INSECTA MUNDI

A Journal of World Insect Systematics

0292

Atlas and checklist of the bark and ambrosia beetles of Texas and Oklahoma (Curculionidae: Scolytinae and Platypodinae)

T. H. Atkinson
University of Texas Insect Collection
3001 Lake Austin Blvd. Suite 1.314
Austin, Texas 78702
thatkinson.austin@gmail.com

E.G. Riley
Department of Entomology
Texas A&M University
College Station, Texas 77843
egrchryso@tamu.edu

Date of Issue: March 22, 2013

CENTER FOR SYSTEMATIC ENTOMOLOGY, INC., Gainesville, FL

T. H. Atkinson and E. G. Riley.
Atlas and checklist of the bark and ambrosia beetles of Texas and Oklahoma (Curculionidae: Scolytinae and Platypodinae)
Insecta Mundi 0292: 1–46

ZooBank Registered urn:lsid:zoobank.org:pub:B2626ACD-9F7F-4DF5-9EE5-D7EA51889467

Published in 2013 by
Center for Systematic Entomology, Inc.
P. O. Box 141874
Gainesville, FL 32614-1874 USA
http://www.centerforsystematicentomology.org/

Insecta Mundi is a journal primarily devoted to insect systematics, but articles can be published on any non-marine arthropod. Topics considered for publication include systematics, taxonomy, nomenclature, checklists, faunal works, and natural history. **Insecta Mundi** will not consider works in the applied sciences (i.e. medical entomology, pest control research, etc.), and no longer publishes book reviews or editorials. **Insecta Mundi** publishes original research or discoveries in an inexpensive and timely manner, distributing them free via open access on the internet on the date of publication.

Insecta Mundi is referenced or abstracted by several sources including the Zoological Record, CAB Abstracts, etc. **Insecta Mundi** is published irregularly throughout the year, with completed manuscripts assigned an individual number. Manuscripts must be peer reviewed prior to submission, after which they are reviewed by the editorial board to ensure quality. One author of each submitted manuscript must be a current member of the Center for Systematic Entomology.

Printed copies (ISSN 0749-6737) annually deposited in libraries of:
CSIRO, Canberra, ACT, Australia
Museu de Zoologia, São Paulo, Brazil
Agriculture and Agrifood Canada, Ottawa, ON, Canada
The Natural History Museum, London, Great Britain
Muzeum i Instytut Zoologiczny 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
Zoological Institute of Russian Academy of Sciences, Saint-Petersburg, Russia

Electronic copies (On-Line ISSN 1942-1354, CDROM ISSN 1942-1362) in PDF format:
Printed CD mailed to all members at end of year. Archived digitally by Portico. Openly accessible at:
Florida Virtual Campus: http://purl.fcla.edu/fcla/insectamundi
University of Nebraska-Lincoln, Digital Commons: http://digitalcommons.unl.edu/insectamundi/
Goethe-Universität, Frankfurt am Main: http://edocs.ub.uni-frankfurt.de/volltexte/2010/14363/

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

INSECTA MUNDI 0292: 1–46 2013

Atlas and Checklist of the bark and ambrosia beetles of Texas and Oklahoma (Curculionidae: Scolytinae and Platypodinae)

T. H. Atkinson
University of Texas Insect Collection
3001 Lake Austin Blvd. Suite 1.314
Austin, Texas 78702
thatkinson.austin@gmail.com

E.G. Riley
Department of Entomology
Texas A&M University
College Station, Texas 77843
egrchryso@tamu.edu

Abstract. 180 species of bark and ambrosia beetles (Curculionidae: Scolytinae and Platypodinae) are known to occur in Texas and Oklahoma. 175 species are known from Texas, 35 of which are reported here for the first time. 78 species are known from Oklahoma, 47 of which are new records for the state. Based on overall distribution patterns the largest group of species found in Texas and virtually all known from Oklahoma are widely distributed in eastern and southeastern North America, reaching their southwestern limits here. In the case of Texas other large elements include Neotropical elements shared with Mexico and a large number found in southwestern North America. New distribution and significant new host records are discussed. Distribution maps are included for most species and a checklist is provided as an appendix.

Introduction

Wood (1982) established the modern benchmark for the bark and ambrosia beetles (Curculionidae: Scolytinae and Platypodinae) in the U.S. in his monograph of the bark and ambrosia beetles of North and Central America. As is often the case, publication of a comprehensive treatment makes it easier to recognize new or omitted information. Since that time, large numbers of new records have been added in regional or state treatments for Indiana (Deyrup 1981, Deyrup and Atkinson 1987), Maryland (Staines 1982, Rabaglia 2003), Idaho (Furniss and Johnson 1987), Florida (Deyrup and Atkinson 1987, Atkinson and Peck 1994), Montana (Gast et al. 1989), Oregon (Furniss et al. 1992, LaBonte et al. 2005), Washington (Furniss and Johnson 1995, LaBonte et al. 2005), Delaware (Rabaglia and Valenti 2003), Ohio (Lightle et al. 2007), Michigan (Cognato et al. 2010) and Mississippi (Schiefer 2010).

Additional new records on hosts and distributions also have been published in numerous articles. A large number of exotic species have become introduced since publication of Wood's monograph (summarized by Haack 2006), many of which have significant pest potential.

Texas is a particularly interesting area biogeographically because it straddles the confluence of three major ecological regions: the mixed deciduous-conifer forests of the southeastern U.S., the arid and montane regions of southwestern North America, and the northern limits of the Neotropical flora and fauna.

This paper grew out of recent local collections by the authors that had not been previously published. The large amount of material deposited in the Texas A&M University collection by the late Karl Stephan also prompted us to include Oklahoma in this study. In addition to notes on new state and significant collection records for Texas and Oklahoma, we include a checklist in tabular format with host, distribution, and feeding habits (Appendix I). Also included are 132 maps showing collection localities for most of the species included in the checklist (Appendix II).

Methods

Most of the information in this paper is based on relatively recently collected materials in regional collections including the following, all of which have been examined by the senior author:

EGRC	E.G. Riley, personal collection, College Station, Texas.
FSCA	Florida State Collection of Arthropods, Gainesville, Florida.
OKSU	Oklahoma State University collection, Stillwater, Oklahoma.
RHTC	R.H. Turnbow, Jr., personal collection, Ft. Rucker, Alabama.
TAMU	Texas A&M University Collection, College Station, Texas.
UTIC	University of Texas Insect Collection, Austin, Texas.

The data in the checklist (Appendix I) and distribution maps are based on these records as well as previously published.

Excluded Species and Taxonomic Notes

Equihua and Burgos (1993) cited localities in eastern Texas for *Hylocurus elegans* (Eichhoff), *Stenoclyptus ruficollis* Wood, and *Hypothenemus birmanus* (Eichhoff). The first two are native to central Mexico, but have never been collected in northern Mexico nor are there any additional records from the U.S. We have seen the specimens in question and while the identifications are correct we believe that the specimens are mislabeled. The third species is possible but unlikely to be found in the Houston area. The three species are not included in this checklist.

Lanier (1970) described *Ips hoppingi* separating it from *Ips confusus* (LeConte) based on hosts, range, minute morphological differences, and limited breeding studies. Wood (1982) cited a collection from the Davis Mountains as "*confusus*" while Lanier cited material from the same location as "*hoppingi*". Neither Wood nor Lanier specified the collections where these specimens were deposited. It is very possible these were the same specimens. Cognato and Sun (2007) included *Ips* specimens collected from pinyon pine from Davis County, TX in a molecular phylogeny of worldwide *Ips* species. The TX specimens were monophyletic with *I. hoppingi* specimens collected from southern AZ and Mexico (Cognato and Sperling 2000, Cognato and Sun 2007). All Texas pinyon-feeding *Ips* are treated here as *I. hoppingi*.

Wood (1982) listed *Micracisella opacicollis* (LeConte) from Texas. After studying large numbers of specimens, including all in Wood's collection and in the U.S. National Museum, all Texas and Oklahoma specimens are treated as *Micracisella nanula* (LeConte). Likewise, although *Phloeotribus dentifrons* Blackman has been reported from Texas by Wood, all specimens from the region are treated as *Phloeotribus texanus* Schaeffer. This is not intended as a formal statement of synonymy for these species pairs. Rather, it simply reflects our opinion that the material from the limited geography or this study belongs to a single species from each pair regardless of previous publications.

Atkinson (1989) placed *Hylastes exilis* (Chapuis) in synonymy under *H. tenuis* Eichhoff. This synonymy is followed here even though it was not accepted by Wood (Wood and Bright 1992a) or Schieffer (2010).

Dryoxylon Bright and Rabablia is placed within the Xyleborina. Regardless of the discussion of characters given by Bright and Rabaglia (1999) this species is clearly allied with the Xyleborina. It is an ambrosia beetle (Coyle et al. 2005), which also supports its placement within the Xyleborina.

New Records and Notes for Texas and Oklahoma

Unless otherwise indicated the following section lists new state records for Texas, Oklahoma, or both. A few notes are added for additional species when the cited collections represent significant host or biological information. Latitude and longitude are only included where these data were provided on labels.

Karl Stephan lived and did most of his collecting in Latimer County in southeastern Oklahoma (Carlton et al. 2005). Many of his specimens bear labels "5 mi. W. of Red Oak" which were collected near

his residence. Others bear labels simply as "Latimer Co.". It is not clear whether these specimens were collected at other localities or merely were shorthand for the same general area, so all of his material is listed here as "Latimer Co." His collection included many species with a few specimens collected on different dates over a long period. As a simplification, a range of years is presented here in those cases. During his lifetime a large amount of his specimens of Scolytinae and Platypodinae were deposited in the Florida State Collection of Arthropods and the Texas A&M University collection. On his death, the bulk of the residual material was transferred to Texas A&M.

Species and genera are listed alphabetically within subfamilies, tribes and subtribes following the arrangement of Wood and Bright (1992a,b), reflecting the recent consensus that the Scolytinae and Platypodinae are subfamilies of the Curculionidae rather than families in their own right. The change to subfamily rank means "demoting" each of Wood's higher groups one level in the hierarchy. Recent changes in names of subtribes follow Alonzo-Zarazaga and Lyal (2009). Alonzo-Zarazaga and Lyal (2009), based on the demonstrated phylogenetic shortcomings of Wood's classification, suggested dropping his subfamilies (now tribes) and keeping all of his tribes. In our opinion, despite known problems with Wood's classification there is still significant phylogenetic information that would be lost from following this proposal. Specifically, while Wood's Scolytini (treated by him as Scolytinae) are probably paraphyletic, the Hylesinini (Hylesininae) are probably a monophyletic group.

A complete checklist of the bark and ambrosia beetles of Texas and Oklahoma is given in Appendix I. Distribution maps of known collection localities have been prepared for almost all species in Appendix II. References to distribution maps are included in the list below.

New State Records for Texas and Oklahoma

Platypodinae
Euplatypus compositus (Say). Map 1. OK: Latimer Co., K. Stephan, 1976-1994 (TAMU, 23; FSCA, 3).

Euplatypus parallelus (F.). Map 1, TX: Hidalgo Co.: Bentsen-Rio Grande St. Pk. (26.1801, -98.3846), J.E. King & E.G. Riley, 6-IX -2008, blacklight (TAMU, 5).

Scolytinae
Hylesinini
Hylastina
Hylastes porculus Erichson. Map 4. OK: Latimer Co., K. Stephan, II-1985 (TAMU, 1); I-1987, (TAMU, 1); IV-1987 (TAMU, 1); V-1987 (TAMU, 1); 1-XI-1976 (TAMU, 1).

Hylastes salebrosus Eichhoff. Map 5. OK: Latimer Co., K. Stephan, XII-96 (TAMU, 1).

Hylesinina
Hylesinus fasciatus LeConte. Map 9. OK: Latimer Co., K. Stephan, 1983-1994 (TAMU, 11). This is the southernmost and westernmost known locality for this species.

Hylurgina
Dendroctonus valens LeConte. Map 11. TX: Jeff Davis Co., Davis Mountains Resort, 2-VII-2003, D.G. Marqua, 1768 m (TAMU, 1); same locality, 6-VII-2009, E.G. Riley, beating brush pile (EGRC, 1).

Bothrosternina
Cnesinus strigicollis LeConte. Map 12. OK: Latimer Co., K. Stephan, VIII-1983 (TAMU, 1); VI-1985 (TAMU, 1).

Phloeotribina
Phloeotribus liminaris (Harris). Map 15. OK: Latimer Co., K. Stephan, VII-1983 (TAMU, 1); TX: Lamar Co.: Camp Maxey (33.7860, -95.5896), T.H. Atkinson, 30-IX-2010, *Prunus mexicana* S. Wats., THA936 (UTIC, 1); Sabine Co.: Hemphill, 8.8 mi NE, Mill Creek Cove (31.3851, -93.7090), E.G. Riley et al., 31-III-2008, flight intercept (EGRC, 1).

Phloeotribus pseudoscabricollis Atkinson. Map 16. TX: Cameron Co.: Sabal Palm Grove Sanct. (25.8496, -97.4185), E.G. Riley, 19-X-2008, beating palm forest vegetation (TAMU, 3); E.G. Riley, 31-X-2008, *Zanthoxylum fagara* (L.) Sarg., emerged from branch (TAMU, 50); Travis Co.: Austin, T.H. Atkinson, 18-II-2012, *Ptelea trifoliata* L., THA 970 (UTIC, 7). This species was described from a few specimens collected in Nueces and San Patricio Counties in southern Texas. The collection localities in the Rio Grande Valley are not surprising. The collections from *Z. fagara* and *P. trifoliata* (Rutaceae) are the first known host associations. Galleries were horizontal in branches as small as 3 cm in diameter. *Zanthoxylum fagara* is a common large shrub to small tree in scrublands of southern Texas and northeastern Mexico. *Ptelea trifoliata* is a small tree found widely in the eastern U.S. *Phloeotribus scabricollis* (Hopkins), a closely related species also breeds in *P. trifoliata*.

Phloeotribus texanus Schaeffer. Map 17. OK: Latimer Co., K. Stephan, 1983-1994 (TAMU, 16).

Phloeosinina

Chramesus hicoriae LeConte. Map 19. OK: Latimer Co., K. Stephan, 1982-1995 (TAMU, 24); TX: Concan, Neal's Lodge, E.G. Riley, 1-X-1994 (EGRC, 1); 8-IV-1995 (EGRC, 3).

Phloeosinus taxodii taxodii Blackman. Map 21. TX: Sabine Co.: Hemphill, 8.8 mi NE, Beech Bottom Cove (31.3851, -93.7090), E.G. Riley, 16-III-2008, Lindgren funnel (EGRC, 2).

Hypoborina

Chaetophloeus mexicanus (Blackman). Map 27. TX: Goliad Co.: Goliad, T.H. Atkinson, 28-VI-2006, *Eysenhardtia texana Scheele* (TAMU, 14), Val Verde Co.:, Seminole Canyon State Park, 20-VII-1986, J.B. Woolley & G. Zolnerowich (TAMU, 1). This species has been reported from eastern and central Mexico in *Eysenhardtia polystachya* (Fabaceae).

Chaetophloeus sulcatus Wood. Map 28. TX: Brewster Co.: Glass Mtns., US hwy 385, T.H. Atkinson, 26-III-2001, *Flourensia cernua* DC. (TAMU, 2); Hudspeth Co.: Sierra Blanca, 16-VIII-2006, T.H. Atkinson, *F. cernua* (TAMU,4); Mexico, Nuevo León, Montemorelos (25.25116, -99.97214), T.H. Atkinson, 15-XI-2009, *Gochnatia hypoleuca* (DC.) A. Gray (NEW HOST RECORD) THA 914 (TAMU, 8, FSCA 3). This species breeds in shrubby, woody composites. *Gochnatia hypoleuca*, reported here from Nuevo León, also occurs in West Texas.

Liparthrum squamosum (Blackman). Map 29. TX: Lamar Co.: Camp Maxey (33.7860, -95.5896), T.H. Atkinson, 30-IX-2010, *Maclura pomifera* (Raf.) Schneid., THA 938 (UTIC, 3); 1-X-2010, *Maclura pomifera*, THA943 (TAMU, 10; UTIC, 2); Grimes Co.: Bovay Scout Camp, 5.5 mi SW Navasota, E.G. Riley, 18-IX-2011, *M. pomifera* (EGRC, 6). This species was originally described from Mississippi (Blackman 1922). The only subsequent collection was from Indiana (Deyrup 1981). *Maclura pomifera*, the osage orange, has been widely planted outside its restricted native range in Texas and Oklahoma. Not only is this a new state record, it is the first time that the insect has been collected within the native range of its host.

Polygraphina

Carphobius arizonicus Blackman. Map 30. TX: Brewster Co., Big Bend National Park, Laguna Meadow, 1676 m, 2-VIII-2003, E.G. Riley (TAMU, 1). This seldom collected species has been previously reported from southern Arizona and New Mexico to central Mexico from species of *Juniperus*.

Carphoborus bicornus Wood. Map 31. OK: Latimer Co., K. Stephan, 1976-1986 (TAMU, 22, FSCA 1); TX: Lamar Co.: Camp Maxey (33.8088, -95.5504), T.H. Atkinson, 1-X-2010, *Pinus echinata* Mill., THA944 (TAMU 19, UTIC, 10, FSCA, 10).

Carphoborus bifurcus Eichhoff. Map 32. TX: Lamar Co.: Camp Maxey (33.8088, -95.5504), T.H. Atkinson, 1-X-2010, *Pinus echinata,* THA944, (TAMU, 1).

Carphoborus convexifrons Wood. Map 31. TX: Jeff Davis Co.: Davis Mtns. Resort, E.G. Riley & M. Yoder, 11-IV-2002, UV light (EGRC, 1); Pecos Co.: , Ft. Stockton, 28 mi S, rest stop hwy 385, E.G. Riley, 19-IV-1997 (EGRC, 1).

Scolytini
Scolytina
Scolytus quadrispinosus Say. Map 37. OK: Latimer Co., K. Stephan, 1979-1988 (TAMU, 3).

Micracidina
Hylocurus flaglerensis Blackman. Map 41. TX: Sabine Co.: Hemphill, 8.8 mi NE (31.3851, -93.7090), Heffern, D.J. et al., 19-XI-2007, Lindgren Funnel (EGRC, 1); E.G. Riley, 1-III-2008, flight intercept (EGRC, 2); 16-III-2008, flight intercept (EGRC, 4).

*Hylocurus floridensi*s Atkinson. Map 40. TX: Brazos Co.: College Station, Lick Ck. Pk., E.G. Riley, 26-I-1997, flight intercept (EGRC, 2); 15-II-1997, light intercept (EGRC, 1); 9-III-1997, flight intercept bottomland forest (EGRC, 1). This is the first record of this species since its description.

Hylocurus langstoni (Blackman). Map 42. OK: Latimer Co., K. Stephan, 1979-1996 (TAMU, 13).

Hylocurus schwarzi Blackman. Map 41. OK: Garvin Co., Pauls Valley, 19-V-2011, Lindgren funnel trap baited with *Ips* pheromone (USNM, 1). TX: Brazos Co., College Station (30.5883, -96.2533), E.G. Riley (TAMU, 1); Wellborn, 22-III-2007, J. Smith & C. Bogran, Lindgren funnel trap (TAMU, 1); Waller Co.: Hempsted, J. Smith & C. Bogran, 22-III-2007 (TAMU, 3); same data, 22-II-2007, bottle trap (TAMU, 1); Grimes Co.: Plantersville, 12-IV-2007, J. Smith & C. Bogran (TAMU, 1). This species was described from South Texas by Blackman from 2 specimens collected in Victoria and has not been collected since. The material cited above demonstrates that this species is not restricted to southern Texas and is relatively abundant.

Micracis suturalis LeConte. Map 44. OK: Latimer Co., K. Stephan, IV-1991 (TAMU, 1).

Pseudothysanoes frondicolens Wood. Map 47. TX: Hudspeth Co.: Allamore, 16-VIII-2006, T.H. Atkinson, dead leaves *Yucca faxoniana* Sarg., THA836 (TAMU, 14); Presidio Co.: Presidio, 29-IX-2005, T.H. Atkinson, dead leaves *Yucca treculeana* Carriere (TAMU, 9). Known previously from southern Arizona and southeastern California.

Pseudothysanoes lecontei Blackman. Map 48. TX: Hays Co.: Dripping Springs, 6 mi NW (30.2170, -98.1830), E.G. Riley et al., 16-XII-2005, Lindgren funnel (TAMU, 1). This represents a significant westward range extension for this species that breeds in small branches and twigs of various oaks.

Thysanoes xylographus Wood. Map 54. TX: Brewster Co., Big Bend National Park, Emory Peak Trail, 24-IV-2004, E.G. Riley, 2256 m (TAMU, 1).

Dryocoetina
Dryocoetes granicollis (LeConte). Map 61. OK: Delaware Co.: Flint Creek (Flint), D.E. Bowles, 8-IV-1988, black light (TAMU, 1), TX: Brazos Co.: College Station (30.5883, -96.2533), E.G. Riley, 2-V-2002, UV light (EGRC, 3); 23-V-2002, UV light (EGRC, 18); 4-VIII-2006, UV light (EGRC, 1), VIII-2006, UV light (EGRC, 1). Bright (1963) stated that the hosts were species of *Picea*, but that records from *Juglans, Castanea*, and *Abies* were likely from "accidental hosts, misidentifications, or errors in identification." Wood (1982) basically repeated this information. However, there are numerous known collection localities in the lower South and Midwest (partially shown in Map 55), which are completely outside the native range of spruces or even the climatic range within which spruces could be successfully grown as ornamentals. Most collections have been from various kinds of traps with no information on hosts. In light of its overall distribution, it seems much more likely that the principal host is actually a broadleaf species and not a conifer.

Lymantor decipiens (LeConte). Map 60. OK: Latimer Co., K. Stephan, VII-1985 (TAMU, 1).

Crypturgina
Crypturgus alutaceus Schwarz. Map 62. OK: Latimer Co., K. Stephan, 1985 (TAMU, 26).

Xyloterina
Trypodendron scabricollis (LeConte).Map 63. TX: Sabine Co.: Hemphill, 8.8 mi NE (31.3851, -93.7090), E.G. Riley, 16-III-2008, flight intercept (EGRC, 1).

Xyleborina
Ambrosiodmus lecontei Hopkins. Map 64. TX: Waller Co.: Hempstead, Smith, J., 19-VI-2007, Lindgren funnel (TAMU, 1); Harris Co.: Tomball, Smith, J., 5-X-2006, Lindgren funnel (TAMU, 1); Montgomery Co.: Willis, Smith, J., 5-VII-2007, Lindgren funnel (TAMU, 1).

Ambrosiodmus rubricollis (Eichhoff). Map 66. OK: Latimer Co., IV-2002 – VIII-2002, K. Stephan (TAMU, 10). TX: Angelina Co.: Angelina NF, 2.5 mi NE Rockland (31.0483, -94.3872), Clarke; Menard & E.G. Riley, 1996 (TAMU, 15); Angelina Co.: Angelina NF, 3 mi NE Rockland (31.0553, -94.3683), Clarke; Menard & E.G. Riley, 1996, (TAMU, 11); Angelina Co.: Angelina NF, 7 mi NE Rockland (31.0775, -94.2778), Clarke; Menard & E.G. Riley, 1996, (TAMU, 11); Angelina Co.: Angelina NF, 4 mi SE Zavala (31.1278, -94.3825), Clarke; Menard & E.G. Riley, 1996, (TAMU, 2); Angelina Co.: Angelina NF, Zavalla, 5.5 mi SE (31.1181, -94.3336), Clarke, Menard & E.G. Riley, 1996, some in pitfalls, others from Lindgren funnels (TAMU, 85); Brazos Co.: College Station, Lick Creek Pk., García, R.R., 16-IX-1995, Malaise (TAMU, 1); San Jacinto Co.: Double Lake, W.F. Chamberlin, 29-VII-1991, Malaise (TAMU, 2); Sabine Co.: Hemphill, 8.8 mi NE, R.S. Anderson & E. Morris., 25-IV-1989, flight intercept (TAMU, 1); Harris Co.: Kingswood, B. Ree, 10-III-1994 (TAMU, 1); Tyler Co.: Kirby State Forest (30.5750, -94.4175), E.G. Riley, 30-III-2003, flight intercept (TAMU, 1); Montgomery Co.: Sam Houston NF, jct. hwy 149 & 1791 (30.5369, -95.7489), E.G. Riley, 7-V-1998, flight intercept (TAMU, 1).

Ambrosiodmus tachygraphus (Zimmermann). Map 64. OK: Latimer Co., K. Stephan, III-1987 (TAMU, 1); IV-1990 (TAMU, 1); TX: Ft. Bend Co.: Brazos Bend St. Pk., E.G. Riley, 4-VI-2003, flight intercept (TAMU, 1).

Ambrosiophilus atratus (Eichhoff). Map 67. OK: Latimer Co., IV-2002, flight intercept trap, K. Stephan (TAMU, 3). TX: Sabine Co.: Hemphill, 8.8 mi NE (31.3851, -93.7090), Heffern, D.J. et al., 19-XI-2007, Lindgren Funnel (EGRC, 1); E.G. Riley, 1-III-2008, flight intercept (EGRC, 6).

Cyclorhipidion boadoanum (Reitter) (=*Xyleborus californicus* Wood). Map. 69. OK: Payne Co.: Stillwater, P. Edde, 1-VII-2002 (TAMU, 1); Latimer Co., K. Stephan, IV, V, VI-2002 (TAMU, 3).

Euwallacea validus (Eichhoff). Map 67. TX: Sabine Co.: Hemphill, 8.8 mi NE, Mill Creek Cove (31.3851, -93.7090), E.G. Riley, 16-III-2008, flight intercept (EGRC, 1).

Xyleborus affinis Eichhoff. Map 73. OK: Latimer Co., K. Stephan, VIII-1988 (FSCA, 1); VI-1998 (FSCA, 1).

Xyleborus celsus Eichhoff. Map 74. OK: Latimer Co., K. Stephan, 9-X-1976 (FSCA, 2); 18-VI-1977 (FSCA, 1).

Xyleborus impressus Eichhoff. Map 77. OK: Latimer Co., K. Stephan, 1977 (TAMU, 11).

Xyleborus spinulosus Blandford. Map 80. TX: Cameron Co.: Sabal Palm Grove, E.G. Riley, 8-IV-1994 (EGRC, 1). This is the northernmost record of a species otherwise known from Central America and lowland Mexico.

Xyleborus viduus Eichhoff. Map. 80. OK: Latimer Co., K. Stephan, 1981-1986 (TAMU, 20); TX: Brazos Co.: College Station, E.G. Riley, 1-XI-1996, ethanol trap (EGRC, 1); Hays Co.: Dripping Springs, 6 mi NW (30.2170, -98.1830), E.G. Riley, 17-IX-2005, flight intercept (TAMU, 1); Sabine Co.: Hemphill, 8.8 mi NE (31.3851, -93.7090), Heffern, D.J. et al., 11-VI-2007, flight intercept (EGRC, 4).

Xyleborus xylographus (Say). Map 81. OK: Latimer Co., K. Stephan,1977-1992 (TAMU, 21).

Xylosandrus crassiusculus (Motschulsky). Map 83. OK: Washington Co.: Bartlesville, *Cercis canadensis* L. (OKSU, 4); Bryan Co.: Durant, Brown, G.E. (OKSU, 2); Latimer Co., K. Stephan, 1987-1994 (TAMU,20; FSCA, 10); Payne Co.: Stillwater, P. Edde., 1-VII-2002 (TAMU, 4); Cherokee Co.: Tahlequah, D. Tidmore, *Koelreuteria formosana* Hayata (OKSU, 2); Tulsa Co.: Tulsa, Affordable Pallet Co. (OKSU, 2).

