

A NEW *LASIOGLOSSUM* FROM THE JUAN FERNANDEZ ISLANDS
(HYMENOPTERA: HALICTIDAE)

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ABSTRACT

The first bee recorded from the Juan Fernandez Islands is described as a new species of the halictine genus *Lasioglossum* (Halictinae: Halictini). *Lasioglossum* (*Dialictus*) *fernandezis* n. sp. is similar to the continental Chilean species *L. (D.) herbstiellus* (Friese) but can be most readily separated from it on the basis of head and mesosomal sculpturing, head shape, and male terminalia, among other characters. *Lasioglossum fernandezis* n. sp. has been captured at inflorescences of the native hybrid *Wahlenbergia fernandeziana* A. DC. x *W. grahamiae* Hemsl. (Campanulaceae).

Key words: bees, Halictinae, *Lasioglossum*, Chile.

RESUMEN

El primer ávido colectado en las islas Juan Fernandez, se describe aquí como una nueva especie de halictido del género *Lasioglossum* (Halictinae: Halictini). *Lasioglossum* (*Dialictus*) *fernandezis* sp. n. es semejante a la especie continental *L. (D.) herbstiellus* (Friese), pero puede separarse fácilmente por la puntuación de la cabeza y mesosoma, forma de la cabeza, terminalia de los machos, aparte de otros caracteres. *Lasioglossum fernandezis* sp. n. ha sido colectado en inflorescencias del híbrido nativo *Wahlenbergia fernandeziana* A. DC. x *W. grahamiae* Hemsl. (Campanulaceae).

Palabras clave: abejas, Halictinae, *Lasioglossum*, Chile.

INTRODUCTION

The cosmopolitan bee genus *Lasioglossum* Curtis (1833) is presently the largest genus of bees in the world with over 1200 described species. Species of the genus have been segregated into numerous subgenera (e.g., Michener, 2000) which are treated by some authors as distinct genera (e.g., Moure and Hurd, 1987). The genus is not only noteworthy for its size in number of species but also for its behavioral diversity. Species range from solitary to primitively eusocial; the latter has apparently arisen, as well as reversed back to solitary behavior, several times. Danforth (1999) has recently presented a preliminary phylogenetic

analysis of higher-level groupings within the genus based on mitochondrial DNA sequence data. This work will help to build a foundation for recognizing natural groups within this diverse and morphologically difficult genus of halictine bees.

The purpose of the present paper is to describe a new *Lasioglossum*, subgenus *Dialictus*, recently recognized from the Juan Fernandez Islands and for which a name is needed for use in studies being undertaken by pollination and conservation biologists studying the flora of Robinson Crusoe Island. Although species of *Lasioglossum* are recorded from most regions of the world, they have not previously been recognized on the Juan Fernandez Islands and, in fact, no bee of any genus has been recorded from these islands until now. Although it may seem peculiar that no bee has been previously discovered on these islands since bees can be

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quite conspicuous, species of *Dialictus* tend to be fairly small and are often overlooked, particularly if a given species is not common. The new species is most similar to the continental Chilean species *Lasioglossum (Dialictus) herbstiellus* (Friese, 1916) (see Diagnosis, below). Whether or not *L. herbstiellus* and the new species together form a natural group will have to await future cladistic work on the species-groups of *Dialictus*.

MATERIAL AND METHODS

Material used in this study is deposited in the following institutions: American Museum of Natural History, New York, USA (AMNH); Snow Entomological Collection, University of Kansas, Lawrence, Kansas, USA (SEMC); the Natural History Museum (British Museum), London, United Kingdom (BMNH); Museo Nacional de Historia Natural, Santiago, Chile (MNHC); Entomology Collection, Department of Ecology and Evolutionary Biology, University of Connecticut, Storrs, Connecticut, USA (UCMS); and Dr. Haroldo Toro Collection, Universidad Católica de Valparaíso, Valparaíso, Chile (UCVC).

