6-2010

Distribution of *Abacion texense* (Loomis, 1937), the only milliped species traversing the Rio Grande, Mississippi, and Pecos rivers (Callipodida: Abacionidae)

Chris T. McAllister
RapidWrite, Hot Springs National Park, AR, drctmcallister@aol.com

Rowland M. Shelley
North Carolina State Museum of Natural Sciences, rowland.shelley@ncdenr.gov

INSECTA MUNDI

A Journal of World Insect Systematics

0124

Distribution of *Abacion texense* (Loomis, 1937), the only milliped species traversing the Rio Grande, Mississippi, and Pecos rivers (Callipodida: Abacionidae)

Chris T. McAllister
RapidWrite
102 Brown Street
Hot Springs National Park, AR 71913, USA

Rowland M. Shelley
Research Laboratory
North Carolina State Museum of Natural Sciences
MSC#1626
Raleigh, NC 27699-1626, USA

Date of Issue: June 18, 2010

CENTER FOR SYSTEMATIC ENTOMOLOGY, INC., Gainesville, FL

Chris T. McAllister and Rowland M. Shelley
Distribution of *Abacion texense* (Loomis, 1937), the only milliped species traversing the Rio Grande, Mississippi, and Pecos rivers (Callipodida: Abacionidae)
Insecta Mundi 0124: 1-8

Published in 2010 by
Center for Systematic Entomology, Inc.
P. O. Box 141874
Gainesville, FL 32614-1874 U. S. A.
http://www.centerforsystematicentomology.org/

Insecta Mundi is a journal primarily devoted to insect systematics, but articles can be published on any non-marine arthropod taxon. Manuscripts considered for publication include, but are not limited to, systematic or taxonomic studies, revisions, nomenclatural changes, faunal studies, book reviews, phylogenetic analyses, biological or behavioral studies, etc. **Insecta Mundi** is widely distributed, and referenced or abstracted by several sources including the Zoological Record, CAB Abstracts, etc.

As of 2007, **Insecta Mundi** is published irregularly throughout the year, not as quarterly issues. As manuscripts are completed they are published and given an individual number. Manuscripts must be peer reviewed prior to submission, after which they are again reviewed by the editorial board to insure quality. One author of each submitted manuscript must be a current member of the Center for Systematic Entomology.

Printed copies deposited in libraries of:
CSIRO, Canberra, ACT, Australia
Museu de Zoologia, São Paulo, Brazil
Agriculture and Agrifood Canada, Ottawa, Ontario, Canada
The Natural History Museum, London, England
Muzeum i Instytut Zoologii Pan, Warsaw, Poland
National Taiwan University, Taipei, Taiwan
California Academy of Sciences, San Francisco, CA, USA
Florida Department of Agriculture and Consumer Services, Gainesville, FL, USA
Field Museum of Natural History, Chicago, IL, USA
National Museum of Natural History, Smithsonian Institution, Washington, DC, USA

Electronic copies in PDF format:
Printed CD mailed to all members at end of year.
Florida Center for Library Automation: http://purl.fcla.edu/fcla/insectamundi
University of Nebraska-Lincoln, Digital Commons: http://digitalcommons.unl.edu/insectamundi/
Goethe Universität, Frankfurt am Mains: http://edocs.ub.uni-frankfurt.de/volltexte/2010/14363/

Author instructions available on the Insecta Mundi page at:
http://www.centerforsystematicentomology.org/insectamundi/

Printed Copy ISSN 0749-6737
On-Line ISSN 1942-1354
CD-ROM ISSN 1942-1362

INSECTA MUNDI 0124: 1-8 2010

Distribution of *Abacion texense* (Loomis, 1937), the only milliped species traversing the Rio Grande, Mississippi, and Pecos rivers (Callipodida: Abacionidae)

Chris T. McAllister
RapidWrite
102 Brown Street
Hot Springs National Park, AR 71913, USA
drctmcallister@aol.com

Rowland M. Shelley
Research Laboratory
North Carolina State Museum of Natural Sciences
MSC#1626
Raleigh, NC 27699-1626, USA
rowland.shelley@ncdenr.gov

Abstract. Localities are documented for the milliped *Abacion texense* (Loomis, 1837) (Callipodida: Abacionidae) whose distribution forms both the northern and southern ordinal limits in the Western Hemisphere. The westernmost component of *Abacion* Rafinesque, 1820, *A. texense* is the only milliped species whose range spans the Mississippi and Pecos rivers and the Rio Grande. Distribution extremes are in Hennepin County (Co.), Minnesota, in the north; Terrell and Potter cos., Texas, in the west; Alcorn Co., Mississippi, in the east; and southwestern Tamaulipas, Mexico, in the south. Occurrences are projected for southeastern South Dakota, northwestern Alabama, and the southwestern periphery of Tennessee. The type series of *A. texense* consists solely of the male holotype, so a neotype will be needed if this individual is ever lost, because no paratypes were officially designated.

