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First North American record of the Palaearctic rhinophorid *Stevenia deceptoria* (Loew) (Diptera: Rhinophoridae)

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The Rhinophoridae (Diptera) have a cosmopolitan distribution and a known fauna of about 150 species (Cerretti & Pape 2007). So far as known, all species are parasitoids of terrestrial woodlice (sow bugs) of the order Isopoda (Oniscoidea) (Pape 2010). Female rhinophorids lay eggs in the vicinity of potential hosts and the planidial first instars parasitize sow bugs as they pass by (Pape 1998).

The only rhinophorids native to North America belong to the genera *Apomorphyto* Cerretti, Lo Giudice & Pape (with one described species from Costa Rica and an undetermined species from Nicaragua) and *Bezzimyia* Townsend (Pape 2010; Cerretti *et al*. 2014). *Bezzimyia* is a mostly Neotropical genus of 17 known species with two species reaching the southern United States (Texas and Arizona) (Pape & Arnaud 2001). Recently, the monophyly of *Bezzimyia* was called into question but the limits of the genus have yet to be formally revised (Cerretti *et al*. 2014). Two rhinophorids are well known as introductions from the Palaearctic Region, *Melanophora roralis* (Linnaeus) and *Phyto discrepans* Pandellé, with the former widespread in eastern North America, West Indies and South America (Crosskey 1977; Pape 2010) and the latter known only from Newfoundland (Canada) (Wood 1987). A key to separate the two species was given by Wood (1987).

The genus *Stevenia* Robineau-Desvoidy is currently known from 23 species, all native to the Old World and most diverse in the West Palaearctic Region (Cerretti & Pape 2007). One species native to Europe and North Africa, *Stevenia deceptoria* (Loew), was reported recently as an introduction to Argentina by Mulieri *et al*. (2010). The authors recorded the species from several locations within Buenos Aires Province and hypothesized that it became established through the introduction of parasitized woodlice originating from the Palaearctic Region. Introduced woodlice are common in the New World (Jass & Klausmeier 2000) and parasitized immigrants or transported puparia most likely account for the presence of all three exotic rhinophorid species in North America. Mulieri *et al*. (2010) summarized the Palaearctic distribution of *S. deceptoria*, gave locality records of the species in Argentina, and provided a key to the five genera of Rhinophoridae known from the New World.

Here we report another finding of *Stevenia deceptoria* in the Americas, this time from Ohio in North America. All records are from a single locality, the backyard of author GAD. Specimens were caught in a six metre Malaise trap (BioQuip® Products, Inc.) and killed in the trap head using a small piece of Hot Shot® No-Pest® Strip [active ingredient 2,2-dichlorovinyl dimethyl phosphate 18.6%]. Trap samples were frozen and later sorted, with selected Diptera subsequently pinned and labeled. The first two specimens of *S. deceptoria* to be detected were removed, pinned, and labeled by JEOH and identified as *S. deceptoria* by PC (Cerretti & Pape 2007) (one of these specimens is shown in Fig. 1). Additional specimens were later found in earlier and later samples by GAD. Specimens are housed in the Canadian National Collection of Insects, Ottawa, Canada (CNC) and the personal collection of Gregory Dahlem, Cincinnati, USA (GAD).

Specimen data. *Locality*: United States, Ohio, Hamilton County, Anderson Township, 39°4.93′N 84°24.37′W [Cincinnati], suburban backyard, coll. G.A. Dahlem. *Dates and specimens*: 28.v.2013, 3 ♀♀ (GAD); 30.v.2013, 1 ♂ (GAD); 12.vii.2013, 2 ♀♀ (GAD); 4.viii.2014, 1 ♀ (GAD); 27.v.2015, 1 ♀ (CNC); 5.vi.2015, 1 ♀ (CNC); 22.vi.2015, 2 ♀♀ (GAD); 23.vi.2015, 1 ♀ (GAD); 24.vi.2015, 2 ♀♀ (GAD).

The backyard habitat where specimens of *S. deceptoria* were captured is rectangular in shape and about 1050 square

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metres in size. Half of the yard is wooded and half is mowed grass. The largest trees are a single American sycamore (*Platanus occidentalis* L.) and seven white ash (*Fraxinus americana* L.) followed by five sugar maple (*Acer saccharum* Marshall) and two hackberry (*Celtis occidentalis* L.). One to several trees of the following species are also present: flowering dogwood (*Cornus florida* L.), eastern red cedar (*Juniperus virginiana* L.), eastern redbud (*Cercis canadensis* L.), honey locust (*Gleditsia triacanthos* L.), Kentucky coffeetree (*Gymnocladus dioicus* (L.)), sassafras (*Sassafras albidum* (Nuttall)), tulip poplar (*Liriodendron tulipifera* L.), hawthorn (*Crataegus* sp.), flowering crabapple (*Malus* sp.), box elder (*Acer negundo* L.), buckeye (*Aesculus* sp.) and slippery elm (*Ulmus rubra* Muhlenberg). At the back of the property is a strip of undisturbed brush with a firewood pile where isopods have been frequently seen.