Cryphalina

Hypothenemus californicus Hopkins. Map 86. OK: Latimer Co., K. Stephan, 1978-1994 (TAMU, 32).

Hypothenemus crudiae (Panzer) Map 88. OK: Latimer Co., K. Stephan, 1983 (TAMU, 22).

Hypothenemus dissimilis (Zimmermann). Map 89. OK: Latimer Co., K. Stephan, 1983-1991 (TAMU, 26).

Hypothenemus distinctus Wood. Map. 90. TX: Ft. Bend Co.: Brazos Bend St. Pk., B. Raber & E.G. Riley, 29-V to 18-VI-1999, flight intercept (EGRC, 1).

Hypothenemus eruditus Westwood. Map 91. OK: Latimer Co., K. Stephan, 1990-1994 (TAMU, 8).

Hypothenemus gossypii (Hopkins). Map 92. OK: Latimer Co., K. Stephan, V-1994 (TAMU, 1); TX: Starr Co.: Falcon Lake St. Pk., J.B. Woolley 15-XII-1983 (TAMU, 6); Hidalgo Co.: Santa Ana NWR (26.0789, -98.1379),E.G. Riley, 8-II-2009, *Fraxinus berlandieri* DC., emerged dead twigs (TAMU, 1); Kenedy Co.: Sarita, 2.7 mi S, E.G. Riley, 8-X-1994, pitfall (EGRC, 1); Val Verde Co.: Seminole Canyon St. Pk., J.B. Woolley & G. Zolnerowich, 20-VII-1986 (TAMU, 1).

Hypothenemus interstitialis (Hopkins).Map 93. OK: Latimer Co., K. Stephan, 1982-1991 (TAMU, 29).

Hypothenemus parvistriatus Wood. Map 95. TX: Ft. Bend Co.: Brazos Bend St. Pk., B. Raber & E.G. Riley, 4-VI-2000 (TAMU, 2). This species was described from southern Florida and this represents a significant range extension. It is also found more widely in the Caribbean and Central and South America (Atkinson, unpublished).

Hypothenemus seriatus (Eichhoff). Map 97. OK: Latimer Co., K. Stephan, 1990-1992 (TAMU, 6).

Scolytogenes jalapae (Letzner). Map 99. TX: Travis Co., Austin, 18-IX-2011, stems of *Ipomoea cordatitriloba* Dennst., T.H. Atkinson, (UTIC, 8).

Trischidias atoma (Hopkins). Map 100. OK: Latimer Co., Stephan, K., 1983-1994 (TAMU, 7).

Trischidias exigua Wood. Map 101. OK: Latimer Co., K. Stephan, 1983-1996 (TAMU, 17); TX: Ft. Bend Co.: Brazos Bend St. Pk., B. Raber & E.G. Riley, 18-IV to 29-V-1999, flight intercept (EGRC, 1); Sabine Co.: Hemphill, 8.8 mi NE (31.3851, -93.7090), E.G. Riley, 16-III to 31-III-2008, flight intercept (EGRC, 4); Tyler Co.: Kirby St. For., B. Raber & E.G. Riley, 30-III to 27-IV-2003, flight intercept (EGRC, 2); Hidalgo Co.: Santa Ana NWR, E.G. Riley, 3-X to 17-X-2008, flight intercept (TAMU, 1).

Trischidias striata Atkinson. Map 102. TX: Sabine Co.: Hemphill, 8.8 mi NE, Mill Creek Cove (31.3851, -93.7090), E.G. Riley, 31-III to 13-IV-2008, flight intercept (EGRC, 4); 28-IV to 10-V-2008, flight intercept (EGRC, 1); Hidalgo Co., Santa Ana Natl. Wildlife Ref., 17-X-2008, emerged *Bernardia myricifolia* (Scheele) S. Wats., E.G. Riley (TAMU, 4).

Corthylina

Araptus dentifrons Wood. Map 103. OK: Latimer Co., K. Stephan, IV-1984 (TAMU, 1) IV-1989 (TAMU, 1; TX: Blanco Co.: 3.2 mi NW Johnson City (30.31796, -98.43555), 6-XII-2007, emerged from dead vines of *Matelea* sp. (Asclepiadaceae), E.G. Riley, (EGRC, 13). While this species has previously been reported from Texas, this is the first host record for the southwestern U.S. Other reported hosts from Florida and Mexico include other species of milkweed vines.

Conophthorus echinatae Wood. Map 104. OK: Latimer Co., V-1993 – VIII-1996, K. Stephan (TAMU, 13); LeFlore Co., Rich Mountain, 24-II-1992, K. Stephan (TAMU, 1). This species has not been collected since the type series from Winona, Missouri from cones of *Pinus echinata*.

Pityophthorus consimilis LeConte. Map 111. OK: Latimer Co., K. Stephan, 1986-1989 (TAMU, 26); TX: Lamar Co.: Camp Maxey (33.8178, -95.5278), T.H. Atkinson, 30-IX-2010, *Pinus echinata,* THA939 (UTIC, 4; TAMU, 10).

Pityophthorus crinalis Blackman. Map 109. OK: Latimer Co., K. Stephan, 1986-1991 (TAMU, 8).

Pityophthorus lautus Eichhoff. Map 112. OK: Latimer Co., K. Stephan, 1977-1995 (TAMU, 33).

Pityophthorus pulicarius (Zimmermann). Map 114. OK: Latimer Co., K. Stephan, 1976-1989 (TAMU, 14).

Pityotrichus barbatus (Blackman). Map 115. TX: Jeff Davis Co., Davis Mountains Resort, Upper Limpia Creek Canyon, E.G. Riley, 18-VII-2002, beating brush pile (EGRC, 1).

Pseudopityophthorus asperulus (LeConte). Map 122. OK: Latimer Co., K. Stephan, 1982-1994 (TAMU, 16); TX: Sabine Co.: Hemphill, 8.8 mi NE (31.3851, -93.7090), E.G. Riley, 16-III-2008, flight intercept trap (EGRC, 14); Hemphill, 9 mi E, R.S. Anderson & E. Morris, 19-III-1989, flight intercept (TAMU, 1); same data, 16-IV-1989 (TAMU, 4); same data, 5-VI-1989 (TAMU, 1); Tyler Co.: Kirby St. For. (30.5750, -94.4175), E.G. Riley, 30-III-2003, flight intercept (TAMU, 1).

Pseudopityophthorus minutissimus (Zimmermann). Map 124. OK: Latimer Co., K. Stephan, 1979-1986 (TAMU, 29); TX: Brazos Co.: College Station, E.G. Riley, 25-VII, Lindgren funnel with ethanol (EGRC, 1); TX: Sabine Co.: Hemphill, 8.8 mi NE, 31.3851, -93.7090, E.G. Riley, 16-III-2008, flight intercept trap (EGRC, 14); 31-III-2008 (EGRC, 1); TX: Houston Co.: Ratcliff Lake Rec. Area, W.F. Chamberlin, 11-VII-1996, UV light (TAMU, 1).

Pseudopityophthorus pruinosus (Eichhoff). Map. 125. OK: Latimer Co., K. Stephan, 1977-1994 (TAMU, 42).

Pseudopityophthorus pubescens Blackman. Map 126. TX: Lamar Co.: Camp Maxey, 33.7956, -95.5579, T.H. Atkinson, 2-X-2010, *Quercus falcata* Michx., THA946 (UTIC, 4); Hays Co.: Dripping Springs, 6 mi NW, 30.2170, -98.1830, E.G. Riley, 12-XI-2005 to 15-XII-2005, flight intercept trap (TAMU, 2); 16-XII-2005 to 26-I-2006 (TAMU, 10); 27-I-2006 to 24-II-2006 (TAMU,2); 25-II-2006 to 30-III-2006 (TAMU, 1).

Pseudopityophthorus yavapaii Blackman. Map 127. TX: Jeff Davis Co.: Davis Mts. Resort, upper Limpia Ck. Canyon, E.G. Riley, 14-IV-2002, *Quercus* sp. (TAMU, 1); Jeff Davis Co.: Ft. Davis, E.G. Riley, 6-X-1982, *Quercus* sp., emerged 5-XI to 30-XI-82 (TAMU, 10); Jeff Davis Co.: Madera Canyon, R.H. Turnbow, 28-VII-1978, *Quercus grisea* Liebm.(RHTC, 1).

Corthylus punctatissimus (Zimmermann). Map 130. OK: Latimer Co., K. Stephan, V-1989 (TAMU, 2); VII-1989 (TAMU,1); VII-1990 (TAMU, 1).

Gnathotrichus pilosus LeConte. Map 129. TX: Jeff Davis Co., Davis Mountains Resort, 1-VII-1999, black light, E.G. Riley (EGRC, 1); Jeff Davis Co., Madera Canyon rest stop, highway 118, 28-VI-1999, black light, E.G. Riley (EGRC, 1).

Monarthrum fasciatum (Say). Map. 131. OK: Latimer Co., K. Stephan, 1979-1983 (TAMU, 31); Payne Co.: Stillwater, P. Edde, VII-2002 (TAMU, 1).

Monarthrum mali (Fitch). Map 132. OK: Latimer Co., K. Stephan, 1976-1997 (TAMU, 24)

Biogeography

Texas and Oklahoma, especially the former, occupy an interesting biogeographical region with transitions and/or discontinuities of major North American ecosystems. To the west, the mixed conifer-deciduous forest of eastern North America gives way to the open grasslands and savannahs of the mid-continent. To the west, as rainfall drops, elevation also steadily increases. In far western Texas many shrubs characteristic of the Chihuahuan Desert appear, some of which are hosts to bark beetles. The isolated sky islands of the Guadalupe, Davis, and Chisos Mountains provide disjunct coniferous forest habitats that are similar to those which are more extensive in Arizona, New Mexico, Chihuahua and Coahuila. Finally, southern Texas, especially in coastal regions, approaches the subtropics and plants and animals of Neotropical affinity begin to appear. Some of these are of broad Neotropical distributions, while others are more restricted to the semi-arid conditions of southern Texas and northeastern Mexico.

Across some of these transitions or discontinuities there are recognizable pairs or groups of "eastern" and "western" species. In cases like the ash bark beetles *Hylesinus californicus* (Swaine), the western species overlaps with *H. aculeatus* Say, its eastern counterpart in central Texas (Map 7, 8). The two species are readily distinguished. On the other hand the sumac bark beetles *Pityophthorus virilis* Blackman (western) and *P. scriptor* Blackman (eastern) are very similar in appearance and have partly been distinguished by geographic separation. The gap is mostly due to an early lack of collecting in central Texas, now filled (Map 118, 121). Examination of localities listed by Wood (1982) and Bright (1981) also show significant differences in their respective interpretations in the central U.S. As currently described distinguishing the two species is arbitrary based on specimens examined from all parts of Texas. Either there is only one widely distributed species or the geographic boundary has not been correctly identified. A similar situation exists with the juniper bark beetles *Phloeosinus dentatus* (Say), *P. serratus* (LeConte), and *P. scopulorum neomexicanus* Blackman. The former is an eastern species while the latter two have different western distributions (Map 22, 23, 24). The three species in fact are very similar morphologically. Wood (1982) shows all three broadly co-occurring in the Edwards Plateau in central Texas. This area corresponds to a significant biogeographical break with an abrupt change in many plant and animal distributions. While it seems possible that two species occur there in narrow sympatry, it seems very unlikely that three co-occur there.

In Table 1, the overall distributions of the bark and ambrosia beetles are summarized. The three main ecological regions mentioned above are combined in different ways to yield seven basic, mutually exclusive patterns. These are discussed below. As with any generalizations particular species will fit these patterns to a greater or lesser extent and the tradeoff is between recognizing fewer, broader patterns versus more numerous, more precise patterns. The distribution pattern to which a particular species has been assigned can be seen in Appendix I. These can also be appreciated in the distribution maps.

SENA. The single largest group of species is those whose ranges are limited to southeastern North America (65 species). Some of these are broadly distributed from the Gulf of Mexico to southern Canada (*Hylastes porculus* Erichson*, Scolytus muticus* Say). Other are more southern (*Phloeotribus texanus* Schaeffer) or northern (*Hylesinus fasciatus* LeConte*, Trypodendron scabricollis* (LeConte)) in their ranges, but still fit the overall pattern. Many of these are host specialists in a variety of conifer and hardwood species. In most cases it appears that the western limits of the ranges of the beetles very closely follows that of their hosts and that the limits are fairly abrupt. In other words, most species found along the Atlantic coast and their host genera reach their western limits in Oklahoma and Texas. Given that most temperate species of bark and ambrosia beetles breed in woody hosts, the transition to grasslands basically means that species diversity drops precipitously to the west. Different woody host species either drop out completely as one moves westward or become restricted to riparian habitats.

Distribution pattern	Abbreviation (Appendix)	No. Species
Southeastern North America, often with range extending into southeastern Canada	SENA	66
Neotropical, with range including Mexico	MEX+NT	25
Southeastern North America as well as widespread Neotropical	SE+NT	12
Species primarily distributed in SE North America but with a disjunct range including temperate montane regions of Mexico	SE+MEX	10
Distribution includes disjunct ranges in both southeastern and southwestern North America	SE+SW NA	6
Southwestern North America, often including temperate montane regions of Mexico	SWNA	39
Widespread in eastern and western North America and Mexico	NA+MEX	1
Not native to New World	Exotic	21
Total		**180**

Table 1. Distribution patterns of bark and ambrosia beetles found in Texas and Oklahoma. Patterns are generalized and mutually exclusive. Consequently the range of a specific species will frequently not exactly fit the overall pattern. *Dendroctonus valens* doesn't fit any pattern.

SWNA. The next largest subgroup consists of species found in far western Texas whose primary range consists of montane habitats of southwestern North America including ranges of northern Mexico (37 species). Some of these, such as *Dendroctonus brevicomis* LeConte, reach their northern limits in southern British Columbia. Further collecting in western Texas is likely to increase the number of species in this category. Most of these occur in Texas only in the relatively small sky islands of the Guadeloupe, Davis, and Chisos Mountains that are isolated from the larger areas of temperate forests in New Mexico and northern Mexico.

MEX+NT. The next largest group includes Neotropical species shared with Mexico (25 species). Most of these do not extend beyond central Texas and only one reaches into Oklahoma (*Araptus dentifrons* Wood). This group can be broken down into 2 main subgroups. The first consists of those species with broad ranges that reach their northern limits in Texas (*Euplatypus parallelus* (F.)*, Xyleborus spinulosus* Blandford*,* etc.). The main barrier to northward dispersal of more Neotropical species is probably the very dry conditions and brushy vegetation of most of southern Texas and northeastern Mexico. Some of these are only known from the area immediately adjacent to the southern Rio Grande and may only survive in this and similar riparian woodlands with greater humidity.

A second subgroup of this Neotropical element consists of those that are more restricted to Tamaulipan xeric scrubland. Some of these, such as *Dendroterus texanus* Wood*, Pseudothysanoes heliura* Wood, and *Pseudothysanoes turnbowi* Wood have only been collected in Texas. Given that they have been collected on the border and that their hosts are common in northeastern Mexico it is almost certain that they will eventually be found in Mexico as well.

SENA species	MEX replacement species	distribution	hosts
Chramesus chapuisii LeConte	same species	SE+MEX	*Celtis*
Cnesinus strigicollis LeConte	same species	SE+MEX	
Dendroctonus frontalis Zimmerman	same species	SE+MEX	*Pinus*
Hylastes tenuis Eichhoff	same species	SE+SW	*Pinus*
Hypothenemus rotundicollis (Eichh.)	same species	SE+MEX	
Oxoplatypus quadridentatus (Olivier)	same species	SE+SW	*Quercus*
Pagiocerus frontalis (F.)	same species	SE+MEX	*Persea*
Phloeotribus frontalis (Olivier)	same species	SE+MEX	*Morus*
Phloeotribus texanus Schaeffer	same species	SE+MEX	*Celtis*
Pityophthorus annectens LeConte	same species	SE+SW	*Pinus*
Pityophthorus confusus Blandford	same species	SE+SW	*Pinus*
Pseudopityophthorus pruinosus (Eichh.)	same species	SE+MEX	*Quercus*
Thysanoes fimbricornis LeConte	same species	SE+MEX	
Thysanoes pallens Wood	same species	SE+MEX	
Chramesus hicoriae LeConte	*Chramesus atkinsoni* Wood	SEUS	*Carya*
Dendroctonus terebrans (Olivier)	*Dendroctonus valensi* LeConte	SEUS	*Pinus*
Ips calligraphus (Germar)	*Ips apache* Lanier	SE+SW	*Pinus*
Ips avulsus (Eichhoff)	*Ips bonanseai* Hopkins	SEUS	*Pinus*
Phloeosinus taxodii taxodii Blackman	*P. taxodii taxodiicolens* Wood	SE+MEX	*Taxodium*
Phloeotribus liminaris (Harris)	*Phloeotribus pruni* Wood	SEUS	*Prunus*
Pityophthorus lautus Eichhoff	several possibilities	SEUS	*Rhus, Toxicodendron*
Pityophthorus liquidambarus Blackman	several possibilities	SEUS	*Liquidambar*
Pityophthorus pulchellus Eichhoff	*Pityophthorus tuberculatus* Eichhoff	SE+SW	*Pinus*
Pityophthorus pulicarius (Zimmermann)	*Pityophthorus schwerdfegeri* Schedl	SEUS	*Pinus*
Pseudothysanoes dislocatus (Blackman)	*Pseudothysanoes perseae* Wood	SEUS	*Carya*
Thysanoes lobdelli Blackman	*Thysanoes xylophagus* Wood	SEUS	
Xyleborus pubescens Zimmermann	*Xyleborus intrusus* Blandford	SEUS	*Pinus*

Table 2. Species common to southeastern North America and temperate montane regions of Mesoamerica or represented by similar species. In all cases the species in question is absent from southern Texas. In most cases the implied relationship is based on morphology and should be considered tentative.

SE+NT. Eleven species, mostly species of *Xyleborus* and *Hypothenemus* have very broad distributions in North, Central and South America in temperate as well as tropical regions. All of these are extremely polyphagous and all but one are inbreeders in which only mated females disperse. In the U.S. their distribution is limited to the eastern regions.

SE+MEX. A biogeographically interesting group (10 species) includes species that have disjunct distributions which include southeastern North America as well as eastern Mexico. Examples include

Chramesus chapuisii LeConte, *Cnesinus* strigicollis LeConte, and *Oxyplatypus* quadridentatus (Olivier). Many of these are found in hardwood hosts in montane habitats in the eastern mountain ranges of Mexico whose distributions are similarly disjunct (*Liquidambar, Celtis, Morus, Carya*). The area of disjunction is the extensive dry scrub land of southern Texas and coastal plains of northeastern Mexico. This is latter group is actually part of a larger pattern shown in Table 2.

SE+SW. Another component element (6 species) is listed in Table 1 and Appendix I as "SE+SW". As a general rule, conditions at high and intermediate elevations are more mesic in the eastern mountain ranges of Mexico than in the interior and western ranges. The SE+SW NA species all breed in pines or oaks, found in all mountain ranges in the southwestern U.S. and Mexico. A third group consists of 9 species restricted to eastern North America but whose closest relative occurs in temperate montane areas of Mexico. In most cases the relationship is speculative, primarily based on morphology and distribution. These species and their counterparts are also shown in Table 2. In all, there are 27 species of beetles (and presumably hosts) that were once continuously distributed across mesic temperate habitats but have now become disjunct through warming and drying conditions across lower elevations of Texas and northern Mexico since the Pleistocene.

There are a few species described from Texas that have not yet been found been found outside the state. However based on host distributions and habits it seems likely that these will eventually be found in adjacent parts of Mexico or the U.S. In terms of regions of endemism, probably the only area that would qualify would be Tamaulipan scrub of southern Texas and adjacent Mexico. *Liparthrum squamosum* (Blackman) is known only from the bois d'arc or osage orange, *Maclura pomifera* (Raf.) Schneid. Given that the presumed native distribution of the host only includes parts of Texas, Arkansas and Oklahoma this might be considered a local endemic (Map 29). On the other hand its host has been dispersed eastward by human activity and the insect has followed. Until this article the insect had only been known from Mississippi where it was described and one other locality in Indiana.

EX. Finally, there are 20 species found in Texas and Oklahoma that are not native to the New World. These have been introduced from a variety of regions, but most are of temperate Eurasian origin. Some of these are significant pests and disease vectors.

Acknowledgments

We thank Robert Rabaglia and Anthony Cognato for reviewing this manuscript. The work was partially supported by a grant to the senior author from the U.S. Forest Service (11-CA-11420004-138).

Literature Cited

Alonzo-Zarazaga, M. A., and C. H. C. Lyal. **2009**. A catalogue of family and genus group names in Scolytinae and Platypodinae with nomenclatorial remarks (Coleoptera: Curculionidae). Zootaxa 2258: 1–134.

Anonymous. 2011. Albert J. Cook Arthropod Research Collection, Michigan State University, online database. http://www.arc.ent.msu.edu/holdings.php. (accessed June 6, 2011).

Atkinson, T. **H. 1989**. New synonymy, new species, and notes on Scolytidae (Coleoptera) from southeastern United States. Coleopterists Bulletin 43(4): 325–337.

Atkinson, T. H., and S. J. Peck. 1994. Annotated checklist of the bark and ambrosia beetles (Coleoptera: Scolytidae and Platypodidae) of tropical southern Florida. Florida Entomologist 77: 313–329.

Bright, D. E. 1963. Bark beetles of the genus *Dryocoetes* (Coleoptera: Scolytidae) in North America. Annals of the Entomological Society of America 56: 103–115.

Bright, D. E. 1981. A taxonomic monograph of the genus *Pityophthorus* Eichhoff in North and Central America (Coleoptera: Scolytidae). Entomological Society of Canada Memoirs 118: 1–378.

Bright, D. E., and R. J. Rabaglia. 1999. *Dryoxylon*, a new genus for *Xyleborus onoharensis* Murayama, recently established in the southeastern United States (Coleoptera: Scolytidae). Coleopterists Bulletin 53: 333–337.

Carlton, C. E., D. S. Chandler, R. A. B. Leschen, E. G. Riley, and P.E. Skelley. 2005. Obituary and dedication. Karl Heinz Stephan 1931–2005. Coleopterists Bulletin 59(3): 277–283.

Cognato, A. I., N. Barc, M. Philip, R. Mech, A. D. Smith, E. Galbraith, A. J. Storer, and L. R. Kirkendall. 2010. The native and introduced bark and ambrosia beetles of Michigan (Coleoptera: Curculionidae, Scolytinae). Great Lakes Entomologist 42 (3-4): 101–120.

Cognato, A. I., and F. A. H. Sperling. 2000. Phylogeny of *Ips* DeGeer (Coleoptera: Scolytidae) inferred from mitochondrial cytochrome oxidase I sequence. Molecular Phylogenetics and Evolution 14: 445–460.

Cognato, A. I., and J. H. Sun. 2007. DNA based cladograms augment the discovery of a new *Ips* species from China (Coleoptera: Curculionidae: Scolytinae). Cladistics 23: 539–551.

Coyle, D. R., D.C. Booth, and M.S. Wallace. 2005. Ambrosia beetle (Coleoptera: Scolytidae) species, flight, and attack on living eastern cottonwood trees. Journal of Economic Entomology 98(6): 2049–2057.

Critchfield, W. B., and E. L Little., Jr. 1966, Geographic distribution of the pines of the world. U.S. Department of Agriculture Miscellaneous Publication 991: 1–97.

Deyrup, M. A. 1981. Annotated list of Indiana Scolytidae (Coleoptera). Great Lakes Entomologist 14: 1–9.

Deyrup, M. A., and T. H. Atkinson. 1987. New records of Scolytidae (Coleoptera) from Indiana and Florida. Great Lakes Entomologist 20: 67–68.

Equihua, M. A., and A. Burgos S. 1993. Notas sobre la distribución de Scolytidae (Coleoptera) de México y el sur de Texas (EUA). Agrociéncia ser. Proteccion Vegetal 4(3): 305–318.

Furniss, M. M., and J. B. Johnson. 1987. List of Idaho Scolytidae (Coleoptera) and notes on new records. Great Basin Naturalist 47: 375–382.

Furniss, M. M., J. B. Johnson, R. L. Westcott, and T. R. Torgerson. 1992. List of Oregon Scolytidae (Coleoptera) and notes on new records. Great Basin Naturalist 52: 373–378.

Furniss, M. M., and J. B. Johnson. 1995. New records of Scolytidae from Washington State. Great Basin Naturalist 55: 335–341.

Gast, S. J., M. M. Furniss, J. B. Johnson, and M. A. Ivie. 1989. List of Montana Scolytidae (Coleoptera) and notes on new records. Great Basin Naturalist 49(3):381–386.

Haack, R. A. 2006. Exotic bark- and wood-boring Coleoptera in the United States: recent establishments and interceptions. Canadian Journal of Forestry Research 36(2): 269–288.

LaBonte, J. R., A. D. Mudge, and K. J. R. Johnson. 2005. Nonindigenous woodboring Coleoptera (Cerambycidae, Curculionidae: Scolytinae) new to Oregon and Washington, 1999-2002: Consequences of the intracontinental movement of raw wood products and solid wood packing materials. Proceedings of the Entomological Society of Washington 107[3]: 554–564.

Lanier, G.N. **1970**. Biosystematics of North American *Ips* (Coleoptera: Scolytidae). Hoppings group IX. Canadian Entomologist 102: 1139–1163.

Lightle, D., K. Gandhi, A. I. Cognato, B. Mosley, D. Nielsen, and D. Herms. 2007. New reports of exotic and native ambrosia and bark beetle species (Coleoptera: Curculionidae: Scolytinae) from Ohio. Great Lakes Entomologist 40: 194–200.

Little, E. L., Jr. 1971. Atlas of United States trees, volume 1, conifers and important hardwoods. U.S. Department of Agriculture Miscellaneous Publication 1146: 1–9, 200 maps.

Rabaglia, R. J. 2003. Annotated list of the bark and ambrosia beetles (Coleoptera : Scolytidae) of Maryland, with new distributional records. Proceedings of the Entomological Society of Washington 105: 373–379.

Rabaglia, R. J., and M. A. Valenti. 2003. Annotated checklist of the bark and ambrosia beetles (Coleoptera: Scolytidae) of Delaware, with new distributional records. Proceedings of the Entomological Society of Washington 105(2): 312–319.

Schiefer, T. L. 2010. New state records of bark and ambrosia beetles (Coleoptera: Curculionidae: Scolytinae), with notes on the identification of *Hylastes exilis* Chapuis and *Hylastes exilis* Eichhoff. Entomolological News 121(2): 109–121.

Staines, C. L. 1982. Distributional records of Platypodidae (Coleoptera) in Maryland. Proceedings of the Entomological Society of Washington 84: 858–859.

Thompson. R. S., K. H. Anderson, and P. J. Bartlein. 1999. Atlas of relations between climatic parameters and distributions of important trees and shrubs in North America. U.S. Geological Survey Professional Paper 1650 A&B. website: http://pubs.usgs.gov/pp/p1650-a/. (accessed July 2012)

Wood, S. L. 1982. The bark and ambrosia beetles of North and Central America (Coleoptera: Scolytidae), a taxonomic monograph. Great Basin Naturalist Memoirs 6: 1–1356.

Wood, S. L., and D. E. Bright. 1992a. A catalog of Scolytidae and Platypodidae (Coleoptera), Part 2. Taxonomic Index Volume A. Great Basin Naturalist Memoirs 13: 1–833.

