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## BRIEF COMMUNICATION

### *Hylaeus (Hylaeana) dominicalis*, a new species and the first colletid bee recorded from Dominica, Lesser Antilles (Hymenoptera: Colletidae: Hylaeinae)

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**Abstract.** A new colletid bee, *Hylaeus (Hylaeana) dominicalis* Gibbs, new species, is described and figured from the Commonwealth of Dominica. The new species can be distinguished from consubgeneric species in the Caribbean Islands based on the integumental coloration, facial fovea, sculpturing, and pubescence. A list of all known *Hylaeus* from the Caribbean Islands is provided.

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## INTRODUCTION

*Hylaeus* Fabricius (Hymenoptera: Colletidae, Hylaeinae) is one of the most species-rich bee genera globally, with 768 described species (Ascher & Pickering, 2019). However, the genus is uncommonly recorded from the Caribbean. To date, only eleven species are known from the Caribbean Islands, six of which occur in the subgenus *Hylaeana* Michener (Table 1). *Hylaeus (Paraprosopis) wootoni* (Cockerell, 1896) is introduced to the region from mainland North America (Snelling, 1984). *Hylaeus* nest in existing cavities, making them particularly prone to human-mediated dispersal (Cane, 2003; Russo, 2016). The subgenus *Hylaeana* is largely restricted to the Neotropical Region, extending from South America to the southern USA (Michener, 2007), making it unlikely that the Dominican *Hylaeus* is introduced from outside of the Americas. *Hylaeus (Hylaeana)* likely includes additional species not yet described (Michener, 2007).

The new species was discovered while examining material as part of a revised checklist for the Commonwealth of Dominica. The species list for the island was recently altered by the description of eight new species in the family Halictidae (Gibbs,

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**Table 1.** Species of *Hylaeus* Fabricius known from the Caribbean Islands.

Subgenus	Species	Region
<i>Gongyloprosopsis</i> Snelling	<i>orbicus</i> (Vachal, 1910)	French Guiana, Guyana, Trinidad and Tobago
<i>Hylaeana</i> Michener	<i>dictyotus</i> Snelling, 1982	French Guiana, Trinidad and Tobago
	<i>extrinsecus</i> Snelling, 1982	Jamaica
	<i>formosus</i> Krombein, 1953	Bahamas, Cuba, USA
	<i>phaeoscapus</i> Snelling, 1982	Jamaica
	<i>rawi</i> Snelling, 1982	Jamaica
	<i>royesi</i> Raw, 1984	Jamaica
<i>Paraprosopsis</i> Popov	<i>wootoni</i> (Cockerell, 1896)	British Virgin Islands (exotic), USA
<i>Prosopsis</i> Fabricius	<i>dearmsi</i> Genaro, 2016	Cuba
	<i>hispaniolensis</i> Genaro, 2016	Dominican Republic
	<i>limbifrons</i> (Cresson, 1869)	Cuba

2012, 2016). During those studies additional records for the island came to light. In order to facilitate completion of the checklist, a new species is described below, representing the first and only record of the family Colletidae for the island.

#### MATERIAL AND METHODS

Six specimens were examined from the Natural History Museum in London, collected as part of Operation Wallacea. Specimens were identified to subgenus using keys in Michener (2007). The specimens were compared to descriptions and type material for *H. (Hylaeana)* and West Indian *Hylaeus* when possible (Friese, 1917; Snelling, 1982; Raw, 1984; Genaro, 2016). Descriptions follow the format used for other recent studies of Caribbean bees (Gibbs, 2016, 2018). The abbreviations “i” and “pd” refer to interspaces between punctures and puncture diameter, respectively. They are used in combination to give a relative measure of puncture density. Specimens were examined using a Nikon SMZ25 at magnifications between 50–100× using a Nikon Model C-FLED2 light source with Roscolux diffusion paper over the bulb. Measurements were taken using an ocular micrometer at 60×. Head measurements follow Michener (2007). Body length was measured as the sum of the length from the antennal base to the posterior propodeal surface and the length of the metasoma in lateral view.