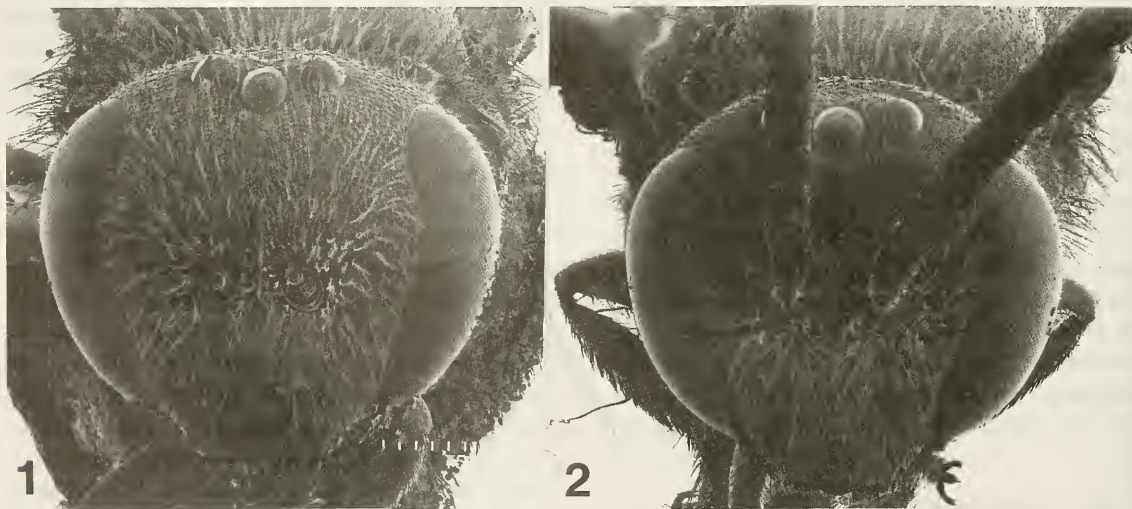
Morphological terminology in the description generally follows that proposed by Michener (1944) while the format for the description follows that generally used elsewhere for halictine bees (e.g., Engel, 1997, 1999, 2000; Engel and

Brooks, 1998). The following abbreviations are used: F, flagellomere; S, sternum; T, tergum.

SYSTEMATICS

Lasioglossum (Dialictus) fernandezis n. sp.
(Figures 1-8)

Diagnosis: This species is similar to *L. (D.) herbstiellus* but differs, outside of the slightly larger body size, in the following characteristics (alternate states for *L. herbstiellus* indicated in brackets): ♀: rugulose sculpturing on the basal area of the propodeum that does not form distinct striae medially although laterally, lateral striae distinctly reaching onto upper part of lateral propodeal surface (Figs. 5-6) [lateral striae end at ridge between basal area and lateral surface, not extending onto dorsal margin of lateral surface]; punctures with similar spacing on either side of parapsidal line borders (Figs. 3-4) [the punctures along the inner border are distinctly more widely spaced than those outside of the parapsidal line]; preepisternal sulcus a broad, deeply impressed area composed of a single row of areolae [preepisternal sulcus a narrow, impressed line, not composed of areolae]; metasomal terga with faint, minute punctures separated by 2-3 times a puncture width [metasomal with distinct, numerous, small punctures separated by a puncture width]. ♂: Head not elongate, wider



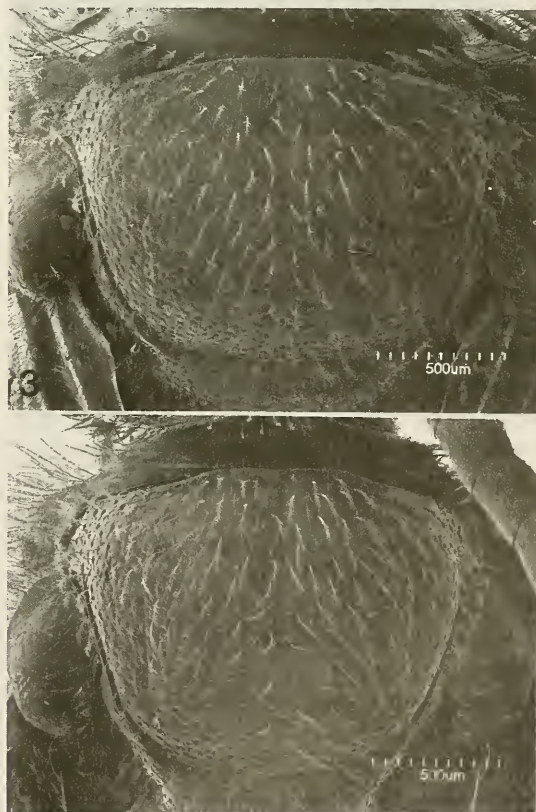
Figs. 1-2: *Lasioglossum (Dialictus) fernandezis* n. sp.; frontal view of heads. 1. Female. 2. Male.

