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Authors: Landry, Bernard, and Léger, Théo

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Taxonomic revision of the Crambinae (Lepidoptera, Pyralidae *sensu lato*) of the Galápagos Islands, Ecuador

Bernard Landry[1]* & Théo Léger[2]

[1] *Muséum d'histoire naturelle de Genève, C.P. 6434, CH-1211 Geneva 6, Switzerland; ORCID: https://orcid.org/0000-0002-6005-1067*

[2] *Museum für Naturkunde Berlin, Leibniz-Institut für Evolutions- und Biodiversitätsforschung, Invalidenstr. 43, D-10115 Berlin, Germany; Theo.Leger@mfn.berlin; ORCID: https://orcid.org/0000-0001-7330-3940*

* *Corresponding author: bernard.landry@geneve.ch*

Abstract: The Crambinae (Lepidoptera, Pyralidae *s. l.*) of the Galápagos Islands, Ecuador are revised. Whereas only *Argyria lacteella* (Fabricius, 1794), *Diatraea saccharalis* (Fabricius, 1794), and *Euchromius galapagosalis* Capps, 1966 had previously been recorded from the archipelago, seven species are described as new: *Mesolia christinae* sp. nov., *La florenciae* sp. nov., *La grisea* sp. nov., *La galapagensis* sp. nov., *La paquitae* sp. nov, *La wagneuri* sp. nov., and *Parapediasia galapagensis* sp. nov., thus bringing the total number of Crambinae species recorded from the Galapagós Islands to ten. *Euchromius galapagosalis* and the seven new species are presumed endemic to the Galápagos. The habitus and genitalia of all ten species are illustrated.

Keywords: Evolutionary radiation - high endemicity - Pyraloidea.

INTRODUCTION

Crambinae is the third largest subfamily of the Pyralidae *s. l.* (Pyraloidea), with 2093 species in 177 genera (Nuss *et al.*, 2024) distributed on all continents except Antarctica; the larvae are known to feed on Poaceae and more rarely on Bryophyta and other plants (Léger *et al.*, 2019). Recent investigations on their phylogenetic relationships with other pyraloids show that their sister group is likely the Scopariinae, but Erupinae is a potential candidate as well (Léger *et al.*, 2019, 2020). With 380 valid species, based on Nuss *et al.* (2024), the Crambinae of the Neotropical region are still poorly known, except for a few genera, and very much under sampled in the hyper-diverse biomes of South America.

The Crambinae fauna of the Galápagos Islands has never been reviewed and only three species have been recorded previously from the archipelago, i.e., *Argyria lacteella* (Fabricius, 1794), *Diatraea saccharalis* (Fabricius, 1794), and *Euchromius galapagosalis* Capps, 1966 (Roque-Albelo & Landry, 2018).

This is the last of the 18 contributions by BL of his endeavour to revise taxonomically for the first time the families of the Lepidoptera of the Galápagos archipelago, mainly in the so-called microlepidoptera and Pyraloidea.

MATERIAL AND METHODS

The 742 specimens treated here were mostly collected by BL during five trips to the Galápagos Islands, the first two in 1989 and 1992 as part of Stewart B. Peck's team from Carleton University, Ottawa, Canada, and the latter three in 2002, 2004, and 2005 directly from Geneva at the invitation of entomologist Lazaro Roque-Albelo, who, at the time, was employed by the Charles Darwin Station of the C. Darwin Foundation for the Galápagos. Additional specimens came from loans of institutional collections. The material collected by BL in 1989 is deposited in the CNC whereas that of subsequent collecting trips, and that collected by P. Schmitz, is in the MHNG. Material from the AMNH was collected by J. DeRoy, that from the CAS by D.Q. Cavagnaro, R.O. Schuster, I.L. Wiggins, F.X. Williams, and M. Willows jr, that from the CDRS by

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L. Roque Albelo, sometimes with C. Causton, that from the MCZ by R. Silberglied, and that from the NHMUK by Tj. de Vries and R. Perry.

Abdomens were dissected in 30% ethanol following maceration in KOH at 60°C for one hour. Dissected parts were stored in lactic acid stained with Orange G until they were ready to be mounted. Mounting included a short staining period in Chlorazol black. Euparal was used as a mounting medium.

Photos of genitalia and abdominal features were taken with a Leica M205C binocular scope and a Leica DMC5400 camera and its associated imaging software. The photos were stacked using Zerene Stacker of Zerene Systems LLC and enhanced using Adobe Photoshop Elements.

The labels of the holotypes are transcribed exactly, with vertical bars representing changes of lines and missing letters of abbreviated words placed in square brackets. For the paratypes, the presentation of the label data is simplified, with the missing letters of abbreviated words and words translated from Spanish placed in square brackets only on their first occurrence, and with the presentation of dates and collectors standardized. For the species described anteriorly, only the collecting localities are presented, with their original data errors such as 'plaja' for 'playa', 'Ibbeston' for 'Ibbetson', and 'Baquarizo' for 'Baquerizo'.

Descriptions are based on all available specimens, even though in some cases, not all specimens are included in the type series. The terminology follows Landry (1995).

The following abbreviations are used: 'BL' for 'Bernard Landry', 'elev.' for 'elevation', 'GPS' for 'Global Positioning System', '*leg*.' for '*legit*' (collected), 'm' for 'meters', ws for 'wingspan', 'AMNH' for American Museum of Natural History, New York, New York, USA, 'CAS' for California Academy of Sciences, San Francisco, California, USA, 'CDRS' for Charles Darwin Research Station, Santa Cruz Island, Galápagos, Ecuador, 'CNC' for Canadian National Collection of Insects, Arachnids and Nematodes, Ottawa, Ontario, Canada, 'MCZ' for Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, USA, 'MHNG' for 'Muséum d'histoire naturelle de Genève', Switzerland, 'NHMUK' for Natural History Museum, London, U.K., and 'NMNH' for National Museum of Natural History, Washington, D.C., USA.

TAXONOMIC ACCOUNT

Mesolia Ragonot, in Joannis & Ragonot, 1889

Mesolia currently includes 20 species distributed in all biogeographical regions of the globe (Nuss *et al.*, 2024). In the Neotropical region species have been described only from the northern fringe, i.e., Dominican Republic (one species), Jamaica (one species), and Mexico (one species from Guerrero and one from Presidio, state unknown). The placement of the new Galápagos species in *Mesolia* is based on the most recent diagnosis of the genus (Bassi, 2013). However, in the species described here as new, the female has a simple corpus bursae (Fig. 51), as opposed to a bilobed corpus bursae in other species. *Mesolia* was recently (Léger *et al.*, 2019) returned to tribe Ancylolomiini, which includes the Prionypterygini (syn.) of Landry (1995).

Mesolia christinae sp. nov.

Figs 1-4, 37-39, 51, 52

Material examined: *Holotype*: ♀, 'ECU[ADOR]., GALAPAGOS | Genovesa, Bahia | Darwin, 26.iii.1992 | M[ercury]V[apour]L[ight], *leg*[*it*]. B. Landry'; 'HOLOTYPE | Mesolia | christinae | Landry & Léger'; 'MHNG | ENTO | 00085748'. Deposited in MHNG.

Paratypes: 18 ♂, 40 ♀ from the Galápagos Islands. – *Genovesa*: 3 ♂, 1 ♀, south side of island, 200 yards from beach, 4-6.ii.1967, in flight trap among *Bursera graveolans* (I.L. Wiggins); 6 ♂ (one dissected, MHNG-ENTO-85551), 13 ♀ (one dissected, MHNG-ENTO-85552), Bahia Darwin, 10.iii.1992, MVL (B. Landry); 1 ♂, 23 ♀ (one dissected, MHNG-ENTO-85555), with same data as holotype; 8 ♂ (one dissected, MHNG-ENTO-85536), 3 ♀ (one dissected, MHNG-ENTO-85537), same data as holotype except 26.iii.1992. Deposited in CAS, CDRS, and MHNG.

Additional material examined: 20 ♂, 29 ♀ from the Galápagos Islands. – *Fernandina*: 2 ♀ (dissected, MHNG-ENTO-85558), Cabo Douglas, GPS: S 00°18.269', W 091°39.098', 9.ii.2005, u[ltra]v[iolet] l[ight] (B. Landry, P. Schmitz); 1 ♂, SW side, GPS: 352 m elev., S 00°20.503', W 091°36.969', 10.ii.2005, uvl (B. Landry, P. Schmitz); 1 ♂, Punta Espinosa, 12.v.1992, M[ercury]V[apour]L[ight] (B. Landry). – *Floreana*: 1 ♀, close to Las Palmas, GPS: 154 m elev., S 01°17.049', W 090°28.305', 15.iv.2004, uvl (P. Schmitz); 1 ♂ (dissected, MHNG-ENTO-85550), 6 ♀ (one dissected, slide MHNG-ENTO-85557), Punta Cormoran, 21.iv.1992, MVL (B. Landry). – *Genovesa*: 7 ♂, 3 ♀, south side of island, 200 yards from beach, 4-6.ii.1967, in flight trap among *Bursera graveolans* (I.L. Wiggins). – *Isabela*: 1 ♀, V[olcan]. Darwin, campamento base, 1.iii.2000, Malaise trap (L. Roque, n° 2000-03); 1 ♂, Volcan Darwin, 200 m s[obre el] n[ivel del]m[ar] [above sea level], 2.iii.2000, uvl-w[hite]l[ight] (L. Roque, n° 2000-05); 1 ♂, 9 ♀, Tagus Cove, alt[itude]. ± 10 m, 22-23.iii.1970, at 15 W uv blacklight (R. Silberglied); 1 ♀, V. Alcedo, 200 m [elev.], arida alta [zone], 12.iv.2001, luz fluorescente [fluorescent light] (L. Roque, n° 2001-06); 1 ♂, 1 ♀, [Volcan] Alcedo, lado [side] NE, 200 m [elev.], camp arida alta, 14.iv.2002, uvl (B. Landry, L. Roque); 1 ♂ (dissected, slide MHNG-ENTO-85559), 2 ♀, Alcedo, lado NE, low arid zone, bosq[ue]. palo santo [forest], 18.iv.2002, uvl (B. Landry, L. Roque). –