#### SYSTEMATICS

Genus *Hylaeus* Fabricius  
Subgenus *Hylaeana* Michener

***Hylaeus (Hylaeana) dominicalis* Gibbs, new species**

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(Figs. 1–3)

**DIAGNOSIS:** The new species was ascribed to *H. (Hylaeana)* based on the small size, fine omaular carina present only ventrally on the mesepisternum, metasomal terga



**Figures 1–3.** *Hylaeus (Hylaeana) dominicalis*, new species, paratype female. 1. Lateral habitus. 2. Facial view. 3. Dorsal habitus.

without evident punctation, pronotal lobe ecarinate, mesosomal punctures relatively fine, and metasomal sterna weakly iridescent.

*Hylaeus dominicalis* can be distinguished from other Caribbean *H. (Hylaeana)* by the black clypeus (ferruginous in *H. extrinsecus* Snelling, *H. formosus* Krombein, and *H. rawi* Snelling) with yellow medial spot (absent in *H. rawi*), facial fovea close to the eye margin (well-removed in *H. rawi*), tergum one without apicolateral hair patches (present in *H. dictyotus* (Vachal) and *H. formosus*), metasomal terga black to dark brown (first and second tergites orange in *H. royesi* Raw), metanotum with distinct punctures (obscure in *H. extrinsecus*), and propodeum lateral surface dull due to microsculpture (moderately shiny in *H. extrinsecus*). The female of *H. phaeoscapus* Snelling is unknown.

**DESCRIPTION:** ♀: Body length: 3.5–3.9 mm (mean = 3.7 mm, n = 6); head length: 1.02–1.06 mm (mean = 1.05 mm, n = 6); head width: 1.11–1.16 mm (mean = 1.13 mm, n = 6); intertegular distance = 0.87–0.91 mm (mean = 0.89 mm, n = 6).

**Color:** Body black, except with bright yellow markings on following: paraoocular area to just below facial fovea, longitudinal spot on clypeus, gena proximal to mandible with small spot, dorsobasal patch on protibia, basal spot on mesotibia, and basal

third of metatibia; pale yellow markings on following: transverse patch on pronotal collar and posterior margin of pronotal lobe; brown to reddish brown on following: ventral surface of flagellum, tarsi, and apical margins of metasomal terga. Metasomal sterna weakly iridescent. Wings faintly dusky, with brown venation.

Pubescence: Dull white throughout, except brownish yellow on metasomal tergum six and sternum six. Sparse and short on head and mesosoma, largely absent from metasoma. Slightly longer ( $>$  ocellar diameter) on mesoscutellum, metanotum, tibial apices, tarsi, apex of metasomal tergum and sternum five, and on disc of metasomal tergum and sternum six. Pro- and mesotarsal setae hamate.

Surface sculpture: Face tessellate-imbricate with faint, sparse punctures on clypeus, supraclypeal area, and lower paraocular area ( $i = 1-2.5$  pd), punctures contiguous on frons and upper paraocular area. Gena lineolate, punctures moderately sparse ( $i = 1-2$  pd). Mesosoma tessellate-imbricate with distinct punctures, contiguous on mesoscutum except sparser on posterior area ( $i \leq$  pd), sparser on mesoscutellum ( $i = 1-2$  d), metanotum ( $i \leq$  pd), and pronotal lobe and mesepisternum ( $i < 1.5$  pd). Pronotum, metanotum, and posterior surface of propodeum reticulate-punctate. Propodeum with punctation contiguous on lateral surface. Metapostnotum scabriculous (irregularly wrinkled), except apex tessellate-imbricate. Metasoma finely coriarius, with extremely indistinct punctation.

Structure: Face round (length/width ratio =  $0.92-0.94$ , mean =  $0.92$ ,  $n = 6$ ), supraclypeal area slightly more than half clypeal length, malar space linear, mandible bidentate, gena narrower than eye in lateral view. Pronotum rounded, ecarinate. Omaulus weakly carinate ventrally. Propodeum lateral carina not evident, metapostnotum weakly delimited posteriorly.

