern state of Florida (Fig. 35).

Seasonality. Adults are known only from the month of March.

Bionomics. The only known habitat is live oak hammock on sand soil, taken with flight intercept traps.

Etymology. The species name, a noun in apposition, refers to Alachua Co, Florida, where all known specimens have been collected.

***Anogdus cochise* Peck and Cook, new species**

(Fig. 23, 24, 34)

Diagnostic description. Length (pronotum + elytra) = 2.92–2.96 mm; greatest width = 1.92 mm. Head punctures variable in size and spacing. Antennal club slender; antennomere 7 narrower than 9 and 10; antennomere 8 narrow, disk-like; apical antennomere narrower than 9 and 10. Sides of pronotum rounded, posterior angles broadly obtuse. Pronotal punctures fine, moderately widely spaced. Elytral stria punctures large, round, deep and closely spaced; interstria punctures minute, distantly spaced; elytral epipleura with pale setae. Metasternal anterior margin with a row of round, deep punctures; punctures not larger in diameter than the shallow lateral punctures of the metasternum. Protarsi and mesotarsi of male bearing white setae ventrally. Male mesotibia curved; mesotibial process broad at base, tapering to apex, nearly as long as large tibial spine. Metafemur slender, male with rounded or triangular expansion near the apex of the lower margin. Abdominal sternite III with a row of indistinct small, deep punctures at anterior margin; sternites IV–VII each with a row of punctures near anterior margin, not visible in dry specimens. Median lobe of aedeagus (Fig. 23, 24) elongate, broad, evenly curved dorsoventrally; paired apical lobes slightly inflexed. Parameres slender, not expanded apically, reaching nearly to apex of median lobe. Inverted internal sac with elongate, darkly sclerotized structure (Figs. 23, 24). Female unknown.

Type material (n=2). Holotype, male, in CSCA, with following label data: “3mi. west/ Southwest Research/ Station, Cochise Co/ Ariz. VIII-18 1967/ Fred G. Andrews.” Paratype, 1: “AZ Cochise Co 7000/ Pinery Cyn Cmpgrd/ 28-VIII-1997/ Wappes & Turnbow” (1, TAMU).

Distribution. Known only in the United States in the southwestern state of Arizona (Fig. 34).

Seasonality. Adults are known only from the month of August.

Bionomics. The presumed habitat is seasonal mixed forest in protected canyons.

Etymology. This species name, a noun in apposition, refers to Cochise County, Arizona, where both of the known specimens were collected.

***Anogdus huachuca* Peck and Cook, new species**

(Fig. 25, 26, 34)

Diagnostic description. Length (pronotum + elytra) = 1.58–1.88 mm; greatest width = 1.02–1.20 mm. Head punctures of moderate size, irregularly spaced. Antennal club slender; antennomere 7 narrower than 9 and 10; antennomere 8 disk-like, narrow; apical antennomere slightly narrower than 9 and 10. Sides of pronotum weakly rounded, posterior angles obtuse. Pronotal punctures minute and distantly spaced. Elytral stria punctures longer than wide, deep, mainly separated by less than 1 diameter; interstria punctures minute, distantly spaced; elytral epipleura inconspicuously setose. Metasternal anterior margin with a row of large, deep punctures; remainder of metasternum with smaller shallow punctures. Protarsi and mesotarsi of male bearing white setae ventrally. Male mesotibia slender, curved; mesotibial process broad at base, narrowing to acute apex, shorter than large tibial spine. Metafemur slender, males with a broad, triangular expansion near the apex of the lower margin. Abdominal sternite III with a row of small, deep punctures at anterior margin. Sternites IV–VII also with punctures at anterior margin that are usually not visible in dry specimens. Median lobe of aedeagus (Fig. 25, 26) elongate, cylindrical, evenly curved dorsoventrally, with rounded apex. Parameres slender, not widened apically, nearly reaching apex of median lobe. Inverted internal sac as in Fig. 25, 26.

Type material (n=4). Holotype, male, in FSCA, with label data: “ARIZONA, Huachuca/ Mts., Sunnyside,/ July 16 1974/ K. Stephan leg.” Paratypes, 3, as follows: same data as holotype (1, FSCA; 1, SBPC); “Arizona, Huachuca/ Mts., Bear Cyn./ Aug. 23 1975/ K. Stephan leg.” (1, FSCA).

Distribution. Known only in the United States in the southwestern state of Arizona (Fig. 34).

Seasonality. Adults are known only from the month of July and August.

Bionomics. The presumed habitat is seasonal mixed forest in protected canyons.

Etymology. This species name, a noun in apposition, refers to the Huachuca Mountains, Cochise County, Arizona, where all of the known specimens were collected.

***Anogdus rileyi* Peck and Cook, new species**

(Fig. 27, 28, 36)

Diagnostic description. Length (pronotum + elytra) = 1.80–2.56 mm; greatest width = 1.20–1.60 mm. Head punctation fine and sparse on front, becoming coarser and more dense on vertex. Antennal club slender; antennomere 7 narrower than 9 and 10; antennomere 8 narrow, disk-like; apical antennomere narrower than 9 and 10. Sides of pronotum rounded, posterior angles broadly obtuse. Pronotal punctures fine, separated by 1–3 diameters. Elytral stria punctures round and deep, separated by ± 1 diameter; interstria punctures minute, distantly spaced; elytral epipleura inconspicuously setose. Metasternal anterior margin with a row of moderately small, round, deep punctures; sides of metasternum rugose. Protarsi and mesotarsi of male broadly expanded and bearing white setae. Male mesotibia curved, inner margin weakly sinuate; mesotibial process triangular, curved, apex passing behind large tibial spine. Metafemur slender; in males the lower margin may be serrate with a broad expansion before apex with a small, acute tip. Abdominal sternites III–VII each with a row of closely spaced, round, deep punctures of about equal size at anterior margin. Median lobe of aedeagus (Fig. 27, 28) elongate, broad, curved dorsoventrally, flattened toward apex. Parameres slender, apically expanded, extending beyond apex of median lobe. Armature of internal sac as in Fig. 27, 28.