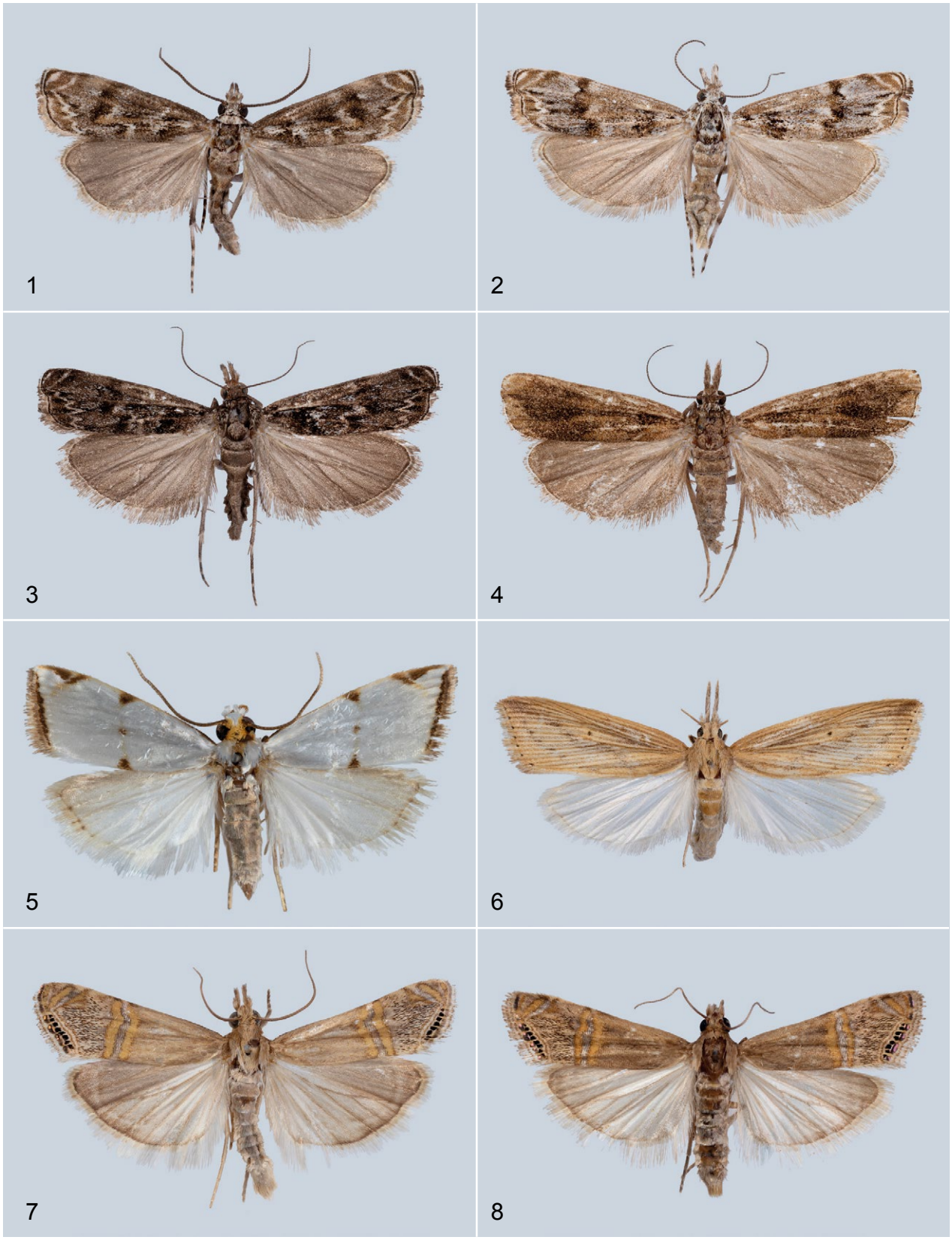
Marchena: 1 ♂ (dissected, MHNG-ENTO-85553), 1 ♀, 12.iii.1992, MVL (B. Landry). – *Pinta*: 1 ♂ (dissected, slide MHNG-ENTO-85560), ± 50 m elev., 20.iii.1992, MVL (B. Landry); 1 ♀, 630 m [elev.], xi.1970, B[ritish].M[useum]. 1971-79, Ref[erence]. No. L.100 (collector unknown). – *Plaza Sur*: 1 ♂, 14 m. elev., S 00°34.982', W 090°09.936', 15.iv.2006, uvl (P. Schmitz). – *Santa Fe*: 1 ♀, tourist trail, 28.v.1992, MVL (B. Landry). – *Santiago*: 1 ♂, N end Bahia James, 1-2.ii.1967 (I.L. Wiggins); 2 ♂ (dissected, MHNG-ENTO-85554 and 85561), Cerro Inn, 28.iii.1992 MVL (B. Landry). Deposited in CAS, CDRS, MCZ, MHNG, NHMUK.

Etymology: This species is dedicated to MHNG artist Christina Lehmann-Graber for her outstanding work on BL's illustrations of this publication and some others.

Diagnosis: In the Galápagos Islands this species is easily separated from other moths by virtue of its size, narrow forewings, long, porrect labial palpi, and forewing white subterminal line that zigzags from the dorsal margin until the median sector where it is directed outward to almost reach the outer margin and then diverges at 90° to reach the costal margin at distal 1/6. Naturally poorly marked specimens do resemble poorly marked specimens of *La galapagensis* sp. nov. (Fig. 18) by virtue of their similar ground colour, narrow forewings and long, porrect labial palpi, but in *M. christinae* sp. nov. the forewing apex is rounded whereas it is pointed in *La galapagensis* sp. nov. Poorly marked, dark-winged specimens of *Parapediasia galapagensi*s sp. nov. (Fig. 36) are also similar, but specimens of the latter always retain a simple subterminal line and their hindwing is white. With respect to the other Neotropical species of *Mesolia*, *M. christinae* sp. nov. is most similar to *M. nipis* (Dyar, 1914), described from Mexico, Sierra de Guerrero. However, in *M. nipis*, even though the holotype is in poor condition, one can see that it has no markings at base until the postmedian line, the outer margin is conspicuously produced at M1-M2, the costa is white between the postmedian and subterminal lines, and there are two prominent black dashes in the M3-CuA sector abutting the subterminal line and ending before the outer margin in a white patch along the outer margin.

Description: *Male* (n=38) (Fig. 1). Head with frons produced, pointed, with vestiture mostly short scaled, white ventrally, brown dorsally; with longer scales laterally over eye white, between antennal bases mostly brown, on occiput and vertex mostly white laterally, brown medially. Antenna laminate with widest flagellomeres about 10% wider than long; vestiture on scape and pedicel white ventrally, on flagellomeres with basal row of scales dark brown and distal row half white and half dark brown on basal 10 flagellomeres, with white replaced by greyish brown on subsequent flagellomeres. Maxillary palpus at base brown laterally and white medially, apically white to greyish white. Labial palpus white on most of first palpomere, white on second ventrally and medially, brown laterally on second and on third. Haustellum white. Thorax mixed white and brown, most often white (or paler) at edges and apex of tegula, beneath tegula, medially on patagium, and as transverse band at junction of mesoscutum and mesoscutellum. Forewing length: 6.0-9.0 mm (holotype: 7.9 mm); wingspan: 13.0-19.0 mm (holotype: 17.7 mm). Wings with colour and pattern as illustrated (Fig. 1). Prothoracic leg coxa and trochanter greyish brown, more or less mottled with white; femur greyish brown with white on ventral edge and medially; tibia white, or at least paler at base and apex, brown in between; tarsomeres I-V as tibia, with paler colour at base less conspicuous or absent on tarsomeres III-V. Mesothoracic leg coxa and trochanter white, tinged with pale brown; femur white to pale greyish brown; tibia pale greyish brown laterally except for white base and apex, white medially; tarsomere I dark greyish brown laterally between white base and apex; tarsomere II white at base and apex, laterally greyish brown in between, sometimes straw-coloured medially; tarsomeres III-V as tarsomere II, but without white at base usually. Metathoracic leg coxa and trochanter as mesothoracic leg; femur white with pale greyish brown apically; tibia mostly white, with pale greyish brown dorsally, sometimes only at apex; tarsomeres as mesothoracic leg. Abdomen dorsally greyish brown, often darker on first tergite, ventrally paler, white to pale greyish brown. Tergum VIII (Fig. 37) with sclerotization as shown. Intersegmental membrane VII-VIII with one digit-like coremata on each side (Fig. 39a), about 1/3 as long as valva, slightly variable in width.

Male genitalia (n=9) (Figs 38, 39). Uncus strong, broadly curved, with dorsodistal crest less thickly sclerotized, with short to medium length setae laterally from about 1/3 until 5/6 of length and dorsally on crest, dorsal edge of crest serrated on distal half, apex laterally compressed. Anal tube ventrally sclerotized as short and narrow plate. Gnathos short, with arms of medium width, more thickly sclerotized on proximal edge, joined at 2/3 to form short, upturned point, with few spinules dorsally along midline in curve of distal section. Tegumen of medium size, with distal edge of lateral arms more thickly sclerotized. Juxta shield like, with apex blunt. Valva medium sized, with dorsal and ventral margins parallel at base until about 1/3 of length, ventral margin then bent upwards, apex broadly rounded, about as wide as half of basal width. Vinculum narrow, about twice as wide towards junction with tegumen arms, with proximal margin medially blunt or slightly concave. Pseudosaccus short, pear-shaped. Phallus straight, about 4/5 valva length, base with ventral and dorsal margins indented, slightly wider at apical ¼ and with more thickly sclerotized, longitudinal striae; vesica without cornuti.



Figs 1-8. Specimens of Crambinae from the Galápagos Islands. (1-4) *Mesolia christinae* sp. nov. (1) Male, Alcedo, NE side, camp arida alta, 200 m elev., ws: 17.0 mm. (2) Holotype. (3) Female, Fernandina, Cabo Douglas, ws: 19.5 mm. (4) Female, Floreana, Punta Cormoran, ws: 20.0 mm. (5) *Argyria lacteella* (Fab.), male, Santa Cruz, Los Gemelos, ws: 11.5 mm. (6) *Diatraea saccharalis* (Fab.), female, San Cristóbal, La Toma, ws: 25.5 mm. (7-8) *Euchromius galapagosalis* Capps. (7) Male, Santa Cruz, Finca S. Devine, ws: 18.5 mm. (8) Female, Floreana, Punta Cormoran, ws: 17.5 mm.

Female (n=70) (Figs 2-4). Head with frons as male's. Antenna simple, with white scaling on most flagellomeres more abundant than in males. Forewing length: 5.5-9.5 mm (wingspan: 12.5-21.0 mm). Frenulum with 1 acantha. Wings with colours and pattern as illustrated, sometimes with markings less distinct than in males.
Female genitalia (n=7) (Figs 51, 52). Papillae anales of medium length and densely setose, shortly produced dorsally; narrow basal sclerite along ventral half narrowing and not connecting ventrally. Posterior apophyses straight, reaching basal margin of segment VIII. Tergite VIII sclerotized areas slightly longer than papillae anales, wider dorsally, unconnected ventrally. Anterior apophyses with short support bar diagonally positioned in segment VIII, with small subtriangular enlargement at basal 1/8, about 1/4 longer than posterior apophyses, straight until slight bend at 5/8, then gently curving. Ostium membranous, about half as wide as width of segment VIII. Ductus bursae wide, with smoothly sclerotized colliculum about 1/3 of whole length of ductus, otherwise simply membranous. Corpus bursae slightly longer than wide, about 1/4 longer than ductus bursae, without sclerotization.

Biology: The hostplant is unknown and the fact that some of the paratypes were collected "among *Bursera graveolans*" does not reflect a direct host-plant association. A shrub or tree reaching 12 m in height, *B. graveolans* (Kunth) Triana & Planch. (Burseraceae) is a common feature of the arid zone of most islands and many islets of the Galápagos (McMullen, 1999). No host plant is known for *Mesolia* species. The moths of *M. christinae* readily come to artificial lights at night.

Distribution: Presently known from the Galápagos islands of Fernandina, Floreana, Genovesa, Isabela, Marchena, Pinta, Plaza Sur, Santa Fé, and Santiago.