Wood, S. L., and D. E. Bright. 1992b. A catalog of Scolytidae and Platypodidae (Coleoptera), Part 2. Taxonomic Index Volume B. Great Basin Naturalist Memoirs 13: 1–835.

Received October 11, 2012; Accepted February 3, 2013.

Appendix I. Checklist of bark and ambrosia beetles known from Texas and Oklahoma.

Species are arranged alphabetically within subfamilies, tribes, and subtribes (Wood, 1982) as modified by Alonzo-Zarazaga and Lyal (2009).

The checklist is presented as a table to reduce space but also to facilitate comparisons. Explanation of columns is given below:

TX, OK: 1=present; *=new state record (information in text); ?=known from one of two states, most likely found in the other. No attempt has been made to indicate the possible presence of additional species that might occur in one or both states.

Distribution: Complete descriptions are given in Table 1 and accompanying text. Categories are mutually exclusive. SE+NT=southeastern North America as well as widespread Neotropical; MEX+NT=lowland Neotropical including Mexico; SENA= southeastern North America; SWNA=southwestern North America, often including temperate montane regions of Mexico; SE+SW=distribution includes disjunct ranges in both southeastern and southwestern North America; SE+MEX=species primarily distributed in SE North America but with a disjunct range including temperate montane regions of Mexico; EX=exotic, not native to New World.

FH (feeding habits): ph = phloeophagous, main diet phloem of hosts, "true bark beetles"; xm = xylomycetophagous, feeding on ectosymbiotic fungi introduced into host tissues, generally not consuming wood itself, ambrosia beetles; my = myelophagy, breeding in pith of twigs and small branches; sp = spermatophagy, breeding in seeds or fruits; xy = xylophagy, breeding in sapwood, consuming the wood, even though fungal staining may be visible and association suspected. In many cases the feeding habits of a particular species do not fit neatly into a particular category so a hyphenated entry is provided. For example, Xylosandrus compactus is a true ambrosia beetle, it restricts its attacks to the pith of small twigs of its hosts and is scored as "xm-my". Conophthorus edulis breeds in cones of its hosts. While it does consume the seeds, larvae and adults mine in the pith of developing cones in a manner similar to other related twig boring species (sp-my).

Hosts: Very few species are strictly limited to a single host species. Generally specificity is at the genus level or for relatively few species in related genera and is most likely the case for phloem feeding and seed feeding species. Others, especially ambrosia beetles are moderately to extremely polyphagous. In many cases there is insufficient information to determine the degree of host specificity and no information is provided. It is suspected that most of these will be shown to polyphagous to some degree.

Species	TX	OK	Distribution	Map	FH	Hosts
PLATYPODINAE						
Euplatypus compositus (Say)	1	1*	SE+NT	1	xm	polyphagous
Euplatypus parallelus (F.)	1*		MEX+NT	1	xm	polyphagous
Myoplatypus flavicornis (F.)	1	1	SENA	2	xm	*Pinus*
Oxoplatypus quadridentatus (Olivier)	1	1	SE+SW	3	xm	*Quercus*
SCOLYTINAE						
Hylesinini						
Hylastina						
Hylastes porculus Erichson	1	1*	SENA	4	ph	*Pinus*
Hylastes salebrosus Eichhoff	1	1*	SENA	5	ph	*Pinus*
Hylastes tenuis Eichhoff	1	1	SE+SW	6	ph	*Pinus*
Hylesinina						
Hylesinus aculeatus Say	1	1	SENA	7	ph	*Fraxinus*
Hylesinus californicus (Swaine)	1	1	SWNA	8	ph	*Fraxinus*
Hylesinus fasciatus LeConte		1*	SENA	9	ph	*Fraxinus*
Hylesinus mexicanus (Wood)	1		MEX+NT	9	ph	*Forestiera*
Tomicina						
Dendroctonus brevicomis LeConte	1		SWNA	10	ph	*Pinus*
Dendroctonus frontalis Zimmermann	1	1	SENA	10	ph	*Pinus*
Dendroctonus terebrans (Olivier)	1	1	SENA	11	ph	*Pinus*
Dendroctonus valens LeConte	1*		NA+MEX	11	Ph	*Pinus*
Bothrosternina						
Cnesinus strigicollis LeConte	1	1*	SE+MEX	12	my	polyphagous
Pagiocerus frontalis (F.)	1		SE+MEX	13	sp	*Persea*
Phloeotribina						
Phloeotribus frontalis (Olivier)	1	1	SE+MEX	14	ph	*Morus*

Species	TX	OK	Distribution	Map	FH	Hosts
Phloeotribus liminaris (Harris)	1*	1*	SENA	15	ph	*Prunus*
Phloeotribus pseudoscabricollis Atkinson	1		MEX+NT	16	ph	*Zanthoxylum*
Phloeotribus texanus Schaeffer	1	1*	SE+MEX	17	ph	*Celtis*
Phloeosinina						
Chramesus chapuisii LeConte	1	1	SE+MEX	18	ph	*Celtis*
Chramesus hicoriae LeConte	1*	1*	SENA	19	ph	*Carya*
Chramesus mimosae Blackman	1		MEX+NT	18	ph	Legume trees
Chramesus subopacus Schaeffer	1		MEX+NT	20	ph	*Celtis*
Chramesus varius Wood	1		MEX+NT	19	ph	Legume trees
Phloeosinus cristatus (LeConte)	1		SWNA	21	ph	*Cupressus*
Phloeosinus dentatus (Say)	1	1	SENA	22	ph	*Juniperus*
Phloeosinus hoferi Blackman	1		SWNA	25	ph	*Juniperus*
Phloeosinus scopulorum neomexicanus Blackman	1		SWNA	23	ph	*Juniperus*
Phloeosinus serratus (LeConte)	1		SWNA	24	ph	*Juniperus*
Phloeosinus taxodii Blackman	1		SE+MEX	21	ph	*Taxodium*
Hypoborina						
Chaetophloeus fasciatus (Blackman)	1		SWNA	26	ph	*Prosopis*
Chaetophloeus heterodoxus (Casey)	1		SWNA		ph	*Rosaceae*
Chaetophloeus mexicanus Wood	1*		MEX+NT	27	ph	*Eysenhardtia*
Chaetophloeus sulcatus Wood	1*		MEX+NT	28	ph	Composite shrubs
Liparthrum squamosum (Blackman)	1*	?	SENA	29	ph	*Maclura pomifera*
Polygraphina						
Carphobius arizonicus Blackman	1*		SWNA	30	ph	*Juniperus*
Carphoborus bicornus Wood	1*	1*	SENA	31	ph	*Pinus*
Carphoborus bifurcus (Chapuis)	1*		SENA	32	ph	*Pinus*
Carphoborus convexifrons Wood	1		SWNA	31	ph	*Pinus*

Species	TX	OK	Distribution	Map	FH	Hosts
Scolytini						
Scolytina						
Scolytus fagi Walsh	1	?	SENA	33	ph	*Celtis, Quercus*
Scolytus multistriatus (Marsham)	1	1	EX	34	ph	*Ulmus*
Scolytus muticus Say	1	1	SENA	35	ph	*Celtis*
Scolytus quadrispinosus Say	1	1*	SENA	37	ph	*Carya*
Scolytus rugulosus (Muller)	1	1	EX	38	ph	*Prunus*
Scolytus schevyrewi Semenov	1	1	EX	36	ph	*Ulmus*
Hexacolina						
Pycnarthrum hispidum (Ferrari)	1		MEX+NT	39	ph	*Ficus*
Micracina						
Hylocurus binodatus Wood		1	SENA		xy	
Hylocurus flaglerensis Blackman	1*		SENA	41	xy	
Hylocurus floridensis Atkinson	1*		SENA	40	xy	
Hylocurus langstoni (Blackman)	1	1*	SENA	42	xy	
Hylocurus parkinsoniae Blackman	1		MEX+NT	40	xy	
Hylocurus rudis (LeConte)	1	1	SENA	43	xy	polyphagous
Hylocurus schwarzi Blackman	1		SENA	41	xy	
Micracis suturalis LeConte	?	1*	SENA	44	xy	polyphagous
Micracis swainei Blackman	1	?	SENA	44	xy	polyphagous
Micracisella nanula (LeConte)	1	1	SENA	45	my	polyphagous
Micracisella opacithorax (Schedl)	1		MEX+NT	45	my	polyphagous
Pseudothysanoes acaciae (Blackman)	1		MEX+NT	46	ph	Legume trees
Pseudothysanoes dislocatus (Blackman)	1		SENA	46	ph	*Carya*
Pseudothysanoes frondicolens Wood	1*		SWNA	47	ph	*Yucca*
Pseudothysanoes heliura Wood	1		MEX+NT	47	xy	
Pseudothysanoes huachucae Blackman	1		SWNA	48	ph	*Quercus*

Species	TX	OK	Distribution	Map	FH	Hosts
Pseudothysanoes lecontei Blackman	1*	?	SENA	48	ph	*Quercus*
Pseudothysanoes phoradendri Blackman	1		SENA	49	ph	*Phoradendron*
Pseudothysanoes sedulus Blackman	1		SWNA	49	ph	*Quercus*
Pseudothysanoes turnbowi Wood	1		MEX+NT	50	ph	*Ulmus*
Thysanoes berchemiae Blackman	1		SENA	50	xy	polyphagous
Thysanoes fimbricornis LeConte	1		SE+MEX	51	xy	polyphagous
Thysanoes lobdelli Blackman	1		SENA	53	xy	polyphagous
Thysanoes pallens Wood	1		SE+MEX	53	xy	polyphagous
Thysanoes texanus Blackman	1		MEX+NT	54	xy	polyphagous
Thysanoes xylographus Wood	1*		SWNA	54	xy	*Quercus*
Ipina						
Ips avulsus (Eichhoff)	1	1	SENA	55	ph	*Pinus*
Ips calligraphus (Germar)	1	1	SE+SW	56	ph	*Pinus*
Ips hoppingi Lanier	1		SWNA	55	ph	*Pinus*
Ips grandicollis (Eichhoff)	1	1	SENA	57	ph	*Pinus*
Ips cribricollis (Eichhoff)	1		SWNA	57	ph	*Pinus*
Orthotomicus caelatus (Eichhoff)	1		SENA	58	ph	*Pinus*
Dryocoetina						
Coccotrypes dactyliperda (F.)	1		EX	59	sp	Palm seeds
Coccotrypes distinctus (Motschulsky)	1		EX	59	sp	Palm seeds
Dendrocranulus cucurbitae (LeConte)	1		SWNA	60	my	Cucurbitaceae
Dendrocranulus knausi (Hopkins)	1	1	SWNA	60	my	Cucurbitaceae
Dryocoetes granicollis (LeConte)	1*	1*	SENA	61	ph	See text
Lymantor decipiens (LeConte)	1	1*	SENA	60	xy	
Crypturgina						
Crypturgus alutaceus Schwarz	1	1*	SENA	62	ph	*Pinus*

Species	TX	OK	Distribution	Map	FH	Hosts
Xyloterina						
Trypodendron scabricollis (LeConte)	1*	1	SENA	63	xm	*Pinus*
Xyleborina						
Ambrosiodmus lecontei Hopkins	1*		MEX+NT	64	xm	polyphagous
Ambrosiodmus obliquus (LeConte)	1		SE+NT	65	xm	polyphagous
Ambrosiodmus rubricollis (Eichhoff)	1	1*	EX	66	xm	polyphagous
Ambrosiodmus tachygraphus (Zimm.)	1*	1*	SENA	64	xm	polyphagous
Ambrosiophilus atratus (Eichhoff)	1*	1*	EX	67	xm	polyphagous
Anisandrus sayi Hopkins	1		SENA		xm	polyphagous
Cnestus mutilatus (Blandford)	1		EX	68	xm	polyphagous
Cyclorhipidion bodoanum (Reitter)	1	1*	EX	69	xm	polyphagous
Dryoxylon onoharensis (Murayama)	1		EX	70	xm	polyphagous?
Euwallacea validus (Eichhoff)	1	?	EX	67	xm	polyphagous
Xyleborinus artestriatus (Eichhoff)	1		EX		xm	polyphagous?
Xyleborinus gracilis (Eichhoff)	1	?	SE+NT	71	xm	polyphagous?
Xyleborinus saxeseni (Ratzeburg)	1	1	EX	72	xm	polyphagous
Xyleborus affinis Eichhoff	1	1*	SE+NT	73	xm	polyphagous
Xyleborus celsus Eichhoff	1	1*	SENA	74	xm	*Carya*
Xyleborus ferrugineus (F.)	1	1	SE+NT	75	xm	polyphagous
Xyleborus horridus Eichhoff	1		MEX+NT	76	xm	polyphagous
Xyleborus impressus Eichhoff	1	1*	SENA	77	xm	polyphagous
Xyleborus pubescens Zimmermann	1		SENA	78	xm	*Pinus*
Xyleborus similis Ferrari	1		EX	79	xm	
Xyleborus spinulosus Blandford	1*		MEX+NT	80	xm	polyphagous
Xyleborus viduus Eichhoff	1	1*	SENA	80	xm	
Xyleborus xylographus (Say)	1	1*	SENA	81	xm	*Quercus*
Xylosandrus compactus (Eichhoff)	1		EX	82	xm	polyphagous

Species	TX	OK	Distribution	Map	FH	Hosts
Xylosandrus crassiusculus (Motschulsky)	1	1*	EX	83	xm	polyphagous
Cryphalina						
Cryptocarenus seriatus Eggers	1		MEX+NT	84	my	polyphagous
Hypothenemus brunneus (Hopkins)	1		EX	85	ph-my	polyphagous
Hypothenemus californicus Hopkins	1	1*	EX	86	ph-my	polyphagous
Hypothenemus columbi Hopkins	1		EX	87	ph-my	polyphagous
Hypothenemus crudiae (Panzer)	1	1*	EX	88	ph-my	polyphagous
Hypothenemus dissimilis (Zimmermann)	1	1*	SENA	89	ph-my	polyphagous
Hypothenemus distinctus Wood	1*	1	SENA	90	ph-my	polyphagous
Hypothenemus erectus LeConte	1		EX	90	ph-my	polyphagous
Hypothenemus eruditus Westwood	1	1*	SE+NT	91	ph-my	polyphagous
Hypothenemus gossypii (Hopkins)	1*	1*	MEX+NT	92	ph-my	polyphagous
Hypothenemus interstitialis (Hopkins)	1	1*	SE+NT	93	ph-my	polyphagous
Hypothenemus miles (LeConte)	1		SENA	95	ph-my	
Hypothenemus obscurus (F.)	1		SE+NT	94	ph-my	polyphagous
Hypothenemus parvistriatus Wood	1*		MEX+NT	95	ph-my	
Hypothenemus pubescens Hopkins	1		SE+NT	95	ph-my	polyphagous
Hypothenemus rotundicollis (Eichhoff)	1	1	SE+MEX	96	ph-my	polyphagous
Hypothenemus seriatus (Eichhoff)	1	1*	SE+NT	97	ph-my	polyphagous
Hypothenemus sparsus Hopkins	1		MEX+NT	98	ph-my	
Hypothenemus squamosus (Hopkins)	1		MEX+NT	99	ph-my	polyphagous
Hypothenemus sp. undescribed	1		SENA		ph-my	
Scolytogenes jalapae (Letzner)	1*		SE+NT	99	ph-my	Convolvulaceae
Trischidias atoma (Hopkins)	1	1*	SENA	100	myc	polyphagous
Trischidias exigua Wood	1*	1*	SE+NT	101	myc	
Trischidias striata Atkinson	1*		SENA	102	myc	

Species	TX	OK	Distribution	Map	FH	Hosts
Pityophthorina						
Araptus dentifrons Wood	1	1*	MEX+NT	103	ph-my	Milkweed vines
Conophthorus echinatae Wood		1*	SEUS	104	my-sp	*Pinus*
Conophthorus edulis Hopkins	1		SWNA	104	my-sp	*Pinus*
Dendroterus texanus Wood	1		MEX+NT	105	ph	*Jatropha dioica*
Pityoborus comatus (Zimmermann)	1	1	SENA	105	xm	*Pinus*
Pityophthorus annectens LeConte	1	1	SE+SW	106	ph	*Pinus*
Pityophthorus arcanus Bright	1		SWNA	106	ph	*Pinus*
Pityophthorus barberi Blackman	1		SWNA	107	ph	*Pinus*
Pityophthorus brevis Blackman	1		SWNA	108	ph	*Pinus*
Pityophthorus confertus Swaine	1		SWNA	110	ph	*Pinus*
Pityophthorus confinis LeConte	1*		SWNA	109	ph	*Pinus*
Pityophthorus confusus Blandford	1		SE+SW	110	ph	*Pinus*
Pityophthorus consimilis LeConte	1	1*	SENA	111	ph	*Pinus*
Pityophthorus crassus Blackman	1		SWNA	112	ph	*Pinus*
Pityophthorus crinalis Blackman	1	1*	SENA	109	ph	*Rhus*
Pityophthorus deletus LeConte	1		SWNA	111	ph	*Pinus*
Pityophthorus grandis Blackman	1		SWNA	113	ph	*Pinus*
Pityophthorus guatemalensis Blandford	1		SWNA	112	ph	*Quercus*
Pityophthorus lautus Eichhoff	1	1*	SENA	112	ph	*Rhus, Toxicodendron*
Pityophthorus liquidambarus Blackman	1		SENA	113	ph	*Liquidambar*
Pityophthorus pulchellus Eichhoff	1		SE+SW	115	ph	*Pinus*
Pityophthorus pulicarius (Zimmermann)	1	1*	SENA	114	ph-my	*Pinus*
Pityophthorus pullus (Zimmermann)	1		SENA	115	ph	*Pinus*
Pityophthorus schwarzi Blackman	1		SWNA	116	ph	*Pinus*
Pityophthorus schwerdtfegeri Schedl	1		SWNA	117	ph-my	*Pinus*
Pityophthorus scriptor Blackman	1	1	SENA	118	ph	*Rhus*

Species	TX	OK	Distribution	Map	FH	Hosts
Pityophthorus tuberculatus Eichhoff	1		SWNA	119	ph	*Pinus*
Pityophthorus venustus Blackman	1		SWNA	120	ph	*Pinus*
Pityophthorus virilis Blackman	1		SWNA	121	ph	*Rhus*
Pityotrichus barbatus (Blackman)	1		SWNA	115	ph	*Pinus*
Pseudopityophthorus asperulus (LeConte)	1	1*	SENA	122	ph	*Quercus*
Pseudopityophthorus denticulus Wood	1		SWNA	123	ph	*Quercus*
Pseudopityophthorus minutissimus (Zimmermann)	1*	1*	SENA	124	ph	*Quercus*
Pseudopityophthorus pruinosus (Eichhoff)	1	1*	SE+MEX	125	ph	*Quercus*
Pseudopityophthorus pubescens Blackman	1*	1	SENA	126	ph	*Quercus*
Pseudopityophthorus yavapaii Blackman	1*		SWNA	127	ph	*Quercus*
Corthylina						
Corthylus punctatissimus (Zimmermann)		1*	SENA	130	xm	polyphagous
Gnathotrichus denticulatus Blackman	1		SWNA	128	xm	*Pinus*
Gnathotrichus materiarius (Fitch)	1	1	SENA	129	xm	polyphagous
Gnathotrichus pilosus (LeConte)	1*		SWNA	129	xm	
Monarthrum dentigerum (LeConte)	1		SWNA	130	xm	*Quercus*
Monarthrum fasciatum (Say)	1	1*	SENA	131	xm	polyphagous
Monarthrum mali (Fitch)	1	1*	SENA	132	xm	polyphagous

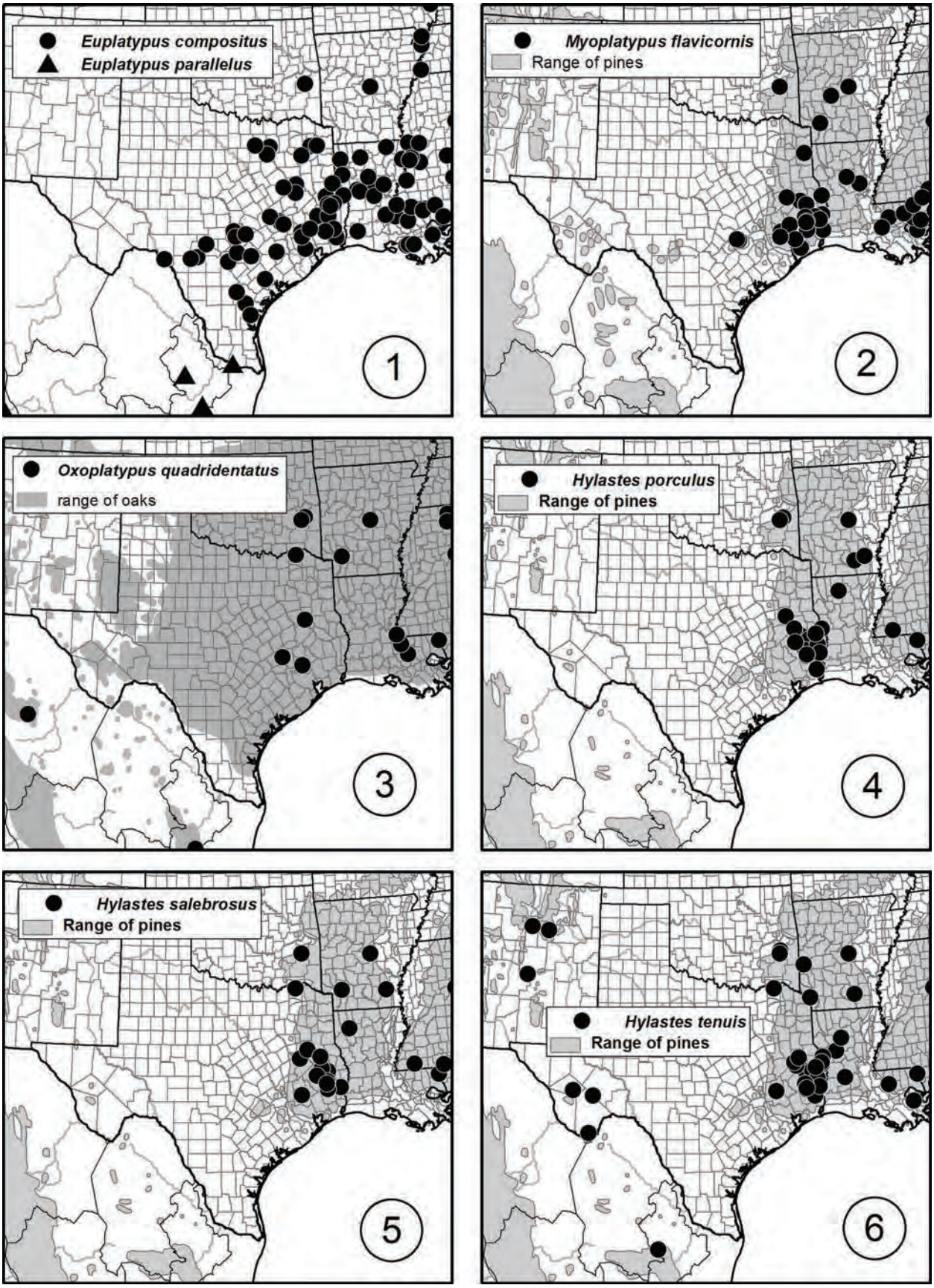
Appendix II. Distribution maps of species of bark and ambrosia beetles known from Texas and Oklahoma.

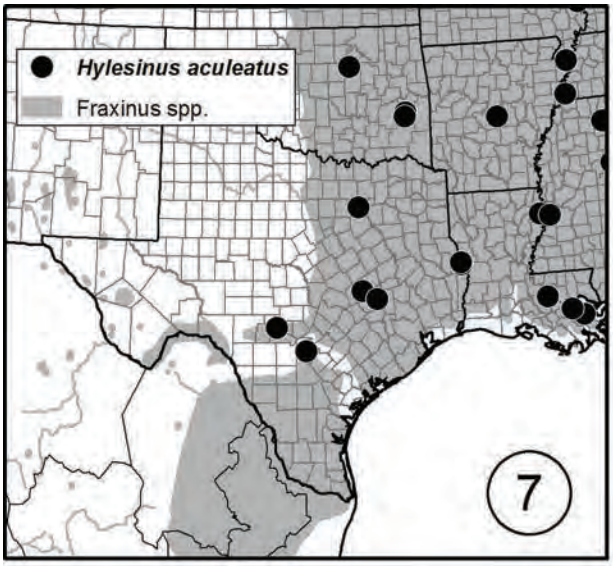
The following maps were prepared from label data of specimens examined by the authors, published in reliable sources, or both. The complete data set is available in electronic format on request to the senior author or at www.barkbeetles.info/datasets/. Data points from the entire New World distributions of included species were taken from over 100 publications, not all of which appear on these maps. Additional records were downloaded from the Michigan State University Collection online database (Anonymous 2011). To the best of our knowledge, the distribution maps are complete for all included species from the published data and collections cited below.

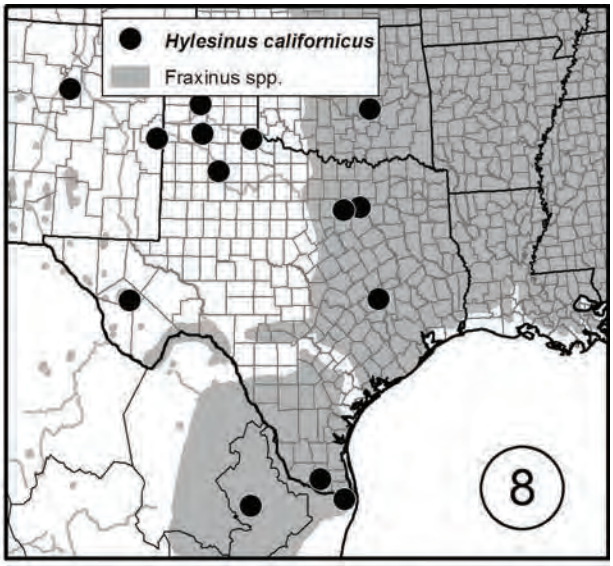
In some maps host distributions are shown. These are taken from Critchfield and Little (1966) and Little (1971). Digital versions of these host species distributions were downloaded from (Thompson et al. 1999). In most cases, the distributions for a group of related species were combined in specific maps to simplify (e.g., all species of hickories, Carya spp.). Most species, so far as is known, are not restricted to a single host species, but rather breed in all or most species of a given genus such as Ulmus (elms), Fraxinus (ashes), Pinus (pines), etc.

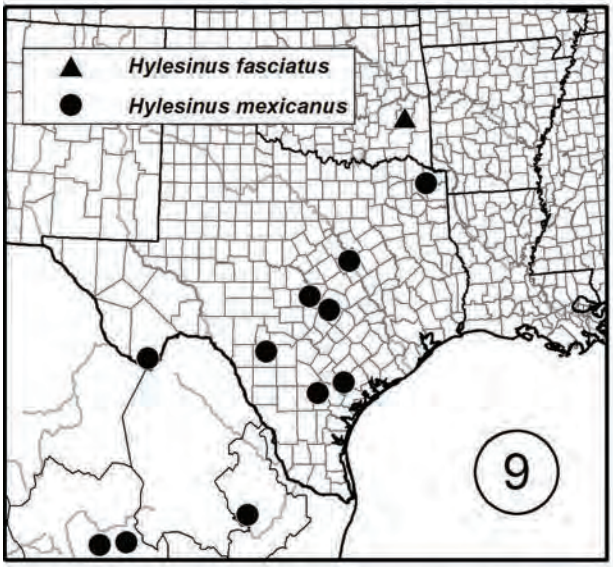
For convenience and purposes of direct comparison, the collection localities of all species are projected onto the same base map, centered on Texas and Oklahoma, but also showing parts of Louisiana, Arkansas, New Mexico, Chihuahua, Coahuila, and Tamaulipas. In almost all cases the full distribution for a particular species covers a much wider area. Due to patchiness in collection effort in some areas, particularly southern Texas and northeastern Mexico, the full distribution pattern as tabulated in the section on biogeography (Table 1, Appendix I) may not be fully apparent from these maps alone.

