

**Reported to be the most poisonous beetle in the world:**

The pupal stage of the leaf beetle *Diamphidia simplex* is used by hunters in Ghanzi District, Totswana, as a source of arrow poison.

**The Leonard Plukenet collection:**

This oldest insect collection comprises a single bound volume, with the specimens mounted on the pages - being pressed rather like flowers and glued in place. Made around 1690, this is probably one of the oldest insect collections surviving largely intact.

**The world's longest insect:**

A 56.7 cm-long stick-insect, *Phobaeticus chaini*, was recently described from Borneo and is known from only three specimens.

\*\*\*\*\*  
 \*\*\*\*\*  
 \*\*\*\*\*  
 \*\*\*\*\*  
 \*\*\*\*\*  
 \*\*\*\*\*  
 \*\*\*\*\*  
 \*\*\*\*\*  
 \*\*\*\*\*

**MISSISSIPPI PLUME MOTHS  
 FROM THE BRYANT MATHER COLLECTION  
 (LEPIDOPTERA: PTEROPHORIDAE)**

BY

**D. L. MATTHEWS**

Bryant Mather collected more than 1,000 plume moths in Mississippi from 1958 to 1999. These specimens, together with material from the collections of the Mississippi Entomological Museum (MEM) at Mississippi State and the University of Mississippi, serve as the foundation for our knowledge of the state's fauna. The family Pterophoridae includes more than 1,139 species in 92 genera worldwide (Gielis 2003) with more than 171 species in 28 genera in North America north of Mexico. There are currently 32 pterophorid species and 16 genera recorded from Mississippi, approximately 19% of the nearctic fauna. Along with distributional data, the results of Mather's consistent collecting efforts in several counties provide useful information on the phenology and relative abundance of several species. A list of species and summary of specimen data (numbers collected, counties, and months for each) are presented (Table 1) along with distribution maps and images (Figs. 1-16) of some adults commonly found in the state.

**Materials and Methods**

Specimens from Mather's collection include records for 35 of the 82 Mississippi counties and were collected throughout the year. Many specimens are from Hinds County, Mather's residence in Clinton, and Warren County, where he worked for the US Army Corps of Engineers Structures Laboratory in Vicksburg. Most of the material was collected by Mather himself but a few specimens from the 1920's and 30's are from what was then Mississippi State College, "Miss. A& M College, and "Agr. Col. Miss." and in the 1990's, Mather's neighbors Millie and Eddie Roshore contributed numerous specimens. Rick Kergosien and Ricky Patterson also added to the Mather collection, increasing the coverage for several counties, especially in the southern part of the state. Counties where species are known to occur based on all available records are shaded in blue on the distribution maps with a black dot indicating specimens recorded from Mather's collection.

Mather's material was identified by the author from 1988-2000. While it was possible to determine many

specimens by wing maculation, others such as the *Hellinsia* borers, which are typically plain light tan to white, required dissection of genitalia. Genitalia were prepared using standard techniques and either mounted on permanent slides with Canada Balsam or stored in microvials in glycerin. All of Mather's specimens include a unique specimen number. These numbers, for all Lepidoptera exceeding 184,538 by October 1999, were on a separate label on each specimen prior to determination and then replaced by Mather with a handwritten duplicate determination label including the number. Label data were separately catalogued by both the author and Mather and organized by specimen number and by species. Mather's Pterophoridae are deposited at MEM, the Florida State Collection of Arthropods (FSCA) at the McGuire Center for Lepidoptera and Biodiversity, Florida Museum of Natural History (MGCL), the National Museum of Natural History (USNM), and other institutions as well as the author's collection (DMC).

### Results

The total number of individuals recorded for each species collected, number of county records, and months during which each species was collected is summarized in Table 1. In all, more than 1,500 specimens were examined and identified to species, 1,296 of these are from the Mather collection. Two specimens, females of the genus *Capperia*, remain unknown. Larval hostplants and life histories are known for all but four species (*Capperia* sp., *Stenoptilia pallistriga*, *Paraplatyptilia carolina*, and *Hellinsia citrites*) (Matthews & Lott 2005, Matthews 2006).