Introduction

Seventeen Atlantic Coastal milliped genera in the United States (US) range subcontinuously westward across the Mississippi River. Eight continue into prairie ecosystems of the Central Plains, where forested habitats become sparse to nonexistent. Distributions tend to be broader in the south, so western boundaries angle southwestward from north to south as evidenced by *Narceus* Rafinesque, 1820 (Spirobolida: Spirobolidae), *Virgoiulus* Enghoff, 1984 (Julida: Blaniulidae), and *Eurymerodesmus* Brölemann, 1900 (Polydesmida: Eurymerodesmidae) (Shelley 1990, McAllister et al. 2005, Shelley et al. 2006). Only three genera, however, range far enough westward to also traverse the Pecos River, whose confluence with the Rio Grande, in west Texas, is some 1,056 km (660 mi) west of the Mississippi: *Eurymerodesmus*, *Cleidogona* Cook, 1895 (Chordeumatida: Cleidogonidae), and *Abacion* Rafinesque, 1820 (Callipodida: Abacionidae). The last two join *Rhysodesmus* Cook, 1895 (Polydesmida: Xystodesmidae), as the only genera also occurring east of the Mississippi and south of the Rio Grande (Shear 1972; Hoffman 1998, 1999; Shelley 1999), and if *Abacion* is ever discovered in Essex County, Ontario, across the Detroit River from Michigan, it will join *Cleidogona* as the only milliped genus occurring in Canada, the US, and Mexico (Shelley 1988).

While *Abacion* and *Cleidogona* occur east of the Mississippi, west of the Pecos, and south of the Rio Grande, the only species with this distribution is *A. texense* (Loomis, 1937). It forms the northern ordinal range limit in both North America and the Western Hemisphere and also forms the southern along with *Aspidiophon divisum* Shelley, 2000 (Schizopetalidae) in Sinaloa (Shelley 2000a, Stoev and Shelley 2009). The lone familial representative in Mexico, *A. texense* was originally assigned to *Spirostrephon* Brandt, 1841, but Chamberlin and Hoffman (1958) transferred it into *Abacion*, a senior synonym. Published and unpublished localities coupled with known ranges indicate that early records of "*Lysiopetalum lactarium*" (Say, 1821) from Kansas, Minnesota, Nebraska, and Oklahoma (Bollman 1893; Kenyon 1893a, b; Gunthorp 1913, 1921; Chamberlin 1931) actually refer to *A. texense*. Shelley (1984) reviewed *Abacion* and mapped distributions of its then four component species, but for brevity did not provide counties or localities. Shelley et al. (2003) described a fifth species that is endemic to Rich Mountain, Polk Co., Arkansas, and regional works have provided localities for others (Williams and Hefner 1928; Johnson 1954; Shelley

1978, 2000b, 2001; Filka and Shelley 1980; Snider 1991; Stoev and Shelley 2009). Because of its unique distribution, we address *A. texense* specifically, providing a diagnostic account and full synonymy as Shelley (1984) missed a few references. Locality details are provided for states in which this milliped is known from five or fewer counties, and the latter alone are given for states with six or more occupied counties. We project ranges in all states of occurrence and cite extremes for ones on borders; missing data were not provided on vial labels. Anatomical details and diagnostic illustrations are available in Shelley (1984: 986-987, figs. 10-11). Repository codens, all in the US, are as follows:

AMNH American Museum of Natural History, New York, New York.
FMNH Field Museum of Natural History, Chicago, Illinois.
FSCA Florida State Collection of Arthropods, Gainesville, Florida.
INHS Illinois Natural History Survey, Champaign, Illinois.
MCZN Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts.
MLBM Monte L. Bean Life Science Museum, Brigham Young University, Provo, Utah.
NCSM North Carolina State Museum of Natural Sciences, Raleigh, North Carolina.
NMNH National Museum of Natural History, Smithsonian Institution, Washington, DC.
OSEC Emerson Entomology Museum, Oklahoma State University, Stillwater, Oklahoma.
TMMC Texas Memorial Museum, Austin, Texas.
UCMC University of Colorado Museum of Natural History, Boulder, Colorado.
UGCA University of Georgia Museum of Natural History, Athens, Georgia.
UMSP - Entomology Department, University of Minnesota, St. Paul, Minnesota.
VMNH Virginia Museum of Natural History, Martinsville, Virginia.
WASC Private collection of W. A. Shear, Hampden-Sydney, Virginia.
WTAM Department of Life, Earth, and Environmental Sciences, West Texas A&MUniversity, Canyon, Texas.