Type material (n=74). Holotype, male, in TAMU, with label data: “USA: TEXAS: Travis Co./ Bull Creek arm of Lake Austin./ 30° 21.060’N, 97°47.211’W/ XII-1-2006-II-14-2007, FIT-grd./ E.G. Riley-et al. 585”. Paratypes, 73, as follows: same data as holotype (26, TAMU; 15, SBPC); same data except “II-15-III-27-2007, FIT-ground/ E.G. Riley-et al.-607” (10, TAMU); “TEXAS: Burnet Co. Inks/ Lake State Pk. Pecan/ Flat Cpgd. 21.v.89/ R. Anderson, Pecan// juniper leaf litter berl.” (1, TAMU); “TEXAS: Ellis Co./ 3.6 mi. NE Italy/ 32.21752°N, 96.93389°W/ IV-2-V-8-2008, FIT-ground/ Coll. E.G. Riley, et al.” (1, TAMU); “TEXAS: Hays Co./ 6 mi. NW Dripping Springs/ 30°13,554’N, 98°11.039’W/ II-25-III-30-2006, FIT-ground/ 1,340’, E.G. Riley, et al.-301/ Juniperus managed plot” (1, TAMU); same data except “IV-28-VI-2-2006, FIT-grd./ E.G. Riley, et al.-392/ Juniperus unmanaged plot” (1, TAMU); same data except “III-31-IV-26-2006, FIT-grd./ E.G. Riley, et al.-340/ Juniperus managed plot” (1, TAMU); same data except “III-31-IV-27-2006, FIT-grd./ E.G. Riley, et al.-353/ Juniperus unmanaged plot” (1, TAMU); “TEXAS: Kerr Co./ 6.5 mi. SW Hunt, 1,960’/ 29°59.409’N, 99°23.244’W/ XI-12-XII-15-2005, FIT-grd./ E.G. Riley, et al.-210/ upland deciduous forest” (2, TAMU); same data except “III-31-IV-27-2006, FIT-grd./ E.G. Riley, et al.-366” (3, TAMU); same data except “IV-28-VI-2-2006, FIT-grd./ E.G. Riley, et al.-405 (1, TAMU); same data except “VI-3-30-2006, FIT-ground/ E.G. Riley, et al.-444” (1, TAMU); same data except “XI-16-2005-I-26-2006, FIT-G/ E.G. Riley, et al.-249” (6, TAMU); same data except “II-23-III-30-2006, FIT-grd./ E.G. Riley, et al.-327” (3, TAMU).

Distribution. Known only in the United States in the southern state of Texas (Fig. 36).

Seasonality. Adult records are scattered through most of the year, but mostly from the cooler winter months. Almost all specimens were taken in flight intercept traps.

Bionomics. The dominant habitat is upland deciduous forest and open juniper scrub.

Etymology. This species is named in recognition of Edward G. Riley, Associate Curator of Texas A & M University Insect Collection, who collected almost all of the known specimens of this species.

***Anogdus texanus* Peck and Cook, new species**

(Fig. 29, 30, 35)

Diagnostic description. Length (pronotum + elytra) = 1.76–2.20 mm; greatest width = 1.16–1.46 mm. Head punctures moderately coarse, irregularly spaced. Antennal club slender; antennomere 7 distinctly narrower than 9 and 10; antennomere 8 distinct, narrow; apical antennomere slightly narrower than 9 and 10. Sides of pronotum rounded, posterior angles obtuse. Pronotal punctures on disk finer and more distantly spaced than head punctures, larger and more dense posterolaterally. Elytral stria punctures round and deep, separated by ± 1 diameter; interstria punctures fine, distantly spaced. Elytral epipleura inconspicuously setose. Metasternal anterior margin with a row of large, deep punctures; metasternum with smaller punctures medially, variably rugose laterally. Protarsi and mesotarsi of male bearing white setae ventrally. Male mesotibia curved; mesotibial process broad at base, curved, shorter than large tibial spine. Metafemur slender; males usually with a broad, triangular expansion near the apex of the lower margin. Abdominal sternites III–VII each with a row of closely spaced, round, deep punctures at anterior margin. Median lobe of aedeagus (Fig. 29, 30) elongate, broad, anterior one-third somewhat depressed; paired apices inwardly curved. Parameres slender, apically expanded, reaching about to apex of median lobe. Inverted internal sac (Fig. 29, 30) with a distinctive structure in basal one-third bearing dark setae.

Note. This species was erroneously illustrated by Daffner (1988, Fig. 17 and 18) as *Anogdus fusciclavus* (Fall) and that record from Kerrville, Kerr Co., Texas, is in error (see above).

