



THE TAENIOPTERYGIDAE OF MISSISSIPPI (INSECTA: PLECOPTERA)

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ABSTRACT

New distribution records and taxonomic keys are given for the species of Taeniopterygidae known to occur in Mississippi. Six species, *Strophopteryx fasciata* (Burmeister), *Taeniopteryx burksi* Ricker & Ross, *T. lita* Frison, *T. lonicera* Ricker & Ross, *T. maura* (Pictet) and *T. parvula* Banks are currently recognized from the state, but neither *T. burksi* nor *T. parvula* have been collected in the state since 1979.

Keywords: Plecoptera, Taeniopterygidae, Mississippi, distribution, *Strophopteryx*, *Taeniopteryx*

INTRODUCTION

Taeniopteryx, *Strophopteryx* and several other taeniopterygid genera were well documented in the North American stonefly fauna early in the last century (Banks 1918; Frison 1934; Needham & Claassen 1925) however, it was not until 1942 that the first record was published for Mississippi (Frison 1942), and not until 1968 that subsequent records became available (Ricker & Ross 1968). Frison's (1942) initial report was of a male and two female "*Taeniopteryx lita* Frison" specimens from Potts Camp, Marshall Co., but the male specimen was later identified as *T. lonicera* Ricker & Ross and included as a paratype of that species by Ricker & Ross (1968). Ricker & Ross (1968) also presented records of *T. lita* from Tishomingo Co., and *T. maura* (Pictet) from Marshall Co., each from a single site. Stark (1979) reported six taeniopterygid species from the state including the first reports for *Strophopteryx fasciata* (Burmeister), *Taeniopteryx burksi* Ricker & Ross and *T.*

parvula Banks, and Fullington & Stewart (1980) added records for *T. burksi*, *T. lita*, *T. lonicera*, *T. maura* and *T. metequi* Ricker & Ross based largely on larval specimens. The precise locality of the latter specimen was not given but the larval specimens (from Chunky River) were recently rediscovered by K.W. Stewart in the Fullington material at the University of North Texas and found to have a tentative identification of "*T. metequi*?" by B.P. Stark in 1977. Larval specimens from this location were later reared (Stark 1979) and determined to be *T. parvula* consequently, we regard this as an invalid record. More recently, Stewart (2000) summarized the current status for and beautifully illustrated all eastern Nearctic taeniopterygid species. The Mississippi records included in that study were based on Stark (1979) and Fullington & Stewart (1980). In addition, a detailed description of *Strophopteryx fasciata* larva was provided by Stewart & Stark (2002) and Earle & Stewart (2008) present a

key to larval *Strophopteryx*.

From 1989-2009 the authors and our colleagues collected winter emerging stoneflies from throughout Mississippi. Capniidae records through the 2006-07 winter season were recently published (Nations et al. 2007) however, the taeniopterygid fauna has not been updated since Stark (1979) and Fullington & Stewart (1980). Therefore, the purpose of this effort is to present a more robust data set for the species known to occur in the state. In addition, a key is provided to assist in identification of the six species currently recognized from the state.

METHODS

Specimens were collected using a combination of bridge surveys and beating sheet collections for adults, and kick net samples for larvae. Specimens from this study are archived in 80% ethanol in the Stark collection, Mississippi College except as noted. Specimen records from Stark (1979) are also included below in order to give as complete an account as possible. In addition, sample records from the Mississippi Department of Environmental Quality (MDEQ) were obtained and included as an indicator of additional sites where taeniopterygids have been collected in the state. These samples are based on larval specimens mass archived by station rather than by sorted taxa, consequently, to sort and identify them beyond genus level would require a great deal of time.

Key to Species of Mississippi Taeniopterygidae (Adults)

- 1 Tip of abdomen with an upright, probe-like epiproct, or sternum 9 prolonged and bent sharply upward near tip (Fig. 8) Males (2)
- 1' Tip of abdomen without probe-like structures or a greatly prolonged, bent process on sternum 9 Females (7)
- 2 Cerci multisegmented; sternum nine prolonged beyond tip of abdomen and bent sharply upward near apex (Fig. 8) *Strophopteryx fasciata*
- 2' Cerci one-segmented; sternum nine not prolonged (Fig. 10) *Taeniopteryx* (3)
- 3 Abdominal sternum nine bearing a vesicle (Fig. 10) 4
- 3' Abdominal sternum nine without a vesicle 5

- 4 Hind femur bearing a prominent, acute spur at mid length (Fig. 12); paraprocts as in Fig. 18 *T. maura*
- 4' Hind femur bearing a low, rounded callus at mid length; paraprocts as in Fig. 13 *T. burksi*
- 5 Apical section of paraprocts, slender, acute and bent sharply outward near tip (Fig. 19) *T. parvula*
- 5' Apical section of paraprocts, broadly rounded or truncate and not hooked outward at tip (Figs. 15, 17) 6
- 6 Extruded aedeagus with small dorsal lobes, or dorsal lobes absent; cercal length greater than basal width (Fig. 16); outer margins of paraprocts apically expanded (Fig. 17) *T. lonicera*
- 6' Dorsal lobes of extruded aedeagus similar to ventral lobes; cercal length subequal to basal width (Fig. 14); outer margins of paraprocts hardly expanded apically (Fig. 15) *T. lita*
- 7 Posterior margin of abdominal sternum 9 prolonged as a narrow, tongue shaped process extending over all, or much of sternum 10 (Fig. 9) *Strophopteryx fasciata*
- 7' Posterior margin of abdominal sternum 9 not prolonged (Fig. 11) *Taeniopteryx* (8)
- 8 Subgenital plate of sternum 8 bearing a U-shaped margin (Figs. 21-22) 9
- 8' Subgenital plate bearing a V-shaped margin, or plate margin indistinct (Figs. 11, 20) 10
- 9 U-shaped margin of subgenital plate usually complete around anterior margin (Fig. 22) *T. lonicera*
- 9' U-shaped margin of subgenital plate usually with a small anteromedian notch (Fig. 21) *T. lita*
- 10 V-shaped margin of subgenital plate dark and acute anteriorly, area lateral to V-margin usually pale (Fig. 23) *T. parvula*
- 10' V-shaped margin of subgenital plate usually incomplete or indistinct anteriorly, area lateral to V-margin usually lightly sclerotized (Figs. 11, 20) *T. burksi*, *T. maura*

(Larvae)

Modified from Fullington & Stewart (1980)

- 1 Coxae without gills; abdominal sternum 9 bearing a triangular, caudal projection *Strophopteryx fasciata*
- 1' Each coxa with a single, segmented or telescoping gill; abdominal sternum 9 without triangular

- | | | | |
|---|-------------------------|--|--------------------|
| projection | <i>Taeniopteryx</i> (2) | and curved | 5 |
| 2 Dorsum of abdomen and thorax without median pale band | <i>T. parvula</i> | 4 Last instar male larvae with spur evident on hind femora | <i>T. maura</i> |
| 2' Dorsum of abdomen and thorax with a median pale band | 3 | 4' Last instar male larvae without obvious spur on hind femora | <i>T. burksi</i> |
| 3 Mid-dorsal pale band bordered by dark brown pigment; abdominal terga armed with slender bristles of variable length | 4 | 5 Body length of last instar larvae less than 7.6 mm | <i>T. lonicera</i> |
| 3' Mid-dorsal pale band without dark brown border; bristles on abdominal terga mostly long | | 5' Body length of last instar larvae at least 8.0 mm | <i>T. lita</i> |

