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A State Record for the Oconee Scorpionfly, *Panorpa oconee* Byers
(Mecoptera: Panorpidae), in Florida

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A State Record for the Oconee Scorpionfly, *Panorpa oconee* Byers
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Abstract. I provide the first state record for the Oconee scorpionfly, *Panorpa oconee* Byers, from Putnam County, Florida. This is the southernmost record for *P. oconee*, extends its range 321 km south of its known distribution and, if valid, adds a seventh described species of panorpid, and twelfth mecopteran, indigenous to Florida.

Introduction

Mecoptera are a small assemblage of largely understudied, ancestral, and undoubtedly paraphyletic taxa of holometabolous insects represented by more than 610 known, extant species arranged in as many as 33 genera and 9 families worldwide (Willmann 1989; Byers 2005; Beutel and Baum 2008; Dunford and Somma 2008; Beutel et al. 2009; Hua and Cai 2009; Machado et al. 2009; Ren et al. 2009; Friedrich and Beutel 2010). Previous studies (Dunford et al. 2007; Somma and Dunford 2008, 2009a, b) have documented at least 12 species of mecopterans occurring in Florida, representing the families Meropeidae (one species), Bittacidae (4 species) and Panorpidae (6 described species, one previously thought to be undescribed).

Panorpa oconee Byers, the Oconee scorpionfly, is distributed in central, west-central, and portions of northeastern Georgia (Byers 1993). The vegetation of the type locality of *P. oconee* consisted of leafy vegetation bordering pine woods mixed with saplings of hardwoods and juniper, and a ground cover of pine needles (Byers 1993). This species rests on vegetation somewhat higher than other *Panorpa* and is often found in the lower branches of hardwood trees (W. Bicha pers. comm. 2010). Herein, I provide the first state record for *Panorpa oconee* Byers, in Florida, and provide hypotheses for the provenance of the specimen and distribution of this species.

Methods

Wesley J. Bicha reexamined a *Panorpa* specimen in the Florida State Collection of Arthropods (FSCA), from Putnam County, Florida, listed as undescribed by Somma and Dunford (2008), and determined its species identification; separating it from other southeastern members of the *Panorpa virginica* Banks species group principally by using the morphology of the male genital bulb in ventral aspect. These characters include (1) the short and closely spaced projections defining the mesal cups of the dististyles, (2) the elongate, slightly bowed ventral parameres, and (3) the flattened, upturned hamula with a broadly rounded apex, and shallow median apical notch (Byers 1993; W. Bicha pers. comm. 2009, 2010).

Results

The specimen is an adult male *P. oconee* collected on 3 August 1948 from an unspecified locality in Putnam County, Florida, by an unknown collector. A mass-generated township/range label in the specimen vial is incomplete (Fig. 1). This poorly preserved, mangled, headless FSCA specimen is in alcohol, and was originally listed by Somma and Dunford (2008) as an undescribed species from the *Panorpa virginica* species complex. This specimen is the first state record for Florida and extends the range of *P. oconee* approximately 321 km south of its previously known distribution. This is the southernmost record for *P. oconee* in continental North America if the label data are valid.

Discussion

Both the exact locality and the collector for the *P. oconee* specimen from Putnam County, Florida, are unknown. However, Putnam County was the focus of a number of biological studies and surveys during the 1930s and 1940s, with some emphasis on the areas of Welaka and Interlachen (Hobbs 1942; Laessle 1942; Moore 1946, 1949; Young 1950; Young et al. 1955; label data in appendices of Woodruff and Beck 1989). Therefore, any mecopteran collected in Putnam County during the 1940s is not surprising. Moreover, suitable habitat for *P. oconee* potentially exists in the vast mosaic of habitats in this area (Laessle 1942).

If there is a population of *P. oconee* in northern peninsular Florida, a disjunction from the Georgian populations may have been generated by the complexities of Pleistocene inundation (Laessle 1942; Cooke 1945; Neill 1957; Fernald 1981; Webb 1990). However, the currently perceived discontinuity of *P. oconee* in Florida may simply be the result of collection bias. Floridian *P. oconee* likely could be continuous with Georgian populations and represent a southward post-Pleistocene pattern of invasion (Webb 1990; Soltis et al. 2006). The 321 km region between the Florida record and the nearest Georgian populations is largely undercollected for mecopterans in both northern peninsular Florida (Somma and Dunford 2008, 2009b) and southern Georgia (W. Bicha pers. comm. 2009). Moreover, the only mecopteran species ever documented for Putnam County, Florida, is *Panorpa lugubris* Swederus, the black scorpionfly, despite the potential for other common northern Floridian species to occur in this region (Somma and Dunford 2009b). This indicates negative collection bias for mecopterans. The potential existence of a continuous distribution for *P. oconee* from Georgia southward through to this region of Florida cannot easily be dismissed; the current absence of evidence does not indicate evidence of absence (Sagan 1995: 213).