Type material (n=102). Holotype, male, in TAMU, with label data: “USA: TEXAS: Ellis Co./ 3.6 mi. NE Italy/ 32.21752°N, 96.93389°W/ IV-2-V-8-2008, FIT-ground/ Coll. E.G. Riley, et al.” Paratypes, 101, as follows: with same data as holotype (19, TAMU; 20, SBPC); “USA: TEXAS: Bell Co./ 1 km. W Youngsfort, FIT/ Bowmer Rch., Lampasas Riv./ 30.96197°N, 97.72903°W/ IV-10-21-2010, T. Robbins” (26, TAMU); “TX: Bandera Co./ Lost Maples St. Nat./ Area 28.IV.-2.V.87/ leaf/log litter Ber./ R. Anderson (1, SBPC); “USA: TEXAS: Hays Co./ 6 mi. NW Dripping Springs/ 30°13.554’N, 98°11.039’W/ VI-3-30-2006, FIT-ground/ 1,340’, E.G. Riley, et al.-431/ Juniperus unmanaged plot” (1, TAMU); same data except “1,340, E.G. Riley, et al.-418/ Juniperus managed plot (1, TAMU); same data except “III-31-IV-27-2006, FIT-grd./ 1,340’, E.G. Riley, et al.-353/ Juniperus unmanaged plot” (3, TAMU); same data except “VI-28-VI-2-2006, FIT-grd./ 1,340’, E.G. Riley, et al.-379/ Juniperus managed plot” (2, TAMU); same data except “1,340’, E.G. Riley, et al.-392/ Juniperus unmanaged plot” (1, TAMU); same data except “IX-2-X-5-2006, FIT-elev./ 1,340’, E.G. Riley, et al.-534/ Juniperus managed plot” (1, TAMU); “TEXAS: Kerr Co./ 6.5 mi. SW Hunt, 1,960’/ 29°59.409’N, 99°23.244’W/ VI-3-30-2006, FIT-ground/ E.G. Riley, et al.-444/ upland deciduous forest” (1, TAMU); same data except “X-27-XI-11-2005, FIT-ground/ E.G. Riley, et al.-171” (1, TAMU); same data except “III-31-IV-27-2006, FIT-grd./ E.G. Riley, et al.-366” (3, TAMU); same data except “IV-28-VI-2-2006, FIT-grd./ E.G. Riley, et al.-405” (3, TAMU); same data except “IX-2-X-5-2006, FIT-grd./ E.G. Riley, et al.-561” (1, TAMU); “USA: TEXAS: Travis Co./ Bull Creek arm of Lake Austin./ 30° 21.060’N, 97°47.211’W/ II-15-III-27-2007, FIT-ground/ E.G. Riley-et al.-607” (15, TAMU); “Kerrville, TEX./ April 5 1959/ Becker & Howden”, “Collected/ in malt/ trap”, “Anogdus/ fusciclavus (Fall)/ det. Daffner 1986” (1, CNCI); “OKLAHOMA/ [Marshall Co.], Kingston, VII.19761,” (1, USNM).

Distribution. North America. Known only from the United States in the states of Oklahoma and Texas (Fig. 35).

Seasonality. Adults are known scattered throughout the year but mostly from the spring months of April and May suggesting that the species is mostly spring active.

Bionomics. The dominant habitat is upland deciduous forest and open juniper scrub, and most specimens were taken in flight intercept traps.

Etymology. This species is named for the state of Texas, USA, where most of the specimens have been collected.

***Anoddus tridens* Peck and Cook, new species**

(Fig. 31, 32, 35)

Diagnostic description. Length (pronotum + elytra) = 1.64–2.04 mm; greatest width = 1.12–1.48 mm. Head punctures moderately coarse, irregularly spaced. Antennal club slender; antennomere 7 narrower than 9 and 10; antennomere 8 narrow, not disk-like, distinctly thicker on the outer side; apical antennomere nearly as wide as 9 and 10. Sides of pronotum weakly rounded, posterior angles broadly obtuse. Pronotal punctures fine and distantly spaced on disk, larger and more dense laterally. Elytral striae punctures round and deep, separated by ± 1 diameter; interstriae punctures minute, distant; elytral epipleura with short setae. Metasternal anterior margin with a row of large, deep punctures, distinctly larger than the shallow lateral punctures of the metasternum. Protarsi and mesotarsi of male bearing white setae ventrally. Male mesotibia curved; mesotibial process broad at base, slender, curved toward and shorter than large tibial spine. Metafemur slender; males usually with a broad expansion near the apex of the lower margin, with a small, acute tip. Anterior margins of abdominal sternites III–VII each with a row of closely spaced, round, deep punctures of about equal size. Median lobe of aedeagus (Fig. 31, 32) elongate, broad, somewhat flattened dorsoventrally, curved near base; apex narrowed and flattened. Parameres slender, apically expanded, nearly reaching apex of median lobe. Internal sac (Fig. 31, 32) with a characteristic heavily sclerotized trilobed structure.

Note. This species was illustrated by Daffner (1988, Fig. 23 and 24) as *Anoddus obsoletus* (Melsheimer). *A. tridens* resembles *A. obsoletus* externally, but is clearly distinguished by the heavily sclerotized three-pronged structure in the internal sac.