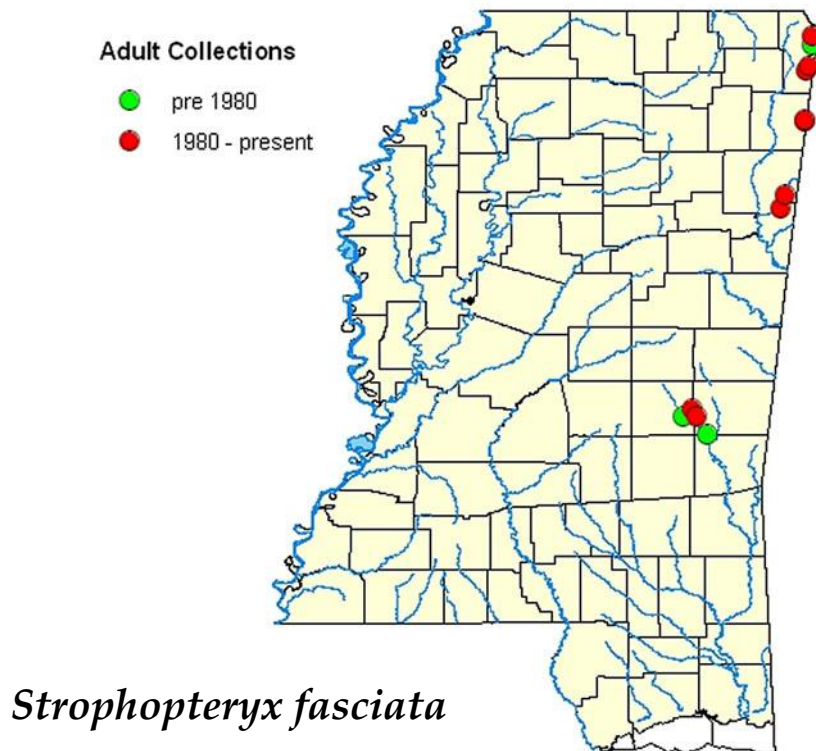


Fig. 1. Distribution of *Strophopteryx fasciata* in Mississippi.

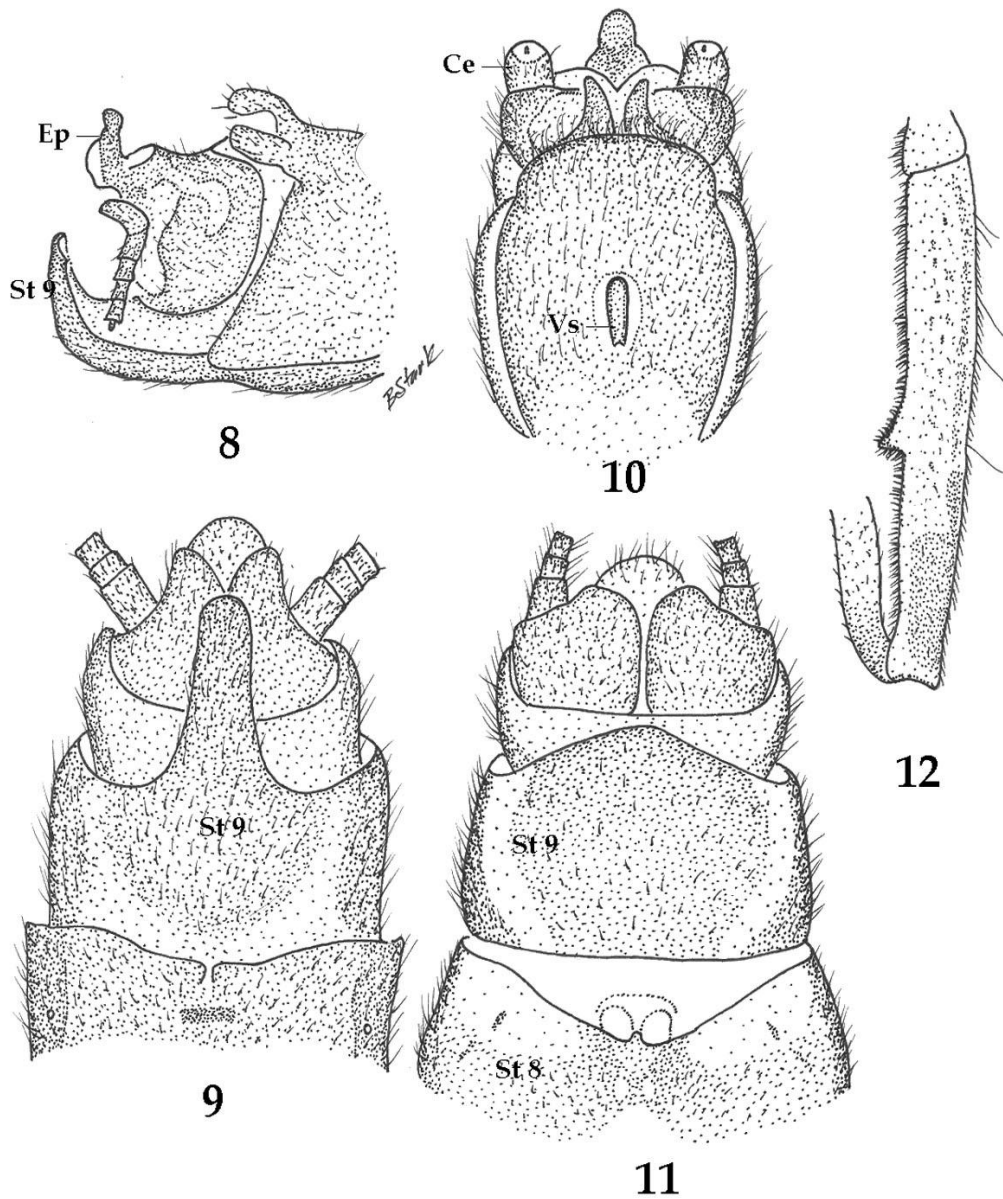
***Strophopteryx fasciata* (Burmeister)**
 (Figs. 1, 8-9)

Semblis fasciata Burmeister, 1839:875. Holotype ♂ (Museum d'Histoire Naturelle, Genève), Pennsylvania
Taeniopteryx frigida Hagen, 1861:35. Syn. Needham & Claassen, 1925

Strophopteryx fasciata: Illies, 1966:67.

Strophopteryx fasciata: Stewart, 2000:61.

Material examined. Mississippi: **Itawamba Co.**, Bull Mountain Creek, Cotton Gin Rd, 3 February 2009, M.B. Hicks, D.E. Burt, 1 ♀. Hurricane Creek, Cotton Gin Rd, 3 February 2009, M.B. Hicks, D.E. Burt, 1 ♂. **Lauderdale Co.**, Chunky River, Dunn's Falls, 7 January 1978, B. Stark, M. Stegall, 2 larvae. Tallahatta Creek, I-20, 7 January 1978, B. Stark, M. Stegall, 5 larvae. Same site, 17 February 1979, B. Stark, 3 reared ♀, 1 larva. Same site, 28 January 1989, B. Stark, T.