than long (Fig. 2) [head distinctly elongate, longer than wide]; F2 about 1.25-1.5 times longer than F1 (Fig. 2) [F2 about twice as long, or longer, than F1]; apical process of S7 slightly emarginate and not expanded at its apex; retrorse lobe more elongate and densely setose; gonostylus smaller; volsella broader.

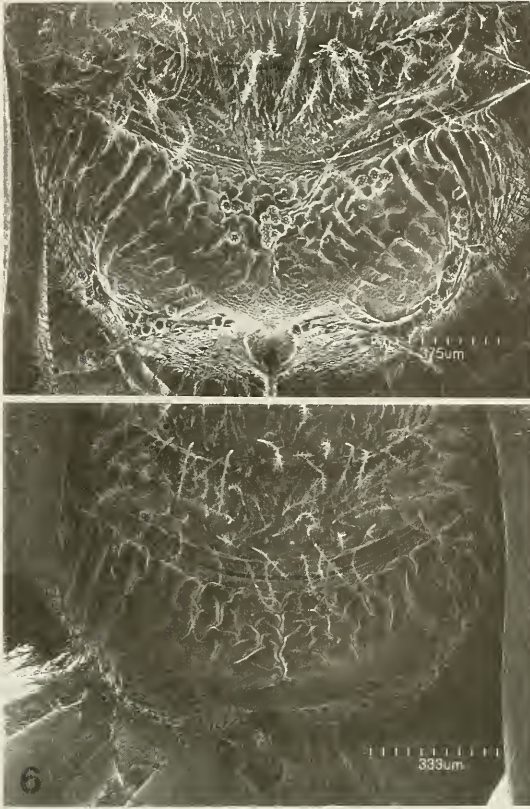
Description: FEMALE: Total body length 6.16 mm; forewing length 4.0 mm. Head wider than long (length 1.36 mm, width 1.58 mm) (Fig. 1). Hypostomal ridge carinate, ridges parallel (not diverging anteriorly), anterior angle rounded. Labrum with subapical, transverse basal elevation. Mandible with weak subapical tooth. Malar space transverse, base of mandible nearly contiguous with lower margin of compound eye. Distal half of clypeus below lower tangent of compound eyes; epistomal sulcus forming a slightly obtuse angle. Inner margin of compound eye weakly emarginated above level of antennal sockets. Frontal line strongly carinate from just below antennal sockets to half of distance between antennal sockets and median ocellus. Scape 0.6 mm in length. Gena as broad as compound eye in lateral view. Preoccipital ridge rounded. Intergtegular distance 1.22 mm; metanotal length just over one-half scutellar length; basal area of propodeum about as long as scutellum. Basal vein distad cu-a by twice vein width; 1r-m distad 1m-cu by twice vein width, 1r-m straight; 2r-m distad 2m-cu by five times vein width, 2r-m curved outward; 1r-m, 2r-m, 2m-cu, and M beyond 1m-cu weakened, faint; first submarginal cell approximately as long as combined lengths of second and third submarginal cells; second submarginal cell narrowed anteriorly; anterior border of second submarginal cell approximately equal to that of third submarginal cell; posterior border of second submarginal cell slightly shorter than that of third submarginal cell; marginal cell apex acute; distal hamuli arranged 2-1-2. Metabasitibial plate strongly bordered along all sides, pointed at apex; inner metatibial spur pectinate, four long teeth (excluding apex).