Alternatively, this specimen may not actually indicate that *P. oconee* is part of Florida's indigenous fauna. The Florida specimen could represent a nonindigenous introduction, perhaps through accidental anthropogenic transport, or may simply be a mislabeled specimen from Georgia. In this lattermost scenario, the labeler could have confused Putnam County, Georgia, a locality closer to the known range of *P. oconee* (Byers 1993), with the Florida county of the same name.

Specimens of *P. oconee* have been collected in northeastern to west-central Georgia from 31 August through 2 October (Byers 1993; W. Bicha pers. comm. 2010). Further collecting for this species during summer and autumn, in appropriate habitat in Putnam County, Florida, perhaps in or near the Welaka area, will help verify the presence or absence of *P. oconee* in the state. If corroborated with at least one more specimen, it would more clearly add a seventh described panorpid and twelfth mecopteran to Florida's indigenous fauna.

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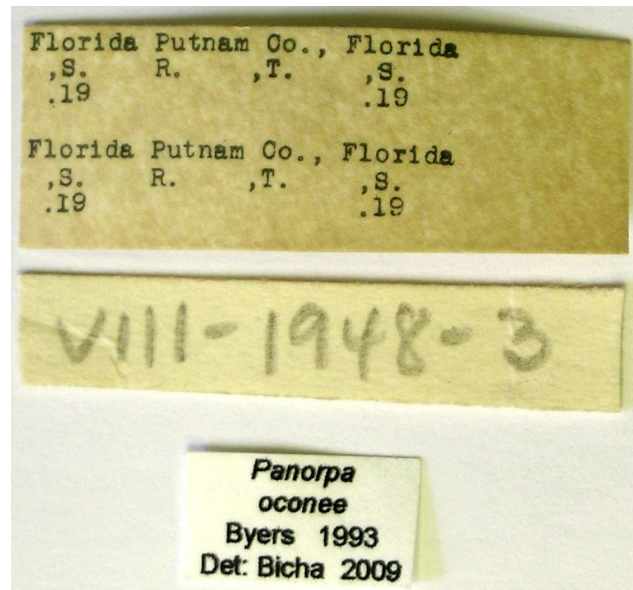


Figure 1. Label data for the Florida *Panorpa oconee* Byers specimen in FSCA. Image by Gary J. Steck.

