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SPECIES OF *MELITTOBIA* (HYMENOPTERA: EULOPHIDAE) ESTABLISHED IN BAHAMAS, COSTA RICA, CUBA, HISPANIOLA, PUERTO RICO, AND TRINIDAD

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Melittobia is a cosmopolitan genus with about 13 species. They are gregarious ectoparasitoids primarily on prepupae of aculeate hymenopterans, but their wide host range includes species in orders as diverse as Coleoptera and Diptera, especially under laboratory conditions (Dahms 1984b). They are normally associated with mud dauber wasps of the genera *Trypoxylon* and *Sceliphron* (Hymenoptera: Sphecidae) and some species serve as model organisms to demonstrate biological, ecological, and behavioral concepts to students from elementary to college level (Matthews 1997, 2000; Matthews et al. 1996). Due to confusion surrounding species identity in this genus, this report is part of efforts to promote nomenclatural stability and facilitate future work on *Melittobia* (González & Matthews 2002; González et al. 2004a, b). Our findings suggest that *Melittobia* are more widely distributed in the Caribbean region than previously thought, although probably not native to this region.

Melittobia was previously reported from Cuba as parasites of the sphecids wasps *Sceliphron asmile* (Dahlbom), *S. jamaicense* (Fabricius), *Trypoxylon succintum* Cresson and *T. subimpressum* (Smith), and the solitary vespids *Pachodynerus nasidens* (Latreille), *P. cubensis* (Saussure), and *Ancistrocerus cingulatus* (Cresson) (Alayo & Hernández 1978; Fernández et al. 2002; Genaro 1994, 1996). While examining specimens of *Melittobia* deposited in the Museum of Comparative Zoology at Harvard, we found 5 females of *Melittobia acasta* (Walker) labeled: Baraguá, Cuba. VI-9-29, T.P.R.F. Ent No. 3541, taken on a mud cell, L.C. Scaramuzza, Col., *Melittobia acasta* (Walker), det. E. Dahms 1985.

Melittobia acasta is regarded as the only species of this genus native to Europe (Bouček 1977) but it also has been reported from Argentina, Canada, India, Japan, New Zealand, USA, and Venezuela (Dahms 1984a; De Santis 1983; Husain & Khan 1986; Hobbs 1968; Hobbs & Kronic 1971; González 1994; González & Terán 1996; González et al. 2004b; La Salle 1993; MacFarlane & Donovan 1989) where it presumably has been accidentally introduced.

Melittobia australica (Girault) was originally described from Australia (Girault 1912), but it has been found in Jamaica, Japan, New Zealand, Trinidad, South Africa, USA, and Venezuela

(Dahms 1984a; MacFarlane & Palma 1987; La Salle 1993; González 1994; González & Terán 1996). One of us (JAG) has collected specimens of *Melittobia australica* from two locations in Cuba comprising eight females from Playa Vitoria, Yaguajay, Sancti Spiritus, Cuba, VII-1996, from nests of *Sceliphron jamaicense* (Fabricius); and 23 females from Cienfuegos, Cuba, XI-1988 from *Sceliphron* sp.

Melittobia was reported from Costa Rica by Hanson & Gauld (1995). However, an earlier report (Hunt 1993) mentions wasps identified by one of us (RWM) as *Melittobia australica* from Guanacaste Province attacking *Sceliphron asmile* (Sphecidae). We also keep a culture in our laboratory obtained originally from a species of *Centris* (Anthophoridae) collected at Lomas Barbudal Reserve, 8.5 km NW of Bagaces, Guanacaste Province (S.B. Vinson, March 2001) in Costa Rica.

Melittobia sp. was also reported to occur in Puerto Rico (Maldonado C. & Navarro 1967), and we thought it most likely to be *M. australica*. This was confirmed when we discovered many specimens of *M. australica* from various Puerto Rico localities in the collection of the National Museum of Natural History (Smithsonian Institution).

As far as we know, *Melittobia* parasitoid wasps had not been reported previously from the Bahamas, Trinidad, and Hispaniola. However, in material borrowed from the Entomology Research Center—Agriculture, Canada C.E.F., we found a female of *Melittobia australica* collected at San Salvador, Bahamas (8-13/XII/80, sweeping pool, B. Brown), and from 2 localities in Trinidad (Carapichaima and Curepe) parasitizing Eumeninae wasps (Vespidae) as well as *Trypoxylon* sp. (Sphecidae). Finally, during an expedition by one of us (JAG) to Dominican Republic, *Melittobia australica* was found parasitizing *Sceliphron* sp. at Oviedo Province, Pedernales (20-XI-2003).

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helped J.A.G. with expedition logistics in the Dominican Republic. Part of this work was supported by NSF Grant 0088021 to RWM.

SUMMARY

The presence of *Melittobia australica* (Hymenoptera: Eulophidae), a cosmopolitan ectoparasitoid, is confirmed from Bahamas, Costa Rica, Cuba, Hispaniola, Puerto Rico, and Trinidad. Also *M. acasta*, the only known European species in the genus, is reported for the first time from Cuba. Some hosts of the genus and for both species in these Latin American countries are reported.