Figs. 8-12. Taeniopterygid structures. 8-9. *Strophopteryx fasciata*. 8. Male terminalia, lateral aspect. 9. Female terminalia, ventral aspect. 10-12. *Taeniopteryx maura*. 10. Male terminalia, ventral aspect. 11. Female terminalia, ventral aspect. 12. Male hind femur. (Ep = epiproct, Ce = cercus, Vs = vesicle, St9 = sternum 9, St8 = sternum 8)

Moore, J. Parham, W. Bell, C. Royston, 10 larvae. **Monroe Co.**, Buttahatchie River, Buttahatchie Rd, 2 February 2009, M.B. Hicks, D.E. Burt, 1 ♂, 1 ♀. Buttahatchie River, Caledonia Rd, 2 February 2009, M.B. Hicks, D.E. Burt, 1 ♂. **Newton Co.**, Chunky River, I-20, 17 February 1979, B. Stark, 1 reared ♀. Tallahatta Creek, Dean Rd, 22 January 2000, B. Stark,

1 ♀. Same site, 18 January 2003, B. Stark, 6 larvae. Same site, 7 February 2009, 1 reared ♂, 1 ♀, 20 larvae. **Tishomingo Co.**, Bear Creek, Tishomingo State Park, 30 December 1991, B. Stark, 4 larvae. Clear Creek, 4 mi E Iuka, Hwy 172, 5 February 1977, B. Stark, 2 larvae.

Remarks. Stark (1979) reported this species from

Mississippi for the first time, listing records from two sites in Lauderdale Co., and one each in Newton and Tishomingo counties. No additional reports have subsequently been published although a few new sites in these same counties were discovered. Recent collections from Itawamba and Monroe counties include the first records from four new sites. The known distribution is along the Alabama-Mississippi border from Tishomingo Co. in the northeast to Lauderdale and Newton counties in the east central part of the state (Fig. 1). Figs. 8-9 show the male and female genitalic structures.

***Taeniopteryx burksi* Ricker & Ross**
(Figs. 2, 13, 20)

Taeniopteryx nivalis: Needham & Claassen, 1925:240. In part

Taeniopteryx maura: Frison, 1942:248. In part

Taeniopteryx burksi Ricker & Ross, 1968:1425. Holotype ♂ (Illinois Natural History Survey), Urbana, Champaign Co., Illinois

Taeniopteryx burksi: Stewart, 2000:63.

Material examined. Mississippi. **Tishomingo Co.**, Rock Quarry Creek, Tishomingo State Park, 10 February 1979, B. Stark, P. Lago, P. Hartfield, C. Cooper, 2 ♂.

Remarks. These two specimens, recorded by Stark (1979), have a very slight, rounded femoral process, similar to that shown in Stewart (2000) and quite unlike the spine found on *T. maura* at other localities in the state. Ricker & Ross (1968) report the species from several sites in Alabama and Tennessee. No new records are available, and *T. burksi* is known only from Tishomingo Co. (Fig. 2). The male paraproct is shown in Fig. 13 and the female 8th sternum in Fig. 20.

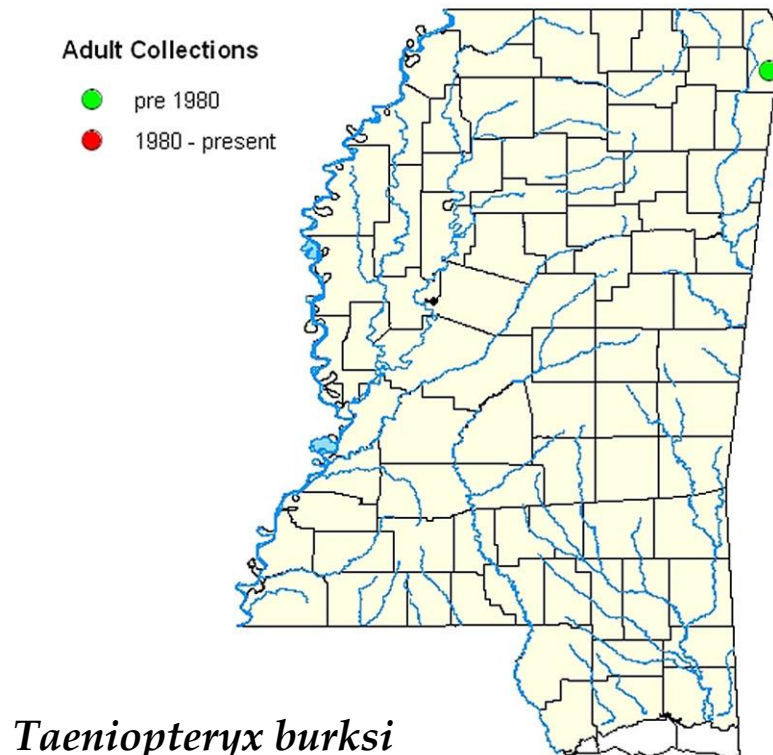
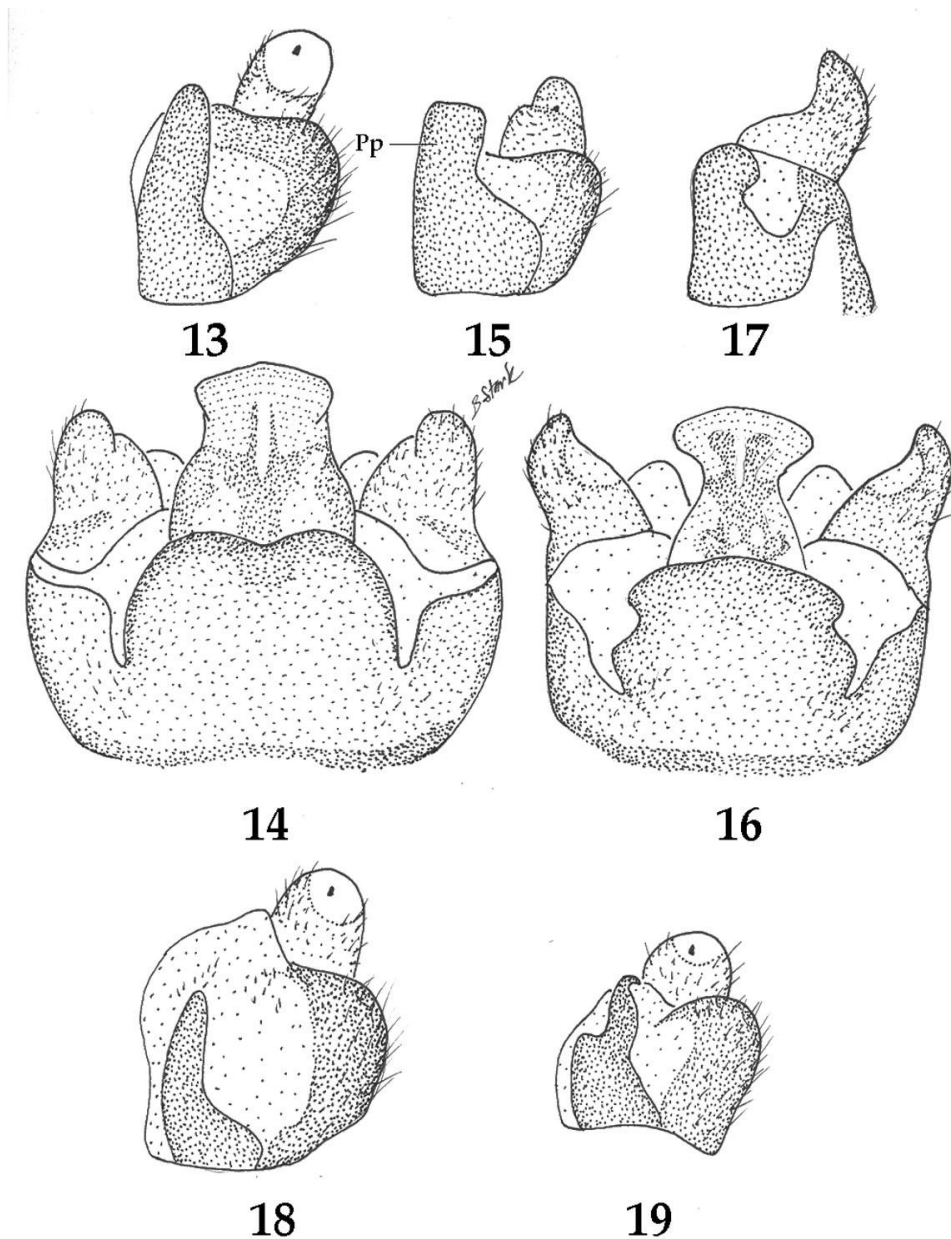