Remarks: Although altogether 108 specimens studied are assigned to this species, the type series is restricted to 59 specimens collected on Genovesa Island. This is because 10 more specimens available from Genovesa are too heavily damaged and, more significantly, the populations found on the other islands are insufficiently known. Specimens of these populations appear to be slightly larger on average than on Genovesa and also slightly warmer brown and with the forewing markings less distinct (Figs 3, 4), especially in females. In genitalia, two male paratypes dissected vary slightly in the width of the valva and in the shape of the anterior margin of the vinculum medially, which is convex in one specimen and straight in the other, with the pseudosaccus reaching beyond the anterior margin in the specimen with the convex margin and just reaching it in the specimen with the straight margin. Male genitalia variation also occurs in specimens from other islands such as a slightly thicker and shorter phallus in a specimen from Santiago Island, but not in another from the same island, a less strongly curved uncus as well as narrower valva at base compared to its apex in one specimen from Isabela Island, and a narrower tegumen and a longer and narrower phallus (Fig. 39) in a specimen from Floreana Island. In female genitalia no significant differences could be detected in the dissected specimens.

Argyria Hübner, 1818

This genus presently includes 33 species distributed mostly in the Western Hemisphere, from southern Canada to Argentina, except for two of them, possibly misplaced in *Argyria*, from India and Fiji (Nuss *et al.*, 2024). The bionomics and immature stages are known only for *Argyria gonogramma* Dyar (see below).

Argyria lacteella (Fabricius, 1794)

Figs 5, 40, 53

Tinea lacteella Fabricius, 1794: 313. Type locality: US Virgin Island of St Croix (see Landry *et al.*, 2023).
Argyria lacteella (Fabricius): Roque-Albelo & Landry, 2018.

Material examined: 7 ♂, 36 ♀ from Ecuador, Galápagos. – *Floreana*: Cerro del Asilo, GPS: elev. 366 m, S 01°18.931', W 90°27.232'. – *Isabela*: Volcan[o] Sierra Negra, Corason [sic] Verde, 360 m; Puerto Villamil; 1 km W Puerto Villamil; 3 km N Puerto Villamil; 11 km N Puerto Villamil; ± 15 km W Puerto Villamil; Sierra Negra [volcano], pampa zone, 1000 m; Alcedo [volcano], NE side, camp arida alta, 200 m; V[olcán]. Alcedo, 830 m elev.; V. Alcedo, 1100 m elev.; V. Darwin, 300 m elev[ation]. – *San Cristóbal*: 2 km SW P[uer]to Baquarizo [sic]; 4 km SE Pto Baquarizo; 1 km S El Progreso; Chatham I[slan]d., 1000 f[ee]t.; pampa zone; base of Cerro Pelado; La Toma, ca. 5.6 km E El Progreso, GPS: 299 m elev., S 00°55.356', W 089°31.089'. – *Santa Cruz*: NNW Bella Vista, GPS: 225 m elev., S 00°41.293', W 090° 19.665'; low agriculture zone, GPS: S 00°42.132' W 90°19.156'; Horneman Farm; agriculture zone, near (NNW) Bella Vista, GPS: elev. 223 m, S 00°41.297', W 090°19.670'; C[harles]D[arwin]R[esearch]S[tation], Barranco, 20 m elev. Deposited in CAS, CDRS, CNC, MHNG, NHMUK.

Diagnosis: In the Galápagos Islands this diminutive Crambinae (Fig. 5) with a wingspan between 11 mm for the smallest males and 14 mm for the biggest females cannot be mistaken with any other moth species. Indeed, none other harbours mostly satiny white wings with brown markings on the forewing consisting of three spots medially (one costal, one median, sometimes absent, and one dorsal), a costal triangle bisected by a thin white line subapically, and a thin stripe along the outer margin. The other mostly satiny white

species in the Galápagos, i.e., *Palpita galapagensis* (Landry & Solis) in Landry (2016) and *Palpita flegia* (Cramer, 1777) are much larger (between 26.5 and 50 mm in wingspan) and lack dark spots medially on the forewing. Other species of *Argyria* with similar markings are known from the continental Americas and Caribbean Islands. One of these, *Argyria centrifugens* Dyar, 1914, described from Panama, is very similar, although distinctly larger, with a wingspan of 16 to 19 mm (see Landry *et al.*, 2023). Apart from size these two species differ in the colouration of their palpi as the tip of the maxillary and labial palpi of *A. lacteella* are satiny white whereas the maxillary palpi of *Argyria centrifugens* are orange brown while its labial palpi are dark brown with the third palpomere slightly paler brown. Both species are also very different in genitalia. Based on its holotype, the male genitalia of *A. centrifugens* (see Landry *et al.*, 2023, figs 21, 22) differ most notably in the three-pronged gnathos, the wider valva with a widely rounded apex and without a short hook-like projection at base but with a large membranous structure sporting a thin and pointed rod about half as long as the valva, directed toward the base of the valva and apparently articulated. Other similar species are the North American and Bermudian *A. gonogramma* Dyar, 1915 and the Antillean *A. diplomochalis* Dyar, 1913 (see Landry *et al.*, 2023).

Biology: The moths come to light and the species can colonize habitats close to sea level as well as up to 1100 m in elevation in the Galápagos Islands. The larvae most likely feed on Poaceae as does its sister species *A. gonogramma* (see Landry *et al.*, 2023).

Distribution: This is a widespread American species for which the type locality has been pinpointed to be Saint Croix Island in the United States Virgin Islands by Landry *et al.* (2023). It is known from southern Florida in the United States of America through the Caribbean Islands and Central and South America (see Landry *et al.*, 2023, for a review). In the Galápagos Islands this species has been found so far only on inhabited islands (Isabela, Floreana, San Cristóbal, and Santa Cruz), potentially indicating one or several introductions from the continent. However, on Isabela Island the species has spread onto the uninhabited slopes of Alcedo and Darwin volcanoes.

Diatraea Guilding, 1828

This large genus contains 41 species known from the Western Hemisphere (Dyar & Heinrich, 1927; Box, 1931; Solis & Metz, 2016; Nuss *et al.*, 2024). *Diatraea saccharalis*, the type species, is a well-known pest of sugarcane in the Americas. The absence of ocelli, the presence of pockets with specialized scales on the male second abdominal segment, hair tufts on the hind tibia of the male, and basal extensions of the tegumen in male genitalia of most species define the genus (Solis & Metz, 2016). Host plants are exclusively panicoid grasses (Poaceae, Panicoideae), including several crops such as maize (*Zea mays* L.), sugar cane (*Saccharum officinarum* L.), and great millet [*Sorghum bicolor* (L.) Moench] (Robinson *et al.*, 2010).

Diatraea saccharalis (Fabricius, 1794)

Figs 6, 41, 54

Phalaena saccharalis Fabricius, 1794: 238. Type locality: "America meridionalis".

Diatraea saccharalis (Fabricius): Roque-Albelo & Landry, 2018.

Material examined: 2 ♀ from Ecuador, Galápagos. – *San Cristóbal*: El Chino, z[ona]. agricola, [S]00.9096927, W089.4458128 (genitalia preparation BL 1585); MHNG-ENTO-85752, La Toma, ca. 5.6 km East El Progreso, 299 m elev. S00°55.356', W89°31.089'. Deposited in CDRS and MHNG.

Diagnosis: In the Galápagos Islands this rather large Crambinae known from two females (wingspan 26-30 mm) cannot be mistaken with other species, but males are generally smaller and the wingspan recorded for the species by Dyar & Heinrich (1927) is 18-39 mm. The moths (Fig. 6) harbour brownish forewings thinly striated with dark brown, with two diffuse dark brown oblique lines running from the dorsum at mid length to the apex (more strongly marked in male specimens), and with marginal dark brown spots between veins. Other *Diatraea* species occur on continental South America and can only be reliably identified by examination of the genitalia (see Solis & Metz, 2016). The male genitalia of *D. saccharalis* (Fig. 41) are similar to those of *D. albicrinella* Box, 1931, *D. impersonatella* (Walker, 1863), and *D. tabernella* Dyar, 1911, and can be separated based on the following features: lateral lobe of tegumen evenly rounded, basal costal lobe of valva well-marked, globular, protruding at a 90° angle with valva, covered with tiny spines, and juxta arms tapered apically, not pointed. Female genitalia (Fig. 54) share features characteristic of the *D. saccharalis* group: sternite VIII with broad transverse "pocket" mostly concealing the ostium bursae; lamella antevaginalis composed of a pair of hardened, posteriorly projecting extensions that may cover the genital opening or surround it laterally; cuticle laterad of lamella postvaginalis wrinkled and/or densely setose, contrasting strikingly with a smooth and glabrous medial area (Solis & Metz, 2016). From other species of the *D. saccharalis* group, it can be separated by the posteriorly projecting triangular extensions of the lamella antevaginalis, the lateral, wrinkled and/or densely setose cuticle of the lamella postvaginalis not reaching the posterior margin of sternite VIII, the

lamella postvaginalis with a distinct pair of elevated transverse ridges posterad, and the glabrous and pear-shaped corpus bursae slightly longer than large (Solis & Metz, 2016). Unambiguous segregation between *D. albicrinella* and *D. impersonatella* is possible with the examination of female genitalia only.

Biology: *Diatraea saccharalis* is a well-known pest of sugar cane (*Saccharum officinarum* L.) and has been reported feeding on 26 different Poaceae species (Robinson *et al.*, 2010). Sugar cane has been introduced on the Galápagos for sugar production and spread in the wild. Guézou *et al.* (2010) record it from all inhabited islands of the Galápagos, except Baltra, and 25.6% overall of the localities visited.

Distribution: *Diatraea saccharalis* is widely distributed in the tropical and subtropical Americas, from Florida, USA, southwards to Argentina (GBIF, 2021). In the Galápagos so far, it has been found only on San Cristóbal.

Remarks: One of the Galápagos specimens was collected at light in February while the other was collected manually in May on a young shoot of corn ("cogollo maiz").

Euchromius Guenée, 1845

Occurring in all biogeographical regions of the World except Antarctica and Oceania, this genus of 50 species (Nuss *et al.*, 2024) is most diverse in Africa and least so in Australia and North America, which have one species each, excluding the widespread *E. ocellea* (Haworth, 1811). The Neotropical fauna is also rather poorly diversified, with four species only, including the Galápagos endemic *E. galapagosalis* Capps. With respect to bionomics, the larvae of several species have been found to feed on dead plant leaves, sometimes attacking living tissue (Schouten, 1992) and the larva of *E. ocellea* has been mentioned to feed on the roots of *Zea mays* L. and *Sorghum* sp. (Poaceae) (Capps, 1966).

Euchromius galapagosalis Capps, 1966

Figs 7, 8, 42, 43, 55

Euchromius galapagosalis Capps, 1966: 5-6, figs 2, 6, pl. 1 fig. 1. Type locality: Ecuador, Galápagos Islands, South Seymour Island.

Euchrombius [sic] *ocelleus* (Haworth): Lindsey & Usinger, 1966: 163. Misidentification.