Clypeus with widely scattered, faint, coarse punctures, integument between punctures imbricate. Supraclypeal area with smaller punctures than those of clypeus and slightly more well-defined, punctures separated by a puncture

width or more, integument between punctures imbricate. Face below level of antennal sockets with well-defined, small punctures separated by a puncture width or less, integument between punctures imbricate except in lower paraocular area near malar space where punctures are smaller and separated by up to four times a puncture width, integument between punctures faintly imbricate; above level of antennal sockets punctures nearly contiguous, integument between punctures, where evident, imbricate. Scape impunctate, imbricate. Vertex behind ocelli and gena with widely scattered, faint, minute punctures, integument imbricate. Postgena longitudinally striate. Pronotum minutely imbricate. Mesoscutum with small punctures separated by a puncture width, integument between punctures imbricate except on central disc and along anterior border punctures more widely spaced, fainter, and on faintly imbricate



Figs. 3-4. *Lasioglossum (Dialictus) fernandezis* n. sp.; mesoscutal surfaces. 3. Female. 4. Male.



Figs. 5-6. *Lastoglossum (Dialictus) fernandezis* n. sp.; basal area of propodeum. 5. Female. 6. Male.

integument (Fig. 3); punctures on either side of parapsidal lines evenly spaced (Fig. 3); scutellum as on mesoscutum except punctures separated by a puncture width or less and slightly smaller; tegula with widely scattered, faint, minute punctures, punctures slightly more numerous along anterior and posterior borders, integument between punctures smooth. Metanotum with minute punctures separated by a puncture width, integument between punctures faintly imbricate. Preëpisternum coarsely rugulose, preëpisternal sulcus a broadly impressed area composed of a single row of areolae. Hypoepimeron with small punctures separated by less than a puncture width, integument between punctures imbricate; mesepisternum below scrobe with coarse, faint punctures separated by less than a puncture width, integument between punctures imbricate, punctures become more widely separated on ventral half. Metepisternum along dorsal third

with transverse striae, ventral two-thirds with small, contiguous punctures. Dorsal-facing, basal area of propodeum strongly rugulose, medially without distinct striae, laterally with some strong striae that extend beyond ridge between dorsal and lateroposterior surfaces of propodeum (Fig. 5); lateral surface with ends of striae from dorsal surface along dorsal margin, otherwise imbricate; posterior surface imbricate. Metasomal terga and sterna imbricate; T1-4 with faint, minute punctures on central discs, punctures separated by 2-3 times a puncture width.

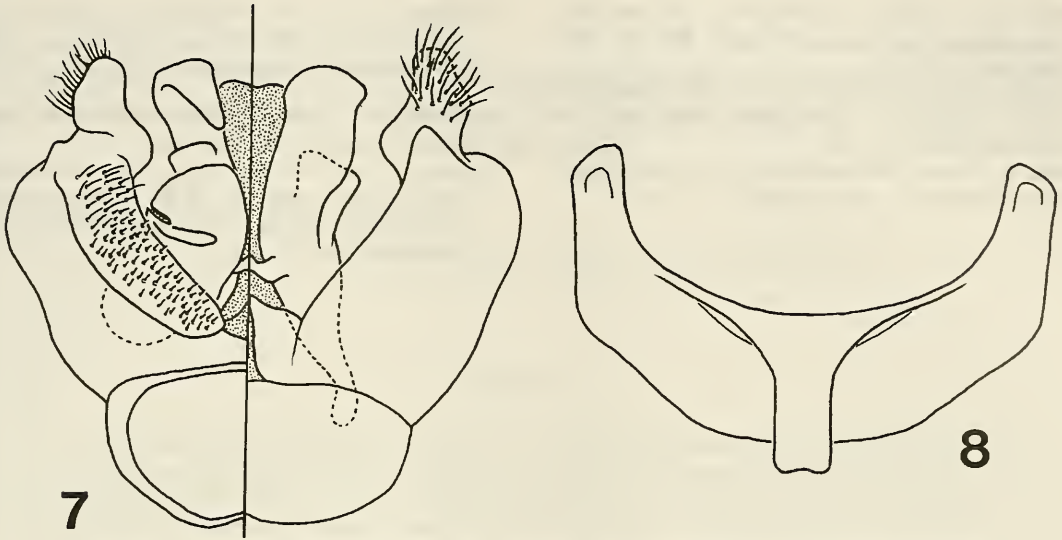
Mandible dark brown with reddish brown apex. Proboscis dark brown. Labrum, clypeus, and supraclypeal area dark brown to black; antenna dark brown; remainder of head dull-metallic green or blue-green. Mesosoma dull-metallic green or blue-green; tegula and legs dark brown. Wing veins light brown or amber, membrane hyaline. Metasoma dark brown with dull-metallic green highlights.