Fig. 2. Distribution of *Taeniopteryx burksi* in Mississippi.



Figs. 13-19. *Taeniopteryx* male structures. 13. *T. burksi* male paraproct, ventral. 14. *T. lita* male terminalia, dorsal. 15. *T. lita* male paraproct, ventral. 16. *T. lonicera* male terminalia, dorsal. 17. *T. lonicera* male paraproct, ventral. 18. *T. maura* male paraproct, ventral. 19. *T. parvula* male paraproct, ventral. (Pp = paraproct)

***Taeniopteryx lita* Frison**
 (Figs. 3, 14-15, 21)

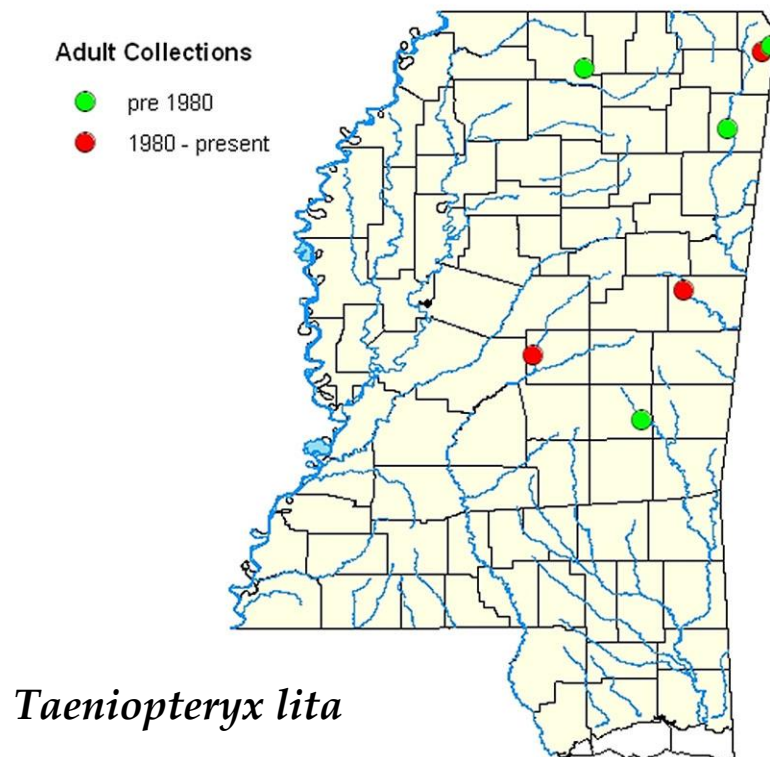
Taeniopteryx parvula Frison, 1929:354. In part
Taeniopteryx parvula Frison, 1935:345. In part

Taeniopteryx lita Frison, 1942:249. Holotype ♂ (Illinois Natural History Survey), Elizabethtown, Illinois
Taeniopteryx lita: Ricker & Ross, 1968:1426.
Taeniopteryx lita: Stewart, 2000:63.

Material examined. Mississippi: **Itawamba Co.**, Tombigbee River, Hwy 78, 14 mi E Tupelo, 5 February 1977, B. Stark, 2 ♂ (University of North Texas). **Leake Co.**, Yockanookany River, Red Dog Rd, 22 January 1996, B. Stark, R. Godwin, 9 ♂, 9 ♀. Same site, 3 January 2005, B. Stark, 2 ♂, 10 ♀. Same site, 5 January 2008, 4 ♂, 3 ♀. **Marshall Co.**, Tippah River, Potts Camp, 5 February 1977, B. Stark, 1 reared ♂ (University of North Texas). **Newton Co.**, Chunky River, I-20, 17 February 1979, B. Stark, 1 reared ♂ (University of North Texas). **Noxubee Co.**, Noxubee River, Lynn Creek Rd, 20 December 2006, M. Hicks, M. Howarter, 1 ♀. **Tishomingo Co.**, Little Cripple Deer Creek, CR 957, 4 January 2000, B. Stark, M.H. Alford, 1 ♂. Clear Creek, Hwy 172, 4 mi E Iuka, 5 February 1977, B. Stark, 1 ♂.

Remarks. Although, as noted above, Frison (1942)

included a male and two female specimens from Marshall Co. (Potts Camp) as paratypes of this species, Ricker & Ross (1968) placed the male from this series as a paratype of their new species, *T. lonicera*. Ricker & Ross (1968), but also provided a record of a single male *T. lita* from "2.5 miles SE of Iuka, Tishomingo Co." Stark (1979) reported specimens from Marshall, Newton and Tishomingo counties and Fullington & Stewart (1980) listed larval and adult records from the Tombigbee River in Itawamba Co. Previously unpublished records are given from Leake and Noxubee counties. Most specimen records are from medium to large streams in the northern through east central regions of the state (Fig. 3). Male genitalic structures are shown in Figs. 14-15, and the female 8th sternum in Fig. 21.



Taeniopteryx lita

Fig. 3. Distribution of *Taeniopteryx lita* in Mississippi.