Material examined: 27 ♂, 38 ♀ from Ecuador, Galápagos. – *Baltra*: arid zone; S 00° 28.034', W 90° 15.231', 57 m elev[ation].; without precise locality. – *Española*: Bahía Manzanillo; Las Tunas Trail, 100 m elev.; Punta Suarez. – *Floreana*: Punta Cormoran; Las Cuevas. – *Genovesa*: Bahía Darwin. – *Isabela*: V[olcan]. Darwin, 300 m elev. – *Marchena*: no precise locality. – *Pinta*: Plaja Ibbeston [sic]; Cabo Ibbetson, N 00° 32.819', W90° 44.229', 8 m elev.; ± 15 m elev.; ± 50 m elev.; arid zone. – *Pinzón*: plaja [sic] Escondida. – *Rábida*: Tourist Trail. – *San Cristóbal*: P[uer]to Baquarizo [sic]; near Loberia, GPS: elev. 14 m, S 00° 55.149', W 89° 36.897'; 4 km SE Pto Baquarizo; 1 km S El Progreso; transition zone, SW El Progreso, GPS: elev. 75 m, S 00° 56.359', W 89° 32.906'; base of Cerro Pelado; pampa zone. – *Santa Cruz*: Bahía Conway; C[harles]D[arwin]R[esearch]S[tation], arid zone; Barranco, arid zone; Academy Bay; Finca Vilema, 2 km W Bella Vista; casa [house of] L. Roque-Albelo & V. Cruz[-Bedon], GPS: 137 m elev., S 00° 42.595', W 090° 19.196'; Finca S. Devine; low agriculture zone, GPS: S00° 42.132', W 90° 19.156'; Indefatigable Is[land]., without precise locality. – *Santa Fé*: Tourist Trail. – *Santiago*: Bahía Espumilla; La Bomba; GPS: 6 m elev., S 00°11.151', W 90°42.052'; Cerro Inn. – *Seymour Norte*: arid zone; GPS: 13 m elev., S 00° 24.013', W 90° 17.422'; without precise locality. Deposited in CAS, CDRS, CNC, MHNG.

Diagnosis: Based on the characteristic *Euchromius* features of the forewing, i.e., the double yellowish-orange median fascia and the terminal row of black dots distally abutted by shining silver dots (Figs 7, 8), this species is unmistakable in the Galápagos. It can be separated from the other New World species by the homogeneous basal brown field of the forewing, without or with very little (fuscous) irroration, contrasting with the conspicuously irrorated field between the median fascia and the subterminal line. In male genitalia (Figs 42, 43) it can be best separated from the other two New World species with a broadly enlarged cucullus (*E. ocellea* and *E. saltalis* Capps, 1966) by the shape of the phallus and the configuration of the cornuti on the vesica (see Capps, 1966). Capps mentioned the wingspan to vary between 16 and 21 mm. However, our material contains a female specimen with a wingspan of only 13 mm, but no specimens larger than 19 mm in wingspan.

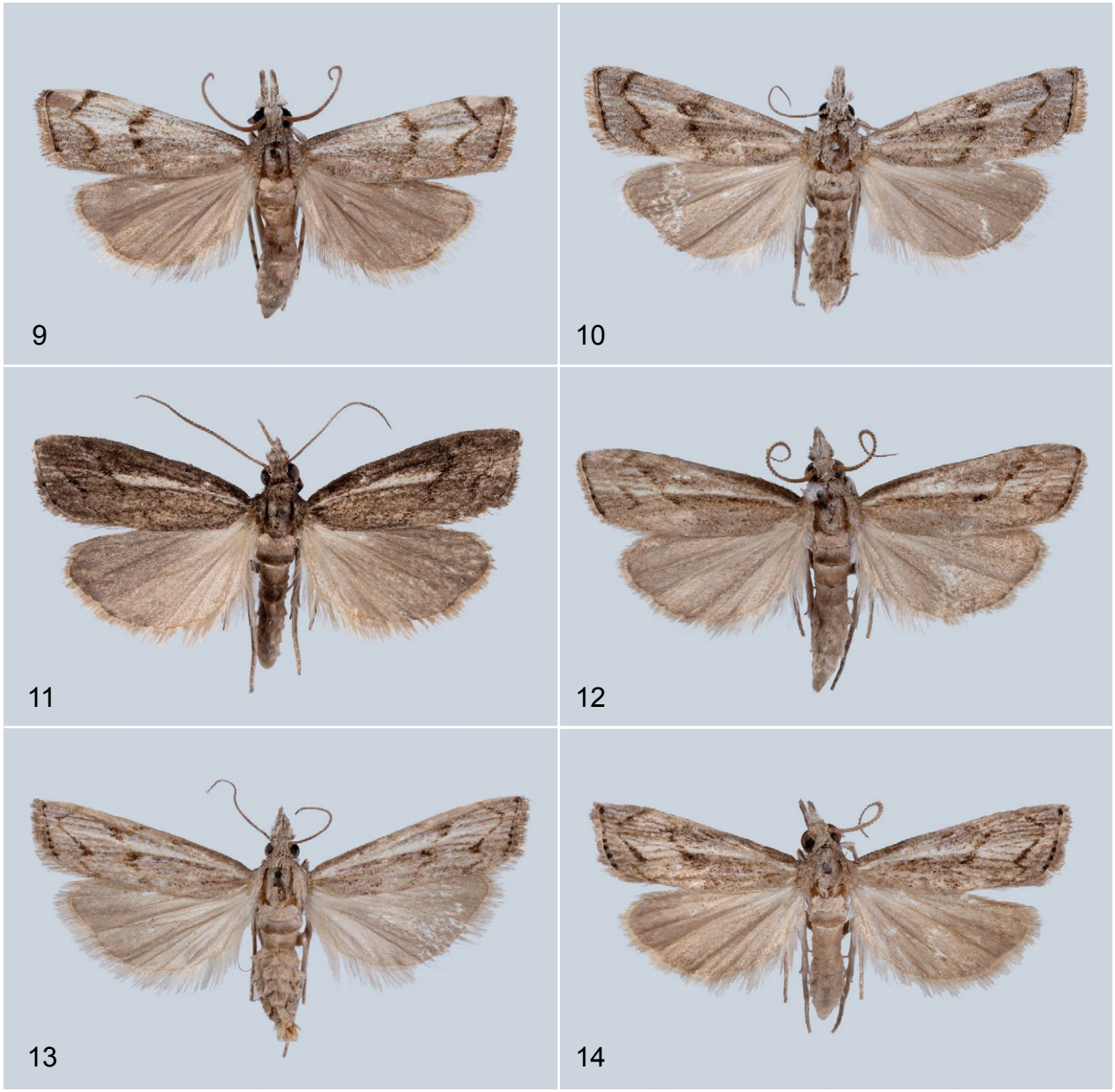
Biology: Unknown except that moths readily come to light and can be found mostly at low elevations in the arid and transition zones, but some have been collected also in the pampa zone, probably above 600 m in elevation.

Distribution: Endemic to the Galápagos Islands, this species has been collected on many of them: Baltra, Española, Floreana, Genovesa, Isabela, Marchena, Pinta, Pinzón, Rábida, San Cristóbal, Santa Cruz, Santa Fé, Santiago, and Seymour Norte.

Remarks: One male specimen dissected has a teratological bifid uncus (Fig. 43a).

La Błeszyński, 1966

This is a small genus with four species described from the south-western United States of America, Colombia, Peru, and Bolivia. The moths of the additional five Galápagos species are often smaller than those from North and South America, the latter reaching between 20 and 29 mm in wingspan for *La cerveza* Landry, 1995 and *La paloma* Błeszyński, 1966, the two continental species for which this information is known to us. The general coloration is brown in the species already described whereas two of the Galápagos species are greyish brown. The male genitalia in all species have a pair of costal projections on each valva and the phallus is apically enlarged with pointed projections laterally, the latter having been identified as a synapomorphy for the genus (Landry, 1995). The larval food and morphology are unknown thus far. A possible synapomorphy for the Galápagos species of *La* is in the male genitalia, which have the manica adorned dorsally with narrow, pointed scales of medium length (see Figs 45b, 47b, 49b). This character is not observed in *La paloma*. The reduced tympanal organs of the Galápagos

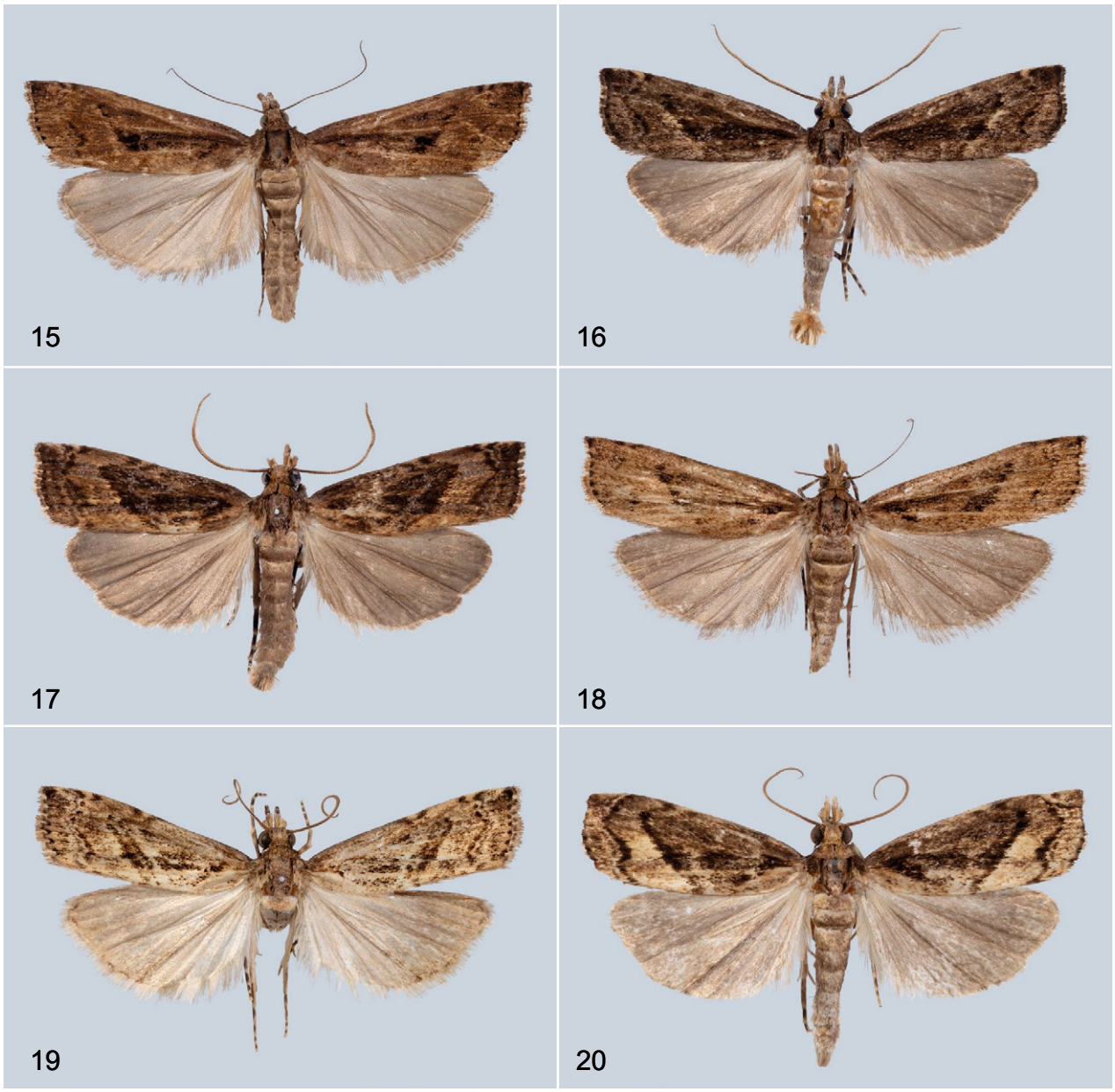


Figs 9-14. Specimens of *La* from the Galápagos Islands. (9-10) *La florenciae* sp. nov. (9) Holotype. (10) Female paratype, MHNG-ENTO-85738, ws: 15.5 mm. (11-14) *La grisea* sp. nov. (11) Male, Fernandina, SW side, 815 m elev., MHNG-ENTO-85736, ws: 15.0 mm. (12) Holotype. (13) Female, Isabela, Tagus Cove, MHNG-ENTO-85760, ws: 14.5 mm. (14) Male, Santiago Bahía Espumilla, MHNG-ENTO-85763, ws: 11.0 mm.

species may also represent a synapomorphy (Fig. 44). Following the terminology used in Landry (1995), these organs can be described as follows: tympanic ridge thin, straight or broadly v-shaped; tympanic pockets almost inexistant; venulae secundae well developed; tympanic bridge long, almost half as long as venulae primae; tympanic crest not observed, apparently absent; tympanic drums narrow, very short, extending posteriorly only to base of reduced praecinctorium. The forewing length over width ratio is sexually dimorphic, with the female forewing being slightly narrower in all species of the Galápagos.