***Abacion texense* (Loomis, 1937)**

Lysiopetalum lactarium (not Say, 1821): Bollman 1893:183. Kenyon 1893a:16; 1893b:161. Gunthorp 1913:164; 1921:88. Chamberlin 1931:98.
Callipus lactarius (not Say, 1821): Chamberlin 1918:369.
Spirostrephon texensis Loomis 1937:109-110, fig. 16n; 1944:168. Chamberlin and Mulaik 1941:60.
Spirostrephon texense: Chamberlin 1942a:16, fig. 28.
Spirostrephon jonesi Chamberlin 1942b:17.
Tynomma messicanum Chamberlin 1943a:33. Loomis 1968a:70.
Spirostrephon lactarium (not Say, 1821): Chamberlin 1943b:145.
Abacion texense: Chamberlin and Hoffman 1958:110. Loomis 1959:161-162; 1966:52 1968a:70; 1968b:388. Causey 1963:78. Reddell 1965:161; 1970:104. Stewart 1969:384. Shelley 1984:986-987, figs. 10-11. Bueno-Villegas et al. 2004:589. Stoev et al. 2008:12. Stoev and Shelley 2009:163.
Abacion texensis: Hoffman 1999:198.

Type specimen. Male holotype (NMNH) collected by O. F. Cook in December 1905 at Pierce, Wharton Co., Texas; no paratypes were officially designated.

Diagnosis (adapted from Shelley, 1984). Gonopodal postfemur short, divided proximad; branch "A" subquadrate, much shorter than branch "B"; solenomere subspiniform, shorter than and poorly demarcated from branch "B"; tibiotarsus with sides narrowing to subacuminate tip, reflexed apically.

Habitats. Habitats include beneath limestone rocks, decaying pine logs and bark, rotting oak logs, railroad ties, and in mixed deciduous litter; elevations range from sea level to 1,620 m (5,400 ft). In Texas, *A. texense* is commonly encountered in cave, sinkhole, and spring habitats; the Terrell Co. individual was under a decaying Ashe juniper (*Juniperus ashei* J. Buchholz) log on desert soil and limestone. In addition to juniper, dominant vegetation included prickly-pear cactus (*Opuntia* sp.), Vasey oak (*Quercus pungens* Liebm.), Torrey yucca (*Yucca torreyi* Shafer), and mesquite (*Prosopis glandulosa* Torrey).

Distribution (Fig. 1). We modify the latest range statement (Stoev and Shelley 2009) as follows: "Occurring in every US state from southern Minnesota and eastern Nebraska southward to Louisiana

and Texas, continuing southward across the Rio Grande into northeastern Coahuila, northern Nuevo León, and most of Tamaulipas, Mexico. The distribution extends across the Mississippi River into Mississippi and southeastern Louisiana, spreads westward in Texas to the panhandle, and crosses the Pecos River near its confluence with the Rio Grande." *Abacion texense* forms the northern, western, and southern boundaries for both the genus and family, so in addition to Shelley's (1984) spot map, borders of its range are depicted in ordinal and familial maps (Shelley 1989:382, fig. 1; Shear et al. 2003:3, fig. 1; Stoev et al. 2008:3, fig. 2). Stoev and Shelley (2009:164, fig. 4) show that *A. texense* is the lone ordinal component in Coahuila, Nuevo León, and Tamaulipas.

Even larger ranges have been projected. Shelley (1984) suggested occurrence in central Nebraska, southeastern South Dakota, and the Black Hills of southwestern South Dakota, but we have sampled in the last without encountering callipodidans and believe that *A. texense* does not occur there. From 2006 to 2008 CTM sampled in northwestern, northcentral, and northeastern Nebraska and southeastern South Dakota without finding this milliped, which we now believe does not inhabit the first two regions. Occupation of the last two is plausible because of their moister, verdant, riparian habitats and locations between the Minnesota and Nebraska sites. Shelley (1984) also suggested occurrence farther west in Texas, in the Davis Mountains, Jeff Davis Co., but we have also investigated this inselberg and worked westward to El Paso without finding a callipodidan. Consequently, we believe that the Terrell Co. locality is at or very near the true western boundary of the species, genus, and family. To the east, Hoffman (1999) and Stoev et al. (2008) predicted discovery in Alabama and Tennessee, and although no-one has yet searched these areas, the northeastern Mississippi locality, in Alcorn Co., implies occurrence in the northwestern corner of Alabama and the southwestern periphery of Tennessee.

Published range statements. "Great Plains from Ames, Iowa, and Lincoln, Nebraska, through Kansas, Oklahoma, and western Missouri, south as far as Kerr, Bandera, and Wharton Counties, Texas, east through Arkansas and Louisiana to Rankin County, Mississippi" (Chamberlin and Hoffman 1958). On the advice of N.B. Causey, Loomis (1968a) expanded the area to include Monterrey and Bustamente, Nuevo León, Mexico, and Shelley (1984) added southern Minnesota and Coahuila and Tamaulipas. "Great Plains from Minnesota and eastern Nebraska south to northern Nuevo León, eastward as far as southern Mississippi, doubtlessly also in Alabama and Tennessee" (Hoffman 1999, Stoev et al. 2008).

Published records. **USA:** ARKANSAS: Arkansas in general (Chamberlin and Hoffman 1958, Loomis 1968a). *Boone*, *Carroll*, *Clark*, *Conway*, *Dallas*, *Franklin*, *Hempstead*, *Jefferson*, *Madison*, *Miller*, *Montgomery*, *Newton*, *Pike*, *Saline*, *Scott*, and *Washington cos*. (Causey 1953, McAllister et al. 2002, 2003).