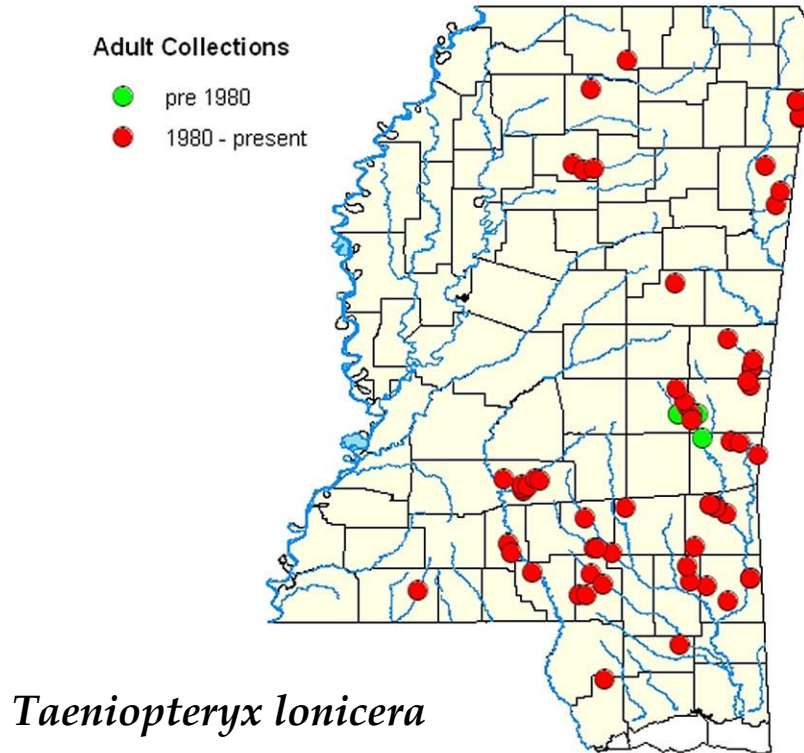
***Taeniopteryx lonicera* Ricker & Ross**
 (Figs. 4, 16-17, 22)

Taeniopteryx lita Frison, 1942:249. In part

Taeniopteryx lonicera Ricker & Ross, 1968:1427. Holotype ♂ (Illinois Natural History Survey), Laurel Fork, Blount Co., S of Blountsville, Alabama
Taeniopteryx lonicera: Stewart, 2000:64.

Material examined. Mississippi: **Amite Co.**, East Fork Amite River, North Newman Rd, date unknown, M.H. Alford, 1 ♂. **Clarke Co.**, Chunky River, Hwy 11, nr Enterprise, 15 January 1977, B. Stark, L. Temple, 2 ♂, 1 ♀. Long Creek, Hwy 514, 18 December 2007, B. Stark, 10 ♂, 5 ♀. Bucatunna Creek, Hwy 514, 18 December 2007, B. Stark, 2 ♂, 2 ♀. Little Okatupa Creek, Hwy 18, 18 January 2003, B. Stark, W. Hawkins, S. Cope, 1 ♂. **Covington Co.**, Okatoma River, Lux Rd, 2 January 2007, B. Stark, 1 ♀. Mayfield Branch, Gilmore Rd, 13 December 2006, B. Stark, M.B. Hicks, 1 larva. Bowie Creek, 26 December 2007, M.B. Hicks, W. Hicks, 1 ♂. Bowie Creek, Hwy 589, 11 December 2007, B. Stark, 4 ♂, 2 ♀. Same site, 9 January 2008, B. Stark, 1 ♂, 1 ♀. Beaver Creek, Maison Trigg Rd, 9 January 2008, B. Stark, 1 ♀. **Greene Co.**, Byrd Creek, 27 December 2007, M.B. Hicks, 1 ♂. Turkey Creek, Hwy 59, 27 December 2007, M.B. Hicks, 1 ♂, 3 ♀. Atkinson Creek, Hintonville Rd, 17 December 2007, B. Stark, 2 larvae. Big Creek, Hwy 57, 17 December 2007, 5 larvae. **Hancock Co.**, Hickory Creek, Skinner Rd, 14 January 2009, M.B. Hicks, D.E. Burt, 1 ♂. **Itawamba Co.**, Bull Mountain Creek, Cotton Gin Rd, 3 February 2009, M.B. Hicks, D.E. Burt, 17 ♂, 10 ♀. Tributary Bull Mountain Creek, Cotton Gin Rd, 3 February 2009, M.B. Hicks, D.E. Burt, 5 ♂, 1 ♀. Hurricane Creek, Cotton Gin Rd, 3 February 2009, M.B. Hicks, D.E. Burt, 1 ♂. Gum Creek, Hwy 23, 3 February 2009, M.B. Hicks, D.E. Burt, 2 ♀. Tributary Gum Creek, Hwy 23, 3 February 2009, M.B. Hicks, D.E. Burt, 1 ♂. **Jones Co.**, Big Creek, Bernis Hill Rd, 29 January 2009, M.B. Hicks, D.E. Burt, 1 ♀. **Kemper Co.**, Blackwater Creek, Porterville Creek Rd, 14 December 2006, B. Stark, M.B. Hicks, 11 ♂, 4 ♀. Straight Creek, Hwy 39, 14 December 2006, B. Stark, M.B. Hicks, 1 ♀. Sucarnoochee Creek, Hwy 45, 28 December 2006, M.B. Hicks, 3 ♂, 5 ♀. Pawticfaw Creek, Hwy 45, 28 December 2006, M.B. Hicks, 5 ♂, 14 ♀. **Lafayette Co.**, Hurricane Creek, CR 129, 1 January 2008, M.B. Hicks 2 ♂, 1 ♀. **Lamar Co.**, Hurricane Creek, Purvis-Columbia Rd, 29 January 2009, M.B. Hicks, D.E. Burt, 1 ♂. Gully Creek, Columbia Purvis Rd, 12 January 2007, M.H. Alford, 1 ♀. Black Creek, North Black Creek Rd, 14 January 2007, M.H. Alford, 1 ♀. Same site, 27 December 2007, M.B. Hicks, 1 ♂. Little Black Creek, WPA Rd, 12 January 2007, 1 ♀. **Lauderdale Co.**, Tallahatta Creek, I-20, 7 January 1978, B. Stark,

M. Stegall, 1 ♂, 4 ♀. Same site, 1 January 1978, B. Stark, 1 ♂. Same site, 12 January 1979, B. Stark, P. Hartfield, 2 ♂, 6 ♀. Chunky River, Point Wanika Lake Rd, 22 January 2009, M.B. Hicks, D.E. Burt, 1 ♂, 2 ♀. Cow Creek, I-20, 12 January 1979, B. Stark, P. Hartfield, 1 ♂. Big Reed Creek, Clarke Rd, 28 December 2006, M.B. Hicks, 1 ♂, 2 ♀. Ponta Creek, Hwy 45, 29 December 1998, B. Stark, 1 ♂. **Lawrence Co.**, Mill Creek, Hwy 587, 17 December 2008, B. Stark, 1 ♀. Coopers Creek, Hwy 587, 1 January 2008, B. Stark, 1 larva. **Marion Co.**, Tributary Pearl River, Hwy 587, Morgantown, 9 January 2008, 1 ♀. **Marshall Co.**, Oaklimer Creek, Potts Camp, Hwy 349, 15 February 2003, B. Stark, 1 ♂. **Monroe Co.**, Buttahatchie River, Buttahatchie Rd, 2 February 2009, M.B. Hicks, D.E. Burt, 1 ♂, 1 ♀. Buttahatchie River, Caledonia Rd, 2 February 2009, M.B. Hicks, D.E. Burt, 1 ♂. Weaver Creek, Old Golf Course Rd, 2 February 2009, M.B. Hicks, D.E. Burt, 1 ♂. **Newton Co.**, Tallahatta Creek, Dean Rd, 22 January 2000, B. Stark, 3 ♂, 4 ♀. Same site, 18 December 2002, B. Stark, J. Lacey, 2 ♂, 1 ♀. Same site, 18 December 2007, B. Stark, 1 ♀. Same site, 20 December 2008, B. Stark, 1 ♂, 1 ♀. Tallahatta Creek, Providence Church Rd, 22 January 2009, M.B. Hicks, D.E. Burt, 1 ♂, 2 ♀. Tallasher Creek, Hwy 494, 22 January 2009, M.B. Hicks, D.E. Burt, 1 ♂, 6 ♀. Chunky River, I-20, 7 January 1978, B. Stark, M. Stegall, 1 ♀. Same site, 17 February 1979, B. Stark, 1 ♂, 8 ♀. Chunky River, Pleasant Ridge Rd, 22 January 2000, B. Stark, 1 ♂. **Perry Co.**, Thompson Creek, Hwy 42, 27 December 2007, M.B. Hicks, 1 ♂, 1 ♀. Thompson Creek, Hintonville Rd, 17 December 2007, B. Stark, 5 ♂, 12 ♀. **Simpson Co.**, Rials Creek, Main Street, 18 December 1991, B. Stark, 1 ♂. Same site, 25 January 2005, B. Stark, 1 ♂. Same site, 30 December 2005, B. Stark, 1 ♀. Same site, 1 January 2008, B. Stark, 1 ♂. Same site, 22 January 2009, B. Stark, 1 ♀. Rials Creek, Hwy 43, 21 December 1990, B. Stark, 1 ♂, 5 ♀, 2 larvae. Same site, 28 December 1991, B. Stark, 1 ♀. Same site, 19 December 1992, B. Stark, 4 ♂, 8 ♀. Same site, 3 January 2006, B. Stark, 3 ♂, 2 ♀. Westville Creek, Hwy 43, 19 December 1992, B. Stark, 3 ♂, 1 ♀. Mill Creek, Bushtown Shivers Rd, 30 December 2002, B. Stark, 1 ♂. Mill Creek, Hwy 472, 3 January 2006, B. Stark, 3 ♀. Same site, 19 December 2007, B. Stark, 2 ♂. Limestone Creek, Buckley Rd, 19 December 2007, B. Stark, 4 larvae. Strong River, Hwy 28, 7 February