The grey-brown cluster of species

This group of two species of grey-brown moths is present on the younger islands of the archipelago (less than 1.55 myo, i.e., Fernandina, Floreana, Genovesa, Isabela, Pinta, and Santiago), but missing from the older islands of Española, San Cristóbal, Santa Fé, and Santa Cruz (more than 2.1 myo) (see Schmitz *et al.*, 2007).



Figs 15-20. Specimens of *La galapagensis* sp. nov. (15) Paratype female, Santa Cruz, Finca S. Devine, ws: 27.5 mm. (16) Male paratype, Santa Cruz, Charles Darwin Research Station, MHNG-ENTO-85767, ws: 17.5 mm. (17) Holotype. (18) Female, Santiago, Central, 700 m elev., MHNG-ENTO-85765, ws: 22.5 mm. (19) Male, San Cristóbal, pampa zone, slide BL 1149, ws: 20.5 mm. (20) Male, Santiago, Aguacate, 520 m elev., ws: 18.0 mm.

They clearly form a separate group of species based on the colour of the moths, but also based on male genitalia characters such as the lateral projection of the costal process shorter than the cucullus, apically rounded, and without setae on the median side, the lack of anterior lobe on the lateral extensions on each side of the phallus apical part, and with the phallus broadly rounded apically in contrast to a more narrowly-rounded apex in the brown cluster of species. In female genitalia, the apical margin of the papillae anales is straight while it is medially produced in the brown cluster of species. Two species are recognized: *La florenciae* sp. nov., a single island endemic on Floreana, and *La grisea* sp. nov., occurring on Fernandina, Genovesa, Isabela, Marchena, and Pinta.

La florenciae sp. nov.

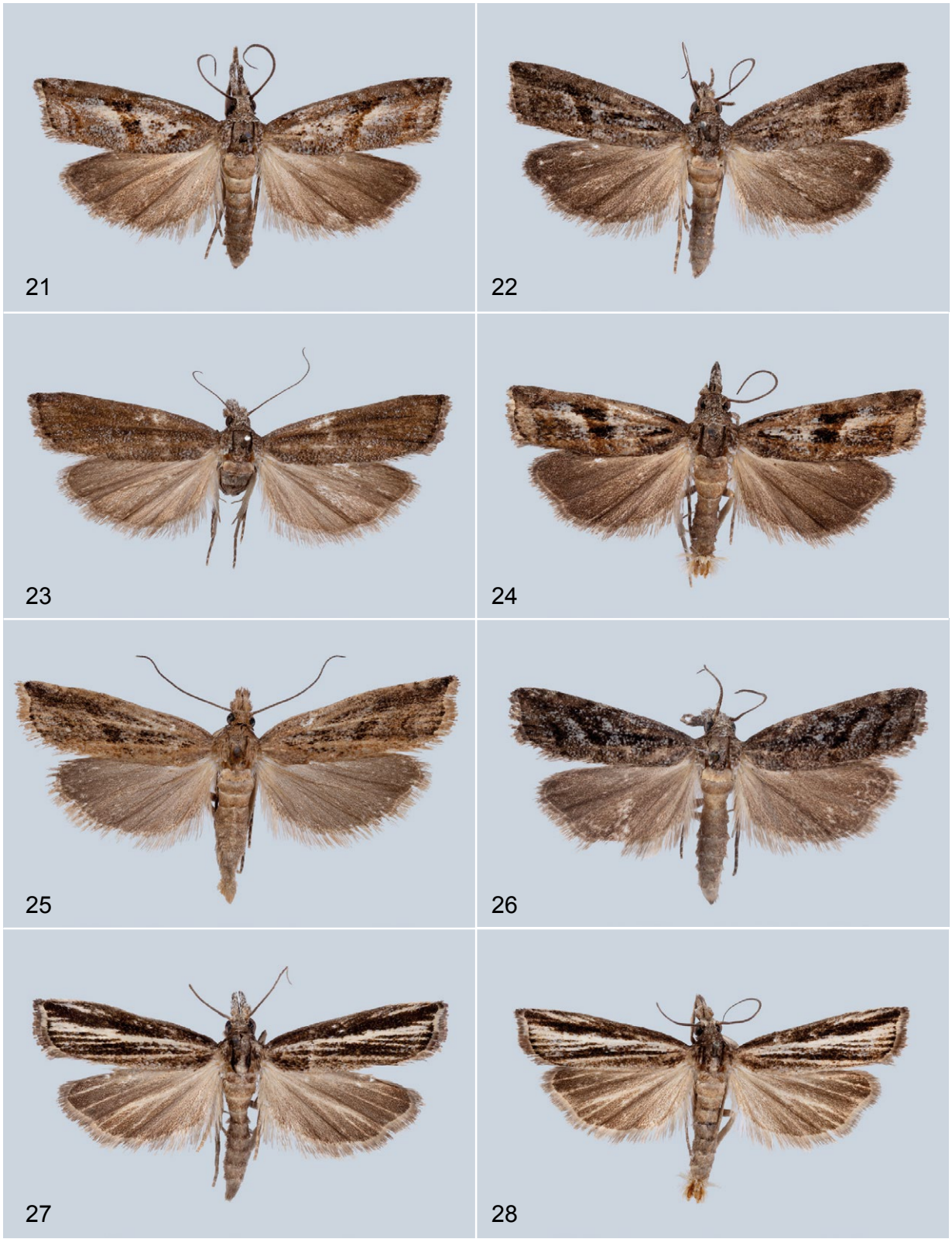
Figs 9, 10, 44, 45, 56

Material examined: *Holotype*: ♂, 'ECU[ADOR]., GALAPAGOS | Floreana, Punta | Cormoran, 21.iv.1992 | M[ercury]V[apour]L[ight], *leg[it]*. B. Landry'; 'HOLOTYPE | La | florenciae | Landry & Léger'; 'MHNG | ENTO | 00085358'. Deposited in MHNG.
Paratypes: 4 ♂, 9 ♀ from the Galápagos Islands. – *Floreana*: 4 ♂ (two dissected, MHNG-ENTO-85359 and 85713), 9 ♀ (two dissected, MHNG-ENTO-85360 and 85714), same data as holotype. Deposited in CDRS and MHNG.

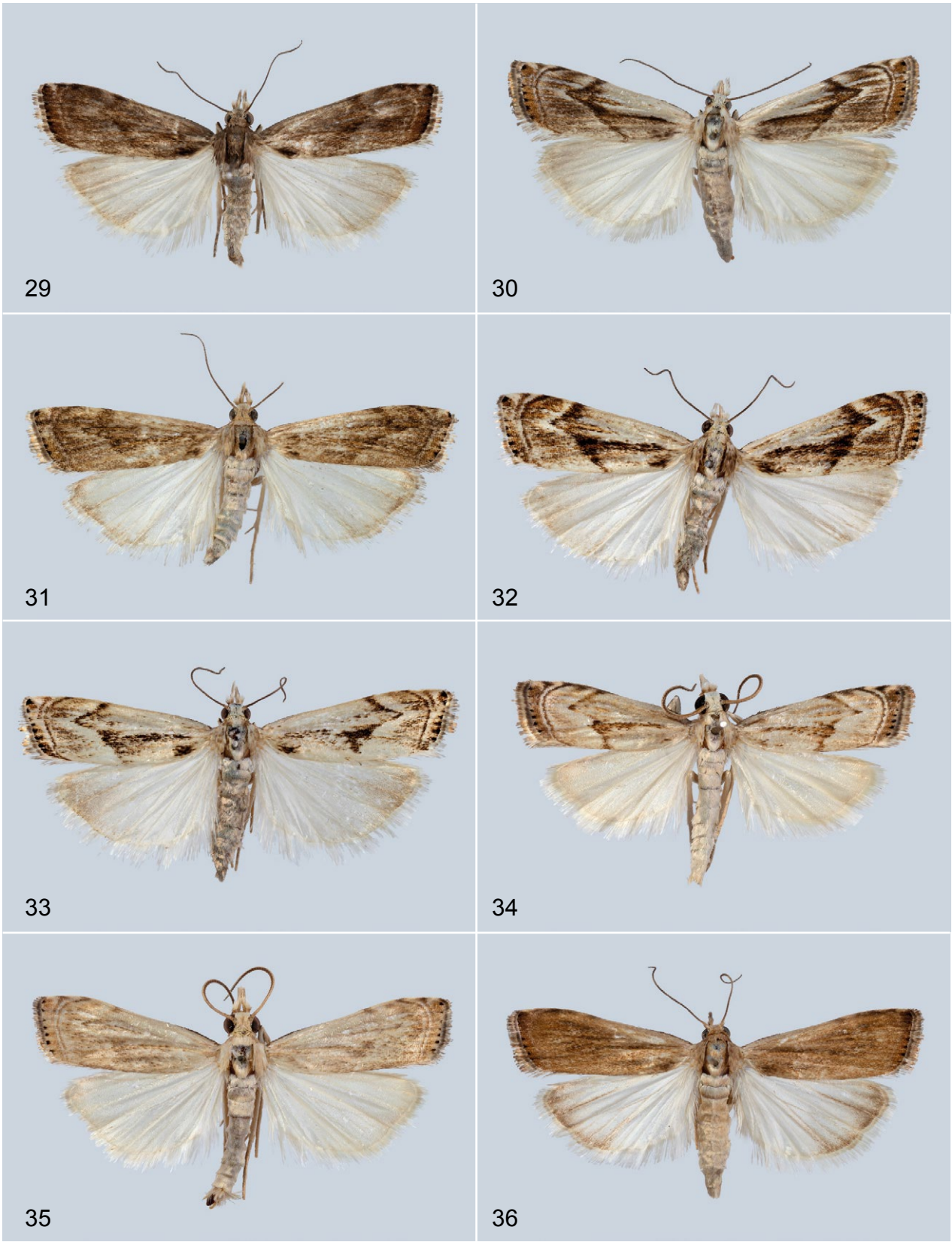
Etymology: Dedicated to Florence Marteau, graphic designer at the MHNG, for her fantastic work on the plates of this manuscript and several others by BL.

Diagnosis: Apart from apparently being a strict endemic to Floreana Island, this species can be recognized from the other greyish-brown species by the usually complete median and subterminal transverse fasciae on the forewing, the lack of a clear longitudinal white streak, and the more uniform greyish-brown background. The male genitalia differ from those of the other species in the short costal projections of the valva, only reaching slightly beyond the middle of the cucullus, the apically narrower outer projection of the costal process of the valva, and the phallus with smaller and weak lateral projections. In the female genitalia, the triangular plate of the ostium bursae contrasts with the larger rounded plate of *La grisea* sp. nov.