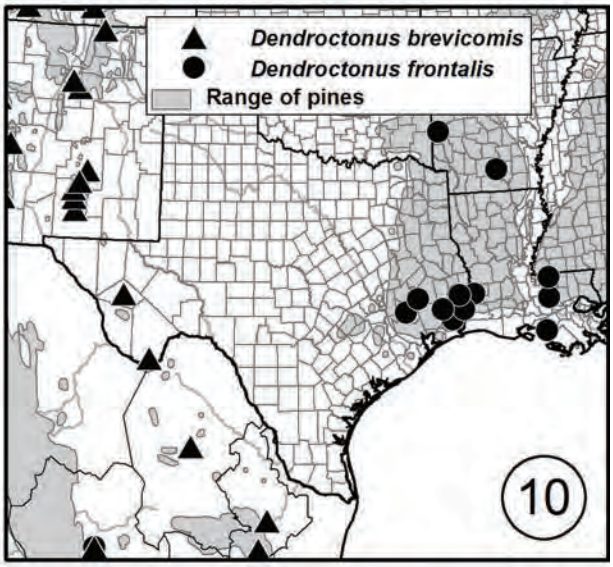
In some cases, 2 or more species were included in the same map. These species were chosen because their distributions do not overlap within the range of the maps or because there are so few known collections that it is premature to infer their distributions based only on collection.

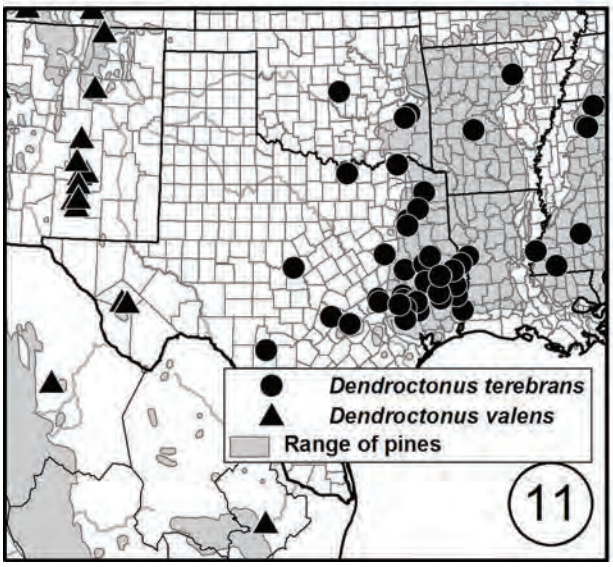

Euplatypus compositus
Euplatypus parallelus
1
Myoplatypus flavicornis
Range of pines
2
Oxoplatypus quadridentatus
range of oaks
3
Hylastes porculus
Range of pines
4
Hylastes salebrosus
Range of pines
5
Hylastes tenuis
Range of pines
6