Taeniopteryx lonicera

Fig. 4. Distribution of *Taeniopteryx lonicera* in Mississippi.

1981, B. Stark, 1 ♂. **Stone Co.**, Bluff Creek, Hwy 26, 28 December 1998, B. Stark, 2 ♂. **Wayne Co.**, Thompson Creek, Boutwell Rd, 23 December 2006, M.H. Alfod, 5 ♀. Dry Fork Creek, Gatlin Rd, 3 January 2007, M.B. Hicks, 11 ♂, 6 ♀. Chickasawhay River, Waynesboro Shubuta Rd, 3 January 2007, M.B. Hicks, 2 ♂, 2 ♀. Yellow Creek, Waynesboro Shubuta Rd, 3 January 2007, M.B. Hicks, 1 ♂, 1 ♀. Silver Creek, Waynesboro Shubuta Rd, 3 January 2007, M.B. Hicks, 1 ♂, 2 ♀. Little Dry Fork Creek, Gatlin Rd, 3 January 2007, M.B. Hicks, 1 ♀. **Winston Co.**, Mill Creek, Hwy 25, 27 December 2006, M.B. Hicks, 1 ♂.

Remarks. Ricker & Ross (1968) included a male paratype from Potts Camp, Marshall Co., in their original series and Stark (1979) recorded the species from Amite, Clarke, Lauderdale, Marshall, Newton and Pike counties. In this study we record *T. lonicera* specimens from 14 additional counties (Covington, Green, Hancock, Kemper, Lafayette, Lamar, Lawrence, Marion, Monroe, Perry, Simpson, Stone, Wayne and Winston), including several coastal, or

near coastal counties (Fig. 4). Male genitalic structures are shown in Figs. 16-17 and the female 8th sternum in Fig. 22.

Taeniopteryx maura (Pictet) (Figs. 5, 10-12, 18)

Nemoura (*Taeniopteryx*) *maura* Pictet, 1841:361. Holotype ♀ (Zoologisches Museum der Humboldt-Universität, Berlin), Pennsylvania

Taeniopteryx maura: Ricker & Ross, 1968:1429.

Taeniopteryx maura: Stewart, 2000:64.

Material examined. Mississippi: **Alcorn Co.**, Mays Creek, 6 mi S Corinth, Hwy 45, 5 February 1977, B. Stark, 1 ♂, 10 larvae. Tuscumbia River Canal, Hwy 2, 2 February 2009, M.B. Hicks, D.E. Burt, 1 ♂, 4 ♀. **Benton Co.**, Shelby Creek, Hwy 4, 23 December 2006, B. Stark, 2 ♂. **Choctaw Co.**, Tributary Yockanookanay River, Hwy 12, Ackerman, 5 January 2008, B. Stark, 1 ♂. **Clay Co.**, Standing Reed Creek,

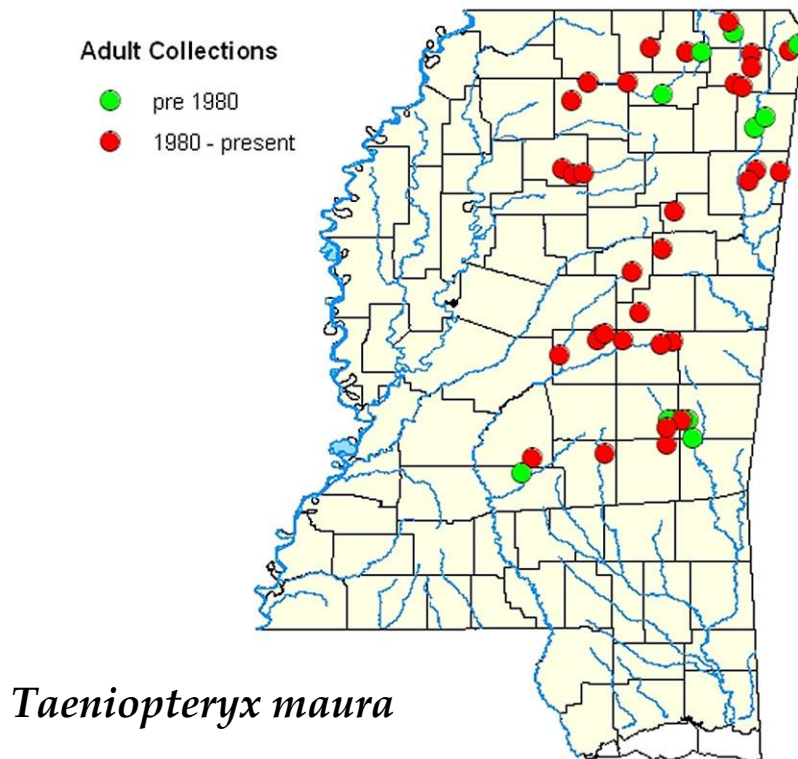
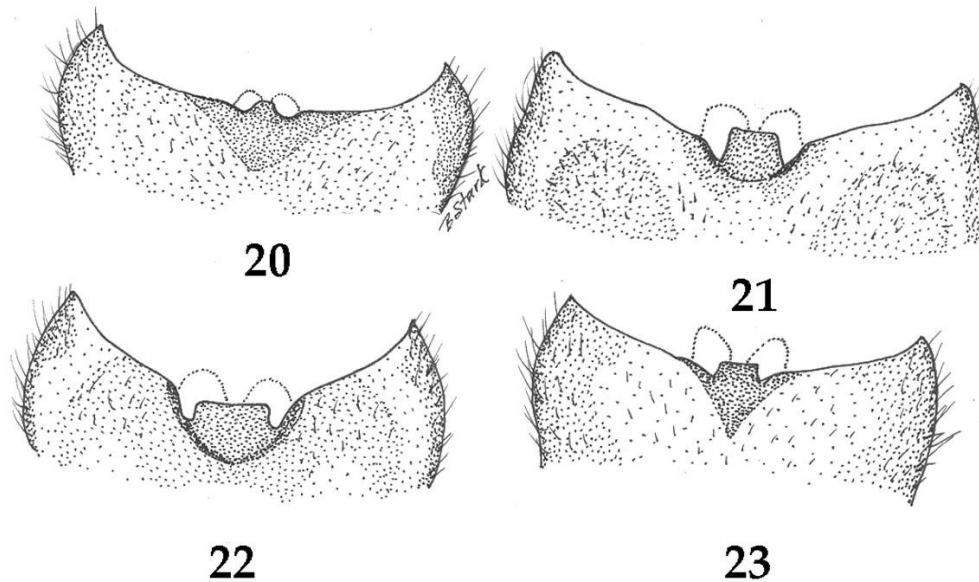