Description: *Male* (n=5) (Fig. 9). Head with frons slightly rounded, not projecting; with mixture of pale-greyish brown scales with paler brown tips to pale grey to white, but mostly white on fronto-clypeus undercover. Antenna laminate, with flagellomeres slightly wider than long; with scape and flagellomeres pale greyish brown and white. Maxillary palpus medially mostly white, laterally dirty white at apex with greyish brown towards base. Labial palpus mostly greyish brown with scales paler at tips, white medially and along ventral edge. Haustellum scales white. Forewing length: 6.5-7.0 mm (holotype: 7.0 mm); wingspan: 14.0-15.0 mm (holotype: 15.0 mm). Forewing length to width ratio in holotype: 2.82. Thorax and wings with colour and pattern as illustrated (Fig. 9). Prothoracic leg coxa mixed pale greyish brown and white; femur dark greyish brown laterally, white medially; tibia greyish brown laterally, white medially; tarsomeres mostly as tibia, laterally with white ring on distal three and medially progressively greyer on distal three. Meso- and metathoracic leg coxa white suffused with light greyish brown towards apex; femur, tibia and tarsomeres white, with greyish brown spot at base of distal four tarsomeres laterally. Abdomen dorsally as shown; ventrally paler, whitish grey. Intersegmental membrane VII-VIII around genitalia narrowly sclerotized, with narrow, pointed scales of medium length.
Male genitalia (n=2) (Fig. 45). Uncus short, bulky, about half as long as tegumen dorsal roof, with short apical point. Gnathos short, about as long as uncus, with apex rounded and slightly bent downward. Tegumen rather short and bulky, with lateral arms of medium width. Valva with cucullus narrow, slightly wider at mid-length, with short and broad mediobasal projection apically blunt; costal process with projections slightly curving dorsally and medially; median projection thin, pointed, with rather sparse, short setation at base; lateral projection slightly wider, flat, narrowing to narrowly rounded apex and slightly curving medially, both of equal lengths reaching slightly beyond mid-length of cucullus. Juxta indistinct, lightly sclerotized at base. Vinculum very narrow medially, enlarging laterally into elongate triangles. Pseudosaccus short, broad, diamond shaped. Phallus short, about 835 µm (n=1), slightly enlarging towards apex; coecum penis short, about 20% of whole shaft length; apex broadly rounded, with lateral projections simple and very short, apically with short pointed tip directed backwards; margin of opening v- or broadly u-shaped, with long wrinkles; vesica without cornuti.
Female (n=9) (Fig. 10). Head with frons as male's. Antenna filiform, with flagellomeres more abundantly scaled than in male. Forewing length: 6.5-7.5 mm (wingspan: 14.0-16.0 mm). Forewing length to width ratio (n=1): 3.0. Frenulum with 2 fused acanthae.
Female genitalia (n=2) (Fig. 56). Papillae anales rather small, with more thickly sclerotized area wider at bases of posterior apophyses, then strongly reduced in width dorsally, with apical margin straight although slightly irregular on account of conical bases of marginal setae. Posterior apophyses straight, short, reaching basal margin of segment VIII. Tergite VIII forming a narrow ring. Anterior apophyses straight, short, about as long as length of segment VIII. Ostium bursae triangular with more thickly sclerotized margins. Ductus bursae very short, wide, unsclerotized. Corpus bursae elongate, rather wide at base, pear shaped.



Figs 21-28. Specimens of *La* from the Galápagos Islands. (21-26) *La wagneuri* sp. nov. (21) Holotype. (22) Paratype male, Isabela, Darwin Volcano, 300 m elev., MHNG-ENTO-85757, ws: 13.5 mm. (23) Paratype female, Isabela, Darwin Volcano, 630 m elev., MHNG-ENTO-85758, ws: 17.0 mm. (24) Paratype male, Isabela, idem, MHNG-ENTO-85759, ws: 14.5 mm. (25) Female, Isabela, Alcedo Volcano, NE slope, near pega-pega camp, MHNG-ENTO-85754, ws: 16.5 mm. (26) Male, Isabela, Alcedo Volcano, NE slope, 200 m elev., camp arida alta, MHNG-ENTO-85755, ws: 13.0 mm. (27, 28) *La paquitae* sp. nov. (27) Female paratype, Isabela, Darwin Volcano, 630 m elev., MHNG-ENTO-85761, ws: 14.5 mm. (28) Holotype.



Figs 29-36. Specimens of *Parapediasia galapagensis* sp. nov. (29) Paratype female, San Cristóbal, pampa zone, ws: 15.5 mm. (30) Paratype female, Isabela, NE slope Alcedo, Los Guayabillos camp, MHNG-ENTO-85746, ws: 17.5 mm. (31) Paratype female, Santiago, Central, 700 m elev., MHNG-ENTO-85744, ws: 15.5 mm. (32) idem, MHNG-ENTO-85743, ws: 14.5 mm. (33) idem, MHNG-ENTO-85742, ws: 14.5 mm. (34) Holotype. (35) Paratype male, Pinta, 400-650 m elev., MHNG-ENTO-85741, ws: 13.0 mm. (36) Paratype female, Santa Cruz, Finca S. Devine, ws: 17.5 mm.

Biology: Unknown except that the moths are attracted to light and that all known specimens have been collected near the seashore.

Distribution: Presently known from the island of Floreana only.

La grisea sp. nov.

Figs 11-14, 46, 57

Material examined: *Holotype*: ♂, 'ECU[ADOR]., GALAPAGOS | Marchena, M[ercury]V[apour]L[ight] | 23.iii.1992 | *leg[it]*. B. Landry'; 'HOLOTYPE | La grisea | Landry & Léger'; 'MHNG | ENTO | 00085766'. Deposited in MHNG.

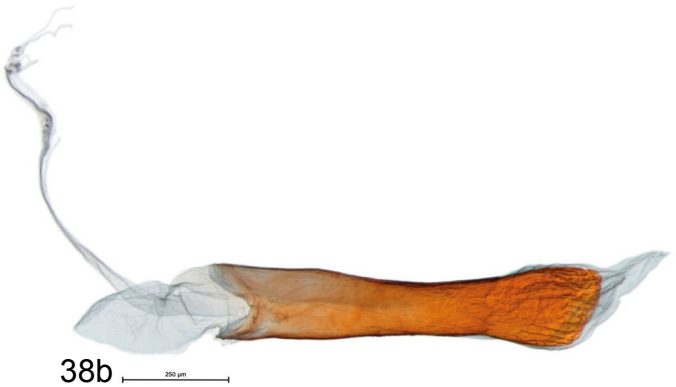
Paratypes: 5 ♂, 19 ♀ from the Galápagos Islands. – *Marchena*: 1 ♂, 17 ♀ (one dissected, MHNG-ENTO-85701), 12.iii.1992, M[ercury]V[apour]L[ight] (B. Landry); 4 ♂ (two dissected, MHNG-ENTO-85702 and 85703), 1 ♀, same data as holotype; 1 ♀, Playa Negra, N0018. 089', W 09030452 [sic], 7.iv.2002, U[ltra]V[iolet]L[ight] (L. Roque). Deposited in CDRS and MHNG.

Additional material examined: 54 ♂, 26 ♀ from the Galápagos Islands. – *Fernandina*: 2 ♂, North side, 300 m, S00°20.541', W091°36.815', 12.i.2002, U[ltra] V[iolet]L[ight] (L. Roque, C. Causton); 2 ♂, SW side, GPS: 352 m elev[ation]., S00°20.503', W091°36.969', 10.ii.2005, uvl (B. Landry, P. Schmitz); 7 ♂ (2 dissected, MHNG-ENTO-85736 and 85709), SW side, GPS: 815 m elev., S00°21.270', W091°35.341', 11.ii.2005, uvl (B. Landry, P. Schmitz); 2 ♂, SW side, crater rim, GPS: 1341 m elev., S00°21.910', W091°34.034', 12.ii.2005, uvl (B. Landry, P. Schmitz); 1 ♂, SW side, crater rim, GPS: 1341 m elev., S00°21.910', W091°34.034', 13.ii.2005, uvl (B. Landry, P. Schmitz); 2 ♂, SW side, GPS: 815 m elev., S00°21.270', W091°35.341', 14.ii.2005, uvl (B. Landry, P. Schmitz); 1 ♂, zona de vegetacion, 19.vi.1998, B[lack].L[ight].-W[hite].L[ight]. (L. Roque, C. Causton). – *Genovesa*: 2 ♂, South side, 200 y[ar]ds. from beach, 4-6.ii.1967, in flight trap among *Bursera graveolens* (I.L. Wiggins). – *Isabela*: 4 ♂, V[olcán]. Darwin, 200 m, 11.ii.1999, U.V.L. (L. Roque, n°99.16); 1 ♂, V. Darwin, campamento base, 1.iii.2000, BL-WL trap (L. Roque, n°2000-04); 1 ♂, V. Darwin, 300 m s[obre el]n[ivel del]m[ar], 6.iii.2000, BL-WL trap (L. Roque, n°2000-012); 3 ♂, NE slope Alcedo, near shore, GPS: 9 m elev., S00°23.619', W090°59.715', 29.iii.2004, uvl (B. Landry, P. Schmitz); 2 ♂, NE slope Alcedo, GPS: 292 m elev., S00°23.829', W090°01.957', 30.iii.2004, uvl (B. Landry, P. Schmitz); 3 ♂ (one dissected, MHNG-ENTO-85685), NE slope Alcedo, near pega-pega camp, GPS: 483 m elev., S00°24.029', W91°02.895', 31.iii.2004, uvl (B. Landry, P. Schmitz); 3 ♂, Alcedo, lado NE, 400 m, pega-pega camp, 15.iv.2002, uvl (B. Landry, L. Roque); 5 ♂ (one dissected, MHNG-ENTO-85686), Alcedo, lado NE, low arid zone, bosq[ue]. palo santo, 18.iv.2002, uvl (B. Landry, L. Roque); 2 ♂, 8 ♀ (one dissected, MHNG-ENTO-85687), Tagus Cove, 13.v.1992, MVL (B. Landry); 3 ♂ (one dissected, MHNG-ENTO-85688), 1 ♀, n[ea]r Tagus Cove, 100 m elev., 21.v.1992, MVL (B. Landry). – *Pinta*: 2 ♂, 1 ♀, Plaja Ibbeston [sic], 13.iii.1992, M[ercury]V[apour]L[ight] (B. Landry); 5 ♀, Plaja Ibbeston [sic], 14.iii.1992, MVL (B. Landry); 1 ♂, 1 ♀, arid zone, 15.iii.1992, MVL (B. Landry); 1 ♂ (dissected, MHNG-ENTO-85715), 400 m elev., 18.iii.1992, MVL (B. Landry); 3 ♀ (one dissected, MHNG-ENTO-85716), ± 50 m elev., 20.iii.1992, MVL (B. Landry); 4 ♀, ± 15 m elev., 21.iii.1992, MVL (B. Landry). – *Santiago*: 2 ♀, Cerro Inn, 28.iii.1992, MVL (B. Landry); 4 ♂ (2 dissected, MHNG-ENTO-85763 & 85693), Bahía Espumilla, 4.iv.1992, MVL (B. Landry); 1 ♀ (dissected, MHNG-ENTO-85694), N side, GPS: 437 m elev., S00°13.316', W090°43.808', 3.iii.2005, uvl (P. Schmitz). Deposited in CAS, CDRS and MHNG.