VARIATION: There is some variation in color patterns such that some individuals have metabasitarsus mostly yellow, pronotal lobe entirely black, and/or tegula with a yellow spot.

♂: Unknown.

HOLOTYPE: ♀, Dominica: St. Paul Parish: Ponte Casse, D-smart Farm, 512 m, N15°22'23.4" W081°20'58.7" Malaise Trap, 13-20.vi.2016, leg. E. McAlister, NHMUK 010813911.

PARATYPES: 5♀♀. Topotypical (NHMUK 010813907-010813910, 010813912).

ETYMOLOGY: From the Latin, *dominicalis*, an adjective in the nominative singular, meaning "pertaining to Sunday", based on the same root as Dominica.

## DISCUSSION

The bee diversity of the Caribbean islands remains incompletely documented. Dominica is among the best studied islands in the Lesser Antilles (Crawford, 1914; Gibbs, 2012, 2016); however, an entire family of bees has gone undetected until now, albeit, it is evidently represented by a rather minute species. Neighboring islands of similar size have no described representatives of Colletidae or Halictidae (Meurgey, 2016). The latter makes up more than one third of the Dominican fauna. Since *Hylaeus* are sometimes adventive, it is possible that *H. dominicalis* is not native to Dominica. However, *H. dominicalis* does appear to belong to a subgenus known from the region. It is possible that *H. dominicalis* could be a variant or an undescribed sex of a previously described species. The female of *H. phaeoscapus* is unknown and *H. extrinsecus* was described from a single female with a missing metasoma (Snelling, 1982). Both are known only from Jamaica. It would be impossible to definitively determine its status

without a full-scale revision of *H. (Hylaeana)*, which is beyond the scope of this paper.

The failure to detect species in this region has potential conservation implications. *Hylaeus* are readily transported around the globe, so it is possible that an exotic species may become established, which has happened numerous times in Canada, the continental USA, and the island of Hawaii (Cane, 2003; Snelling, 2003; Ascher *et al.*, 2006; Sheffield *et al.*, 2011; Magnacca *et al.*, 2013; Gibbs & Dathe, 2017; Martins *et al.*, 2017). Seven species of endemic Hawaiian *Hylaeus* are now considered endangered due in large part to the introduction of exotic insects (Fish and Wildlife Service, 2016). Introduction of exotic bees may compete with native species for foraging or nesting resources, but importantly may also transport exotic pathogens (Goulson, 2003). It is critical to recognize the diversity of bees in ecologically sensitive areas, such as islands, to prevent their accidental extirpation.

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#### REFERENCES

- Ascher, J.S., & J. Pickering. 2019. Discover Life bee species guide and world checklist (Hymenoptera: Apoidea: Anthophila). Draft-52. [[http://www.discoverlife.org/mp/20q?guide=Apoidea\\_species](http://www.discoverlife.org/mp/20q?guide=Apoidea_species); last accessed 6 February 2020].
- Ascher, J.S., P. Gambino, & S. Droege. 2006. Adventive *Hylaeus* (*Spatulariella* Popov) in the New World (Hymenoptera: Apoidea: Colletidae). *Proceedings of the Entomological Society of Washington* 108(1): 237–239.
- Cane, J.H. 2003. Exotic nonsocial bees (Hymenoptera: Apiformes) in North America: ecological implications. In: Strickler, K., & J.H. Cane (Eds.), *Nonnative Crops, Whence Pollinators of the Future?*: 113–126. Thomas Say Publications in Entomology: Proceedings of the Entomological Society of America; Lanham, MD; 204 pp.
- Cockerell, T.D.A. 1896. New species of *Prosapis*. *Psyche* 7(supplement): 26–32.
- Crawford, J.C. 1914. Hymenoptera, superfamilies Apoidea and Chalcidoidea, of the Yale Dominican expedition of 1913. *Proceedings of the United States National Museum* 47: 131–134.
- Cresson, E.T. 1868. Description of North American bees. No. 2. *Proceedings of the Boston Society of Natural History* 12: 269–273.
- Fish and Wildlife Service. 2016. Endangered and threatened wildlife and plants: Endangered status for 49 species from the Hawaiian Islands. *Federal Register* 81(190): 67786–67860
- Friese, H. 1917. Zur Bienenfauna von Costa Rica (Hym.). *Stettiner Entomologische Zeitung* 77: 287–348.
- Genaro, J.A. 2016. Especies nuevas y nuevos registros de abejas para las Antillas (Hymenoptera: Anthophila; Colletidae, Halictidae). *Novitates Caribaea* 10: 38–51.
- Gibbs, J. 2012. A new species of *Habralictus* Moure from Dominica, Lesser Antilles (Hymenoptera, Halictidae). *Zookeys* 168: 1–12.
- Gibbs, J. 2016. Bees of the family Halictidae Thomson, 1869 from Dominica, Lesser Antilles (Hymenoptera: Apoidea). *European Journal of Taxonomy* 180: 1–50.
- Gibbs, J. 2018. Bees of the genus *Lasioglossum* (Hymenoptera: Halictidae) from Greater Puerto Rico, West Indies. *European Journal of Taxonomy* 400: 1–57.
- Gibbs, J., & H.H. Dathe. 2017. First records of *Hylaeus* (*Paraprosopis*) *pictipes* Nylander, 1852 (Hy-