IOWA: *Story Co*., Ames (Chamberlin 1942b, Chamberlin and Hoffman 1958, Loomis 1968a, Stoev et al. 2008).

KANSAS: Kansas in general (Chamberlin and Hoffman 1958, Loomis 1968a). *Anderson*, *Bourbon*, *Chase*, *Cherokee*, *Cowley*, *Douglas*, *Elk*, *Graham*, *Greenwood*, *Jefferson*, *Marion*, *Osage*, *Pottawatomie*, *Riley*, *Shawnee*, *Sumner*, and *Trego cos*. (Gunthorp 1913, 1921).

LOUISIANA: Louisiana in general (Chamberlin and Hoffman 1958, Loomis 1968a, McAllister et al. 2002, Stoev and Shelley 2009). *Allen, Caddo*, *Claiborne*, *LaSalle*, *Lincoln*, *Morehouse*, *Natchitoches*, *St. Landry*, *Tangipahoa*, and *West Feliciana parishes* (*pars*.) (Chamberlin 1918; Loomis 1944, 1959; Causey 1953, 1963).

MINNESOTA: Minnesota in general (Stoev et al. 2008, Stoev and Shelley 2009).

MISSISSIPPI: Southern Mississippi (Stoev et al. 2008). Northeastern and central Mississippi (McAllister et al. 2003). *Rankin Co*. (Causey 1953, Chamberlin and Hoffman 1958, Loomis 1968a, Stoev and Shelley 2009).

MISSOURI: Western Missouri (Chamberlin and Hoffman 1958, Loomis 1968a).

NEBRASKA: Nebraska in general (Kenyon 1893b, Stoev and Shelley 2009). Eastern Nebraska (Stoev et al. 2008). *Cuming*, *Lancaster*, *Sarpy*, and *Saunders cos*. (Kenyon 1893a, Chamberlin and Hoffman 1958, Loomis 1968a).

OKLAHOMA: Oklahoma in general (Chamberlin and Hoffman 1958, Loomis 1968a). *Comanche Co*. (Chamberlin 1931).

TEXAS: Texas in general (Stoev and Shelley 2009). Eastern Texas (McAllister et al. 2002). *Angelina*, *Bandera*, *Bexar*, *Burnet*, *Camp*, *Cherokee*, *Comal*, *Dallas*, *Edwards*, *Guadalupe*, *Harris*, *Kendall*, *Kerr, Lampasas*, *McCulloch*, *Nacogdoches*, *Panola*, *Sabine*, *Shelby*, *Smith*, *Tarrant*, *Travis*, *Uvalde*, *Wharton*, and *Williamson cos.* (Loomis 1937, 1959, 1966, 1968a; Chamberlin and Mulaik 1941; Chamberlin 1943b;

Chamberlin and Hoffman 1958; Reddell 1965, 1970; Stewart 1969; Shelley 1984; Hoffman 1999; Stoev et al. 2008).

MEXICO: COAHUILA: northeastern Coahuila (Stoev and Shelley 2009). El Nacimiento, and 2 km (1.6 mi) S and 10 km (6.3 mi) SE Musquiz (Stoev and Shelley 2009).

NUEVO LEÓN: northern Nuevo León (Stoev et al. 2008, Stoev and Shelley 2009). Bustamente (Loomis 1968a). 4.8 km (3 mi) W Bustamente (Stoev and Shelley 2009). Monterrey (Loomis 1968a, Stoev et al. 2008). Chipinque Mesa near Monterrey (Chamberlin 1943a, Loomis 1968b, Bueno-Villegas et al. 2004; Stoev and Shelley 2009). Horsetail Falls above Cercado (Loomis 1966, 1968b). 32 km (20 mi) S Sabinas Hidalgo (Stoev and Shelley 2009). 32.9 km (20.6 mi) N Montemorelos (Stoev and Shelley 2009). Santiago (Stoev and Shelley 2009).

TAMAULIPAS: Municipio de Ocampo, 18 km (11.3 mi) NW Chamal (Stoev and Shelley 2009).

Projected Occurrences and New Records. **USA:** ARKANSAS**:** western 1/3rd of the state. *Clark, Conway, Franklin, Garland, Hempstead, Hot Spring, Johnson, Logan*, *Madison*, *Montgomery*, *Newton*, *Pike*, *Polk*, *Scott*, and *Washington cos.* (FMNH, FSCA, NCSM, NMNH, UGCA). Easternmost record: *Lawrence Co*., Imboden, M, F, 1928, B.C. Marshall (NMNH).

IOWA: All except southeastern 1/3rd of the state, but known from only two localities. *Boone Co*., Boonesboro, F, July 1867, J.A. Allen (MCZN). *Story Co*., Ames, M, F, 27 April 1957, L. Hubricht (VMNH).

KANSAS**:** eastern 2/3rd of the state. *Douglas Co*., Baldwin City, M, F, 1900, J.C. Bridwell (NMNH). *Harvey Co*., N of Newton, M (NMNH). Westernmost record: *Graham Co*. (Gunthorp, 1913).