Fig. 5. Distribution of *Taeniopteryx maura* in Mississippi.

Hwy 46, 5 January 2008, B. Stark, 1 ♂. **Itawamba Co.**, Tombigbee River, Hwy 78, 10 February 1979, B. Stark, P. Hartfield, C. Cooper, 1 ♂. Tributary Gum Creek, Hwy 25, 2 mi NE Fulton, 10 February 1979, B. Stark, P. Hartfield, C. Cooper, 2 larvae. **Jasper Co.**, Souinlove Creek, CR 31, 22 January 2009, M.B. Hicks, D.E. Burt, 4 ♀. **Lafayette Co.**, Oxford, date unknown, P. Lago, 1 ♂ (University of Mississippi). 6 mi NW Oxford, date unknown, P. Lago, 1 ♂ (University of Mississippi). Lee Creek, CR 296, 1 January 2008, M.B. Hicks, 2 ♂. tributary Toby Tubby Creek, 1 January 2008, 1 ♂. **Lauderdale Co.**, Tallahatta Creek, I-20, 15 January 1977, B. Stark, L. Temple, 2 ♀. Same site, 7 January 1978, B. Stark, M. Stegall, 1 ♂. Same site, 12 January 1979, B. Stark, P. Hartfield, 1 ♂. Cow Creek, I-20, 12 January 1979, B. Stark, P. Hartfield, 1 ♂. Chunky River, Dunn's Falls, 7 January 1978, B. Stark, M. Stegall, 1 ♂. **Leake Co.**, Bibalucta Creek, Salem Rd, 28 December 2006, M.B. Hicks, 4 ♂, 3 ♀. Bibalucta Creek, Mars Hill Rd, 7 January 2008, B. Stark, 2 ♀. Lobucha Creek, Hwy 25,

20 December 2006, M.B. Hicks, M. Howarter, 3 ♂. Yockanookanay River, 1 mi W Saint Ann, 22 January 1996, B. Stark, R. Godwin, 3 ♂. **Marshall Co.**, Potts Camp, 17 February 1941, T.H. Frison, 2 ♂, 2 ♀ (Illinois Natural History Survey). **Monroe Co.**, Weaver Creek, Old Golf Course Rd, 2 February 2009, M.B. Hicks, D.E. Burt, 1 ♀. Halfway Creek, Old Hwy 75, 2 February 2009, M.B. Hicks, D.E. Burt, 1 ♂, 1 ♀. Sipsey Creek, Sipsey Fork Rd, 21 January 2008, B. Stark, 1 ♂. **Neshoba Co.**, Spring Creek, Hwy 21, 28 December 2006, M.B. Hicks, 2 ♂. Owl Creek, Hwy 491, 28 December 2006, M.B. Hicks, 3 ♂, 1 ♀. Lukfapa Creek, River Rd, 28 December 2006, M.B. Hicks, 3 ♂, 4 ♀. **Newton Co.**, tributary to Potterchitto Creek, 17 January 1998, J.W. Kyzar, 1 ♀. Tonacana Creek, I-20, 7 January 1978, B. Stark, M. Stegall, 1 ♂. Chunky River, I-20, 7 January 1978, B. Stark, M. Stegall, 1 ♀. Same site 17 February 1979, B. Stark, 2 ♂, 3 ♀. Chunky River, Hwy 80, 15 January 1977, B. Stark, L. Temple, 1 ♂. **Oktoberbeha Co.**, Trim Cane Creek, Old West Point Rd, 5 January 2008, B. Stark, 1 ♀. **Prentiss Co.**,



Figs. 20-23. *Taeniopteryx* female sternum 8. 20. *T. burksi*. 21. *T. lita*. 22. *T. lonicera*. 23. *T. parvula*.

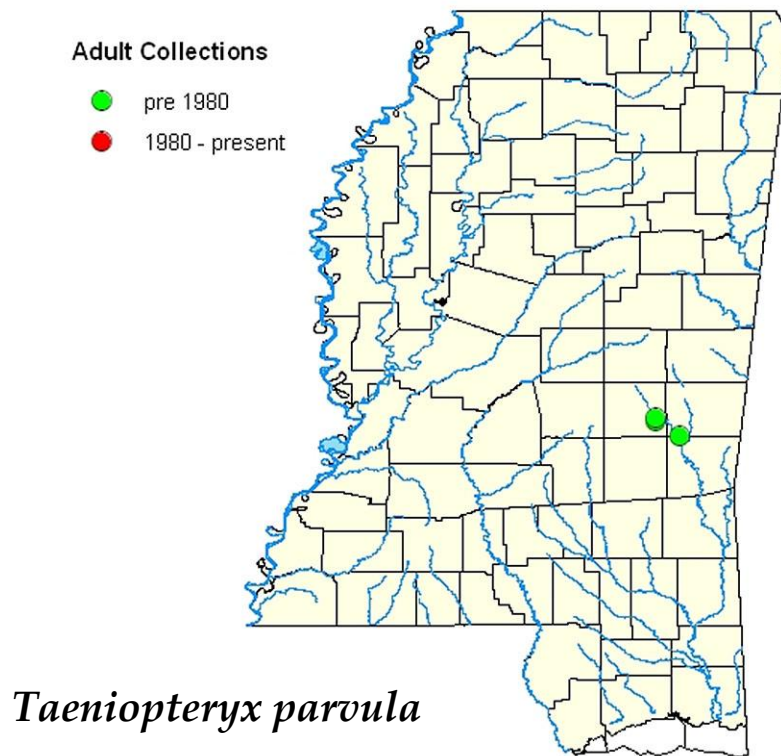
Big Rock Hollow, CR 1341, 4 January 2000, B. Stark, M.H. Alford, 1 ♂. Donovan Creek, Hwy 366, 4 January 2008, M.B. Hicks, 1 ♀. Donovan Creek, Hwy 36, 11 February 2008, M.B. Hicks, 1 ♀. Big Brown Creek, Hwy 30, 12 February 2008, M.B. Hicks, 1 ♀. Casey Creek, Hwy 366, 3 February 2009, M.B. Hicks, D.E. Burt, 1 ♂, 1 ♀. **Rankin Co.**, Campbell Creek, Spring Water Ranch Rd, 29 December 2006, M.B. Hicks, 1 ♀. **Simpson Co.**, Dabbs Creek, 1 mi N D'Lo, 21 February 1977, B. Stark, 1 ♂, 2 ♀. Same site, 16 February 1978, B. Stark 3 ♀. Smith Co., Ichusa Creek, Boyte Rd, 1 February 2003, B. Stark, 1 ♀. **Tippah Co.**, Little Hatchie River, Hwy 4, 23 December 2006, B. Stark, 4 ♂, 2 ♀, 2 larvae. Hatchie River, Hwy 4, 5 February 1977, B. Stark, 1 larva. **Tishomingo Co.**, Clear Creek, Hwy 172, 4 mi E Iuka, 5 February 1977, B. Stark, 3 larvae. tributary Little Cripple Deer Creek, CR 957, 4 January 2000, B. Stark, M.H. Alford, 1 ♂. Little Cripple Deer Creek, CR 957, 4 January 2000, B. Stark, M.H. Alford, 1 ♂. **Union Co.**, King Creek, Hwy 15, 5 February 1977, B. Stark, 6 larvae. Mill Creek, Hwy 349, 4 January 2008, M.B. Hicks, 1 ♀. **Winston Co.**, Noxapater Creek, Hwy 25, 27 December 2006, M.B. Hicks, 1 ♂, 1 ♀. **Yalobusha Co.**, Tributary Skuna River Canal, W Benwood, Hwy 330, 22