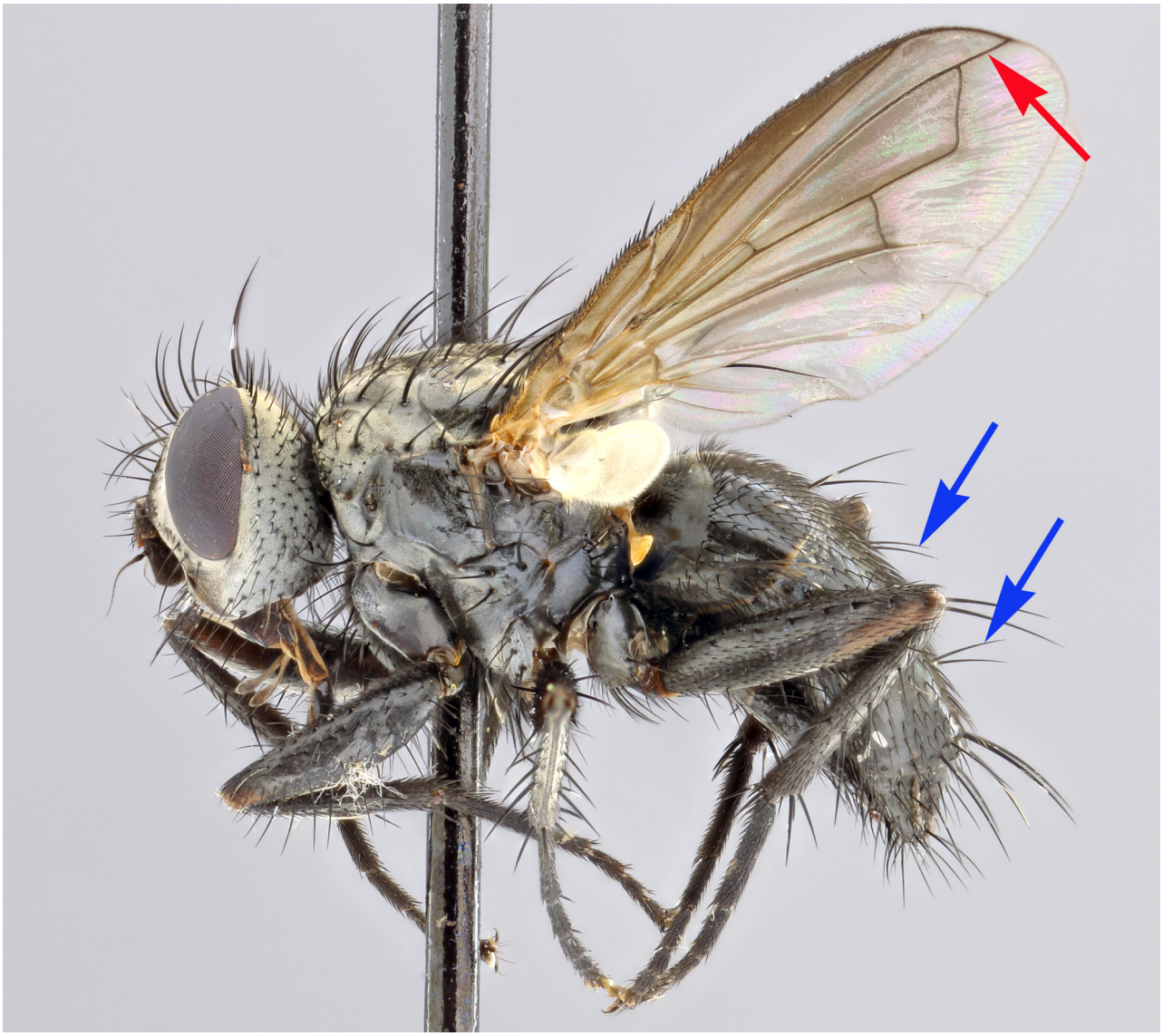

FIGURE 1. Female of *Stevenia deceptoria* (Loew) captured in Cincinnati, Ohio, on 27 May 2015. Red arrow points to petiole of wing cell r_{4+5} and blue arrows point to median discal setae on abdominal tergites 3 and 4.