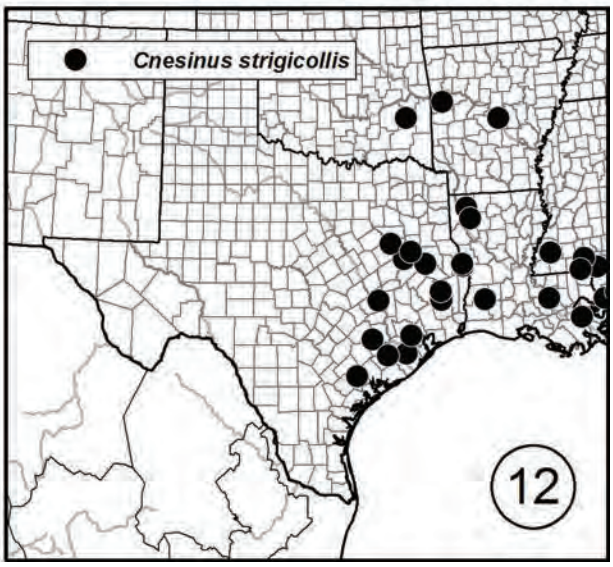

Hylesinus aculeatus
Fraxinus spp.
7

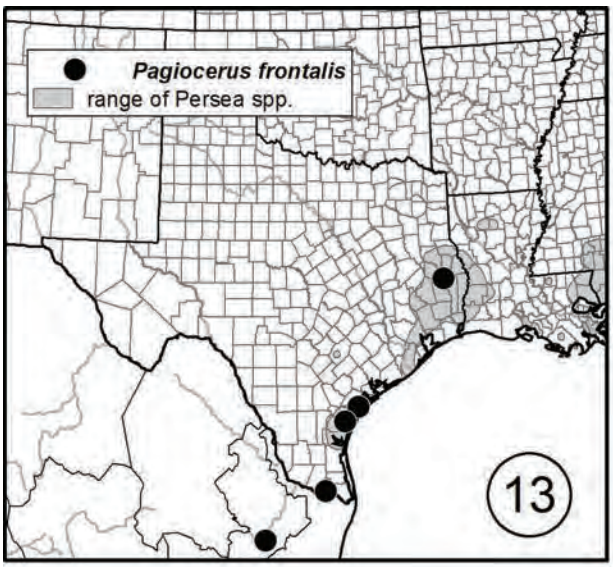

Hylesinus californicus
Fraxinus spp.
8

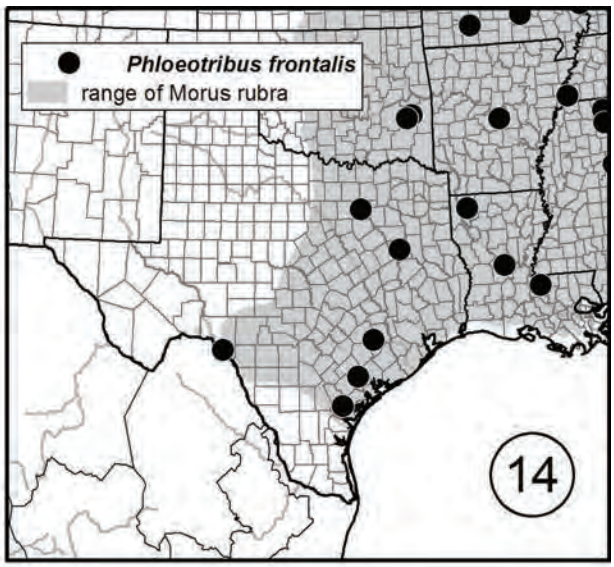

Hylesinus fasciatus
Hylesinus mexicanus
9

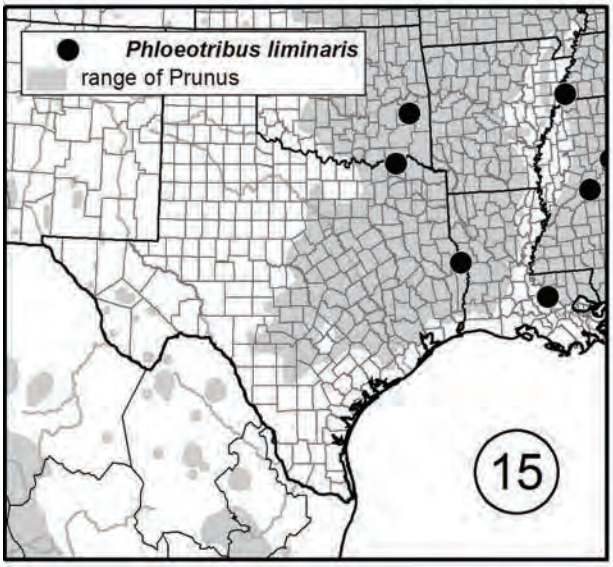

Dendroctonus brevicomis
Dendroctonus frontalis
Range of pines
10

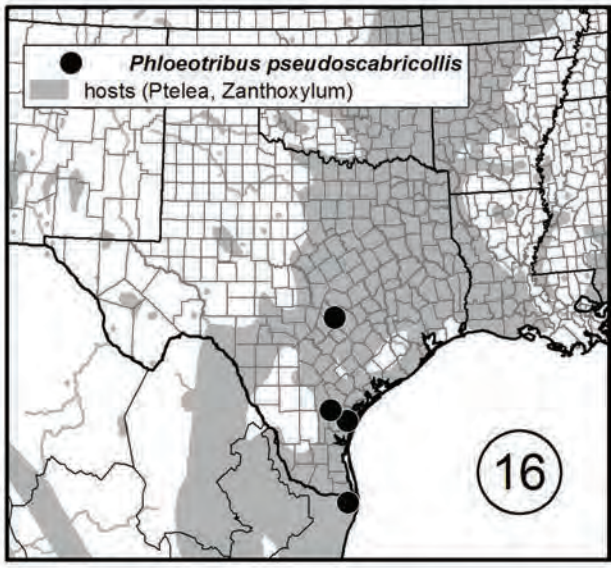

Dendroctonus terebrans
Dendroctonus valens
Range of pines
11

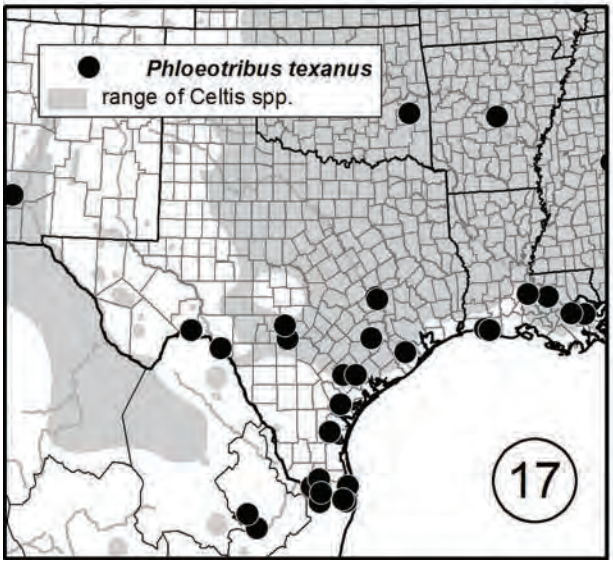

Cnesinus strigicollis
12

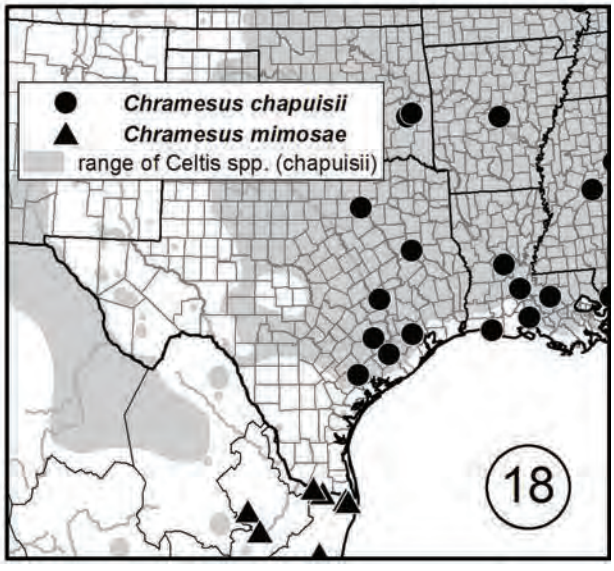

Pagiocerus frontalis
range of Persea spp.
13

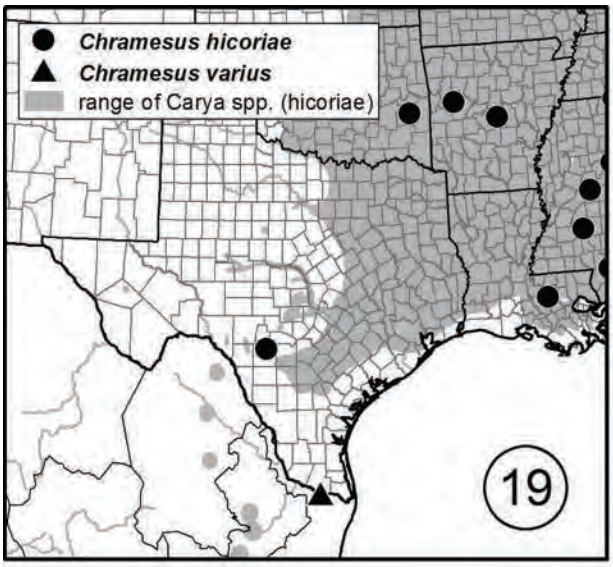

Phloeotribus frontalis
range of Morus rubra
14

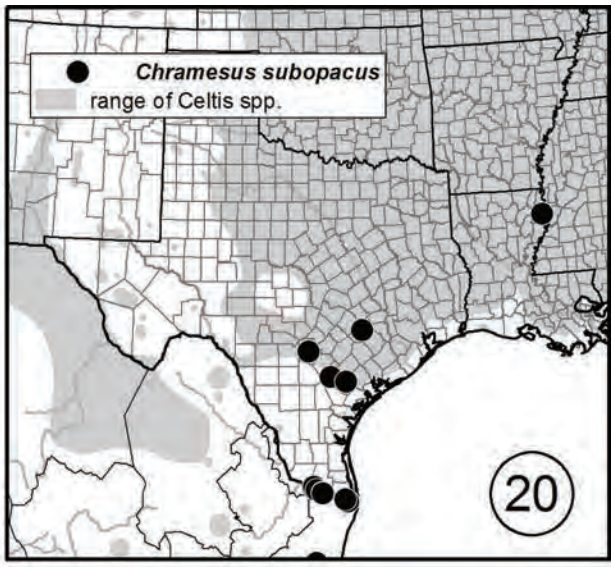

Phloeotribus liminaris
range of Prunus
15

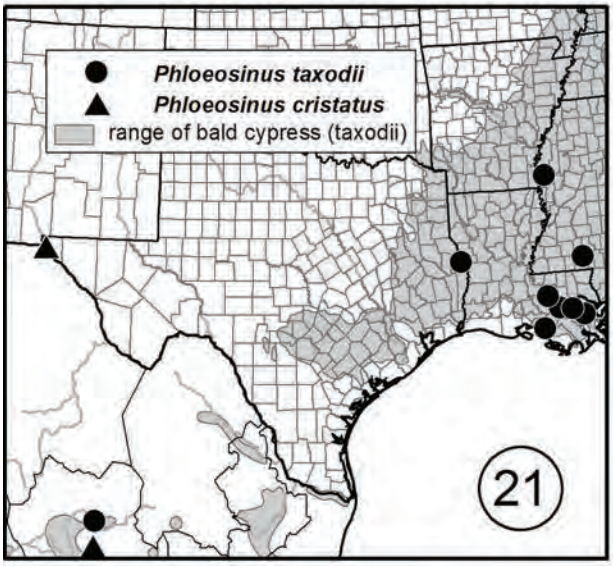

Phloeotribus pseudoscabricollis
hosts (Ptelea, Zanthoxylum)
16

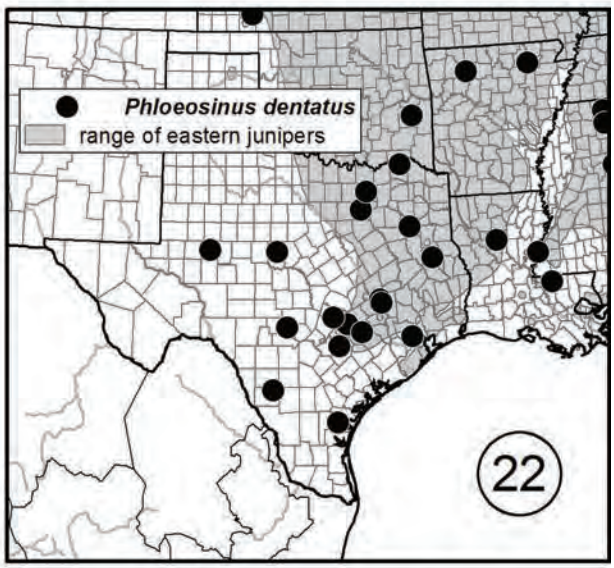

Phloeotribus texanus
range of Celtis spp.
17

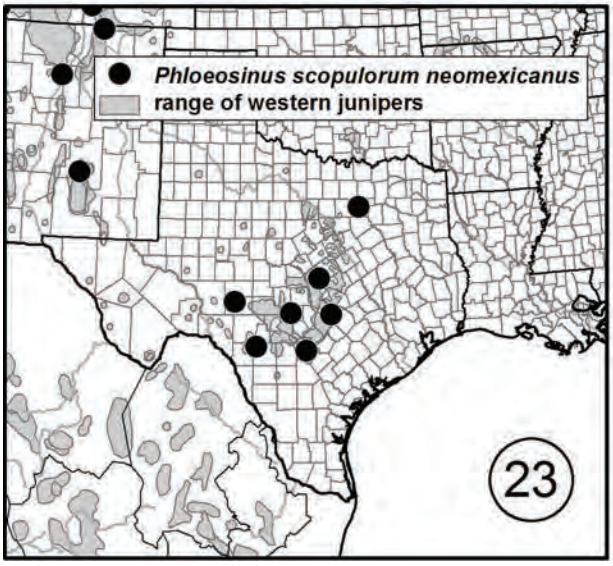

Chramesus chapuisii
Chramesus mimosae
range of Celtis spp. (chapuisii)
18

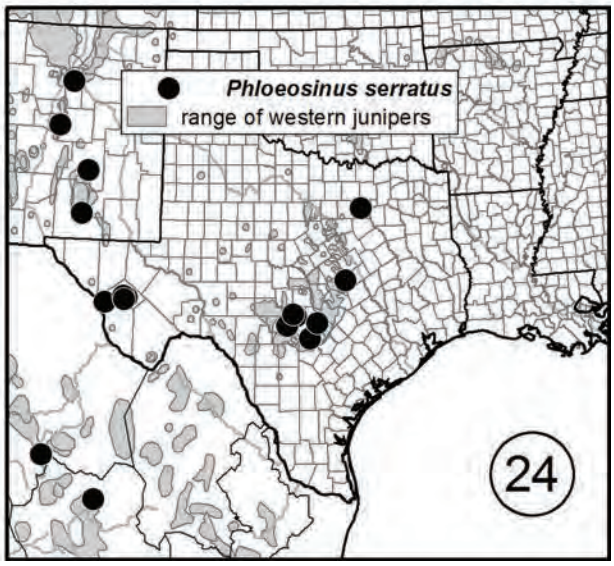

Chramesus hicoriae
Chramesus varius
range of Carya spp. (hicoriae)
19

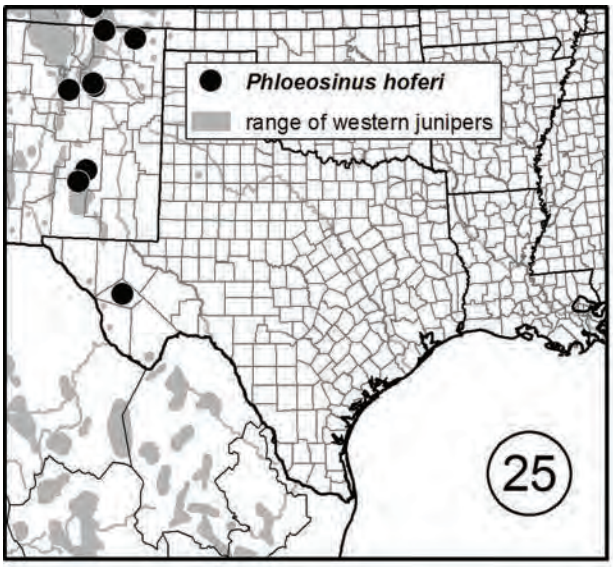

Chramesus subopacus
range of Celtis spp.
20

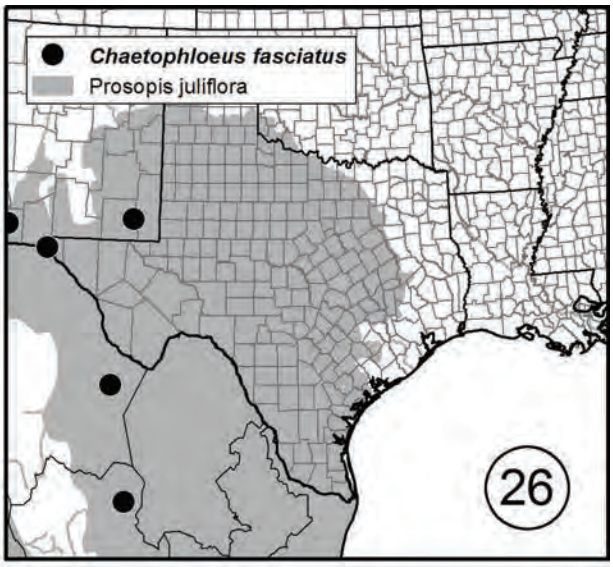

Phloeosinus taxodii
Phloeosinus cristatus
range of bald cypress (taxodii)
21

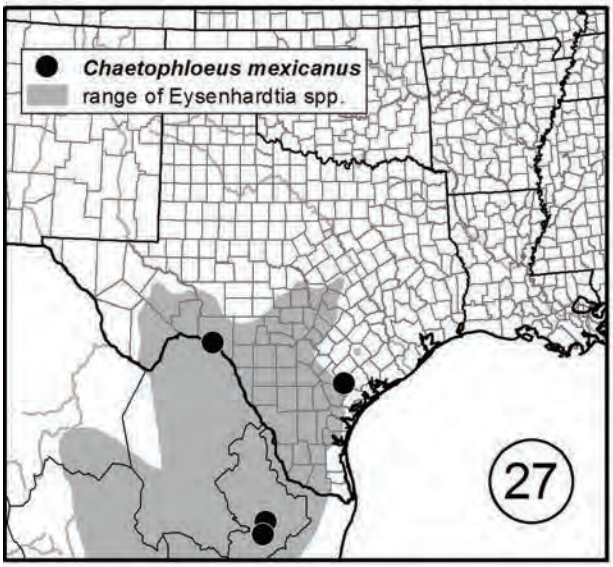

Phloeosinus dentatus
range of eastern junipers
22

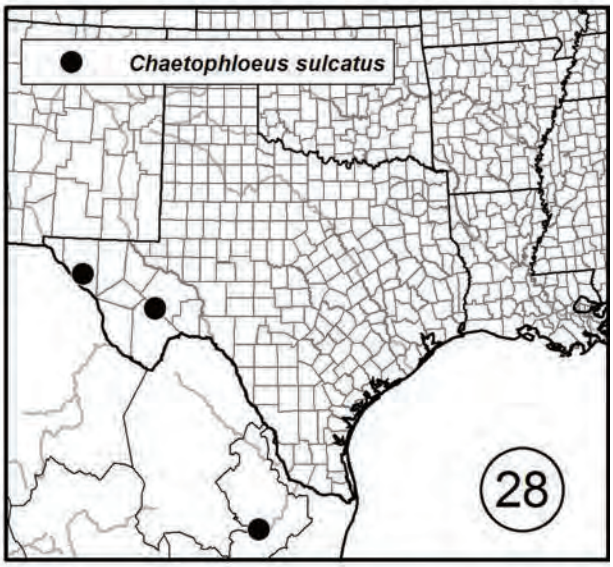

Phloeosinus scopulorum neomexicanus
range of western junipers
23

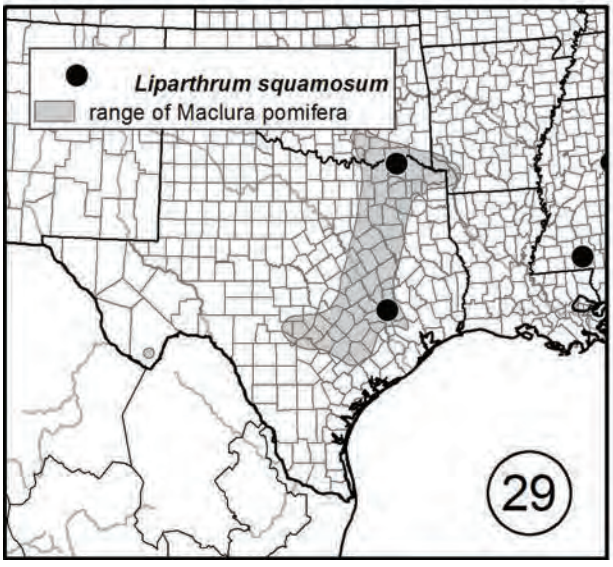

Phloeosinus serratus
range of western junipers
24

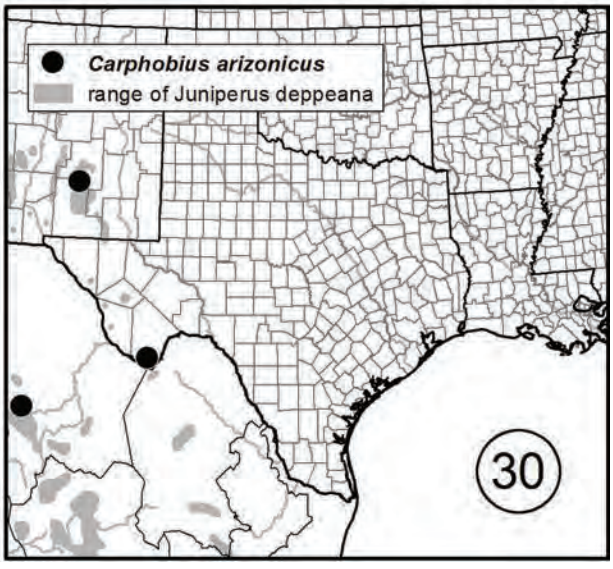

Phloeosinus hoferi
range of western junipers
25

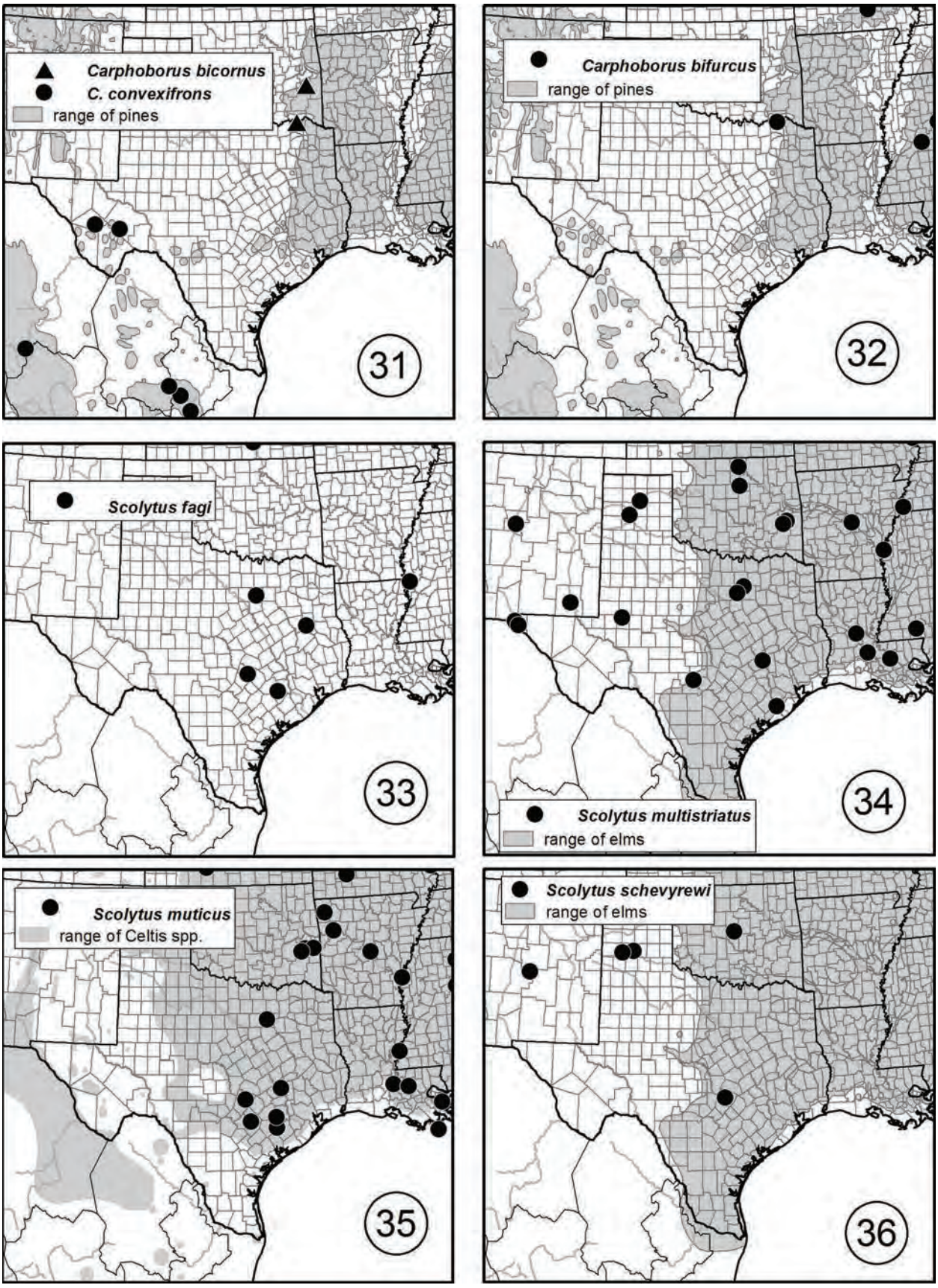

Chaetophloeus fasciatus
Prosopis juliflora
26

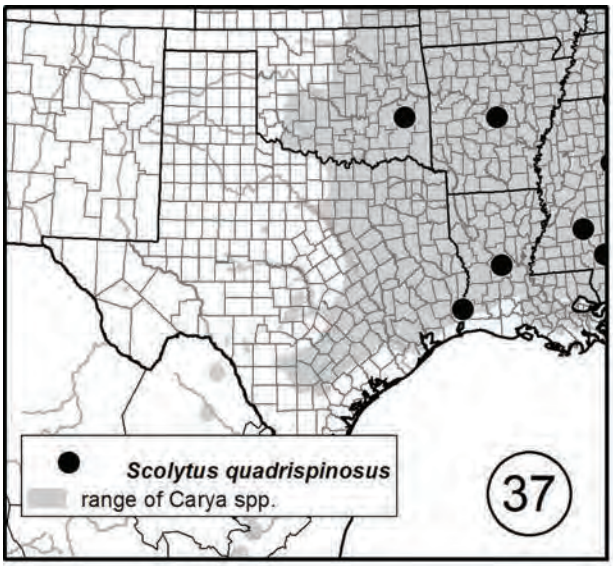

Chaetophloeus mexicanus
range of Eysenhardtia spp.
27

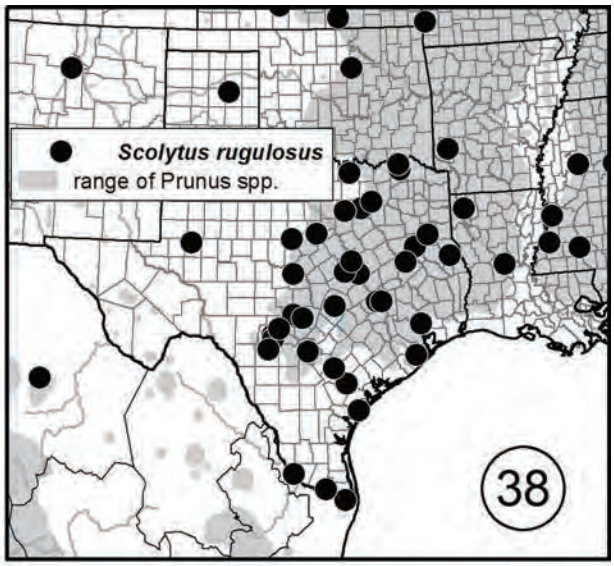

Chaetophloeus sulcatus
28

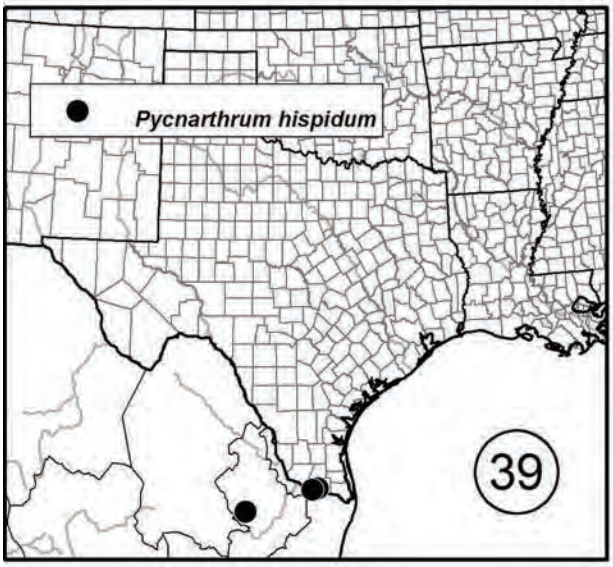

Liparthrum squamosum
range of Maclura pomifera
29

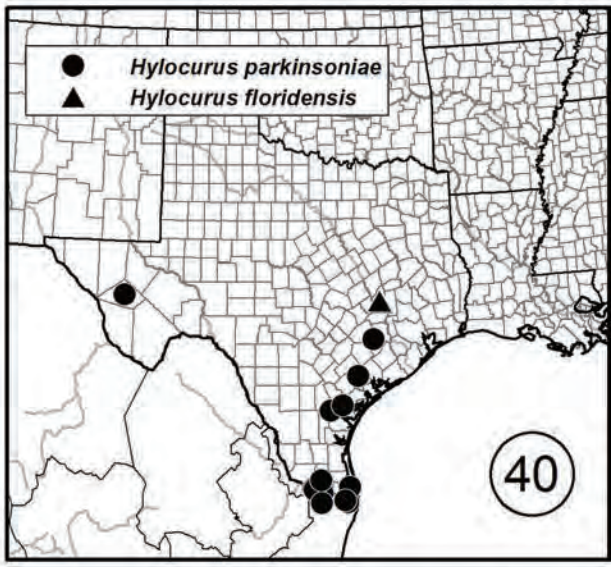

Carphobius arizonicus
range of Juniperus deppeana
30

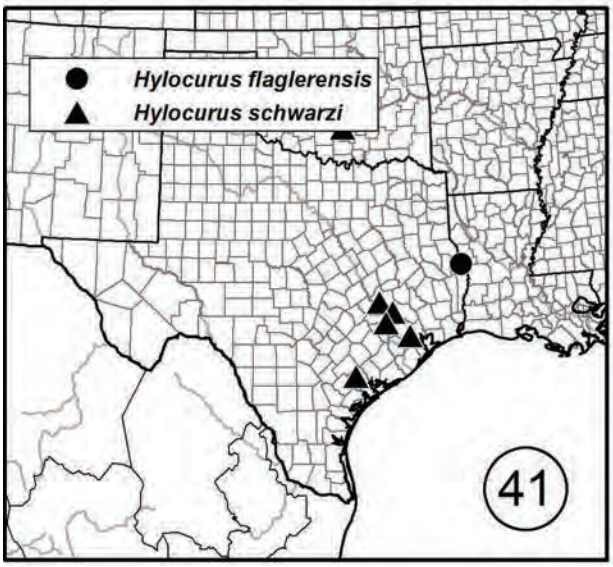

Carphoborus bicornus
C. convexifrons
range of pines
31
Carphoborus bifurcus
range of pines
32
Scolytus fagi
33
Scolytus multistriatus
range of elms
34
Scolytus muticus
range of Celtis spp.
35
Scolytus schevyrewi
range of elms
36

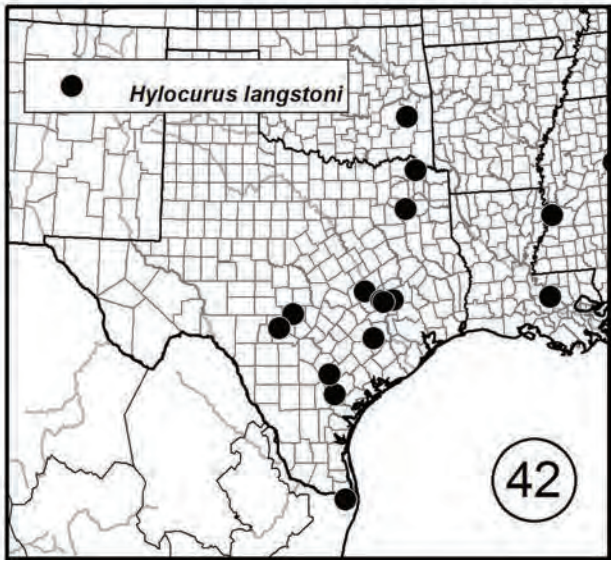

Scolytus quadrispinosus
range of Carya spp.
37

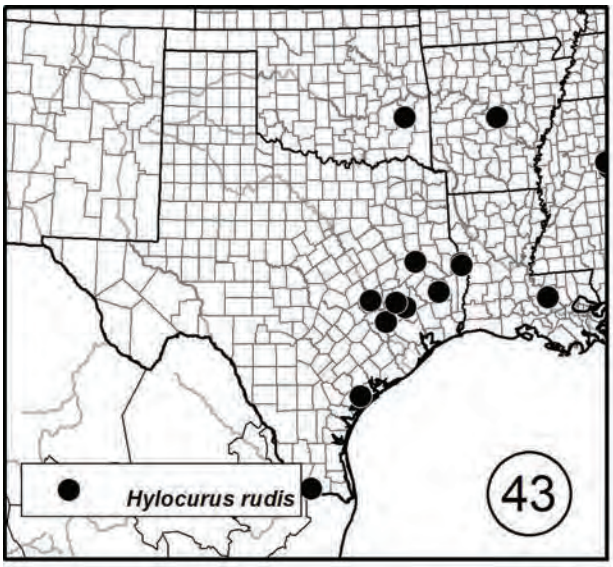

Scolytus rugulosus
range of Prunus spp.
38

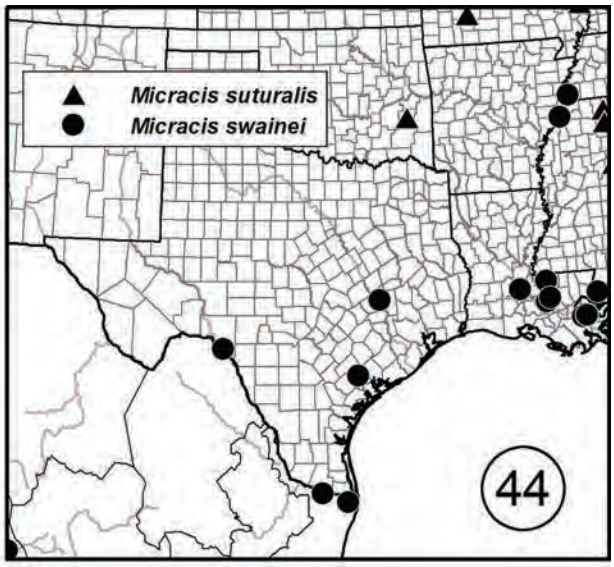

Pycnarthrum hispidum
39

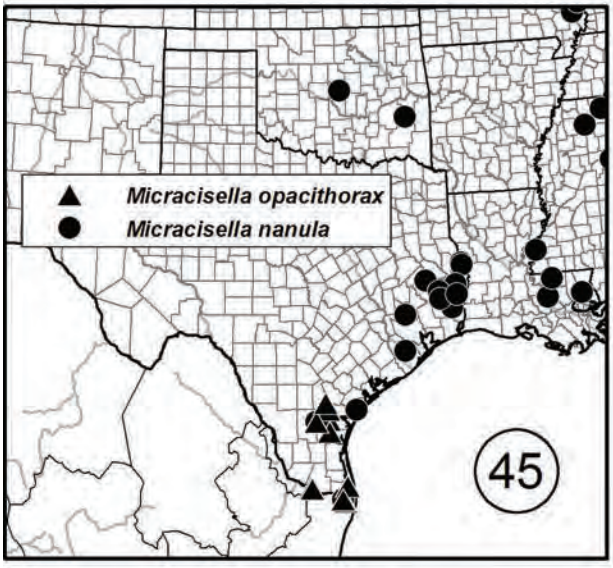

Hylocurus parkinsoniae
Hylocurus floridensis
40

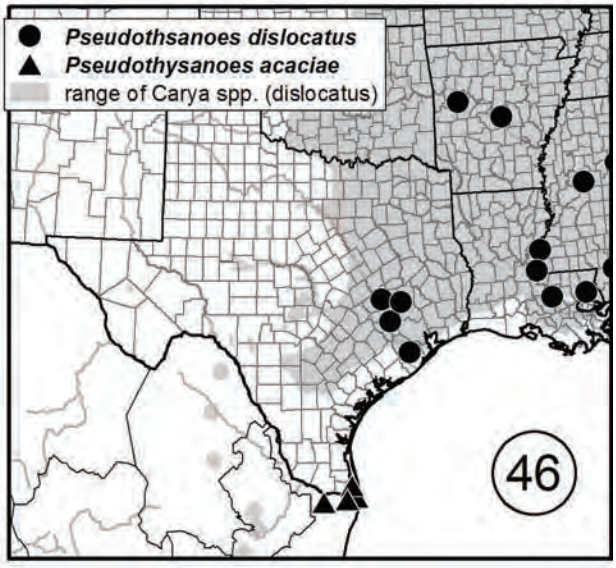

Hylocurus flaglerensis
Hylocurus schwarzi
41

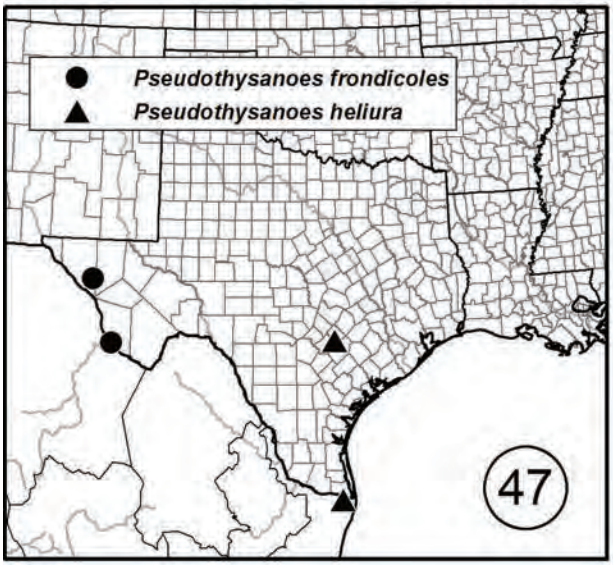

Hylocurus langstoni
42

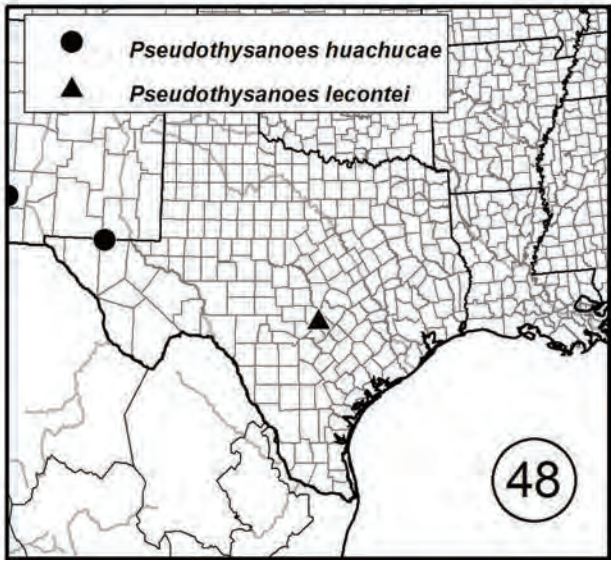

Hylocurus rudis
43

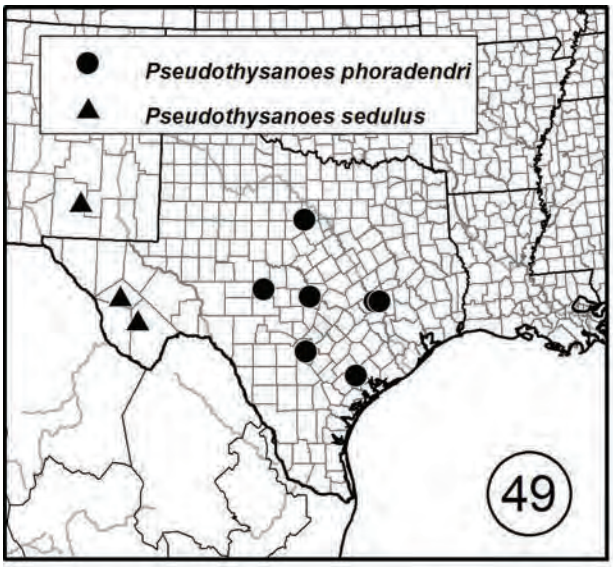

Micracis suturalis
Micracis swainei
44

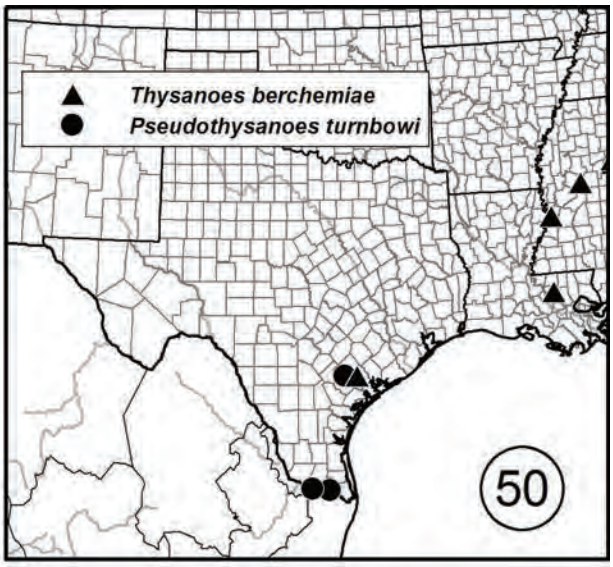

Micracisella opacithorax
Micracisella nanula
45

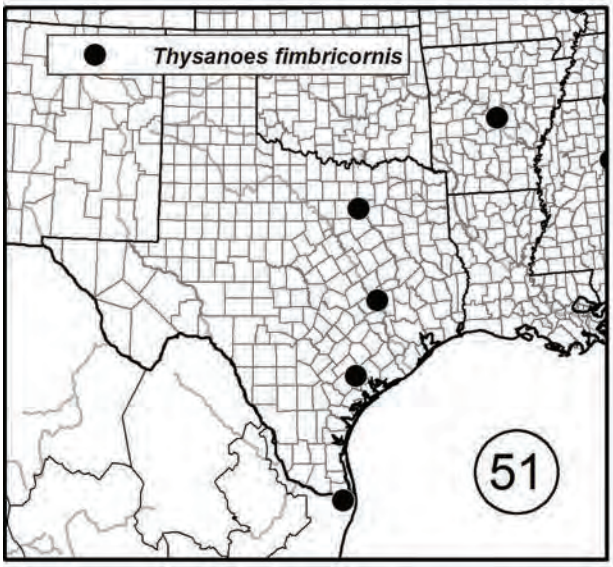

Pseudothsanoes dislocatus
Pseudothysanoes acaciae
range of Carya spp. (dislocatus)
46