Pubescence generally white and with numerous minute branches. Face with long, mostly simple setae intermixed with shorter, plumose setae; postgena with long, widely scattered, branched setae. Mesosoma with scattered long, branched setae. Metasomal terga with short setae, subappressed, most setae simple; setae progressively longer, more numerous, and more branched on apical terga; sterna with scattered, long, branched setae, those setae on S5-S6 distinctly shorter and more numerous than on previous sterna.

MALE: As described for the female with the following modifications: Total body length 5.96 mm; forewing length 3.83 mm. Head distinctly wider than long (length 1.42 mm, width 1.50 mm). Scape 0.33 mm in length, not reaching to median ocellus; F2 about 1.25-1.5 times length of F1; F1 with inner, basal swelling with dense, microscopic setae (Fig. 2); F2 as long as F3. Intertegular distance 1.03 mm. Terminalia as in Figs. 7-8.

Mesoscutum between punctures smooth, not imbricate, punctures over central disc more faint than those of female (Fig. 4). Metasomal terga with minute punctures more numerous and slightly more well-defined.

Typical sexual differences in pubescence (e.g., absence of scopa).



Figs. 7-8. *Lasioglossum (Dialictus) fernandezis* n. sp., male terminalia. 7. Genital capsule; left half is the ventral view, right half is the dorsal view. 8. Hidden and fused sterna 7 and 8.

Holotype: CHILE: Archipelago J. [Juan] Fernandez, I. [Isla] Robinson, 4-XI-1980 [4 November 1980], H. Flores (♀, MNNC).

Paratypes: CHILE: Archipelago J. [Juan] Fernandez, I. [Isla] Robinson, 4-XI-1980 [4 November 1980], H. Flores (82♀♀HCVC, 2♀♀SEMC, 2♀♀BMNH, 4♀♀MNNC, 4♀♀AMNH). CHILE: V Region, I. J. [Islas Juan] Fernandez, X-1981 [October 1981], H. Toro (6♀♀1♂HCVC). [CHILE]: Juan Fernandez Islands, CONAF, 20 Jan. [January] 1996, G. J. Anderson, #19, ex: *Wahlenbergia larrainii* (1♀UCMS). [CHILE]: Juan Fernandez Islands, CONAF, 23 Jan. [January] 1996, G. J. Anderson, #20, ex: *Wahlenbergia larrainii* (1♂UCMS). [CHILE]: Juan Fernandez Islands, CONAF, 12 Jan. [January] 1996, G. J. Anderson, #7, ex: *Wahlenbergia larrainii* (1♂UCMS). [CHILE]: Juan Fernandez Is. [Islands], Masatierra, 5 Jan. [January] 1997, Mirador Trail, 160-170 m, G. J. Anderson, #4041 (1♂UCMS).

Floral associations: This species has been collected at the native hybrid *Wahlenbergia fernandeziana* A. DC. x *W. grahamiae* Hemsl. (Campanulaceae) previously known by the name *W. larrainii* (Bertero) Skotts. (Lammers, 1996).

Distribution: At present this species is known only from Robinson Crusoe Island in the Juan Fernandez Archipelago, Chile.

Etymology: The specific epithet is a reference to the Juan Fernandez Islands.

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