Literature Cited

- Beutel, R. G., and E. Baum. 2008.** A longstanding entomological problem finally solved? Head morphology of *Nannochorista* (Mecoptera, Insecta) and possible phylogenetic implications. *Journal of Zoological Systematics and Evolutionary Research* 46: 346-367.
- Beutel, R. G., N. P. Kristensen, and H. Pohl. 2009.** Resolving insect phylogeny: The significance of cephalic structures of the Nannomecoptera in understanding endopterygote relationships. *Arthropod Structure & Development* 38: 427-460.
- Byers, G. W. 1993.** Autumnal Mecoptera of southeastern United States. *University of Kansas Science Bulletin* 55: 57-96.
- Byers, G. W. 2005 [2004].** Order Mecoptera. Scorpionflies and hangingflies. p. 662-668. *In*: C. A. Triplehorn and N. F. Johnson (editors). *Borror and DeLong's introduction to the study of insects*. Seventh edition. Thomson Brooks/Cole; Belmont, CA. 864 p.
- Cooke, C. W. 1945.** Geology of Florida. State of Florida, Department of Conservation, Florida Geological Survey, *Geological Bulletin* 29: i-ix, 1-339.
- Dunford, J. C., P. W. Kovarik, L. A. Somma, and D. Serrano. 2007.** First state records for *Merope tuber* (Mecoptera: Meropeidae) in Florida and biogeographical implications. *Florida Entomologist* 90: 581-584.
- Dunford, J. C., and L. A. Somma. 2008.** Scorpionflies (Mecoptera). p. 3304-3310, pl. 97. *In*: J. L. Capinera (editor). *Encyclopedia of entomology*. Second ed. Vol. 4. S-Z. Springer; [Dordrecht].
- Fernald, E. A. (editor). 1981.** *Atlas of Florida*. The Florida State University Foundation, Inc.; Tallahassee. 276 p.
- Friedrich, F., and R. G. Beutel. 2010.** The thoracic morphology of *Nannochorista* (Nannochoristidae) and its implications for the phylogeny of Mecoptera and Antliophora. *Journal of Zoological Systematics and Evolutionary Research* 48: 50-74.
- Hobbs, H. H., Jr. 1942.** The crayfishes of Florida. University of Florida Publication, *Biological Science Series* 3(2): 1-179, pl. I-XXIV.
- Hua, B.-Z., and L.-J. Cai. 2009.** A new species of the genus *Panorpa* (Mecoptera: Panorpidae) from China with notes on its biology. *Journal of Natural History* 43: 545-552.
- Laessle, A. M. 1942.** The plant communities of the Welaka area with special reference to correlations between soils and vegetational succession. University of Florida Publication, *Biological Science Series* 4(1): 1-115, Fig. 15-16, pl. I-XIV.
- Machado, R. J. P., F. S. P. Godoi, and J. A. Rafael. 2009.** Neotropical Mecoptera (Insecta): New generic synonymies, new combinations, key to families and genera, and checklist of species. *Zootaxa* 2148: 27-38.
- Moore, J. C. 1946.** Mammals from Welaka, Putnam County, Florida. *Journal of Mammalogy* 27: 49-59.
- Moore, J. C. 1949.** Putnam County and other Florida Mammal notes. *Journal of Mammalogy* 30: 57-66.
- Neill, W. T. 1957.** Historical biogeography of present-day Florida. *Bulletin of the Florida State Museum, Biological Sciences* 2: 175-220.
- Ren, D., C. C. Labandeira, J. A. Santiago-Blay, A. Rasnitsyn, CK. Shih, A. Bashkuev, M. A. V. Logan, C. L. Hotton, and D. Dilcher. 2009.** A probable pollination mode before angiosperms: Eurasian, long-proboscid scorpionflies. *Science* 326: 840-847 + Supplement [online] available on URL: <http://www.sciencemag.org/cgi/content/full/326/5954/840/DC1>. (Last accessed 5 May 2010.)
- Sagan, C. 1995.** *The demon-haunted world. Science as a candle in the dark*. Random House; New York. 475 p.
- Soltis, D. E., A. B. Morris, J. S. McLachlan, P. Manos, and P. S. Soltis. 2006.** Comparative phylogeography of unglaciated eastern North America. *Molecular Ecology* 15: 4261-4293.
- Somma, L. A., and J. C. Dunford. 2008.** Preliminary checklist of the Mecoptera of Florida: Earwigflies, hangingflies, and scorpionflies. *Insecta Mundi* 0042: 1-9.
- Somma, L. A., and J. C. Dunford. 2009a.** The Florida scorpionfly, *Panorpa floridana* Byers (Mecoptera: Panorpidae). Florida Department of Agriculture & Consumer Services, Division of Plant Industry, *Entomology Circular* 420: 1-3.
- Somma, L. A., and J. C. Dunford. 2009b.** Records for *Bittacus* hangingflies and *Panorpa* scorpionflies (Mecoptera: Bittacidae and Panorpidae) in Florida. *Insecta Mundi* 0084: 1-5.

- Webb, S. D. 1990.** Historical biogeography. p. 70-100. *In*: R. L. Myers and J. J. Ewel (editors). *Ecosystems of Florida*. University of Central Florida Press; Orlando. 765 p.
- Willmann, R. 1989.** Evolution und phylogenetisches System der Mecoptera (Insecta: Holometabola). *Abhandlungen der Senckenbergischen Naturforschenden Gesellschaft* 544: 1-153.
- Woodruff, R. E. and B. M. Beck. 1989.** The scarab beetles of Florida (Coleoptera: Scarabaeidae) part II. The May or June beetles (genus *Phyllophaga*). *Arthropods of Florida and Neighboring Land Areas* 13: i-vi, 1-226.
- Young, F. N. 1950.** Notes on the habits and habitat of *Geotrupes chalybaeus* LeConte in Florida. *Psyche* 57: 88-92.
- Young, F. N., T. H. Hubbell, and D. W. Hayne. 1955.** Further notes on the habits of *Geotrupes* (Coleoptera: Geotrupidae). *Psyche* 62: 53-54.

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