Type material (n=65). Holotype, male, in FSCA, with label data: “OKLAHOMA/ Latimer Co./ -IV-1990/ Karl Stephan”; Paratypes, 64, as follows: same data as holotype (1, FSCA); same data except “IV-1989” (1, FSCA); same data (1, TAMU); same data except “-V-1991” (1, FSCA); same data except “-IV-1991” (1, FSCA); same data except “V-1992” (2, FSCA); same data except “VIII-1988” (1, FSCA); same data except “V-1989” (5, FSCA); same data (1, TAMU); same data except “V-2002/ K. Stephan” (1, TAMU); 3, same data except “V-1982” (1, TAMU); same data except “V-1986” (3, TAMU); same data except “IV-1986” (4, TAMU); same data except “V-1988” (1, TAMU); same data except “VIII-1988” (1, TAMU); same data except “5mi. W. Red Oak/ 7-V-77” (1, TAMU); “ARKANSAS: Polk Co/ 13mi. NW Mena/ Rich Mt., 2800’ 1-3.VI.79, S. & J. Peck/ mesic oak-hickory” (1, SBPC); “ARIZONA: Cochise Co./ Southwest Research/ Station VII-29/31-1987/ F. Andrews & T. Eichlin / Malaise trap in/ wooded riparian/ canyon bottom” (1, CSCA); “Arizona: Cochise Co./ West Stronghold/ Dragoon Mts./ July 20 1973/ K. Stephan leg.” (1, FSCA); “Portal/ Arizona”, “DrLency/ 7.1968” (4, USNM); “Florida Cn/ Pima Co./ Arizona”, “DrLency/ 8.1976” (1, USNM); “Green Valley/ Pima Co./ Arizona”, “DrLency/ 6.1969” (4, USNM); “INDIANA: Tippecanoe/ Co., Lafayette/ VI.27 1990/ N.M. Downie, UV light” (1, FMNH); “ILLINOIS: Champaign Co., Mahomet/ Nettie Hart Mem. Woods/ 22 May 66 uv/ M.W. Sanderson” (1, SBPC); same data except “24 Aug 66 uv” (1, SBPC); same data except “18 July 66 uv” (1, SBPC); same data except “24 June 66 uv” (1, SBPC); Champaign Co, Urbana, Ill., “May 31, 1938/ Eugene Ray” (1, FMNH); “USA: TEXAS: Bell Co./ 1 km. W Youngsfort, FIT/ Bowmer Rch., Lampasas Riv./ 30.96197°N, 97.72903°W/ IV-10-21-2010, T. Robbins” (1, TAMU); “USA: TEXAS: Brazos Co./ College Sta., Lick Creek/ Park (Site 1), FIT-ground/ 30.55841°N, 96.20866°W/ bottomland forest/ V-22-VI-29-2011/ E.G. Riley,” (1, TAMU); “USA: TX: Brazos Co./ Koppe’s Bridge, 5miSW/ College Sta. 17.IV-18.V.87/ Riparian ravine FIT/ R. Anderson” (10, SBPC); “USA Texas Brewster Co./ Big Bend National Park/ Maple Cyn. 5200’ 9.VII.82 G.A.P. Gibson” (1, SBPC); “USA: TEXAS: Ellis Co./ 3.6 mi. NE Italy/ 32.21752°N, 96.93389°W/ IV-2-V-8-2008, FIT-ground/ Coll. E.G. Riley, et al.” (4, TAMU); “TEX. Palmetto St./ Pk. Gonzales Co./ X.73” (1, SBPC).

Distribution. Widely distributed in the eastern United States from Illinois and Indiana through Arkansas to Arizona, Oklahoma and Texas (Fig. 35).

Seasonality. Adults are mostly known from the months of May through August suggesting that the species is active during the monsoon rainy season in the summer months.

Bionomics. The dominant habitat is deciduous moist forest, ranging into wooded riparian canyon bottoms and open juniper scrub.

Etymology. The epithet “*tridens*” refers to the characteristic heavily sclerotized three-pronged structure in the internal sac of the aedeagus of this species.

Acknowledgments

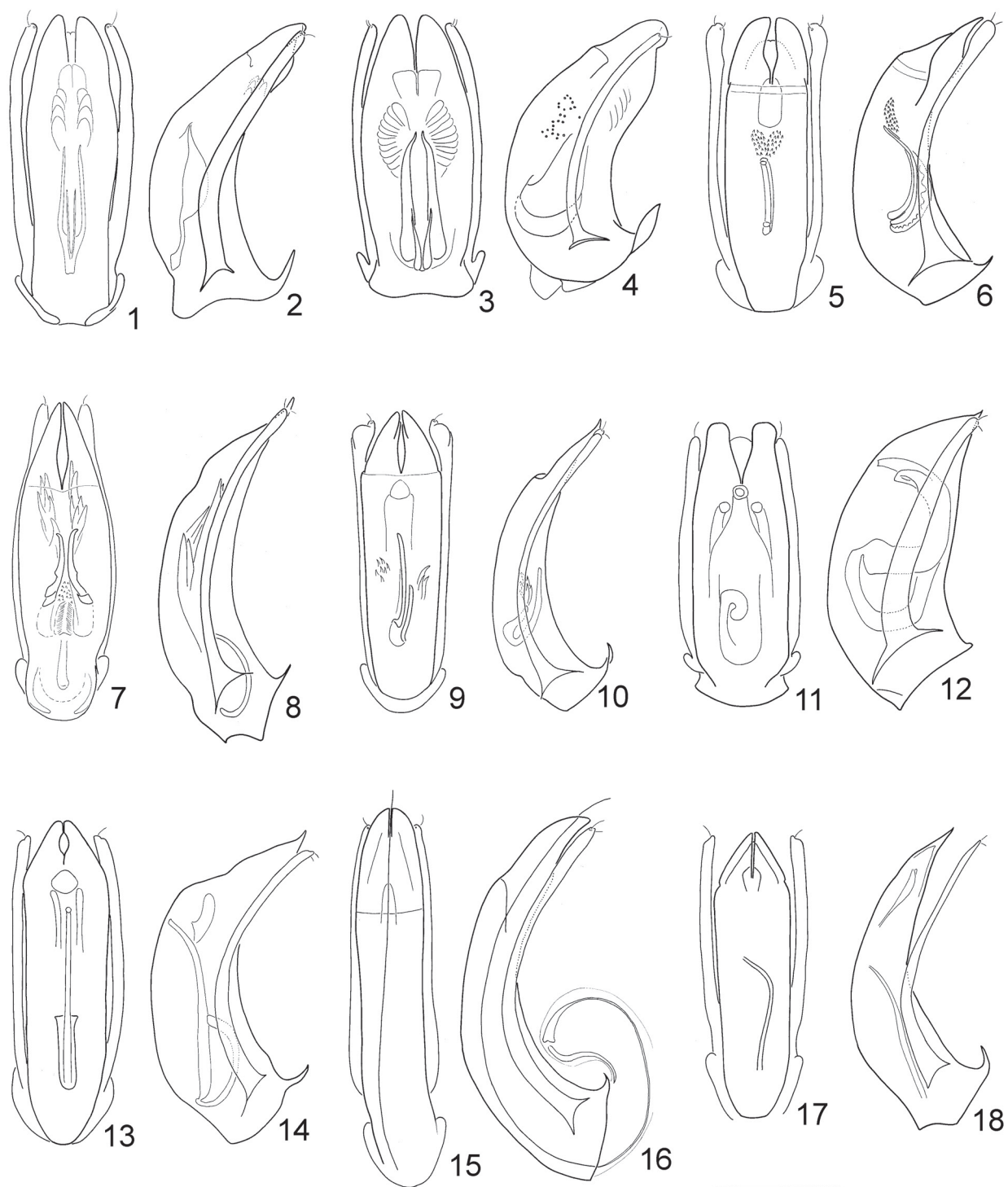
The field work for this study was partially supported by an operating grant to SBP by the Natural Sciences and Engineering Research Council of Canada. We thank the curators who allowed study of the specimens under their care. The manuscript was reviewed with constructive comments by Ed Riley and Mark Deyrup. We thank Paul Skelley, FSCA, for providing the cover photo of *Anogdus alachua*.