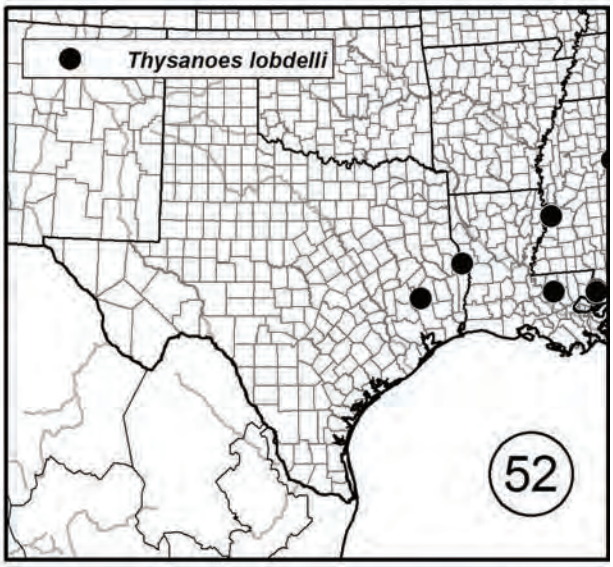

Pseudothysanoes frondicoles
Pseudothysanoes heliura
47

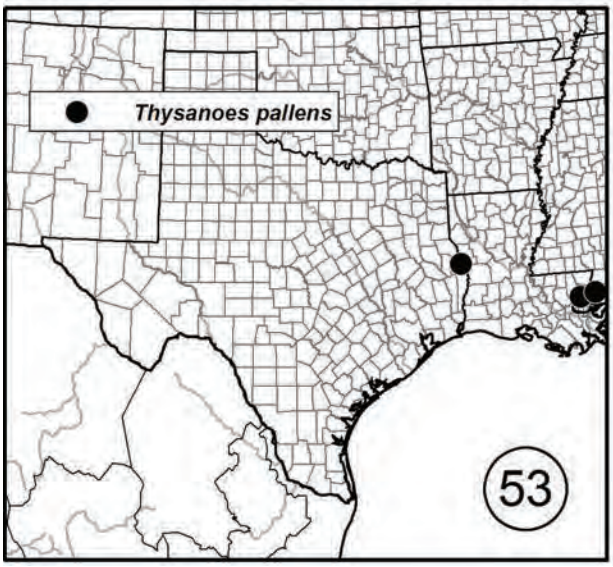

Pseudothysanoes huachucae
Pseudothysanoes lecontei
48

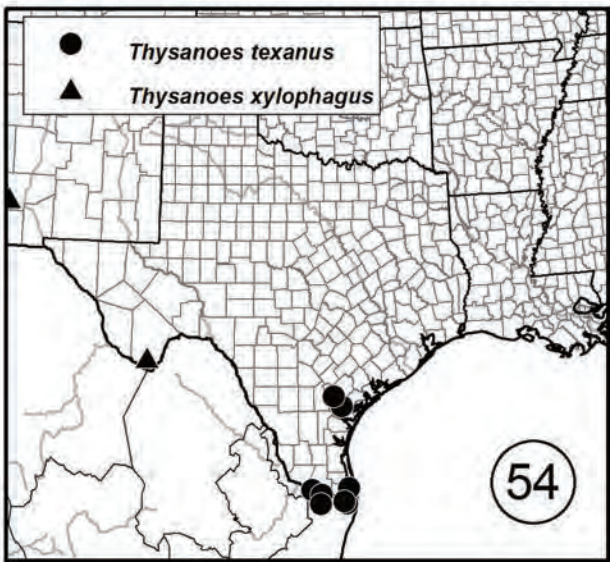

Pseudothysanoes phoradendri
Pseudothysanoes sedulus
49

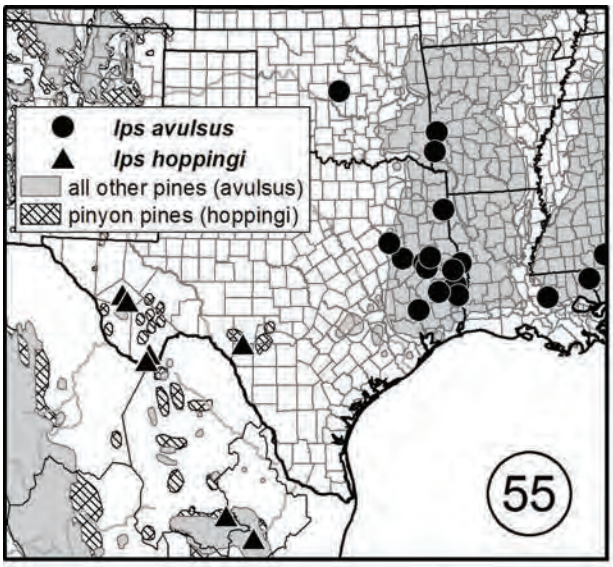

Thysanoes berchemiae
Pseudothysanoes turnbowi
50

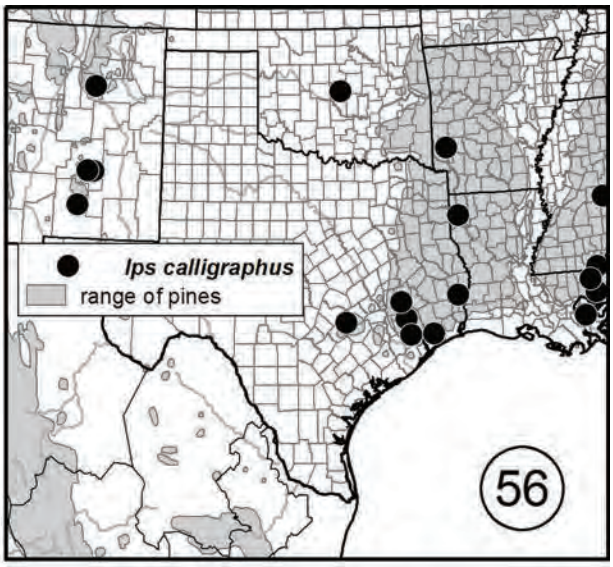

Thysanoes fimbricornis
51

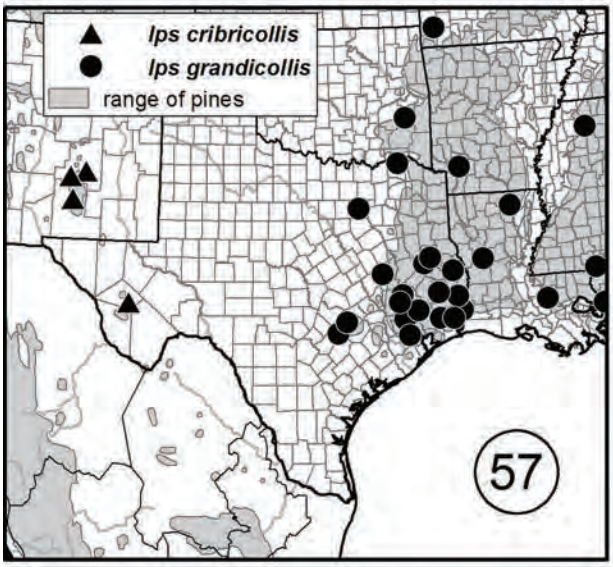

Thysanoes lobdelli
52

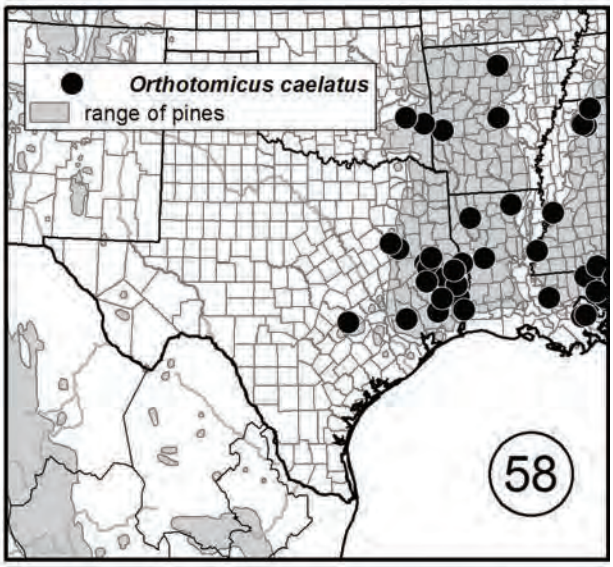

Thysanoes pallens
53

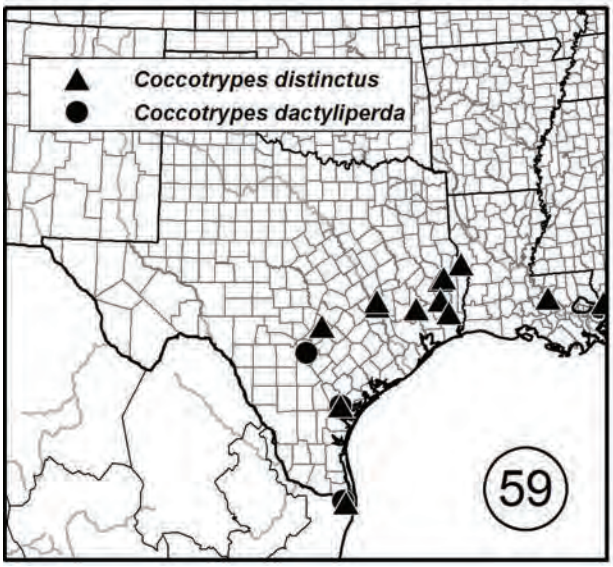

Thysanoes texanus
Thysanoes xylophagus
54

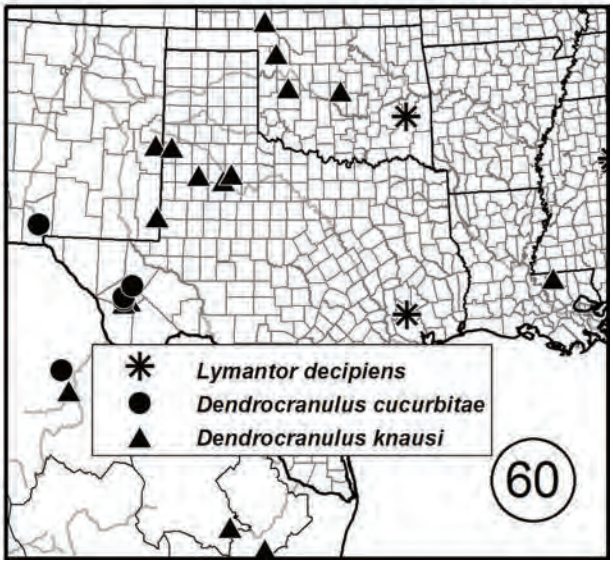

Ips avulsus
Ips hoppingi
all other pines (avulsus)
pinyon pines (hoppingi)
55

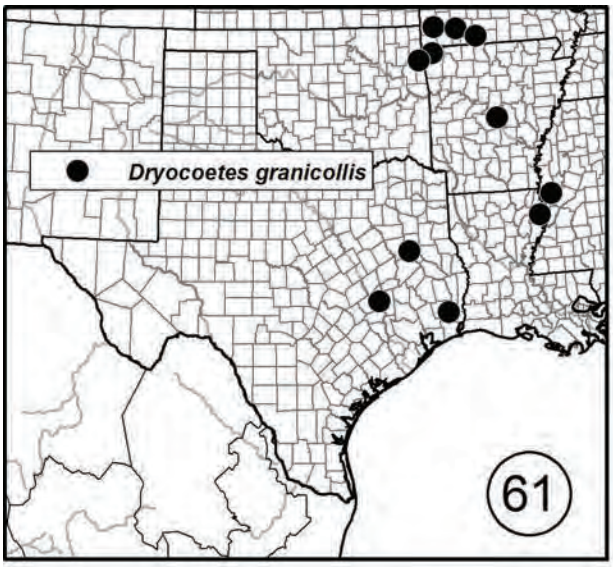

Ips calligraphus
range of pines
56

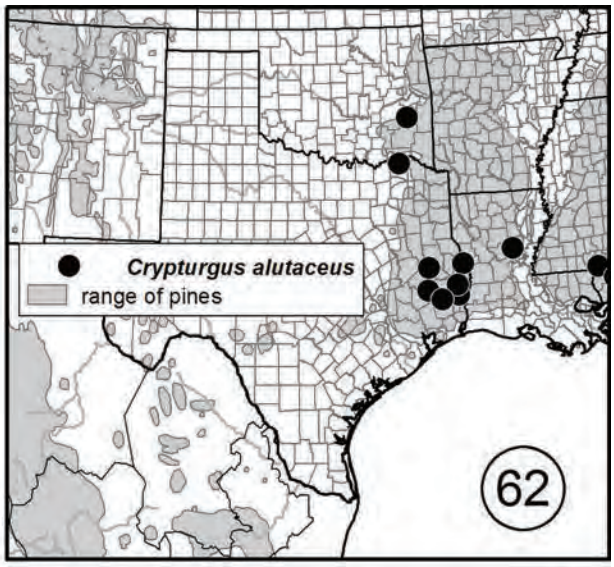

Ips cribricollis
Ips grandicollis
range of pines
57

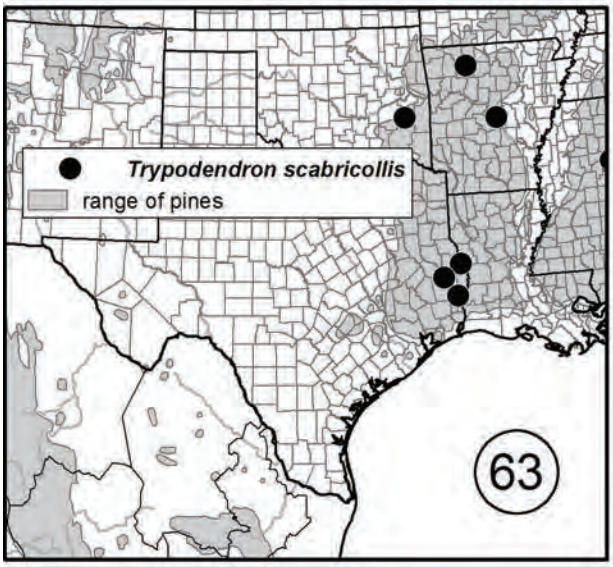

Orthotomicus caelatus
range of pines
58

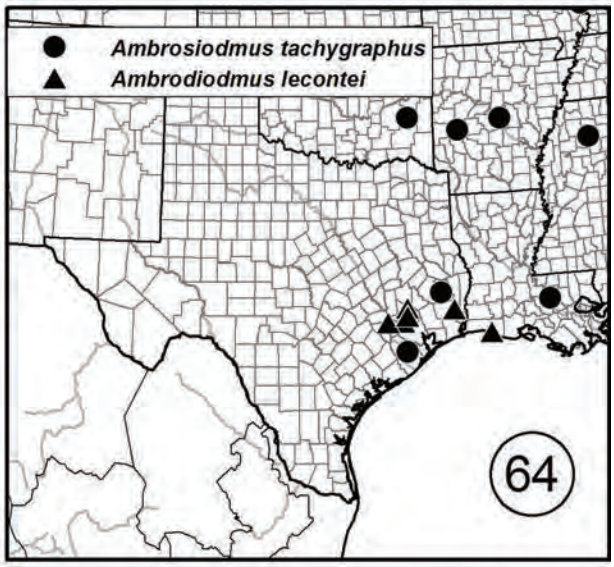

Coccotrypes distinctus
Coccotrypes dactyliperda
59

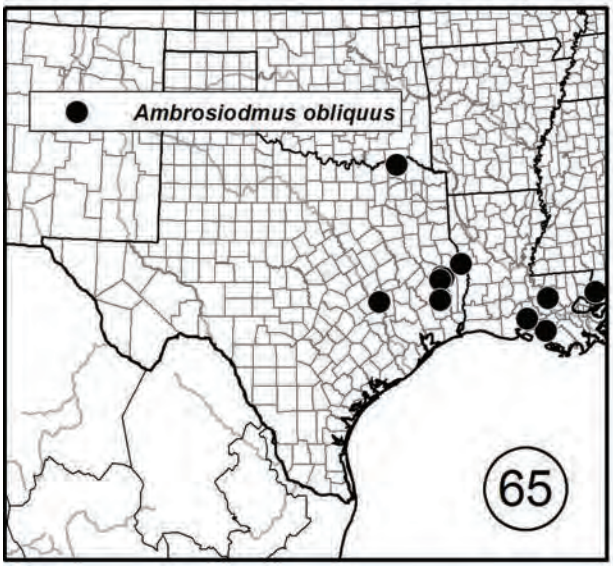

Lymantor decipiens
Dendrocranulus cucurbitae
Dendrocranulus knausi
60

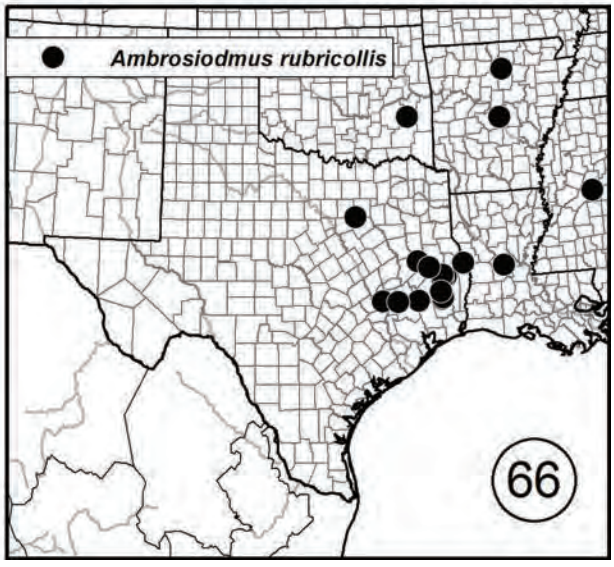

Dryocoetes granicollis
61

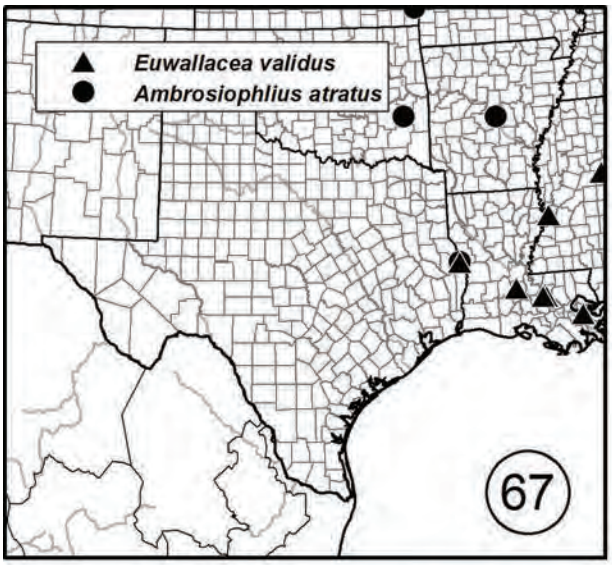

Crypturgus alutaceus
range of pines
62

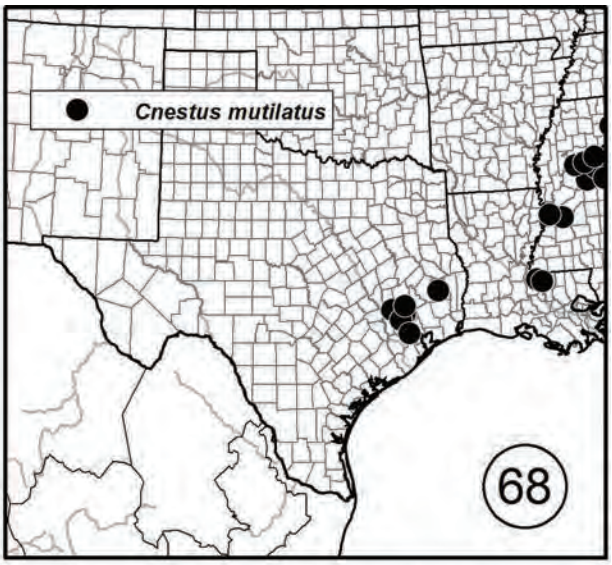

Trypodendron scabricollis
range of pines
63

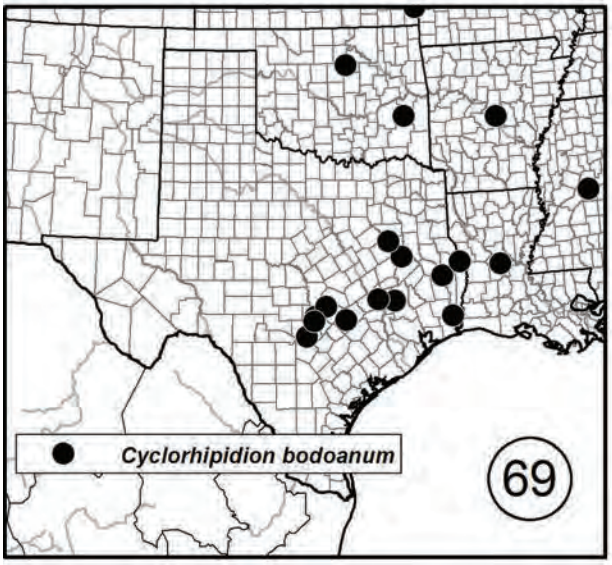

Ambrosiodmus tachygraphus
Ambrodiodmus lecontei
64

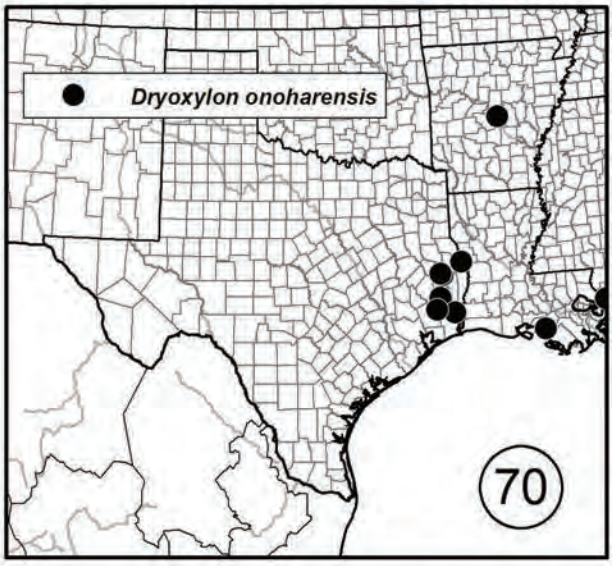

Ambrosiodmus obliquus
65

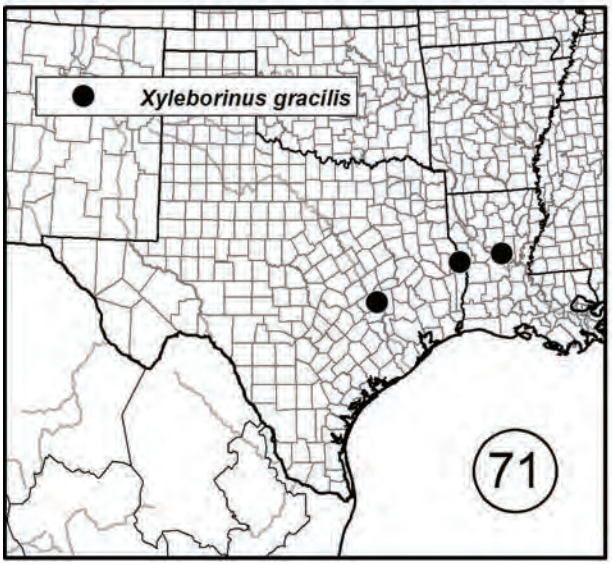

Ambrosiodmus rubricollis
66

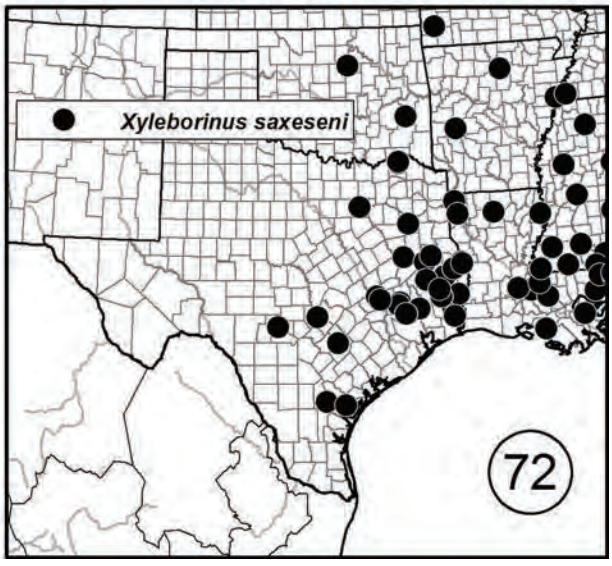

Euwallacea validus
Ambrosiophlius atratus
67

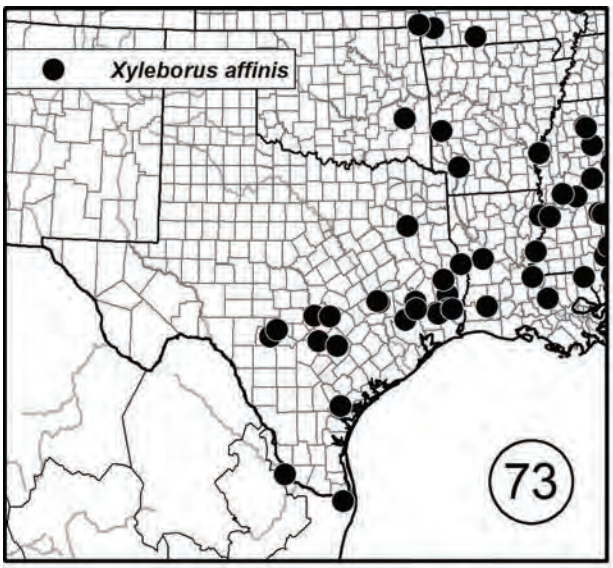

Cnestus mutilatus
68

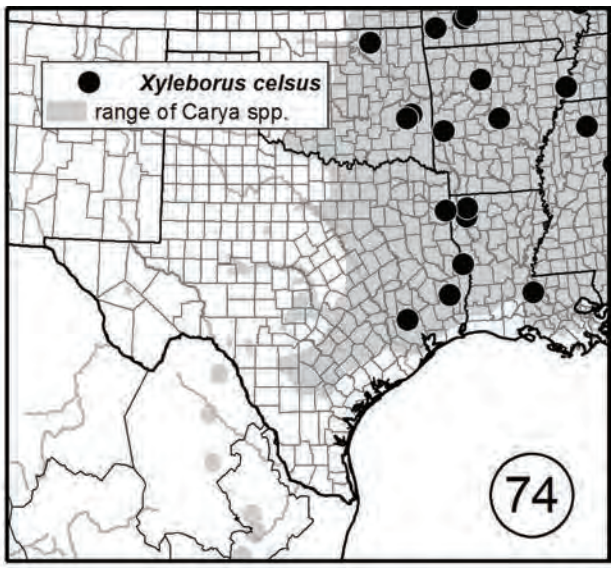

Cyclorhipidion bodoanum
69

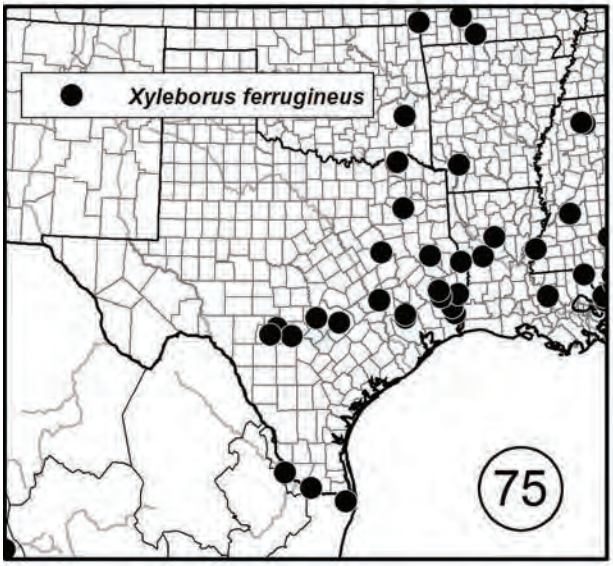

Dryoxylon onoharensis
70

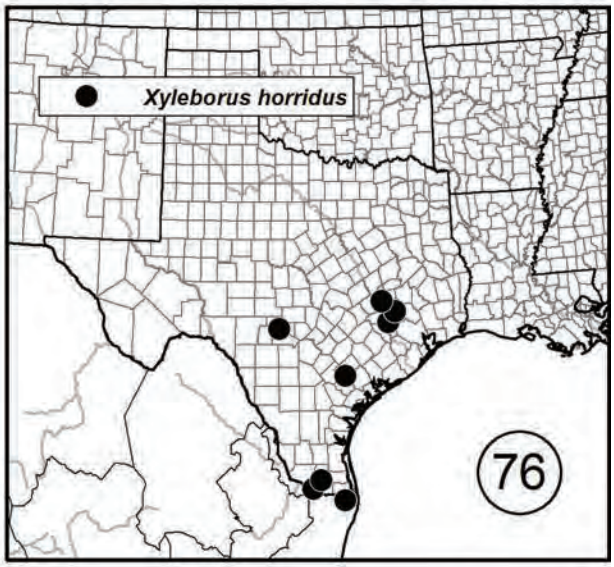

Xyleborinus gracilis
71