LOUISIANA: Statewide. *Acadia*, *Allen, Ascension, Beauregard*, *Bienville, Bossier*, *Caddo*, *Caldwell*, *Catahoula*, *Concordia*, *Evangeline*, *Franklin*, *Jefferson*, *Iberia*, *Landry*, *LaSalle*, *Lincoln*, *Madison*, *Natchitoches, Orleans*, *Ouachita*, *Rapides*, *St. Helena*, *St. Landry*, *St. Tammany*, *Tensas, Vernon*, *West Feliciana*, and *Winn pars*. (FSCA, MCZN, NCSM, NMNH, VMNH).

MINNESOTA: southern 1/3rd of the state. *Houston Co*., 2M, 11F, 21 May 1938, C.E. Mickel (UMSP). *Rock Co*., Luverne, M, 4F, 13 September 1935, M.S. Telford (UMSP); and Beaver Creek, M, 19 June 1938, Nicholson-Peterson (FSCA). Northernmost record for the species, genus, family, and order in the state, North America, and the Western Hemisphere: *Hennepin Co*., Minneapolis, M, F, 16 May 1931, W.J. Gertsch (NMNH).

MISSISSIPPI: western 2/3rd of the state, angling northeastward in the north. *Hinds Co*., 6.4 km (4 mi) NE Jackson, Mayes Lake, MM, FF, 30 March 1958, S. Lazell (FSCA). *Pearl River Co***.,** along MS hwy. 26, 3M, 12F, 2 March 1969, D.C. Moriz, G. Eberle, G. Alvarez (FSCA). Eastern- and northernmost record; easternmost record of the species: *Alcorn Co*., 22.5 km (14.1 mi) S Corinth, M, 3F, 1958, N.B. Causey (FSCA).

MISSOURI: western 1/3rd of the state but known only from the southern periphery. *Barry Co*., 11.3 km (7.1 mi) S Cassville, Cliff Notch Cave, M, 2 April 1981, J.E. Gardner (NCSM). *McDonald Co*., Noel, M, 11 April 1975, W. F. Rapp (INHS). *Stone Co*., Cape Fair, F, 17 April 1954, Bagby (FSCA). Easternmost record: *Oregon Co*., Alton, M, F, W.F. Rushton (FSCA).

NEBRASKA: eastern 1/4th of the state. *Cass Co***.,** South Bend, M, F, F.C. Kenyon (NMNH); and Weeping Water, F, M.H. Muma (NMNH). Northernmost record: *Cuming Co*., West Point (Kenyon 1893b). Westernmost record: *Jefferson Co*., Reynolds, M, 31 July 1982, W.F. Rapp (MCZN).

OKLAHOMA: statewide except for the panhandle. *Adair*, *Cherokee*, *Choctaw*, *Garfield*, *Kiowa*, *Latimer*, *LeFlore*, *Major*, *Mayes*, *Pittsburg*, *Pottawatomie*, *Sequoyah*, and *Stephens cos.* (FSCA, MLBM, NCSM, OSEC, UCMC, WASC). Westernmost record: *Ellis Co*., Lake Lloyd Vincent, F, 14 October 1967, D.C. Arnold (OSEC).

TEXAS: eastern and central regions extending westward into the panhandle and across the Pecos River. *Angelina*, *Austin*, *Bandera*, *Bell*, *Bexar*, *Bowie*, *Brazoria*, *Burnet*, *Cameron*, *Cass*, *Cherokee*, *Colorado*, *Comal*, *Dallas*, *Edwards*, *Ellis*, *Fayette*, *Fort Bend*, *Galveston*, *Goliad*, *Gonzales*, *Guadalupe*, *Hardeman*, *Hardin*, *Harris*, *Harrison*, *Hays*, *Hopkins*, *Houston*, *Hunt*, *Irion*, *Jasper*, *Jim Wells*, *Karnes*, *Kendall*, *Kerr*, *Kimball*, *Lampasas*, *Live Oak*, *Llano*, *Nacogdoches*, *Newton*, *Palo Pinto*, *Polk*, *Real*, *Rusk*, *Sabine*, *San Augustine*, *San Patricio*, *San Saba*, *Smith*, *Sutton*, *Tarrant*, *Taylor*, *Tom Green*, *Travis*, *Tyler*, *Uvalde*, *Val Verde*, *Victoria*, *Walker*, *Wharton*, *Williamson*, and *Wilson cos*. (AMNH, FSCA, MCZN, NCSM, NMNH, TMMC, VMNH, WTAM). Westernmost records: *Randall Co*., Palo Duro

Canyon, 24.1 km (15.1 mi) E Old Canyon, F, 28 April 1962, R.O. Albert (FSCA) **First record for the order, family, genus, and species from the Texas Panhandle.** *Terrell Co*., Independence Creek Preserve, 37 km (23.1 mi) SE Sheffield, M, 7 October 2005, C.T. McAllister (NCSM) **Westernmost record and first from west of the Pecos River for the family, genus, and species.**

MEXICO: COAHUILA: northern periphery and northeast corner; no new records.