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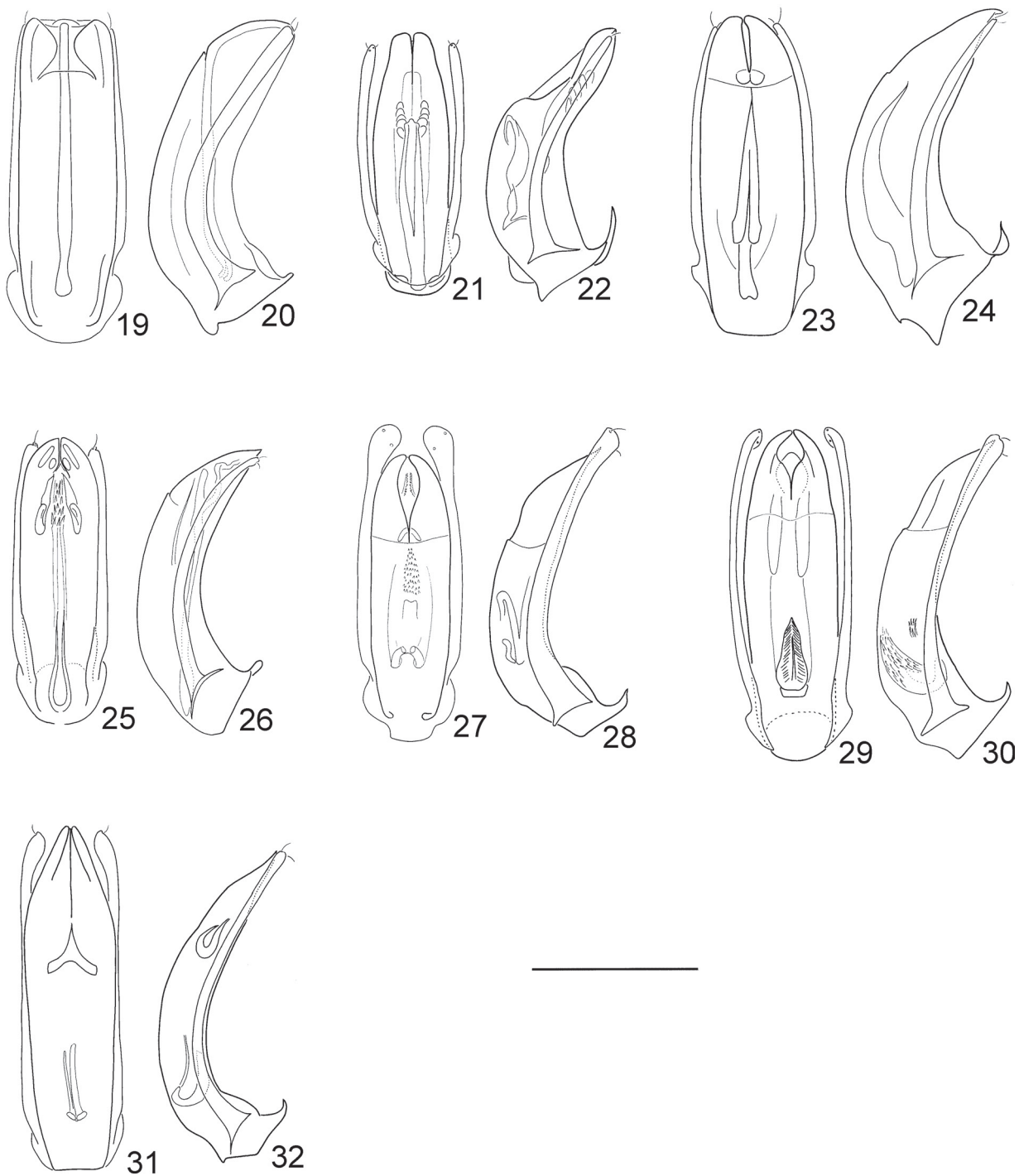
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Figures 1–18. Aedeagi, dorsal and lateral, of *Anogdus* species. 1, 2) *A. capitatus*. 3, 4) *A. dissimilis*. 5, 6) *A. fusciclavus*. 7, 8) *A. insolitus*. 9, 10) *A. obsoletus*. 11, 12) *A. potens*. 13, 14) *A. puritanus*. 15, 16) *A. sculpturatus*. 17, 18) *A. secretus*. Scale line = 0.30 mm for *capitatus*, *dissimilis*, *fusciclavus*, *obsoletus*, *puritanus*, *sculpturatus*, *secretus*; 0.35 mm for *insolitus*, *potens*.