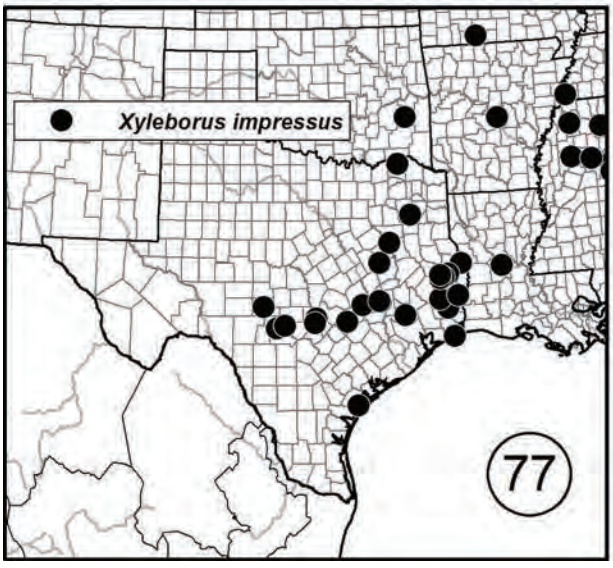

Xyleborinus saxeseni
72

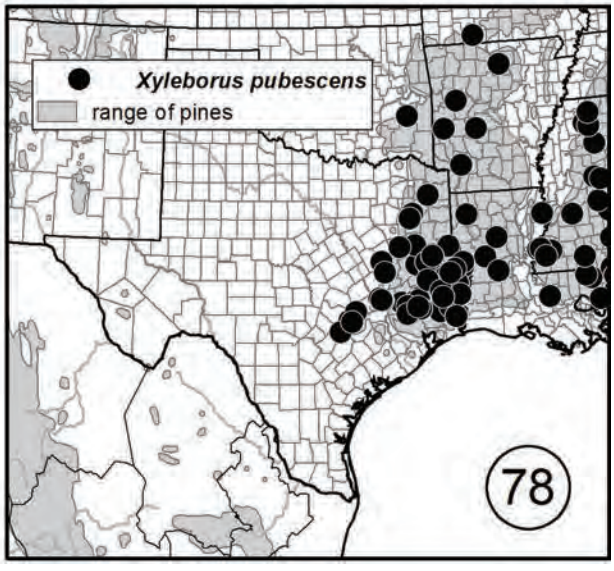

Xyleborus affinis
73

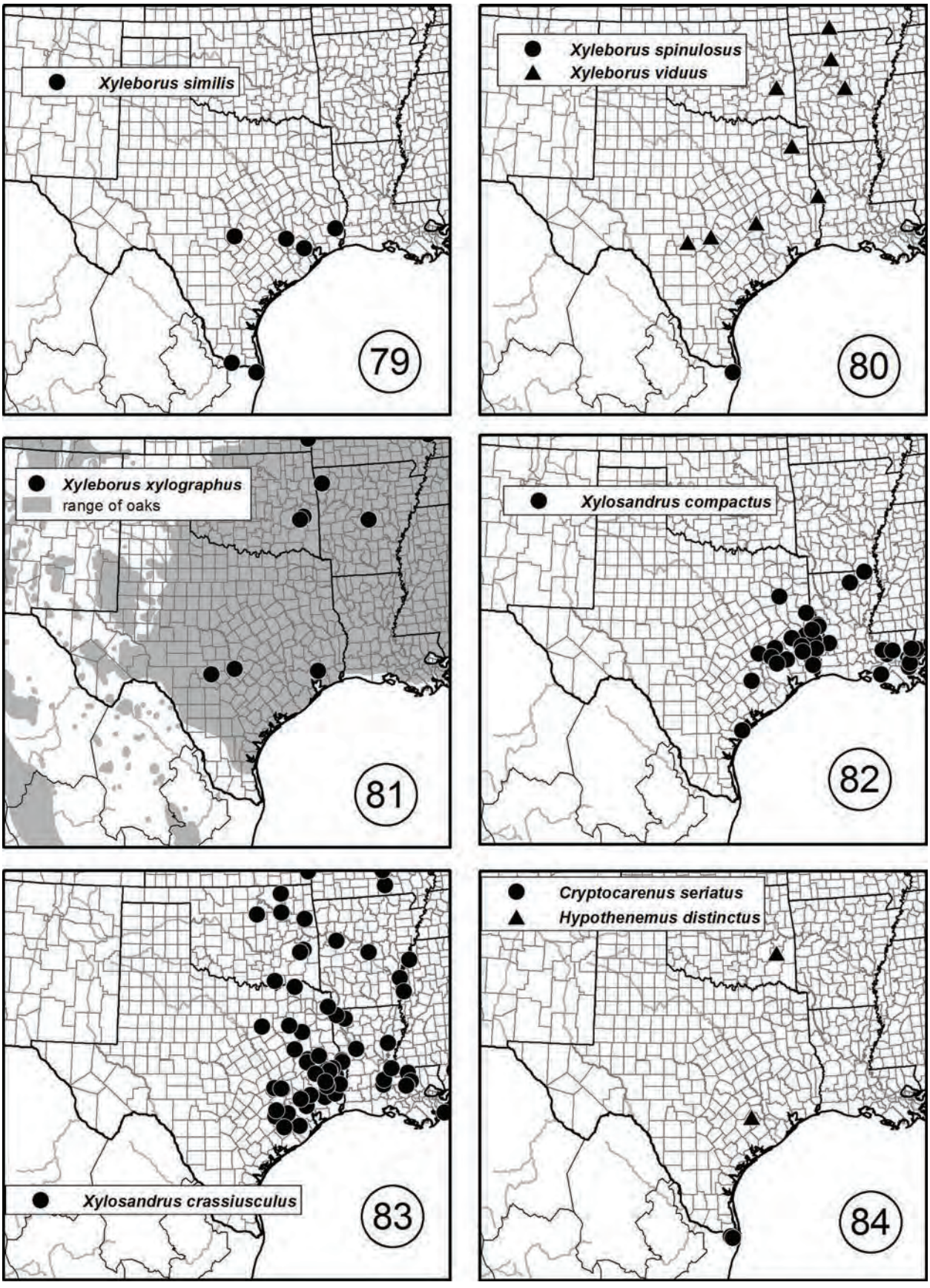

Xyleborus celsus
range of Carya spp.
74

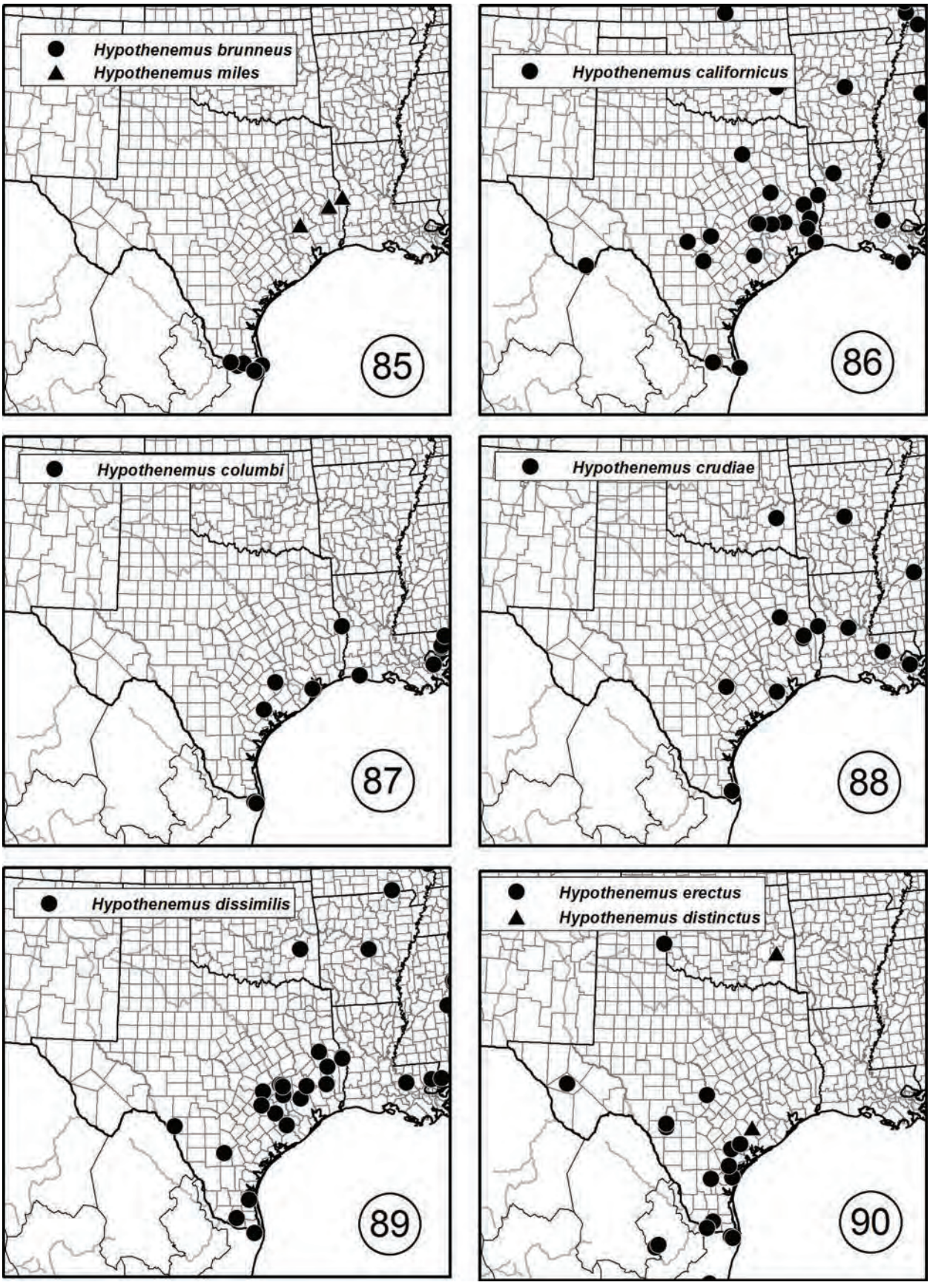

Xyleborus ferrugineus
75

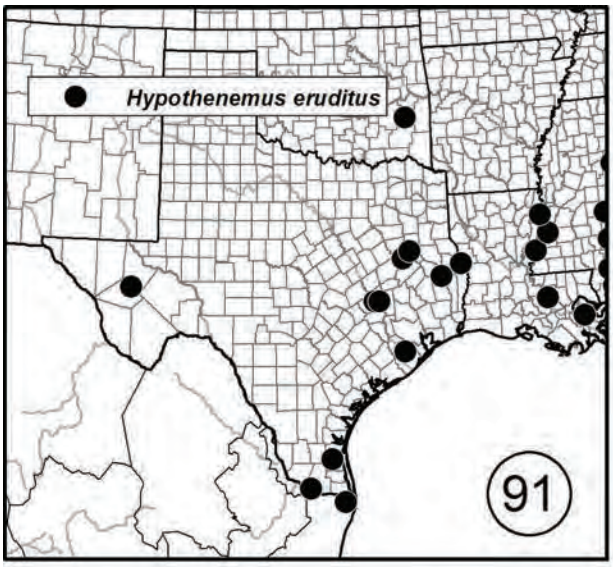

Xyleborus horridus
76

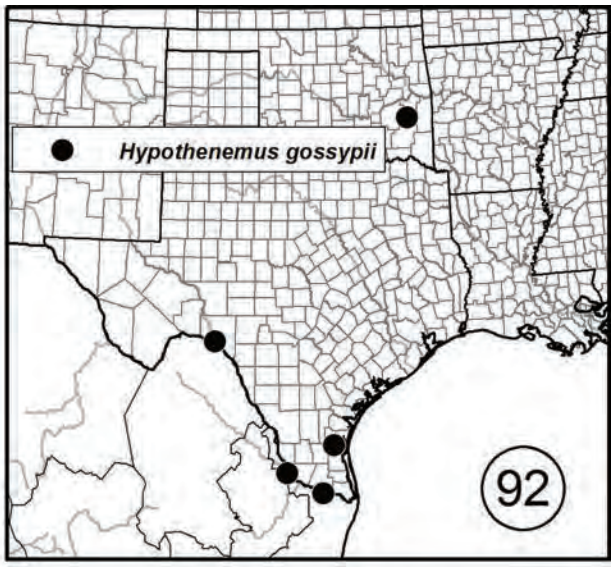

Xyleborus impressus
77

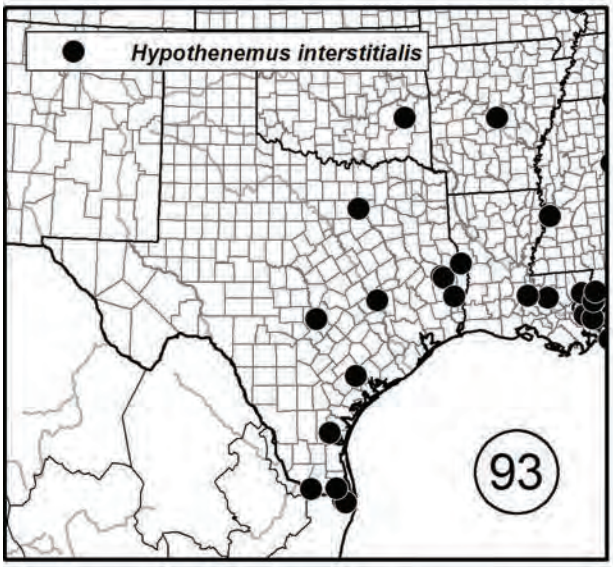

Xyleborus pubescens
range of pines
78

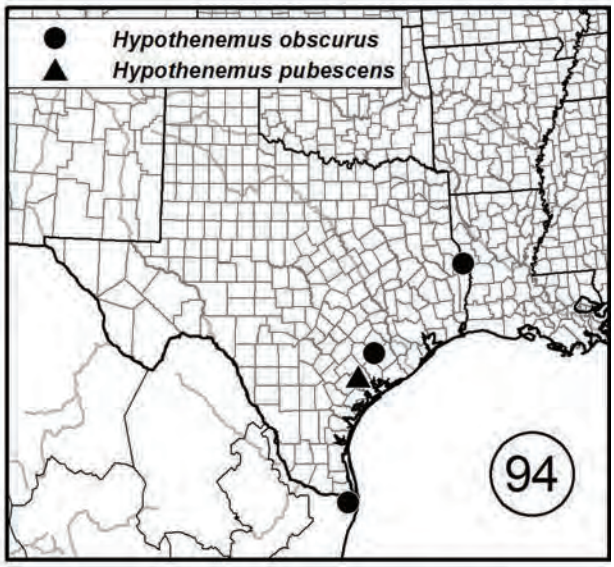

Xyleborus similis
79
Xyleborus spinulosus
Xyleborus viduus
80
Xyleborus xylographus
range of oaks
81
Xylosandrus compactus
82
Xylosandrus crassiusculus
83
Cryptocarenus seriatus
Hypothenemus distinctus
84

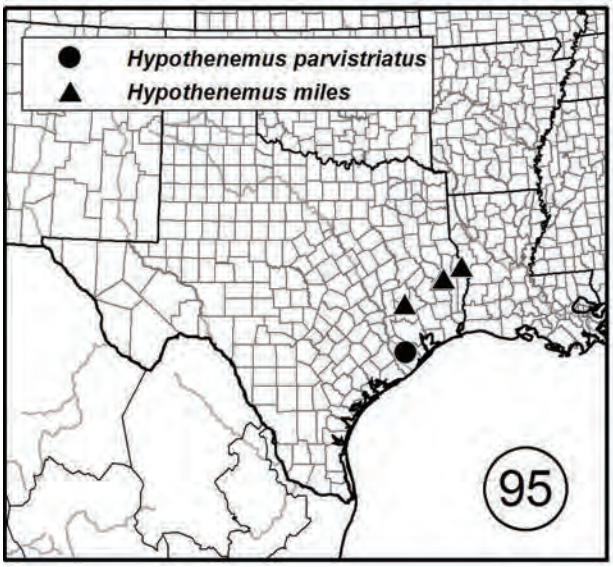

Hypothenemus brunneus
Hypothenemus miles
85
Hypothenemus californicus
86
Hypothenemus columbi
87
Hypothenemus crudiae
88
Hypothenemus dissimilis
89
Hypothenemus erectus
Hypothenemus distinctus
90

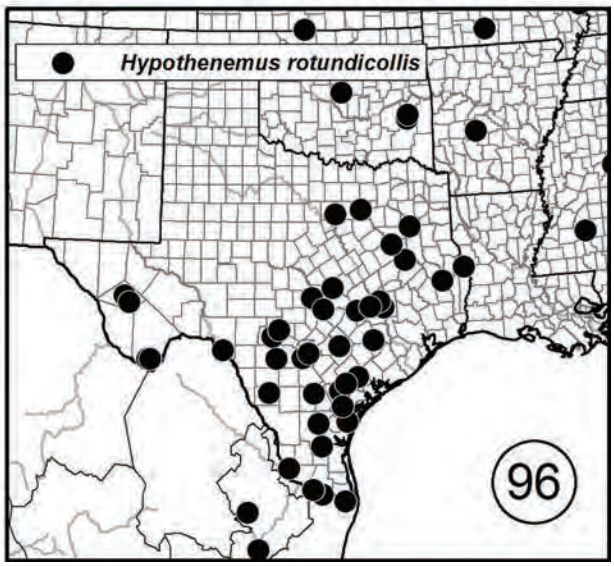

Hypothenemus eruditus
91

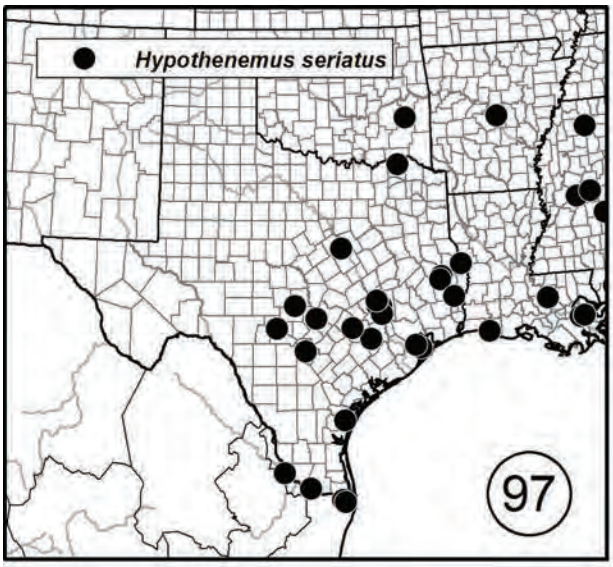

Hypothenemus gossypii
92

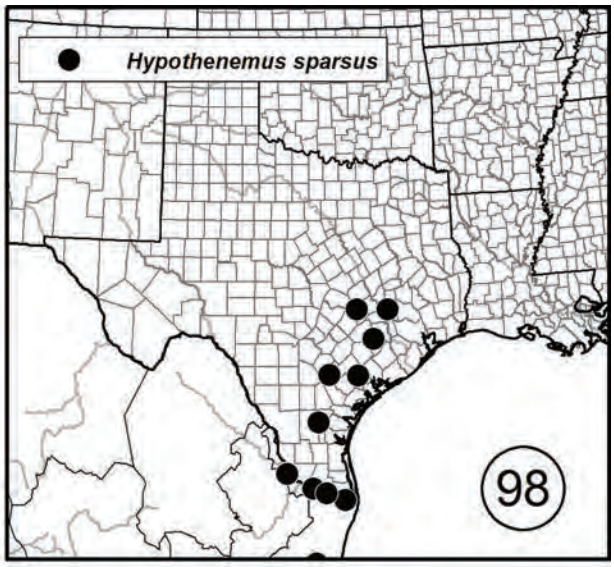

Hypothenemus interstitialis
93

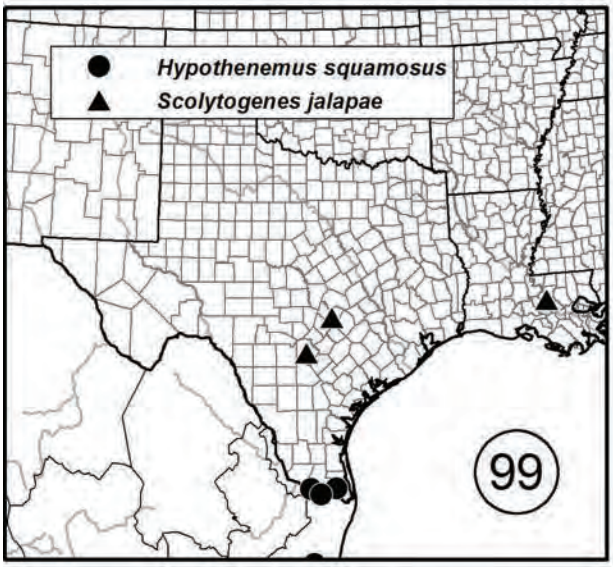

Hypothenemus obscurus
Hypothenemus pubescens
94

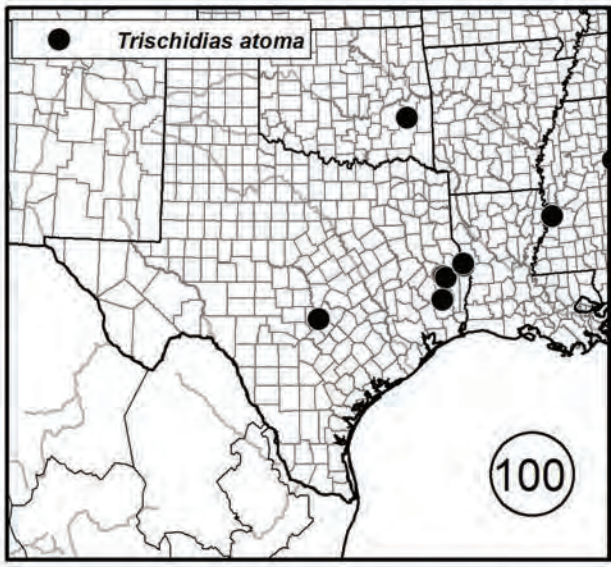

Hypothenemus parvistriatus
Hypothenemus miles
95

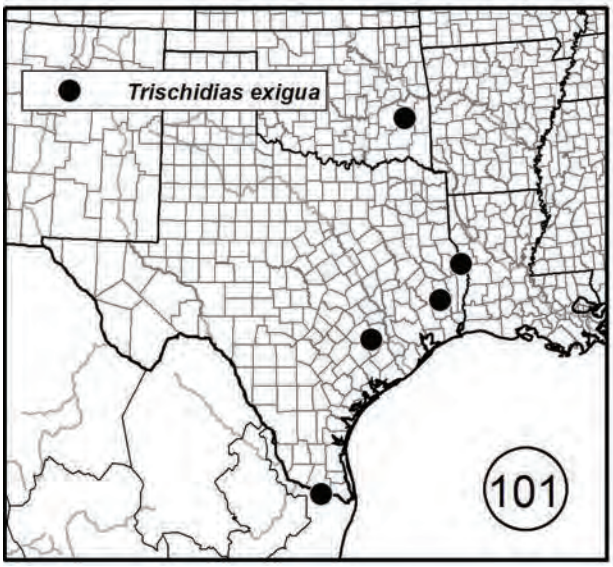

Hypothenemus rotundicollis
96

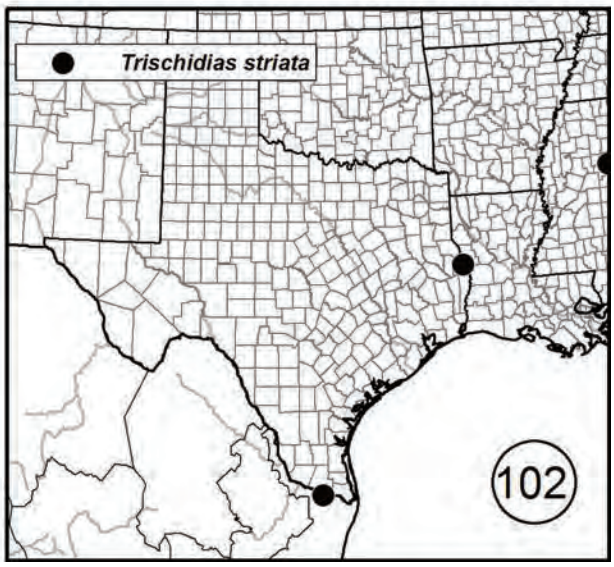

Hypothenemus seriatus
97

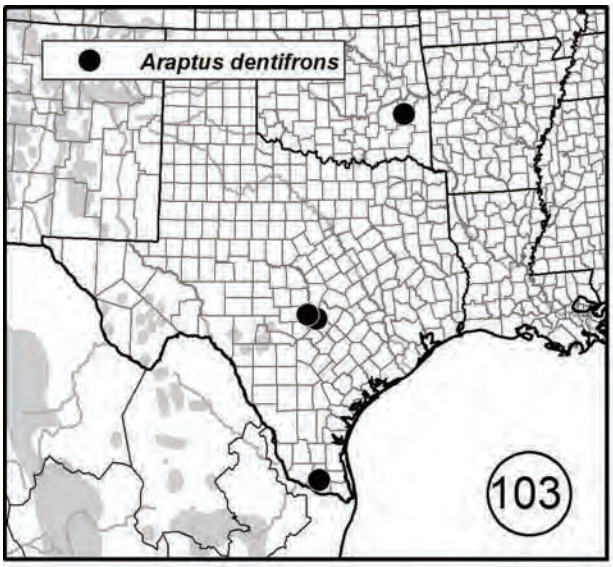

Hypothenemus sparsus
98

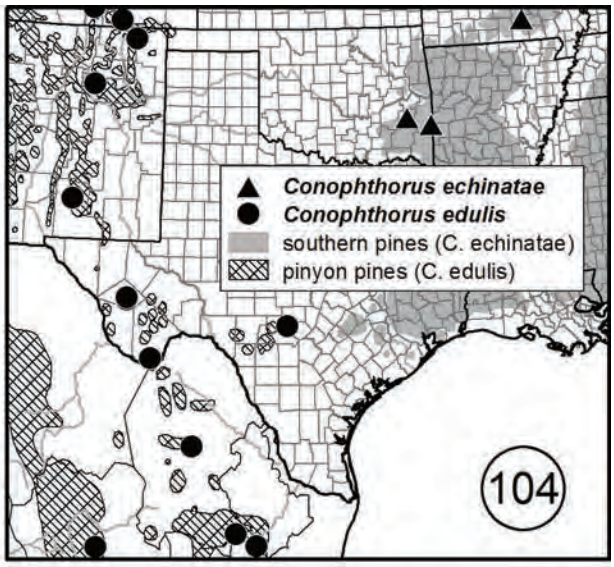

Hypothenemus squamosus
Scolytogenes jalapae
99

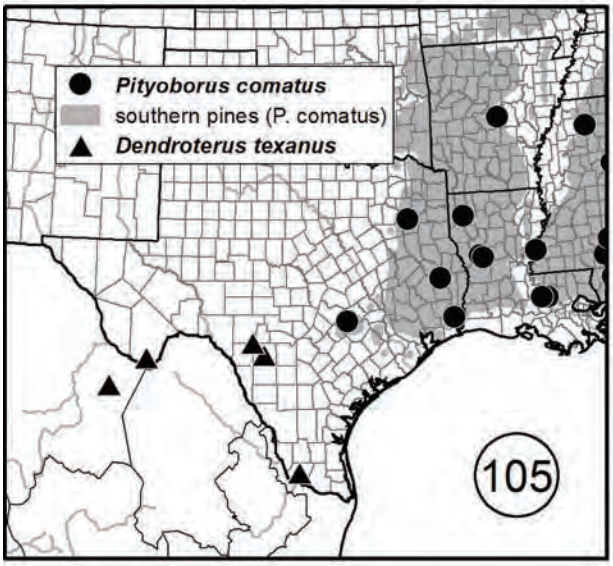

Trischidias atoma
100

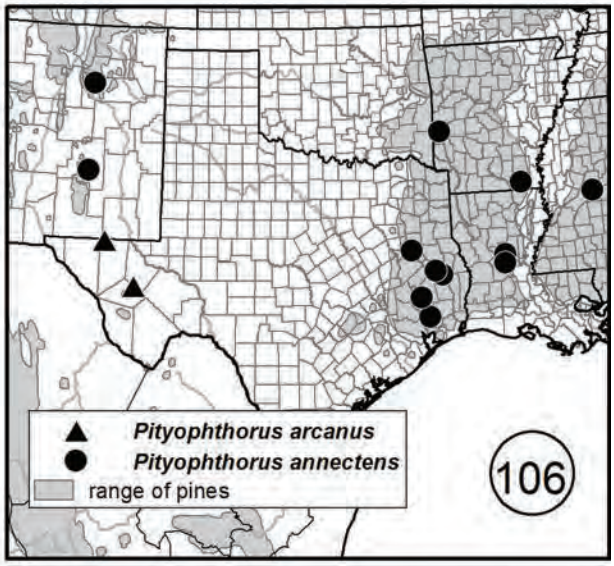

Trischidias exigua
101

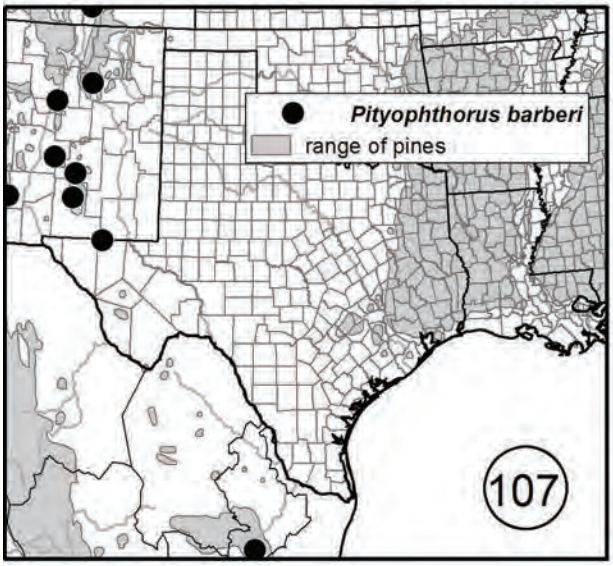

Trischidias striata
102

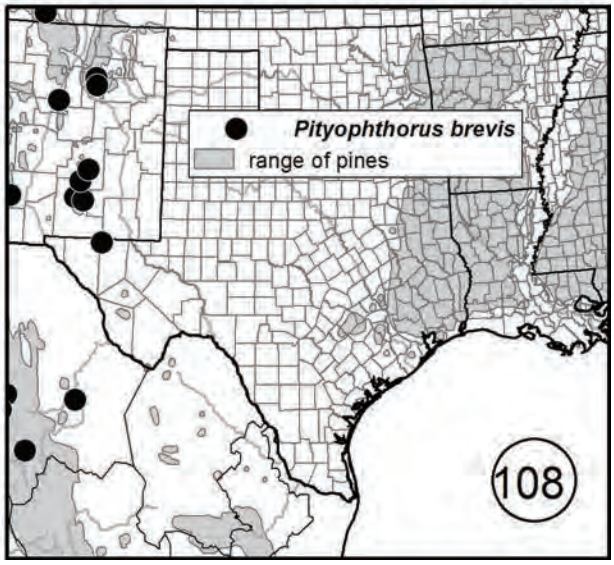

Araptus dentifrons
103

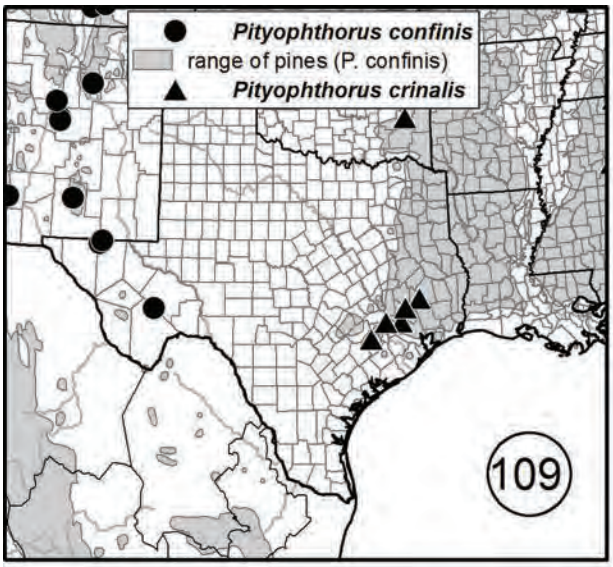

Conophthorus echinatae
Conophthorus edulis
southern pines (C. echinatae)
pinyon pines (C. edulis)
104