Stevenia deceptoria can be recognized as a rhinophorid by its weakly developed subscutellum (as shown for *M. roralis* and *P. discrepans* in figs. 2 and 3 in Wood 1987: 1190) and tongue-like lower calypter. It can be distinguished from other Palaearctic species of *Stevenia* by the key of Cerretti & Pape (2007). In America north of Mexico it can be separated from the other known rhinophorids, *Bezzimyia* spp., *P. discrepans* and *M. roralis*, by the following key:

1. Vein M incomplete; i.e., more or less straight and ending freely in wing membrane ..... *Bezzimyia* Townsend
- Vein M complete, postangular section merging with vein R_{4+5} and thus forming a petiolate wing cell r_{4+5} 2
2. Petiole of wing cell r_{4+5} not longer than crossvein r-m ..... *Phyto discrepans* Pandellé
- Petiole of wing cell r_{4+5} at least twice as long as crossvein r-m (Fig. 1, red arrow) 3

3. Parafacial with 2–4 strong setae on lower half. Head profile not receding. Petiole of wing cell r_{4+5} slightly shorter than postangular section of vein M. Abdominal tergites 3 and 4 with one pair of median discal setae (Fig. 1, blue arrows). Male without, female with one or two proclinate orbital setae..... *Stevenia deceptoria* (Loew)
- Parafacial either bare or with short setae confined to upper half. Head profile strongly receding. Petiole of wing cell r_{4+5} about 1.5 times longer than postangular section of vein M. Abdominal tergites 3 and 4 without median discal setae. Both sexes with 4–6 proclinate orbital setae..... *Melanophora roralis* (Linnaeus)

Stevenia deceptoria probably entered North America in parasitized sow bugs that were unintentionally introduced by man from Europe, as suggested by Mulieri *et al*. (2010) for the establishment of *S. deceptoria* in Argentina. When and where this introduction first occurred is not known but there may be unidentified specimens of *S. deceptoria* in collections that will provide earlier dates and other localities for this species in North America. Similarly, detecting *S. deceptoria* in future non-targeted collecting and sampling will help determine its current range in North America.

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References

Cerretti, P., Lo Giudice, G. & Pape, T. (2014) Remarkable Rhinophoridae in a growing generic genealogy (Diptera: Calyptratae, Oestroidea). *Systematic Entomology*, 39, 660–690.
http://dx.doi.org/10.1111/syen.12080

Cerretti, P. & Pape, T. (2007) Two new species of European *Stevenia* Robineau-Desvoidy (Diptera: Rhinophoridae) and a key to the Palaearctic species. *Zootaxa*, 1624, 31–41.

Crosskey, R.W. (1977) A review of the Rhinophoridae (Diptera) and a revision of the Afrotropical species. *Bulletin of the British Museum (Natural History). Entomology*, 36, 1–66.

Jass, J. & Klausmeier, B. (2000) Endemics and immigrants: North American terrestrial isopods (Isopoda, Oniscidea) north of Mexico. *Crustaceana*, 73, 771–799.
http://dx.doi.org/10.1163/156854000504804

Mulieri, P.R., Patitucci, L.D., Mariluis, J.C. & Pape, T. (2010) Long-distance introduction: first New World record of *Stevenia deceptoria* (Loew) and a key to the genera of New World Rhinophoridae (Diptera). *Zootaxa*, 2524, 66–68.

Pape, T. (1998) Family Rhinophoridae. *In*: Papp, L. & Darvas, B. (Eds.), *Contributions to a manual of Palaearctic Diptera (with special reference to flies of economic importance). Vol. 3. Higher Brachycera*. Science Herald, Budapest, pp. 679–689.

Pape, T. (2010) Rhinophoridae (woodlouse flies). *In*: Brown, B.V., Borkent, A., Cumming, J.M., Wood, D.M., Woodley, N.E. & Zumbado, M.A. (Eds.), *Manual of Central American Diptera. Vol. 2*. NRC Research Press, Ottawa, pp. 1337–1341.

Pape, T. & Arnaud, P.H. Jr. (2001) *Bezzimyia* — a genus of native New World Rhinophoridae (Insecta, Diptera). *Zoologica Scripta*, 30, 257–297.
http://dx.doi.org/10.1046/j.1463-6409.2001.00064.x

Wood, D.M. (1987) Rhinophoridae. *In*: McAlpine, J.F., Peterson, B.V., Shewell, G.E., Teskey, H.J., Vockeroth, J.R. & Wood, D.M. (Eds.), Manual of Nearctic Diptera. Vol. 2. *Agriculture Canada Monograph*, 28, 1187–1191.