Figures 19–32. Aedeagi, dorsal and lateral, of *Anogdus* species. 19, 20) *A. superans*. 21, 22) *A. alachua*. 23, 24) *A. cochise*. 25, 26) *A. huachuca*. 27, 28) *A. rileyi*. 29, 30) *A. texanus*. 31, 32) *A. tridens*. Scale line = 0.30 mm for *superans*, *alachua*, *huachuca*, *texanus*, *tridens*; 0.35 mm for *cochise*, *rileyi*.

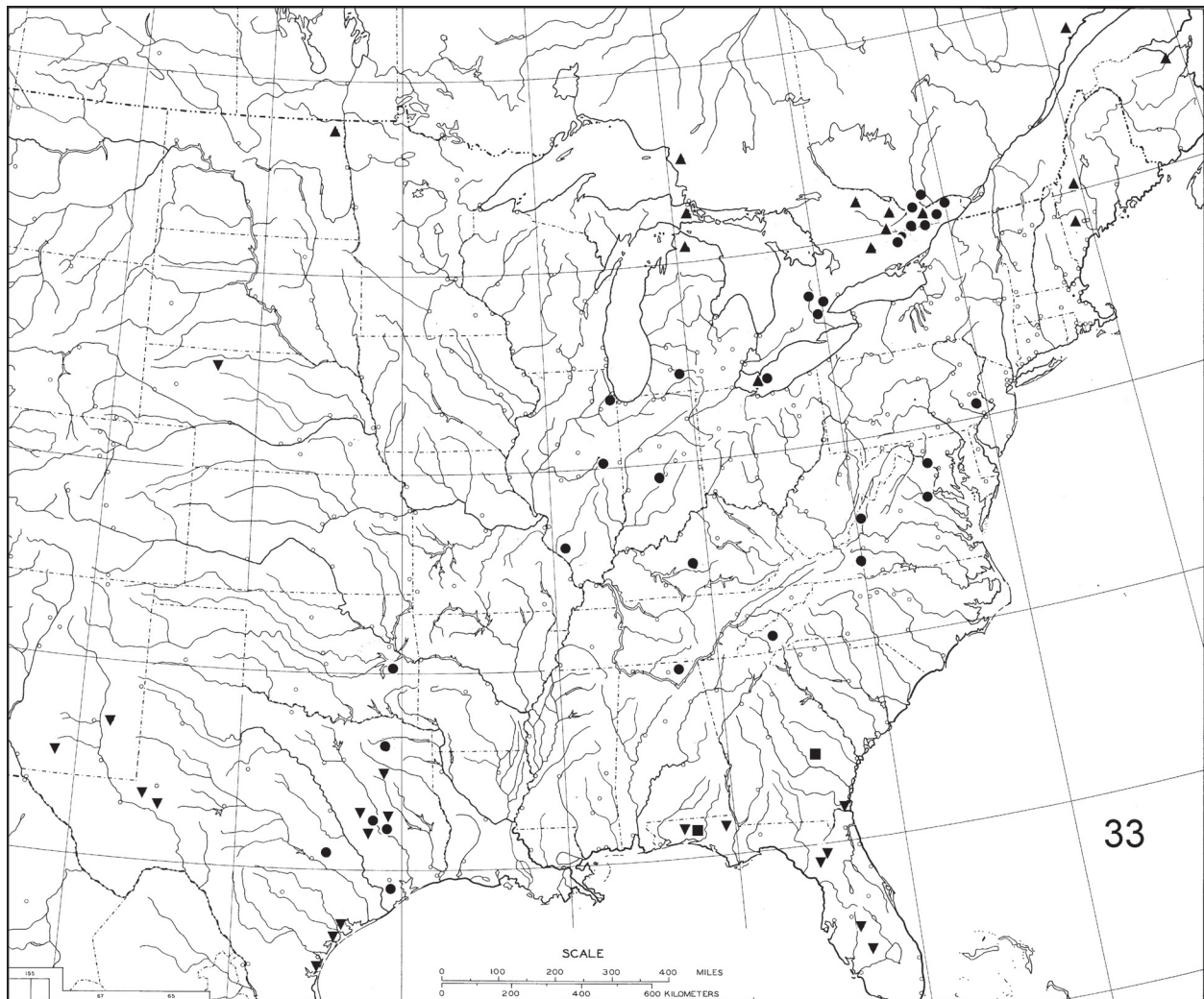


Figure 33. North American distribution of *Anogdus capitatus* (squares), *A. dissimilis* (inverted triangles), *A. obsoletus* (circles), *A. potens* (triangles).