NUEVO LEÓN: northern half and possibly farther south in the eastern periphery; no new records.

TAMAULIPAS: northern 3/4th; no new records. The published locality is the southernmost for the species, genus, and family, and one of the two southernmost for the order in the Western Hemisphere.

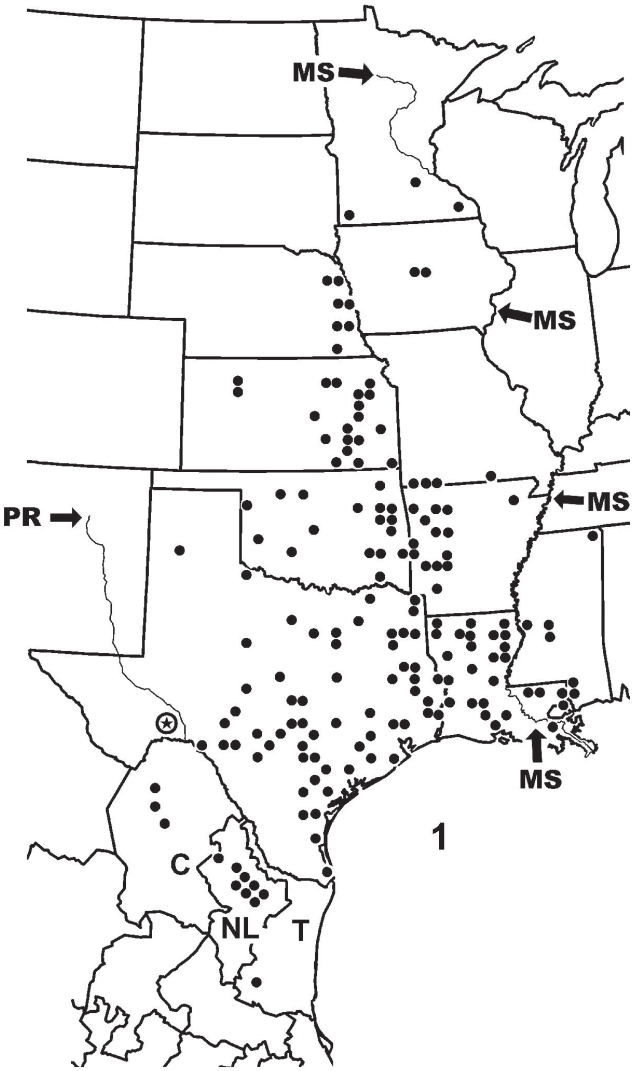

Figure 1. Distribution of *A. texense*; some dots represent more than one closely proximate localities. Star in Dot, the Terrell Co., Texas, locality. C, Coahuila; MS, course of the Mississippi River; NL, Nuevo León; PR, course of the Pecos River; T, Tamaulipas.

Remarks. In the original description, Loomis (1937) indicated, but did not actually state, that the male from Pierce, Wharton Co., Texas, is the holotype; no paratypes were mentioned, suggesting that the type series consisted of only this one individual. In subsequent remarks Loomis stated, "…many other specimens were collected the same year (1905) at Wharton, Texas, on the bank of the Colorado River," and he also mentioned samples collected in 1927 in Dallas, Smith, and Tarrant cos. All this material was apparently available when Loomis described the species, but we do not know the number of individuals. "Many other specimens" is vague, and numbers were not provided for the 1927 samples. The FSCA houses two males and two females from the Colorado River bank sample that are labeled, "paratypes"; presumably, they constitute only part of this sample because "many specimens" implies more to us. As these specimens were not specifically designated as paratypes in the original account, they are not such despite the sample label (Article 72.4.6 of the Code, ICZN 1999); if they were legitimate paratypes, the 1927 samples from Dallas, Smith, and Tarrant cos. would also hold this status. This technicality is significant because if the holotype is ever lost, a neotype will have to be designated among new or existing material because no official paratypes exist.

Acknowledgments

The following curators and collection managers loaned or provided access to material in institutional holdings: L. Prendini (AMNH), R.W. Baumann (MLBM), P. Sierwald (FMNH), G.B. Edwards (FSCA), C. Favret (INHS), L. Leibensperger (MCZN), J. Coddington (NMNH), D.C. Arnold (OSEC), J.R. Reddell (TMMC), S.-K.Wu (UCMC), C.L. Smith (UGCA), P. Clausen (UMSP), R.L. Hoffman (VMNH), and W.D. Sissom (WTAM); W.A. Shear loaned material from his private collection. CTM thanks the Arkansas

Game and Fish Commission, the Nebraska Game and Parks Commission, the Oklahoma Department of Wildlife Conservation, the South Dakota Department of Game, Fish and Parks, and the Texas Parks and Wildlife Commission, for Scientific Collecting Permits, and R.C. Dowler (Angelo State University) for support for travel to Terrell County, Texas. Field work by RMS in the Black Hills and Davis Mountains was funded by grant no. 3203-85 from the National Geographic Society. We also thank J. T. McAllister, III, D. Moore, and G. Torres, for collecting assistance, and M. Leite, Chadron State College, for helping prepare the map; J.J. Lewis and R.L. Hoffman provided pre-submission reviews.