December 2006, B. Stark, 2 ♂, 1 ♀. York Creek, Hwy 330, 22 December 2006, B. Stark, 1 ♂. Turkey Creek, Hwy 330, 22 December 2006, B. Stark, 1 ♂, 1 ♀.

Remarks. Ricker & Ross (1968) first reported *T. maura* in Mississippi based on adult males and females collected from Potts Camp, Marshall Co. by T.H. Frison. Stark (1979) presented records from ten counties including Alcorn, Itawamba, Lafayette, Lauderdale, Marshall, Newton, Simpson, Tippah, Tishomingo and Union. The present study presents additional records from Clay, Jasper, Leake, Monroe, Neshoba, Oktibbeha, Prentiss, Rankin, Winston and Yalobusha counties. Distribution within the state extends from the Tennessee border counties southward to Rankin, Simpson, and Lauderdale counties (Fig. 5). Figs. 10-11, 18 show the male and female genital structures and Fig. 12 shows the distinctive male hind femur for this species.

Taeniopteryx parvula Banks
 (Figs. 6, 19, 23)

Taeniopteryx parvula Banks, 1918:7. Lectotype ♂ (Museum of Comparative Zoology, Harvard), Peach Grove Hill, Virginia (designated by Frison, 1942:249.)



Taeniopteryx parvula

Fig. 6. Distribution of *Taeniopteryx parvula* in Mississippi.

Taeniopteryx parvula: Ricker & Ross, 1968:1436.

Taeniopteryx pecos Baumann & Jacobi, 1984:147.
 Holotype ♂ (United States National Museum of Natural History), Tecolotito, Pecos River, San Miguel Co., New Mexico. Synonymy by Kondratieff & Baumann, 1988

Taeniopteryx parvula: Stewart, 2000:66.

Material examined. Mississippi: **Lauderdale Co.**, Chunky River, Dunn's Falls, 7 January 1978, B. Stark, M. Stegall, 1 ♂. **Newton Co.**, Chunky River, I-20, 7 January 1978, B. Stark, M. Stegall, 1 reared ♂, 1 ♀. Chunky River, Hwy 80, 15 January 1977, B. Stark, L. Temple, 1 ♂.

Remarks. This species is known from two counties in east central Mississippi (Fig. 6). Unfortunately, we were unable to recollect it from streams in the Chunky River drainage where it was collected in 1977 and 1978 samples. Perhaps it has been extirpated from the state, but we are hopeful it might still persist in the Dunn's Falls area which has not

been sampled recently. The species is more common in the central Atlantic and Northeastern states (Ricker & Ross 1968), but is reported from Alberta to Nova Scotia southward to New Mexico and South Carolina (Stewart 2000). Fig. 19 shows the ventral aspect of the male paraproct and Fig. 23 shows the female sternum 8.

DISCUSSION

Six taeniopterygid species are reported from 37 Mississippi counties based on samples collected from 1980-2009, and from published studies of Frison (1942), Stark (1979), Fullington & Stewart (1980), and Ricker & Ross (1969). Most records are based on adult specimens, but a few, especially of *Strophopteryx fasciata* include larval specimens. Independently, the MDEQ collected larval specimens from streams throughout the state and found taeniopterygid specimens (mostly determined as *Taeniopteryx* but with a few *Strophopteryx*) in 55

counties including 21 where no adult material has been collected (Fig. 7). As Fig. 7 indicates, taeniopterygid specimens have been collected, either by MDEQ or by the authors, from all regions of the state except the southwestern counties, the Mississippi Delta and a few scattered counties in other regions. Many of the

counties without taeniopterygid records have been sampled rather intensively and, particularly in the southwestern counties, these sites have often produced winter emerging capniids and other stoneflies, but taeniopterygids have not been collected, and may be absent from this region.

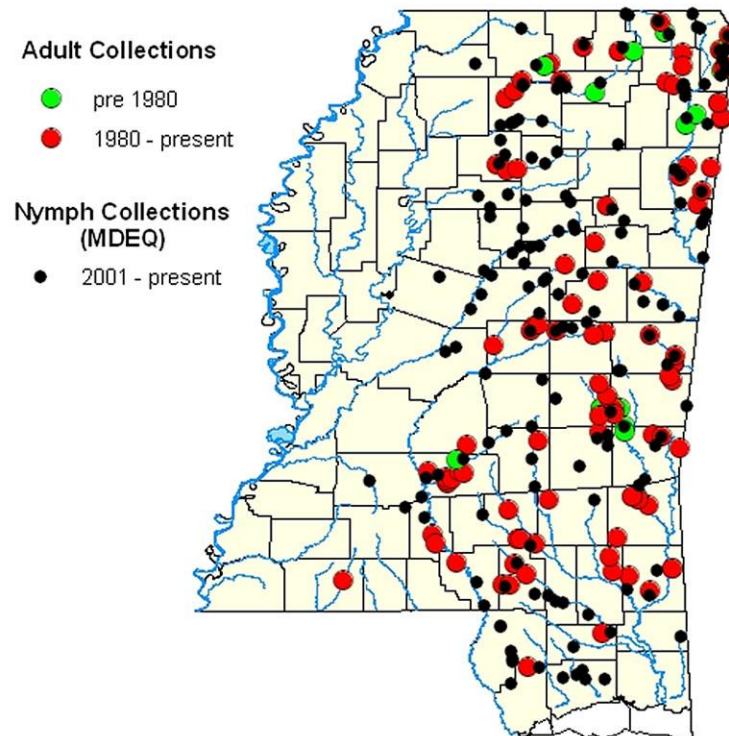


Fig. 7. Distribution of all Taeniopterygidae within Mississippi. MDEQ sites = small, dark circles, sites based on literature and personal collections = larger, green circles.

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