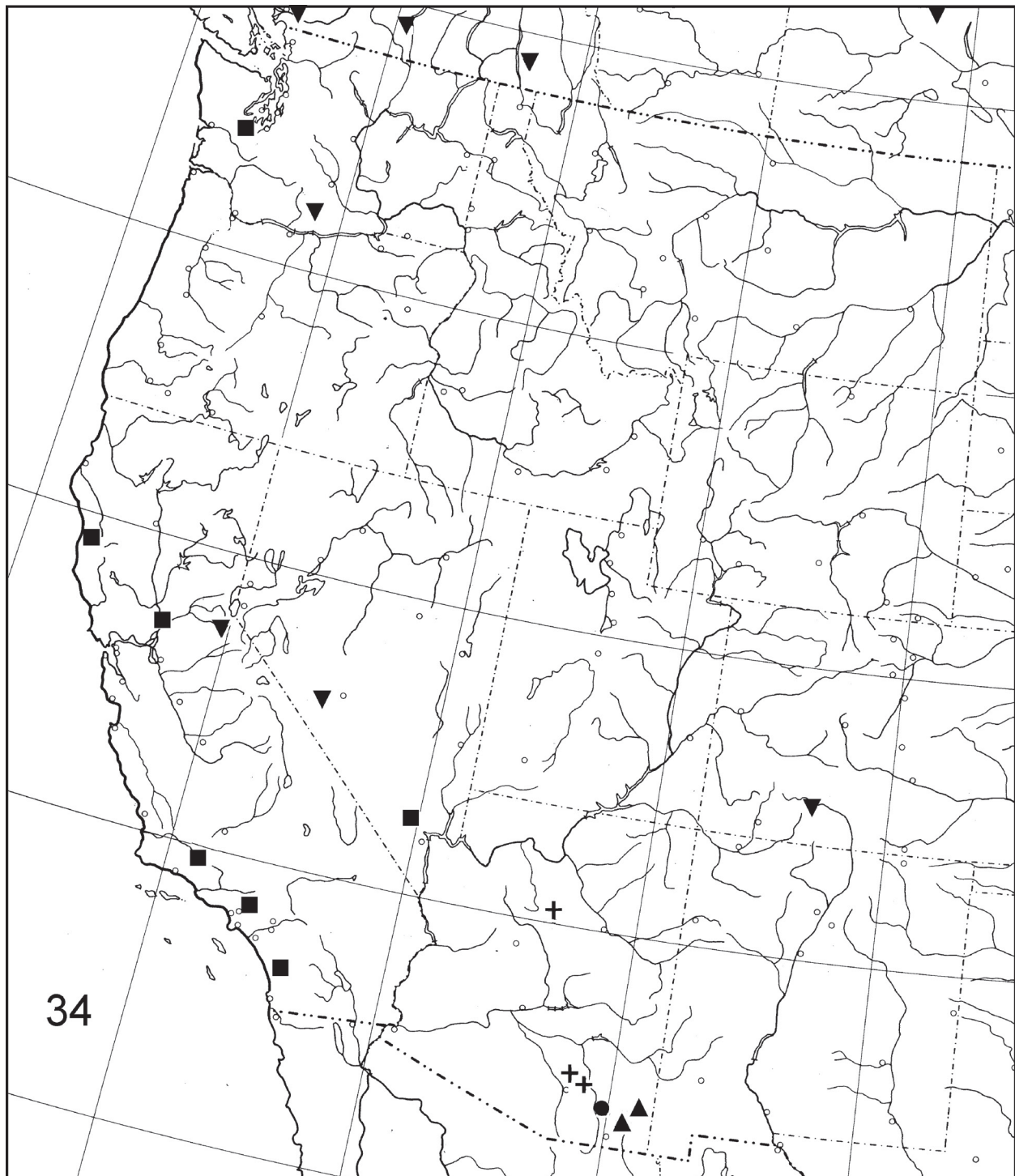


Figure 34. Western North American distribution of *Anogdus fusciclavus* (squares), *A. insolitus* (inverted triangles), *A. sculpturatus* (crosses), *A. cochise* (triangles), *A. huachuca* (circles).