Literature Cited

Bollman, C.H. 1893. The Myriapoda of North America. United States National Museum Bulletin 46: 1-210.

Bueno-Villegas, J., P. Sierwald, and J.E. Bond. 2004. Diplopoda. p. 569-599. *In*: J.L. Bousquets, J.J. Morrone, O.Y. Odóñez, and I.V. Ferñandez (eds.). Biodiversidad, taxonomía y biogeografía de artrópodos de México: Hacia una síntesis de su conocimiento, IV, UNAM; México. 186 p.

Causey, N.B. 1953. On five new North American millipeds and records of some established species. American Midland Naturalist 50: 152-158.

Causey, N.B. 1963. Additional records of Louisiana millipeds. Proceedings of the Louisiana Academy of Science 26: 76-79.

Chamberlin, R.V. 1918. Myriopods from Okefenokee Swamp, GA, and from Natchitoches Parish, Louisiana. Annals of the Entomological Society of America 11: 369-380.

Chamberlin, R.V. 1931. On a collection of chilopods and diplopods from Oklahoma. Entomological News 42: 97-104.

Chamberlin, R.V. 1942a. New southern millipeds. Bulletin of the University of Utah 23 [Biological Series 6(8)]: 1-19.

Chamberlin, R.V. 1942b. On a collection of myriopods from Iowa. Canadian Entomologist 74: 15-17.

Chamberlin, R.V. 1943a. On Mexican millipeds. Bulletin of the University of Utah 34 [Biological Series 8(3)]: 1-103.

Chamberlin, R.V. 1943b. Some records and descriptions of American diplopods. Proceedings of the Biological Society of Washington 56: 143-152.

Chamberlin, R.V., and R.L. Hoffman. 1958. Checklist of the millipeds of North America. United States National Museum Bulletin Number 212: 1-236.

Chamberlin, R.V., and S. Mulaik. 1941. On a collection of millipeds from Texas and New Mexico. Journal of the New York Entomological Society 49: 57-64.

Filka, M.E., and R.M. Shelley. 1980. The milliped fauna of the Kings Mountain region of North Carolina (Arthropoda: Diplopoda). Brimleyana 4: 1-42.

Gunthorp, H. 1913. Annotated list of Diplopoda and Chilopoda of Kansas. Kansas University Science Bulletin 7: 161-182.

Gunthorp, H. 1921. Cragin's collection of Kansas Myriapoda. Canadian Entomologist 53: 87-91.

Hoffman, R.L. 1998. An Appalachian species of *Rhysodesmus* (Polydesmida: Xystodesmidae: Rhysodesmini). Myriapodologica 5: 77-83.

Hoffman, R.L. 1999. Checklist of the millipeds of North and Middle America. Virginia Museum of Natural History Special Publication Number 8: 1-584.

ICZN (International Commission of Zoological Nomenclature). 1999. International Code of Zoological Nomenclature (4th ed.). International Trust for Zoological Nomenclature; London. 306 p.

Johnson, B.M. 1954. The millipeds of Michigan. Papers of the Michigan Academy of Science 39: 241-252.

Kenyon, F.C. 1893a. A preliminary list of the Myriapoda of Nebraska, with descriptions of new species. Publications of the Nebraska Academy of Science 3: 14-18.

Kenyon, F.C. 1893b. Nebraska Myriapoda. Canadian Entomologist 25: 161.

Loomis, H.F. 1937. Crested millipeds of the family Lysiopetalidae in North America, with descriptions of new species. Proceedings of the United States National Museum 84: 97-135.

Loomis, H.F. 1944. Millipeds principally collected by Professor V.E. Shelford in the eastern and southeastern states. Psyche 51: 166-177.

Loomis, H.F. 1959. Millipeds collected enroute from Florida to San Antonio, Texas, and vicinity. Journal of the Washington Academy of Science 49: 157-163.

Loomis, H.F. 1966. Millipeds from the region of Monterrey, Mexico. Journal of the Kansas Entomological Society 39: 513-524.

Loomis, H.F. 1968a. A checklist of the millipeds of Mexico and Central America. United States National Museum Bulletin 68: 1-137.

Loomis, H.F. 1968b. New species and records of millipeds from Nuevo León, Mexico. Journal of the Kansas Entomological Society 41: 382-394.

McAllister, C.T., C. S. Harris, R.M. Shelley, and J. T. McAllister, III. 2002. Millipeds (Arthropoda: Diplopoda) of the Ark-La-Tex. I. New distributional and state records for seven counties of the west Gulf Coastal Plain of Arkansas. Journal of the Arkansas Academy of Science 56: 91-94.