- menoptera: Colletidae) in North America. *CheckList* 13: 2116.
- Goulson, D. 2003. Effects of introduced bees on native ecosystems. *Annual Review of Ecology, Evolution, and Systematics* 34: 1–26.
- Krombein, K.V. 1953. The wasps and bees of the Bimini Island Group, Bahamas, British West Indies (Hymenoptera: Aculeata). *American Museum Novitates* 1633: 1–29.
- Magnacca, K.N., J. Gibbs, & S. Droege. 2013. Notes on alien and native bees (Hymenoptera: Apoidea) from the Hawaiian Islands. *Bishop Museum Occasional Papers* 114: 61–65.
- Martins, K.T., É. Normandin, & J.S. Ascher. 2017. *Hylaeus communis* (Hymenoptera: Colletidae), a new exotic bee for North America with generalist foraging and habitat preferences. *Canadian Entomologist* 149(3): 377–390.
- Meurgey, F. 2016. Bee species and their associated flowers in the French West Indies (Guadeloupe, Les Saintes, La Désirade, Marie Galante, St Barthelemy and Martinique) (Hymenoptera: Anthophila: Apoidea). *Annales de la Société entomologique de France* 52(4): 209–232.
- Michener, C.D. 2007. *The Bees of the World* [2<sup>nd</sup> Edition]. Johns Hopkins University Press; Baltimore, MD; xvi+[i]+953 pp., +20 pls.
- Raw, A. 1984. Four new species of bees from Jamaica (Hymenoptera). *Revista Brasileira de Entomologia* 28: 491–495.
- Russo, L. 2016. Positive and negative impacts of non-native bee species around the world. *Insects* 7(4): 69.
- Sheffield, C.S., S. Dumesh, & M. Cheryomina. 2011. *Hylaeus punctatus* (Hymenoptera: Colletidae), a bee species new to Canada, with notes on other non-native species. *Journal of the Entomological Society of Ontario* 142: 29–43.
- Snelling, R.R. 1982. The taxonomy of some Neotropical *Hylaeus* and descriptions of new taxa (Hymenoptera: Colletidae). *Bulletin of the Southern California Academy of Sciences* 8: 1–25.
- Snelling, R.R. 1984. Collecting on Guana Island. *Melissa* 7: 15.
- Snelling, R.R. 2003. Bees of the Hawaiian Islands, exclusive of *Hylaeus* (*Nesoprotopis*) (Hymenoptera: Apoidea). *Journal of the Kansas Entomological Society* 76(2): 342–356.
- Vachal, J. 1910. Espèces nouvelles ou litigieuses d'Apidae du haut Bassin du Parana et des régions contiguës et délimitation d'une nouvelle sous-famille Diphaglossinae (Hym.). *Revue d'Entomologie* 28: 65–70.

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