Etymology: The specific epithet is derived from the general colouration of the known specimens, which is Medieval Latin for grey.

Diagnosis: This species includes the specimens of the grey-brown complex of species of *La* that show a white longitudinal streak medially on the forewing from the base to its interruption at the transverse postmedial fascia (Figs 11-14), as opposed to the lack of such streak in *La florenciae* sp. nov. (Figs 9, 10). White scales on veins in the continuity of the white streak are often also present on the veins beyond the postmedian fascia in contrast to the generally more uniformly grey background forewing colour of *La florenciae* sp. nov. In *La grisea* sp. nov., the postmedian fascia, when visible, is also more oblique, at 45° from the costa whereas in *La florenciae* sp. nov. this fascia is almost at right angle from the costa. The subterminal fascia of *La grisea* sp. nov. is generally weakly marked, often inconspicuous, and almost never reaching the dorsal margin whereas it is usually complete, nicely contrasting, and reaching the dorsal margin in *La florenciae* sp. nov. The male genitalia (Fig. 46) differ from those of *A. florenciae* sp. nov. (Fig. 45) notably in the comparatively longer tegumen dorsal roof, in the shape of the outer projection of the costal process of the valva, which is almost equal in girth from base to apex whereas is noticeably narrowing subapically in *La florenciae* sp. nov., in the shape of the phallus with a longer coecum penis than in *La florenciae* sp. nov., and in the noticeably bigger and stronger claw-like lateral projections of the phallus. The female genitalia (Fig. 57) differ from those of *La florenciae* sp. nov. (Fig. 56) mainly in the shape of the ostium bursae, which is broadly rounded in *La grisea* sp. nov. and triangular in *La florenciae* sp. nov.

Description: *Male* (n=60) (Figs 11, 12, 14). Head with frons rounded, slightly produced, grey brown with white around antennal bases. Antenna laminate, with



Figs 37-39. Male features of *Mesolia christinae* sp. nov. (37) Sclerotization of tergum VIII, specimen from Floreana, slide MHNG-ENTO-85550. (38, 39) Male genitalia. (38) Paratype, MHNG-ENTO-85551. (38a) Genitalia without phallus. (38b) Phallus. (39) Specimen from Floreana, MHNG-ENTO-85550. (39a) Genitalia without phallus. (39b) Phallus.

flagellomeres slightly wider than long; scape greyish brown dorsally, white ventrally; flagellum mostly pale greyish white on basal ca 10 basal flagellomeres and then annulated greyish white and greyish brown to dark brown. Maxillary palpus dark greyish brown at base laterally, and white scaled medially, with longer apical scales pale greyish brown with white tip, projecting as fan. Labial palpus porrect with slightly decumbent third segment; vestiture appressed, laterally mostly greyish brown and paler tipped, white ventrally and medially on two basal segments. Haustellum white. Thorax with scales of various shades of greyish brown with paler tips. Forewing length: 5.5-6.5 mm (holotype: 6.0 mm); wingspan: 13.0-15.0 mm (holotype: 14.5 mm). Ratio length/width (n=4): 3.01. Wings with colour and pattern as illustrated (Figs 11, 12, 14). Prothoracic leg coxa pale greyish brown; femur blackish brown laterally, white and pale greyish brown medially; tibia blackish brown laterally, white medially; tarsomere I dark greyish brown laterally, paler greyish brown medially; tarsomeres II-V equally dark greyish brown laterally and medially. Mesothoracic leg coxa white; femur white medially with greyish brown at tip and sometimes base and elsewhere; tibia dirty white, with lateral spur dark greyish brown and about 0.25 shorter than medial spur; tarsomere I as tibia; following tarsomeres greyish brown all around. Metathoracic leg coxa and femur as in mesothoracic leg; tibia and tarsomeres slightly paler than on mesothoracic leg, with tibial spurs subequal in length, the laterals slightly shorter, and darker. Abdomen dorsally pale greyish brown, darker posteriorly on first three tergites; ventrally mostly dirty white, sometimes with posterior half slightly greyish brown. Intersegmental membrane VII-VIII around genitalia broadly sclerotized, with narrow, pointed scales of medium length along apical margin.

Male genitalia (n=13) (Fig. 46). Uncus short, bulky, slightly longer than half as long as tegumen dorsally, with short apical point. Gnathos short, slightly longer than uncus, apically narrowly rounded and slightly bent downward. Tegumen rather short and bulky, with lateral arms of medium width. Valva with cucullus narrow, with basal half slightly wider; with short and broad mediobasal projection apically rounded; costal process with projections subequal in length, reaching beyond middle of cucullus, slightly pointing upward and medially; thin median projection pointed, with few, mostly short setae at base; outer projection flat, of nearly equal girth from base to apex, narrowing from about half of length, curving subapically, apically rounded or appearing blunt depending on angle of view. Vinculum narrow medially, enlarging laterally into rather broad-based elongate triangles. Pseudosaccus medium sized, diamond shaped. Phallus short, about 780 µ (n=1), gradually enlarging slightly towards apex, more evidently so postmedially; coecum penis of medium length, slightly more than 20% of whole shaft length; apex broadly rounded; lateral projections strong, claw-like, pointing directly backwards; margin of opening broadly rounded, with mostly short wrinkles; vesica without cornuti.

Female (n=55) (Fig. 13). Head with frons as in male. Antenna filiform, with flagellomeres more abundantly scaled than in male. Forewing pattern as in males. Forewing length: 5.0-7.5 mm; wingspan: 12.0-17.0 mm. Ratio length/width (n=2): 3.35. Frenulum with 2 fused acanthae, also often with thin white scales from frenulum base, reaching half of frenulum length at most.

Female genitalia (n=4) (Fig. 57). Papillae anales small, with more thickly sclerotized area wider at bases of posterior apophyses, then strongly reduced in width dorsally, with apical margin straight although slightly irregular on account of conical bases of marginal setae. Posterior apophyses short, slightly curved, reaching beyond basal margin of segment VIII. Tergite VIII a narrow ring. Anterior apophyses straight, short, about as long as posterior apophyses. Ostium a broad rounded plate, uniformly sclerotized, with small notch medially on apical margin. Ductus bursae wide, very short, indistinct from base of corpus bursae. Corpus bursae widening to form elongate pouch.

Biology: Unknown apart from the light attraction of the moths and their presence from the seashore to 1341 m, the crater rim on Fernandina.

Distribution: Galápagos islands of Fernandina, Genovesa, Isabela, Marchena, Pinta, and Santiago.

Remarks: On account of the variation observed in the morphology of this species in the genitalia and to a lesser extent in external characters, the type locality is restricted to Marchena Island, from which a sample of both sexes was obtained, as opposed to the sample from Fernandina, for example, from which only males could be examined. The variation observed in external features is expressed most conspicuously in the darker specimens found on Fernandina (Fig. 11) and also Isabela at Tagus Cove. Specimens from other islands (Figs 13, 14) are like the type series. In male genitalia there is variation especially in the shape of the outer projection of the costal process of the valva, which may be wider medially in specimens from Fernandina, and in the shape of the phallus, which may have a longer coecum penis and a more evenly widening shaft postmedially. In female genitalia, the main variation occurs at the apical margin of the ostium plate, which may have a more pronounced median dent, or none at all.

The brown cluster of species

The ground colour of the moths separates them from those with a greyish-brown colouration. The male genitalia have the outer projection of the costal process of the valva reaching the tip of the cucullus or subequal

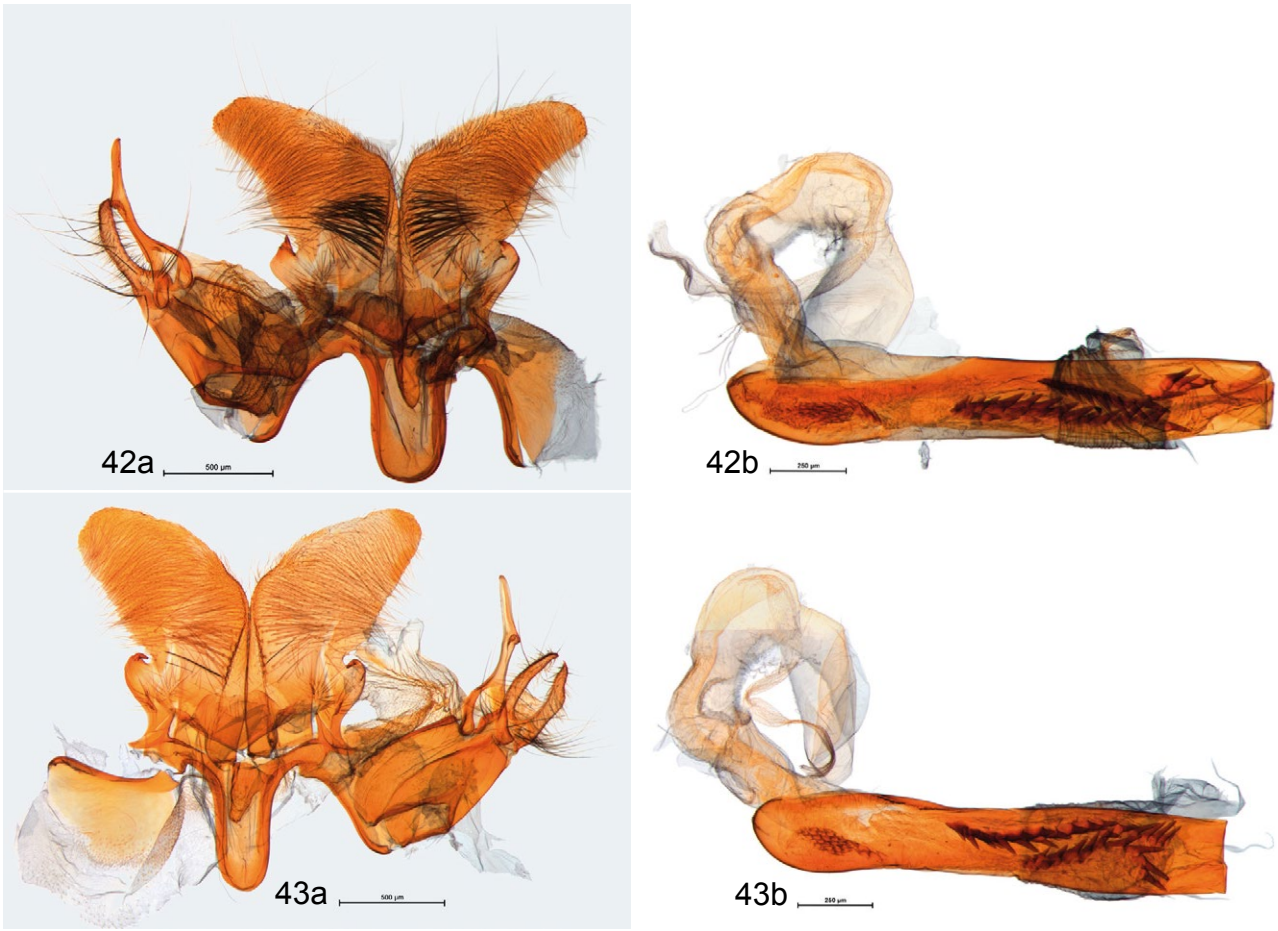
to it, nearly parallel-margined with a blunt or slightly rounded apex and with minute setae on the inner side at apex and sometimes also along the dorsal margin and medially; the phallus also usually has a short additional sclerotized projection at the base of the lateral extensions on each side and it is not as broadly rounded apically than in the grey-brown cluster of species. The intersegmental membrane VII-VIII around the genitalia is sclerotized mainly laterally, with a narrow band set with long, thin scales. In the female genitalia, the apical margin of the papillae anales is produced medially whereas it is straight in the greyish brown species. The three species described here in this group can be separated based on external characters and island of occurrence, but the genitalia show only few diagnostic characters. One specimen of this group of species has been collected on the island of Santa Fé (Tourist trail, 28.v.1992, *leg*. B. Landry; MHNG); it is too rubbed to identify based on external characters, and the genitalia characters of the median costal projection of the valva point to *La wagneuri* sp.