McAllister, C.T., R.M. Shelley, and J. T. McAllister, III. 2003. Millipeds (Arthropoda: Diplopoda) of the Ark-La-Tex. III. Additional records from Arkansas. Journal of the Arkansas Academy of Science 57: 115-121.

McAllister, C.T., R.M. Shelley, H. Enghoff, and Z.D. Ramsey. 2005. Distribution of the milliped *Virgoiulus minutus* (Brandt, 1841): First records from Mississippi, Oklahoma, and Texas (Julida: Blaniulidae). Western North American Naturalist 65: 258-266.

Reddell, J.R. 1965. A checklist of the cave fauna of Texas. I. The Invertebrata (exclusive of Insecta). Texas Journal of Science 17: 143-187.

Reddell, J.R. 1970. A checklist of the cave fauna of Texas. IV. Additional records of Invertebrata (exclusive of Insecta). Texas Journal of Science 21: 381-415.

Shear, W.A. 1972. Studies in the milliped order Chordeumida (Diplopoda): A revision of the family Cleidogonidae and a reclassification of the order Chordeumida in the New World. Bulletin of the Museum of Comparative Zoology 144: 151-352.

Shear, W.A., R.M. Shelley, and H. Heatwole. 2003. Occurrence of the milliped *Sinocallipus simplipodicus* Zhang, 1993 in Laos, with reviews of the southeast Asian and global callipodidan faunas, and remarks on the phylogenetic position of the order (Callipodida: Sinocallipodidea: Sinocallipodidae). Zootaxa 365: 1-20.

Shelley, R.M. 1978. Millipeds of the eastern Piedmont region of North Carolina, USA (Diplopoda). Journal of Natural History 12: 37-79.

Shelley, R.M. 1984. A synopsis of the milliped genus *Abacion* Rafinesque (Callipodida: Caspiopetalidae). Canadian Journal of Zoology 62: 980-988.

Shelley, R.M. 1988. The millipeds of eastern Canada (Arthropoda: Diplopoda). Canadian Journal of Zoology 66: 1638-1663.

Shelley, R.M. 1989. The milliped genus *Texophon* Chamberlin and the new tribe Texophonini (Callipodida: Schizopetalidae). Southwestern Naturalist 34: 381-391.

Shelley, R.M. 1990 (1989). Revision of the milliped family Eurymerodesmidae (Polydesmida: Chelodesmidea). Memoirs of the American Entomological Society Number 37: 1-112.

Shelley, R.M. 1999. A second east-Nearctic species of *Rhysodesmus* Cook (Polydesmida: Xystodesmidae). Myriapodologica 6(3): 19-22.

Shelley, R.M. 2000a. A new callipodoid milliped genus and species from Sinaloa, with the proposal of a new tribe in the subfamily Tynommatinae (Schizopetalidae). Myriapodologica 6(9): 83-86.

Shelley, R.M. 2000b. Annotated checklist of the millipeds of North Carolina (Arthropoda: Diplopoda), with remarks on the genus *Sigmoria* Chamberlin (Polydesmida: Xystodesmidae). Journal of the Elisha Mitchell Scientific Society 116: 177-205.

Shelley, R.M. 2001(2000). Annotated checklist of the millipeds of Florida (Arthropoda). Insecta Mundi 14: 241-251.

Shelley, R.M., C.T. McAllister, and J.L. Hollis. 2003. A new milliped of the genus *Abacion* Rafinesque, 1820 from Arkansas, U.S.A. (Callipodida: Abacionidae). Zootaxa 170: 1-7.

Shelley, R.M., C.T. McAllister, and M.F. Medrano. 2006. Distribution of the milliped genus *Narceus* Rafinesque, 1820 (Spirobolida: Spirobolidae): Occurrences in New England and west of the Mississippi River, and a summary of peripheral localities: first records from Connecticut, Delaware, and Maine. Western North American Naturalist 66: 374-379.

Snider, R.M. 1991. Updated species lists and distribution records for the Diplopoda and Chilopoda of Michigan. Michigan Academician 24: 177-194.

Stewart, T.C. 1969. Records of millipeds in twenty five northeast Texas counties. Texas Journal of Science 20: 383-385.

Stoev, P., and R.M. Shelley. 2009. The millipede order Callipodida in Mexico, with descriptions of a new genus and species from Sonora (Schizopetalidae). p. 159-165. *In*: S.M. Roble and J.C. Mitchell (eds.). A lifetime of contributions to myriapodology and the natural history of Virginia: A festschrift in honor of Richard L. Hoffman's 80th birthday. Virginia Museum of Natural History Special Publication Number 16: 1-457 + i-xvi.

Stoev, P., P. Sierwald, and A. Billey. 2008. An annotated world catalogue of the millipede order Callipodida (Arthropoda: Diplopoda). Zootaxa 1706: 1-50.

Williams, S.R., and R.A. Hefner. 1928. The millipedes and centipedes of Ohio. The Ohio State University Bulletin 33(7)[Ohio Biological Survey Bulletin 18, 4(3)]: 1-146.

Received March 6, 2010; Accepted March 20, 2010.