**ABUNDANCE.** Of the 32 species recorded for the state, *Pselnophorus belfragei* is by far the most common in terms of overall abundance with a total of 591 specimens, accounting for 39% of the material examined. The

**Table 1.** List of Pterophoridae species recorded from Mississippi.

	Species	# specimens	# counties	months collected
1.	<i>Lioptilodes albistriolatus</i> (Zeller, 1871)	99	14	-FMAMJ-ASOND
2.	<i>Platyptilia carduidactylus</i> (Riley, 1869)	4	4	--MA-J-----
3.	<i>Stenoptilodes brevipennis</i> (Zeller, 1874)	27	8	J---M--ASO-D
4.	<i>Stenoptilodes taprobanes</i> (Felder & Rogenhofer, 1875)	16	4	J---M-JASO-D
5.	<i>Stenoptilia pallistriga</i> Barnes & McDunnough, 1913	15	5	--MAM-JA-OND
6.	<i>Stenoptilia zophodactylus</i> (Duponchel, 1838)	4	4	--MAM-J-----
7.	<i>Paraplatyptilia auriga</i> (Barnes & Lindsey, 1921)	4	3	---AM-----
8.	<i>Paraplatyptilia carolina</i> (Kearfott, 1907)	4	2	----MJ-----
9.	<i>Oxyptilus delawaricus</i> Zeller, 1873	3	2	----MJ-----
10.	<i>Capperia</i> sp.	2	1	----MJ-----
11.	<i>Geina buscki</i> (McDunnough, 1933)	42	16	---AMJ-----
12.	<i>Geina tenuidactyla</i> (Fitch, 1854)	5	3	-----
13.	<i>Geina periscelidactylus</i> (Fitch, 1854)	6	5	----MJ-----
14.	<i>Geina sheppardi</i> B. Landry, 1989	2	1	-----
15.	<i>Sphenarches anisodactylus</i> (Walker, 1864)	19	3	-----SON-
16.	<i>Buckleria parvulus</i> (Barnes & Lindsey, 1921)	33	8	---AMJJ-SO--
17.	<i>Exelastis pumilio</i> (Zeller, 1873)	12	7	----M-JASO--
18.	<i>Pselnophorus belfragei</i> (Fish, 1881)	591	22	JFMAMJJASON-
19.	<i>Emmelina monodactyla</i> (Linnaeus, 1758)	91	10	JFMAMJJ-SOND
20.	<i>Oidaematophorus eupatorii</i> (Fernald, 1891)	1	1	-----J-----
21.	<i>Hellinsia elliottii</i> (Fernald, 1893)	2	2	-----J-----
22.	<i>Hellinsia paleaceus</i> (Zeller, 1873)	40	8	-FMAMJJAS---
23.	<i>Hellinsia inquinatus</i> (Zeller, 1873)	36	9	--MAMJJAS---
24.	<i>Hellinsia citrites</i> (Meyrick, 1908)	1	1	-----S---
25.	<i>Hellinsia balanotes</i> (Meyrick, 1908)	63	8	--MAMJJASON-
26.	<i>Hellinsia kellicottii</i> (Fish, 1881)	72	16	--MAMJJAS---
27.	<i>Hellinsia chlorias</i> (Meyrick, 1908)	8	6	----MJ-AS---
28.	<i>Hellinsia lacteodactylus</i> (Chambers, 1873)	15	6	----MJJ-----
29.	<i>Hellinsia glenni</i> (Cashatt, 1972)	59	10	--MAM-----
30.	<i>Hellinsia unicolor</i> (Barnes & McDunnough, 1913)	46	10	--MAMJJA----
31.	<i>Adaina simplicius</i> (Grossbeck, 1917)	100	9	---AMJJASO--
32.	<i>Adaina ambrosiae</i> (Murtfeldt, 1880)	86	14	---A-JJASON-

larvae of this species feed on leaves of pony-foot, *Dichondra caroliniensis* (Convolvulaceae), a common herbaceous plant in shady moist areas of lawns. Also numerous are the composite flower borers *Adaina simplicius* (100 specimens) and *Lioptilodes albistriolatus* (99 specimens). The morning glory plume moth, *Emmelina monodactyla* (91 specimens) is abundant where hedge bindweed, *Calystegia sepium* and other species of Convolvulaceae are present. The ragweed plume moth, *Adaina ambrosiae*, an external feeder of several composite species is next with 86 specimens. The *Hellinsia* stem borers, a morphologically distinct group within the genus, include 6 species (*H. balanotes*, *H. kellicottii*, *H. chlorias*, *H. lacteodactylus*, *H. glenni*, and *H. unicolor*). *Hellinsia kellicotti*, the goldenrod (*Solidago*) borer and *H. balanotes*, a borer of several species of *Baccharis*, were the most commonly encountered (72 and 63 specimens each). Adults of *H. balanotes* are relatively large and conspicuous, with wing spans up to 4.2 cm.