REFERENCES CITED

- ALAYO, P., AND L. R. HERNÁNDEZ. 1978. Introducción al Estudio de los Himenópteros de Cuba. Superfamilia Chalcidoidea. La Habana: Ed. Academia de Ciencias de Cuba. 105 pp.
- BOUČEK, Z. 1977. Descriptions of *Tachinobia* gen. n. and three new species of Tetrastichinae (Hymenoptera: Eulophidae) with a tentative key to genera. Bull. Entomol. Res. 67: 17-30.
- DAHMS, E. 1984a. Revision of the genus *Melittobia* (Chalcidoidea; Eulophidae) with the description of seven new species. Mem. Queensland Mus. 21(2): 271-336.
- DAHMS, E. 1984b. A review of the biology of species in the genus *Melittobia* (Hymenoptera: Eulophidae) with interpretations and additions using observations on *Melittobia australica*. Mem. Queensland Mus. 21(2): 337-360.
- DE SANTIS, L. 1983. Catálogo de los Himenópteros Calcidoides (Hymenoptera) de América al sur de los Estados Unidos, Primer Suplemento. Rev. Peruana Entomol. 24(1): 1-38.
- FERNÁNDEZ TRIANA, J. L., H. SARIOL, M. A. VEGA CASTILLO, S. RICARDO, M. GONZÁLEZ, AND E. PORTUONDO FERRER. 2002. Datos preliminares sobre la biodiversidad del Orden Hymenoptera en la provincia Granma, Cuba. Bol. Soc. Entomol. Aragonesa. 31: 42-48.
- GENARO, J. A. 1994. Inquilinos de *Sceliphron assimile*, con énfasis en *Podium fulvipes* (Hymenoptera: Vespidae, Sphecidae, Megachilidae). Caribbean J. Sci. 30(3-4): 268-270.
- GENARO, J. A. 1996. Nest parasites (Coleoptera, Diptera, Hymenoptera) of some wasps and bees (Vespidae, Sphecidae, Colletidae, Megachilidae, Anthophoridae) in Cuba. Caribbean J. Sci. 32(2): 239-240.
- GIRAULT, A. A. 1912. A new *Melittobia* from Queensland. Psyche, Cambridge 19: 203-205.
- GONZÁLEZ, J. M. 1994. Taxonomía, biología y comportamiento de las avispas parasíticas del género *Melittobia* Westwood (Hymenoptera: Eulophidae) en Venezuela. Ecotropicos 7(1): 41.
- GONZÁLEZ, J. M., AND R. W. MATTHEWS. 2002. Life history development and sex ratio of *Melittobia australica* and *M. digitata* (Hymenoptera: Eulophidae) on *Megachile rotundata* (Hymenoptera: Megachilidae) and *Trypoxylon politum* (Hymenoptera: Sphecidae). Great Lakes Entomol. 35(1): 85-91.
- GONZÁLEZ, J. M., AND J. B. TERÁN. 1996. Parasitoides del género *Melittobia* Westwood (Hymenoptera: Eulophidae) en Venezuela. Distribución y hospederos. Bol. Entomol. Venezolana. (N.S.) 11: 139-147.
- GONZÁLEZ, J. M., J. ABE, AND R. W. MATTHEWS. 2004a. Offspring production and development in the parasitoid wasp *Melittobia clavicornis* (Cameron) (Hymenoptera: Eulophidae) from Japan. Entomol. Sci. 7: 15-19.
- GONZÁLEZ, J. M., J. B. TERÁN, AND R. W. MATTHEWS. 2004b. Review of the Biology of *Melittobia acasta* (Walker) (Hymenoptera: Eulophidae) and additions on development and sex ratio of the species. Caribbean J. Sci. 40(1): 52-61.
- HANSON, P. E., AND I. D. GAULD. 1995. The Hymenoptera of Costa Rica. Oxford University Press, Oxford. 920 pp.
- HOBBS, G. A. 1968. Controlling insect enemies of the alfalfa leafcutter bee, *Megachile rotundata*. Canadian Entomol. 100: 781-784.
- HOBBS, G. A., AND M. D. KRUNIC. 1971. Comparative behavior of three chalcidoid (Hymenoptera) parasites of the alfalfa leafcutter bee, *Megachile rotundata*, in the laboratory. Canadian Entomol. 103: 674-685.
- HUNT, J. H. 1993. Survivorship, fecundity, and recruitment in a mud dauber wasp, *Sceliphron assimile* (Hymenoptera: Sphecidae). Ann. Entomol. Soc. Amer. 86(1): 51-59.
- HUSAIN, T., AND M. Y. KHAN. 1986. Family Eulophidae. Oriental Insects 20: 211-245.
- LA SALLE, J. 1993. North American genera of Tetrastichinae (Hymenoptera: Eulophidae). J. Nat. Hist. 28: 109-236.
- MACFARLANE, R. P., AND R. L. PALMA. 1987. The first record for *Melittobia australica* Girault in New Zealand and new host records for *Melittobia* (Eulophidae). New Zealand J. Zool. 14: 423-425.
- MACFARLANE, R. P., AND B. J. DONOVAN. 1989. *Melittobia* spp. as parasitoids of bumble and Lucerne leaf-cutting bees and their control in New Zealand, pp. 274-277 In Proceedings of the 42nd New Zealand Weed and Pest Control Conference, 1989.
- MALDONADO C., J., AND C. A. NAVARRO. 1967. Additions and corrections to Wolcott's "Insects of Puerto Rico". Caribbean J. Sci. 7(1-2): 45-64.
- MATTHEWS, R. W. 1997. Teaching ecological interactions with mud dauber nests. Amer. Biol. Teacher. 59(3): 152-158.
- MATTHEWS, R. W. 2000. Developing life science instructional materials using a parasitic wasp, *Melittobia digitata* Dahms (Hymenoptera: Eulophidae): A case study, pp. 427-433 In A. D. Austin and M. Dolton (eds.), Hymenoptera: Evolution, Biodiversity and Biological Control. Australia: CSIRO Publishing.
- MATTHEWS, R. W., T. R. KOBALLA, JR., L. R. FLAGE, AND E. J. PYLE. 1996. WOWBugs: New Life for Life Science. Riverview Press, Athens, GA. 318 pp.