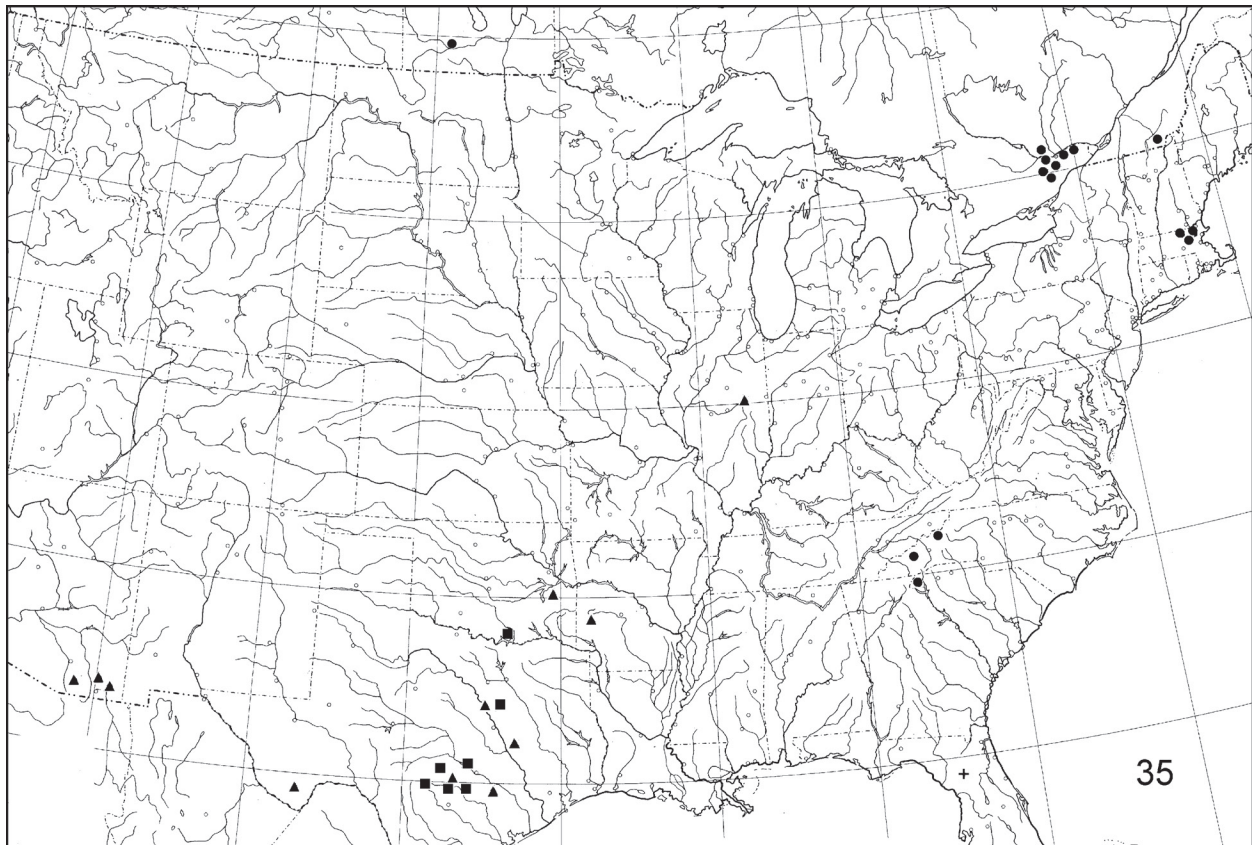


Figure 35. North American distribution of *Anogdus puritanus* (circles), *A. alachua* (cross), *A. texanus* (squares), *A. tridens* (triangles).

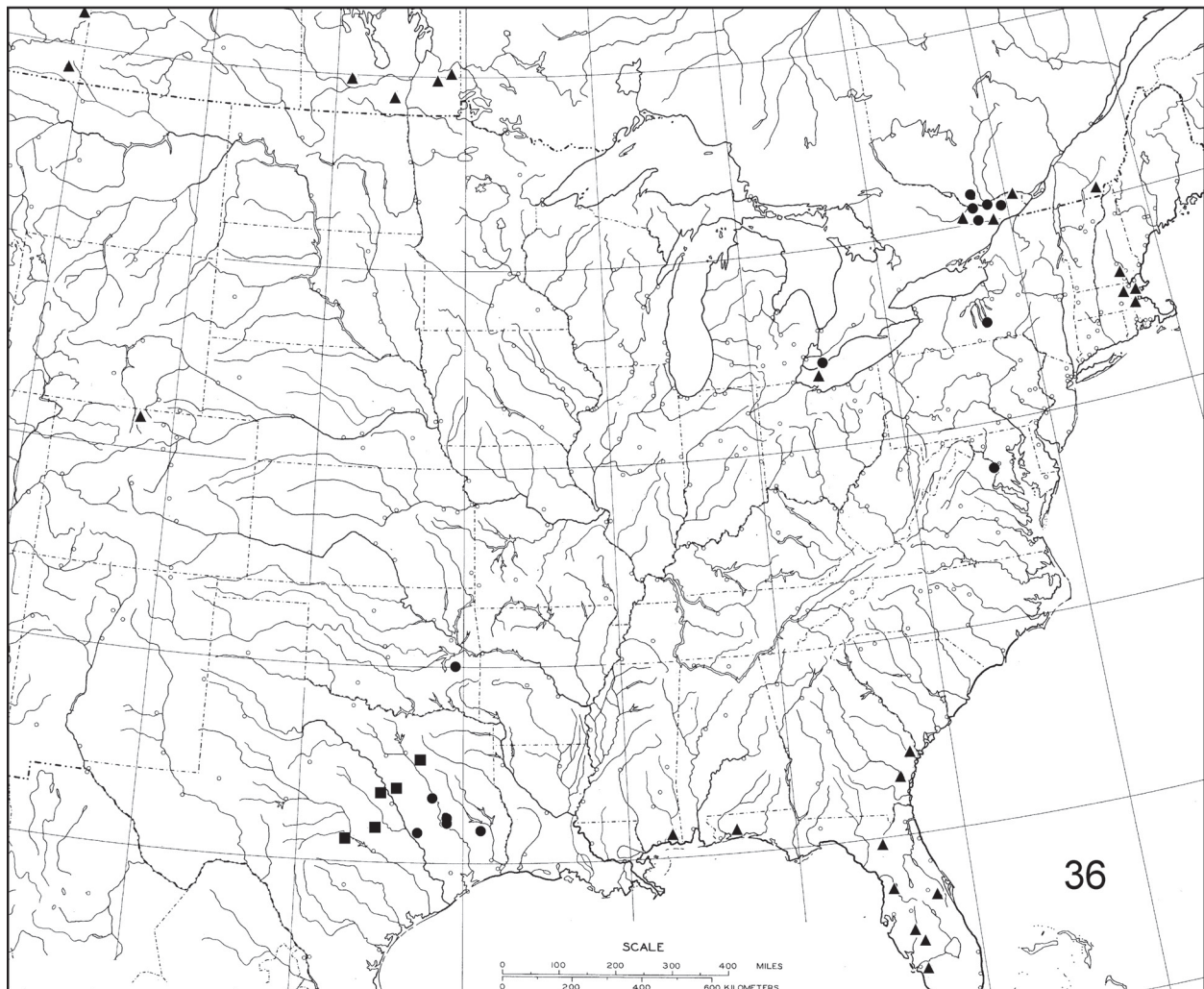


Figure 36. North American distribution of *Anogdus secretus* (circles), *A. superans* (triangles), *A. rileyi* (squares).