**DISTRIBUTION.** Samples from 34 counties show *Pselnophorus belfragei* to be the most widely distributed (22 counties), followed by *Geina buscki* (16), *Hellinsia kellicottii* (16), *Adaina ambrosiae* (14), and *Lioptilodes albistriolatus* (14). Five species appear to be limited to the northern half of the state: *Geina periscelidactyla*, *G. tenuidactyla*, *Oxyptilus delawaricus*, *Paraplatyptilia auriga*, and *P. carolina*. These and four others occur in the northeastern states and extend into the southern Appalachians. Three species with primarily tropical and subtropical distributions, *Sphenarches anisodactylus*, *Lioptilodes albistriolatus*, and *Exelastis pumilio*, are presently known to extend as far north as Warren county, the latter species to Oktibbeha and Lowndes counties. In comparing the known Mississippi fauna with Florida (41 species total) which includes additional neotropical species but lacks the more temperate fauna, 23 species occur in both states. With the possible exception of *Capperia* sp., no endemic species were found.

**PHENOLOGY.** Adults have been collected throughout the year, with at least 4 species available in any given month. The greatest diversity is found April through June with a peak of 26 species in May. Another smaller peak occurs in September with 16 species recorded. Two species, *Pselnophorus belfragei* and *Emmelina monodactyla* have been collected 11 months out of the year. The latter is known to overwinter as adults. Some of the more typically northern species, such as the grape feeders, *Geina periscelidactylus* and *G. sheppardi* (May, and May-June), are single brooded, while others such as *Lioptilodes albistriolatus* use several hosts and have multiple or continuous broods.

### Discussion

As would be expected with more extensive sampling, Mather's collecting near his home in Hinds County yielded the most species recorded (20), followed by Warren (19), Harrison (19), and Oktibbeha (18) counties. Additions to the state fauna are expected as new material from local and habitat specific surveys is identified and more counties, relic habitats, and specific hostplants are sampled. As the Mississippi pterophorid fauna includes both temperate and subtropical species, the state as a whole has the potential for several more species. Some species which have not been recorded but are possible given their regional distributions include *Exelastis rhynchosiae* (Dyar), *Dejongia californicus* (Walsingham), and *Megalorhipida leucodactyla* (Fabricius). Bryant Mather's steadfast collecting efforts have provided a significant contribution to our knowledge of Pterophoridae and other lepidopteran families in the state and his collection provides an important base resource for further surveys.

### Acknowledgements

In addition to Bryant Mather, the following individuals are acknowledged for providing material examined and/or technical support: Richard L. Brown (MEM), Paul K. Lago (Univ. Miss.), Reed A. Watkins (USNM), Terry A. Lott (FLMNH), and Jacqueline Y. Miller (MGCL). Thanks are also due to Andrew D. Warren (MGCL) and Jacqueline Y. Miller for their reviews of the text.

### References

- Gielis, C., 2003. Pterophoridae & Alucitoidea - In: *World Catalogue of Insects* 4: 1-198.
- Matthews, D. L. & Lott, T. A., 2005. Larval Hostplants of the Pterophoridae (Lepidoptera: Pterophoroidea). *Memoirs of the American Entomological Institute* 76: 1-324.
- Matthews D. L., 2006. *Larvae and Pupae of Nearctic Pterophoridae: A Synopsis of Life Histories, Morphology, and Taxonomy (Lepidoptera: Pterophoroidea)*. Ph.D. Dissertation, University of Florida, Gainesville. 959 pp.



Figures 1-16. Some Mississippi plume moths: 1) *Lioptilodes albistriolatus*; 2) *Platyptilia carduidactylus*; 3) *Stenoptilodes taprobanes*; 4) *Stenoptilia pallistriga*; 5) *Paraplatyptilia auriga*; 6) *Geina buscki*; 7) *G. periscelidactylus*; 8) *Sphenarches anisodactylus*; 9) *Pselnophorus befragei*; 10) *Emmelina monodactyla*; 11) *Hellinsia paleaceus*; 12) *H. inquinatus*; 13) *H. glenni*; 14) *H. unicolor*; 15) *Adaina simplicius*; 16) *A. ambrosiae*.



*Lioptilodes albistriolatus*



*Platyptilia carduidactylus*



*Stenoptilodes brevipennis*



*Stenoptilodes taprobanes*



*Stenoptilia pallistriga*



*Stenoptilia zophodactylus*



*Paraplatyptilia auriga*



*Paraplatyptilia carolina*



*Oxyptilus delawaricus*



*Capperia sp.*



*Geina buscki*



*Geina tenuidactyla*



*Geina periscelidactylus*



*Geina sheppardi*



*Sphenarches anisodactylus*



*Buckleria parvulus*