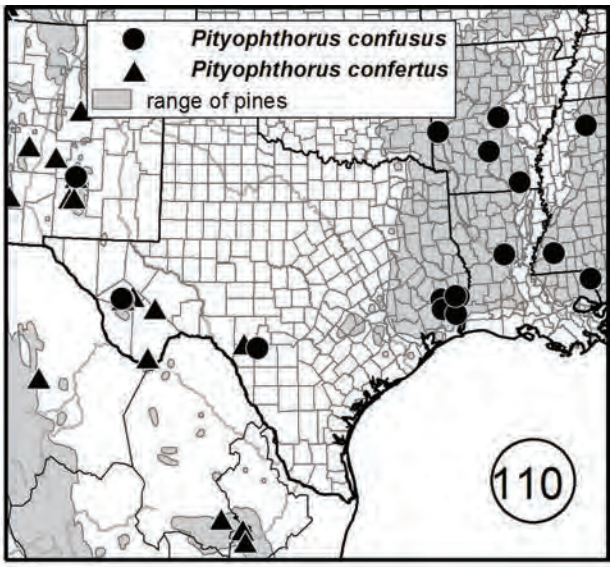

Pityoborus comatus
southern pines (P. comatus)
Dendroterus texanus
105

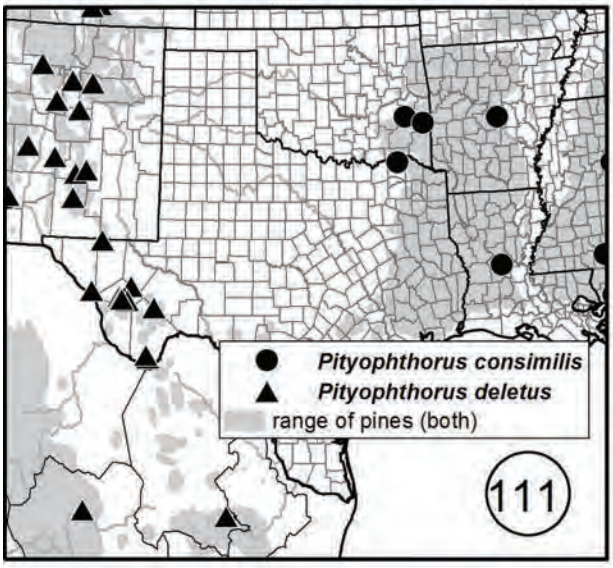

Pityophthorus arcanus
Pityophthorus annectens
range of pines
106

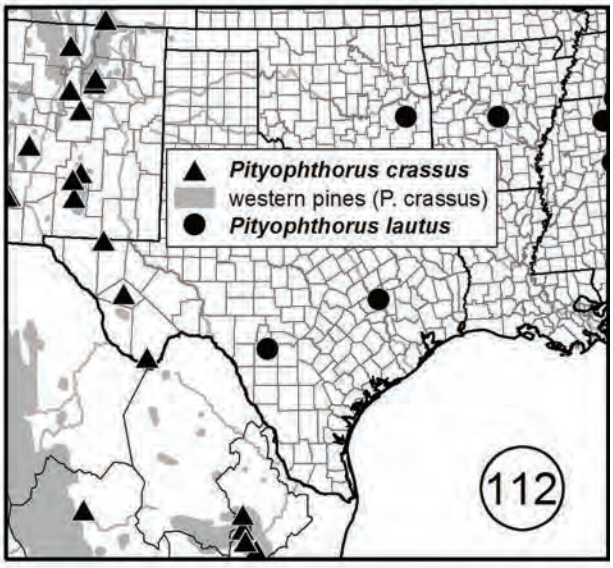

Pityophthorus barberi
range of pines
107

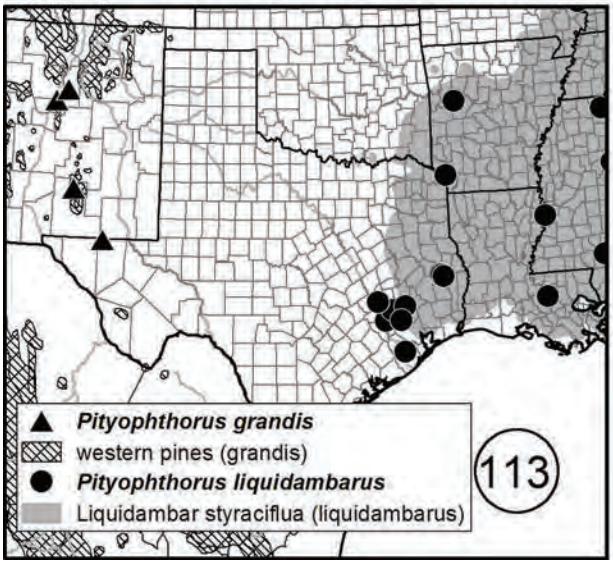

Pityophthorus brevis
range of pines
108

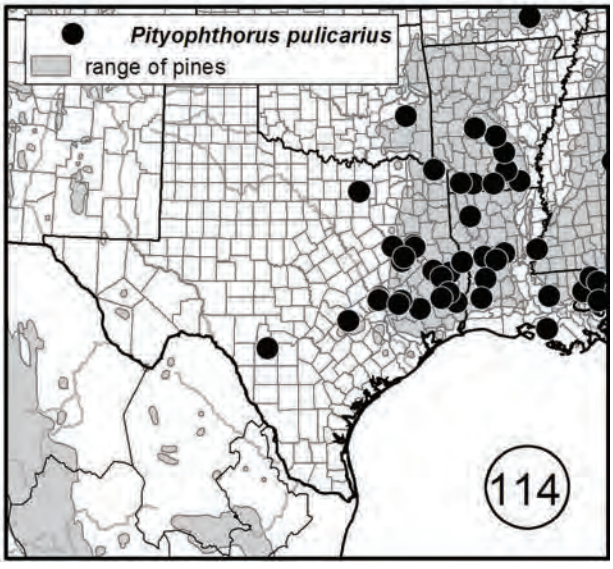

Pityophthorus confinis
range of pines (P. confinis)
Pityophthorus crinalis
109

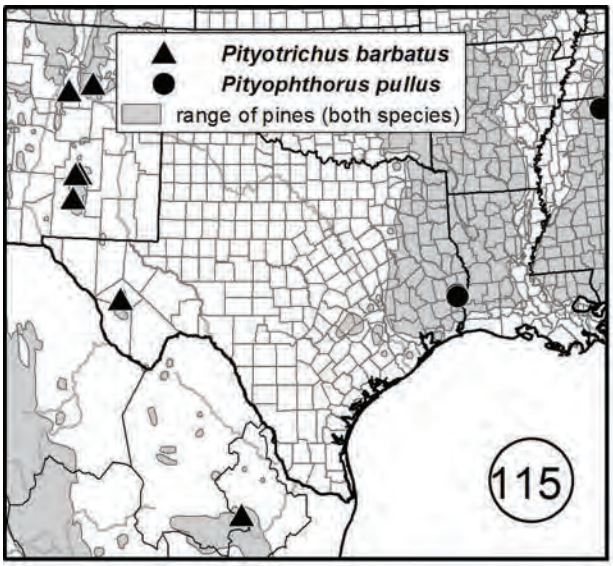

Pityophthorus confusus
Pityophthorus confertus
range of pines
110

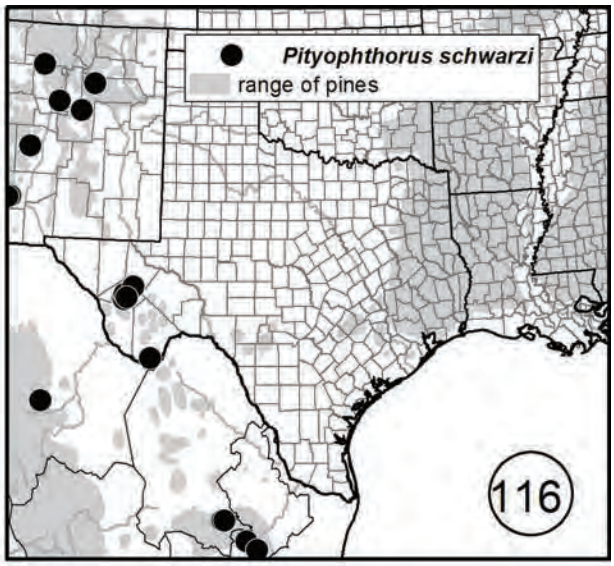

Pityophthorus consimilis
Pityophthorus deletus
range of pines (both)
111

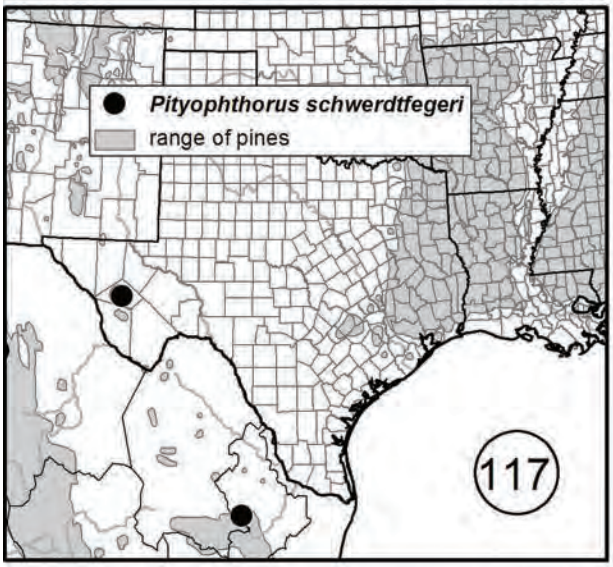

Pityophthorus crassus
western pines (P. crassus)
Pityophthorus lautus
112

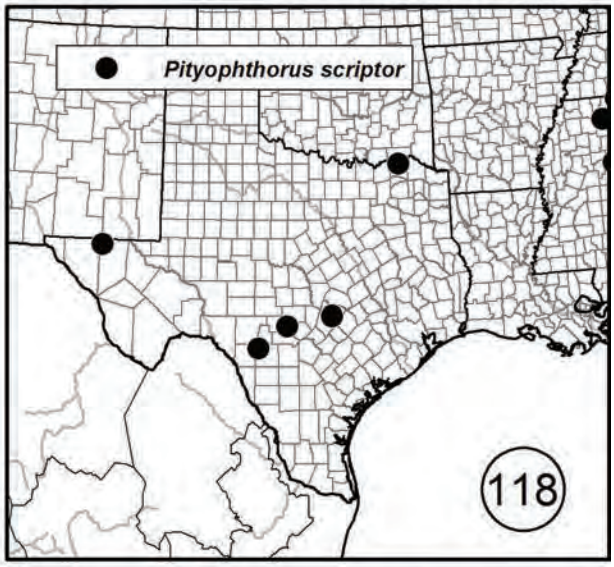

Pityophthorus grandis
western pines (grandis)
Pityophthorus liquidambarus
Liquidambar styraciflua (liquidambarus)
113

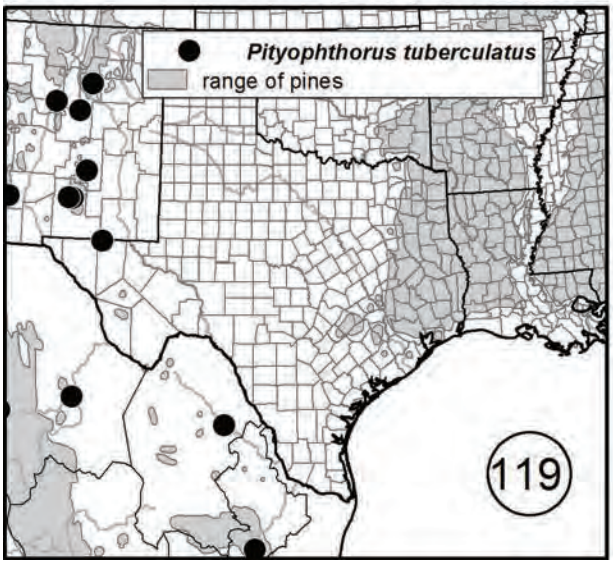

Pityophthorus pulicarius
range of pines
114

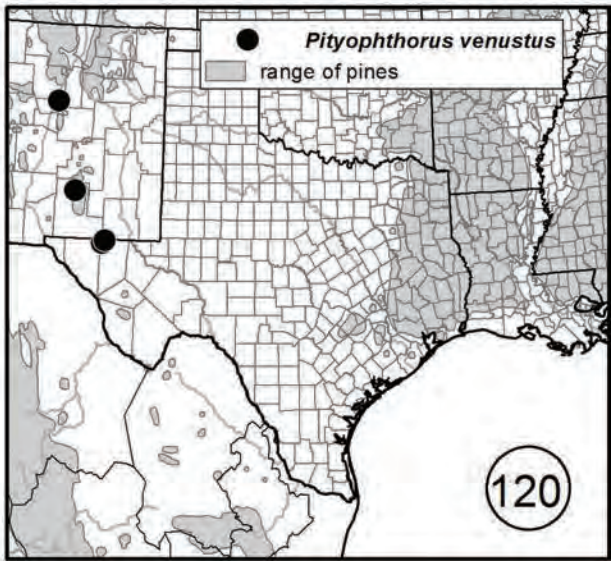

Pityotrichus barbatus
Pityophthorus pullus
range of pines (both species)
115

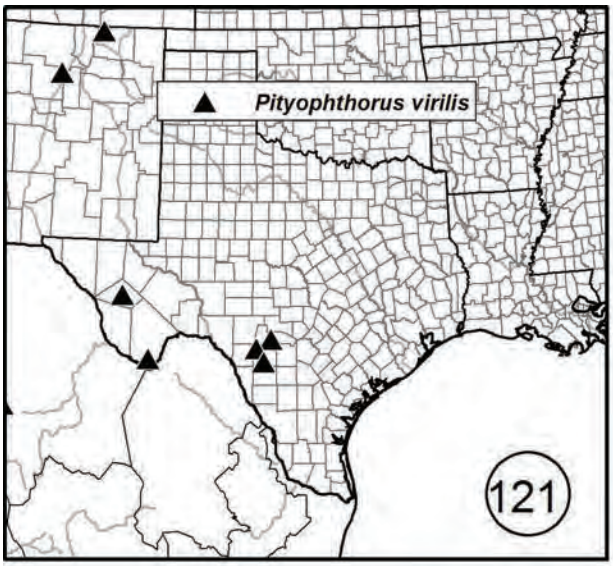

Pityophthorus schwarzi
range of pines
116

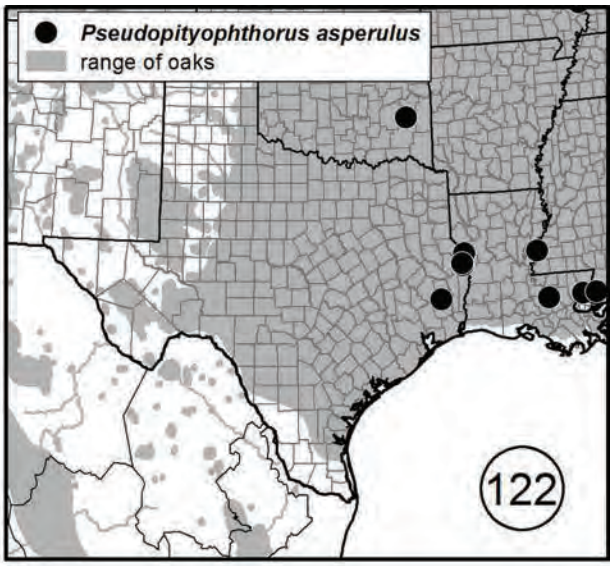

Pityophthorus schwerdtfegeri
range of pines
117

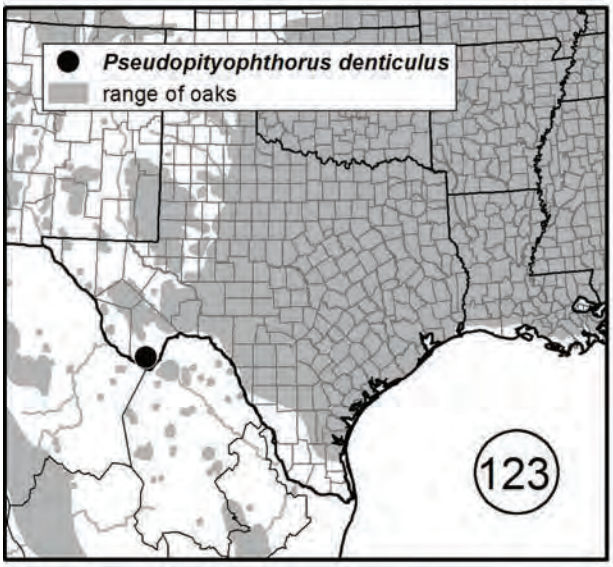

Pityophthorus scriptor
118

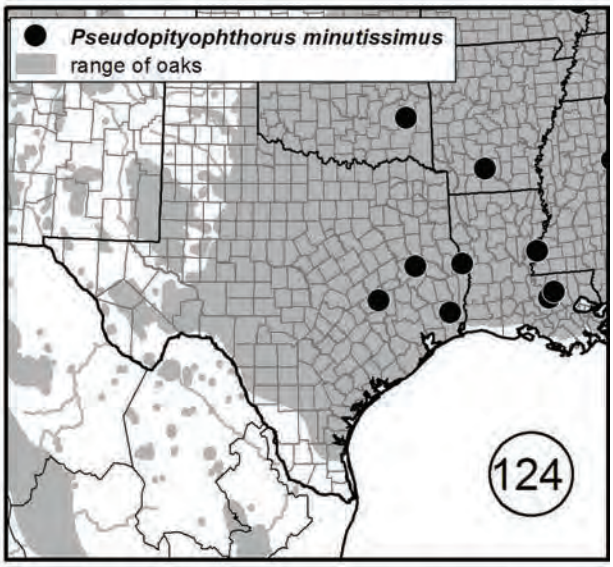

Pityophthorus tuberculatus
range of pines
119

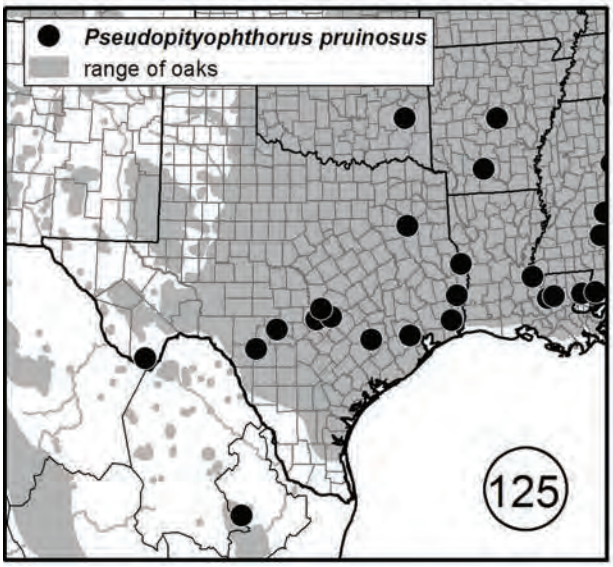

Pityophthorus venustus
range of pines
120

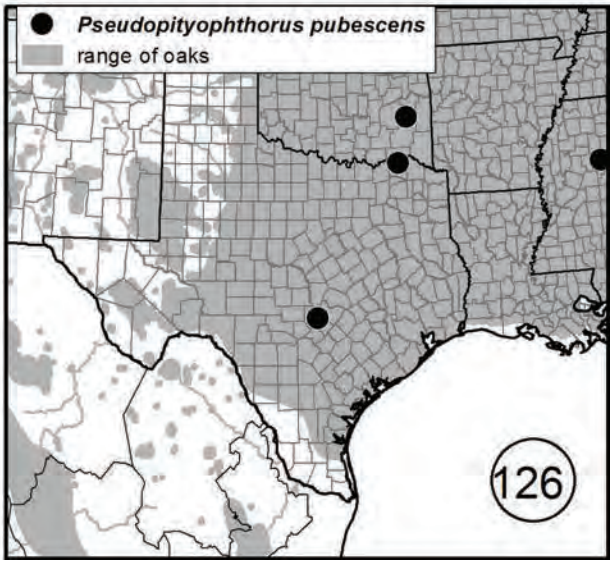

Pityophthorus virilis
121

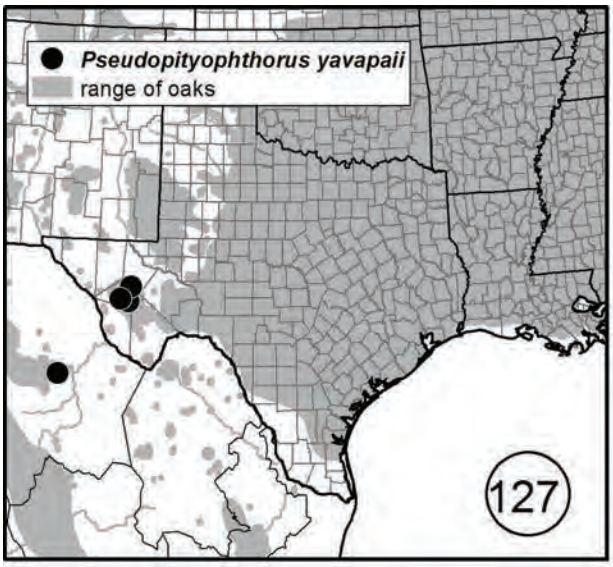

Pseudopityophthorus asperulus
range of oaks
122

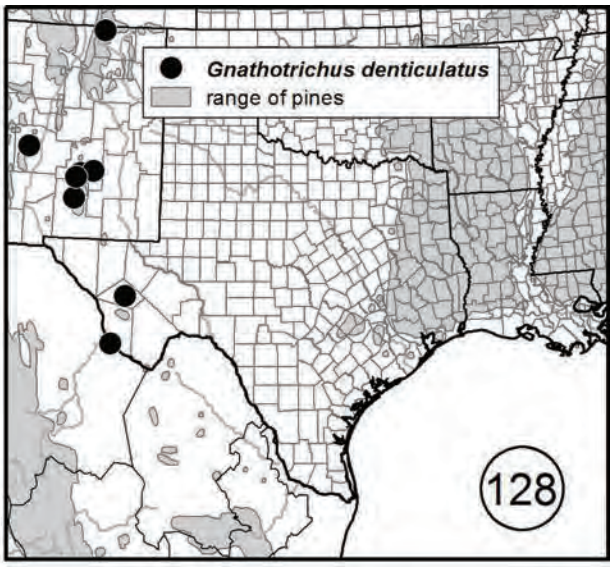

Pseudopityophthorus denticulus
range of oaks
123

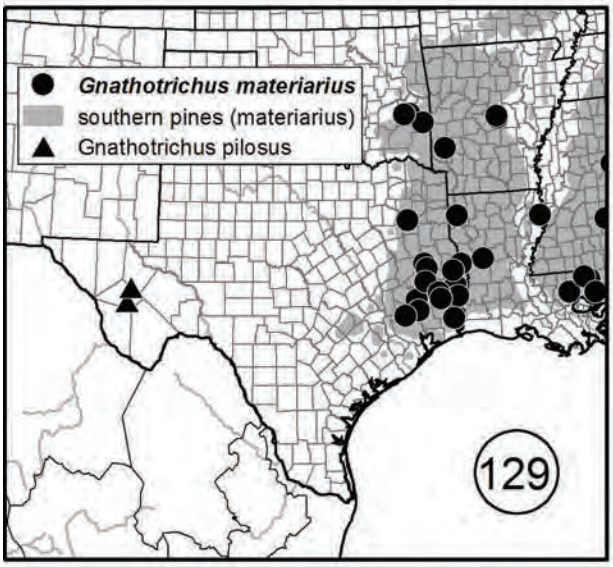

Pseudopityophthorus minutissimus
range of oaks
124

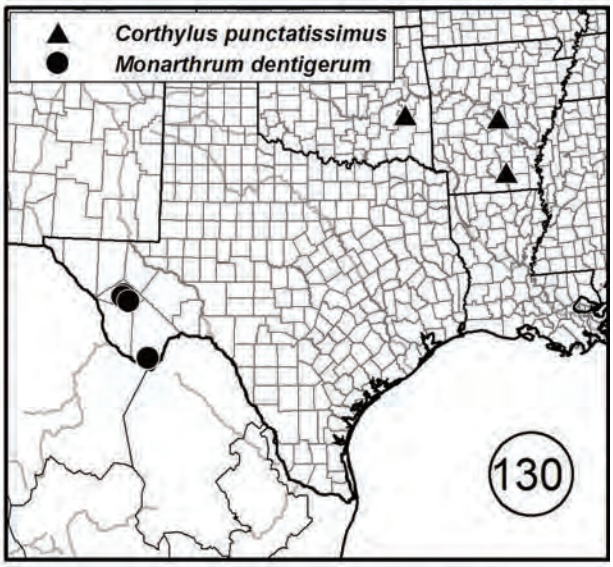

Pseudopityophthorus pruinosus
range of oaks
125

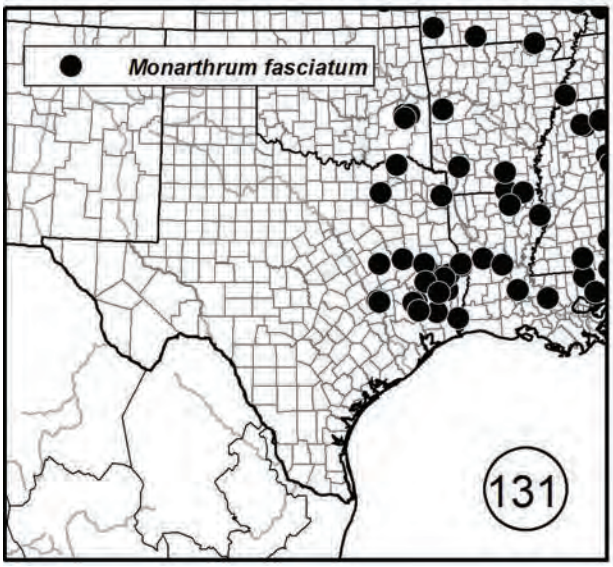

Pseudopityophthorus pubescens
range of oaks
126

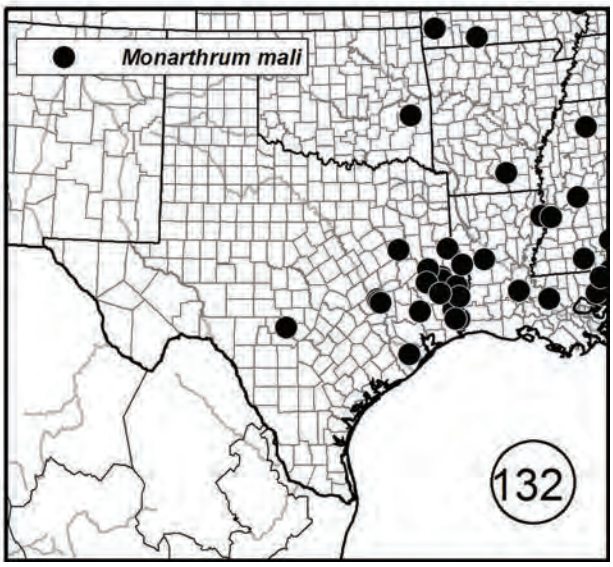

Pseudopityophthorus yavapaii
range of oaks
127


Gnathotrichus denticulatus
range of pines
128


Gnathotrichus materiarius
southern pines (materiarius)
Gnathotrichus pilosus
129


Corthylus punctatissimus
Monarthrum dentigerum
130


Monarthrum fasciatum
131


Monarthrum mali
132