Figs 40, 41. Male genitalia of Galápagos specimens of Crambinae. (40) *Argyria lacteella* (Fab.), specimen from Isabela, ca 15 km N Puerto Villamil, slide BL 1180. (40a) Uncus, gnathos, and tegumen. (40b) Valvae, juxta, and vinculum. (40c) Phallus. (41) *Diatraea saccharalis* (Fab.), specimen from Colombia, Amazonas, Leticia, slide BL 1867. (41a) Genitalia without phallus. (41b) Phallus.

nov. whereas the tegumen with the dorsal section longer that the lateral arms point to *La galapagensis* sp. nov.

***La galapagensis* sp. nov.**
Figs 15-20, 47, 58

Material examined: *Holotype*: ♂, 'ECU[ADOR]., GALAPAGOS | Santa Crúz, Los | Gemelos, 27.v.1992 | M[ercury]V[apour]L[ight], *leg*[*it*]. B. Landry'; 'HOLOTYPE | La | galapagensis | Landry & Léger'; 'MHNG | ENTO | 00085768'. Deposited in MHNG.
Paratypes: 39 ♂, 13 ♀ from the Galápagos Island of Santa Cruz. 3 ♂, NNW Bella Vista, GPS: 225 m elev[ation]., S00°41.293' W090°19.665', 18.ii.2005, u[ltra]v[iolet]l[ight] (B. Landry, P. Schmitz); 1 ♀, Finca S[teve]. Devine, 17.iii.1989, M[ercury]V[apour]L[ight] (B. Landry); 1 ♀, Horneman Farm, 220 m, 10.iii.1964 (D.Q. Cavagnaro); 1 ♂, C[harles[D]arwin[R]esearch [S]tation, Base of El Barranco, GPS: S00°44.305', W90°18.105', 18.iii.2004, uvl (B. Landry, P. Schmitz); 4 ♂ (one dissected, MHNG-ENTO-85704), CDRS, wall of Invert[ebrate]s. Lab[oratory]., GPS: 11 m elev., S00°44.478', W90°18.132', 6.iv.2004, uvl (B. Landry, P. Schmitz); 2 ♂, 1 ♀ (dissected, MHNG-ENTO-85705), agriculture zone, near (NNW) Bella Vista, GPS: 223 m elev., S00°41.297', W90°19.670', 7.iv.2004, uvl (B. Landry); 6 ♂ (one dissected, MHNG-ENTO-85707), 2 ♀ (one dissected, MHNG-ENTO-85706), CDRS, Barranco, 20 m elev., 30.iv.2002, uvl (B. Landry); 2 ♂, 1 ♀, Los Gemelos, 4.v.2002, uvl (B. Landry, L. Roque); 1 ♂, Horneman Farm, 220 m, 3.v.1964 (D.Q. Cavagnaro); 2 ♂, 1 ♀, Los Gemelos, 4.v.2002, uvl (B. Landry, L. Roque); 13 ♂ (one dissected, MHNG-ENTO-248655), 3 ♀, same data as holotype; 1 ♂, no precise locality, v.-vi.1970 (R. Perry, Tj. De Vries); 1 ♂, Los Gemelos, vi.1997, MVL (L. Roque); 1 ♂, 2 ♀, Horneman Farm, 200 m, 26.vi.1965 (J. DeRoy); 3 ♂, transition zone, 60 m s[obre el]n[ivel del]m[ar], S00°44'14'', W090°19'52'', 19.ix.1996, fluorescent light (L. Roque); 2 ♂, Los Gemelos, Scalesia forest, 580 msnm, S00°37'29.4'', W090°23'05.3'', 14.x.1996, fluorescent light trap (L. Roque); 1 ♀, Hacienda Schiess, xi.1974 (no collector).



Figs 42, 43. Male genitalia of Galápagos specimens of *Euchromius galapagosalis* Capps. (42) Specimen from Pinta, MHNG-ENTO-85671. (42a) Genitalia without phallus. (42b) Phallus. (43) Teratological specimen from San Cristóbal, MHNG-ENTO-85672. (43a) Genitalia without phallus. (43b) Phallus.

Deposited in AMNH, CAS, CDRS, CNC, MHNG, and NHMUK.

Additional material examined: 18 ♂, 8 ♀ from the Galápagos Islands. – *Pinta*: 1 ♂ (dissected, MHNG-ENTO-85717), 1 ♀, N00°34.591', W90°45.137', 421 m elev., 17.iii.2006 (P. Schmitz, L. Roque); 2 ♂ (one dissected, MHNG-ENTO-85718), 400 m elev., 17.iii.1992, MVL (B. Landry). – *San Cristóbal*: 1 ♂ (dissected, BL 1194), pampa zone, 15.ii.1989, MVL (B. Landry); 2 ♂, El Junco, v.1975 (T.J. de Vries). – *Santiago*: 1 ♂ (dissected, MHNG-ENTO-85697), 2 ♀ (one dissected, MHNG-ENTO-85695), N side, GPS: 527 m elev., S00°13.690', W090°44.135', 5.iii.2005, uvl (P. Schmitz); 1 ♂, 1 ♀ (dissected, MHNG-ENTO-85696), N side, GPS: 686 m elev., S00°14.177', W090°44.619', 6.iii.2005, uvl (P. Schmitz); 1 ♀, Cerro Inn, 28.iii.1992, MVL (B. Landry); 2 ♂, Aguacate, 520 m elev., 7.iv.1992, MVL (B. Landry); 3 ♂, 2 ♀, Central, 700 m elev., 9.iv.1992, MVL (B. Landry); 4 ♂ (one dissected, MHNG-ENTO-85698), Central, 700 m elev., 9.iv.1992, MVL (B. Landry); 1 ♂, 1 ♀, Aguacate, 520 m elev., 12.iv.1992, MVL (B. Landry). Deposited in CDRS, CNC, and MHNG.

Etymology: The new name derives from the area of occurrence, the Galápagos Archipelago.

Diagnosis: Among the brown cluster of *La* species in the Galápagos, this one (Figs 15-20) is recognized by its generally larger size, with a wingspan of 14.0-28.0 mm, versus 11.5-19.0 mm in *La wagneuri* sp. nov. (Figs 21-26) and 10.5-16.5 mm in *La paquitae* sp. nov. (Figs 27, 28), and warmer chocolate brown colour of the forewings. *La paquitae* sp. nov. also differs externally by the longitudinally striped pattern of the forewing. In male genitalia (Fig. 47), the tegumen lateral arms are slightly longer than the dorsal section as opposed to a longer dorsal section in *La wagneuri* sp. nov. (Fig. 48) and *La paquitae* sp. nov. (Fig. 49), and the ventral margin is evenly curved towards uncus-gnathos connection, while it is conspicuously concave in the other two species; also, the median projection of the costal process of the valva is thinner and curving upwards at midlength as opposed to the thicker process curving upwards at apical third in *La wagneuri* sp. nov. and *La paquitae* sp. nov.; the outer projection of the costal process is not narrowing and only slightly curving subapically whereas in *La wagneuri* sp. nov. it is distinctly narrowing and curving subapically.

Description: *Male* (n=58) (Figs 16, 17, 19, 20). Head with frons only slightly rounded, not projecting, mostly chocolate brown of various shades, with thin scales behind eyes blackish brown. Antenna laminate, dark brown, darker, blackish brown on scape and basal flagellomeres. Maxillary palpus vestiture expanded apically as feather duster, brown, darker greyish brown at base laterally, lighter medially, with apical scales sometimes tipped white. Labial palpus with 3rd palpomere slightly drooping, vestiture dark greyish brown, sometimes with few dorsal scales tipped white. Haustellum pale whitish brown. Thorax various shades of brown, darker at base of tegulae, paler at tip of tegulae and laterally on segment III. Forewing length: 7.0-9.0 mm (holotype: 9.0 mm); wingspan: 14.0-20.0 mm (holotype: 19.5 mm). Ratio length/width (n=4): 2.67-2.82. Wings with colour and pattern as illustrated (Figs 16, 17, 19, 20). Prothoracic leg coxa greyish brown; femur blackish brown, with paler fawn scales along ventral margin apically; tibia and tarsomeres greyish brown with paler, dirty white tips. Mesothoracic leg coxa dirty white; femur greyish brown to pale fawn, darker at tip; tibia dark greyish brown, with paler fawn spot postmedially and whitish apically; tarsomeres greyish brown with paler, dirty white tips. Metathoracic leg coxa dirty white medially, greyish brown laterally; femur greyish brown, darker at base; tibia pale greyish brown, darker towards tip, dirty white at tip; tarsomeres greyish brown with paler, dirty white tips. Abdomen dorsally with scales of various shades of brown and greyish brown, paler on two apical segments, ventrally greyish brown, mixed with dirty white.

Male genitalia (n=8) (Fig. 47). Uncus variable in length (0.6-0.7 length of tegumen dorsally), slightly downcurved and pointed apically. Gnathos variable in length in conjunction with uncus, narrow with downward-bent apical bulge and dorsomedial cleft apically, or bulkier without a pronounced apical bulge and dorsomedial cleft. Tegumen medium-sized, with lateral arms of medium width, equal in length or slightly shorter than dorsal section, with partial extension of sclerotization midventrally. Valva with cucullus narrow, apically rounded, slightly wider at base; with short and broad mediobasal projection apically rounded, with thickened apical margin; costal process with projections clearly differing in length; thin median projection shorter, pointed, curving in basal half, with few, mostly short setae at base laterally; outer projection flat, longer, slightly wider than cucullus, slightly curving subapically, with apex blunt. Vinculum of medium width laterally; basal margin medially straight. Pseudosaccus slightly longer than wide, with short, flat crest. Phallus of medium length and girth, 1.3 mm long (n=1), sometimes shorter and bulkier, nearly parallel-margined medially, with narrower coecum penis 0.25 length of whole phallus, sometimes slightly asymmetrical; apex mediumly rounded; lateral projections well developed, with short spine on apical pair of projections; median margin of opening with deep narrow cleft, with short wrinkles anteriorly; vesica without cornuti.

Female (n=21) (Figs 15, 18). Head with frons as male's. Antenna filiform, with scaling more abundant than in males. Forewing pattern reduced, as shown. Forewing length: 7.5-12.0 mm (wingspan: 16.0-28.0 mm). Ratio length/width (n=2): 2.87-3.14. Frenulum with two fused acanthae, often appearing as one.

Female genitalia (n=4) (Fig. 58). Papillae anales small, with more thickly sclerotized area about twice as wide at bases of posterior apophyses, narrower ventrally, distinctly produced submedially, i.e., ventrally from middle, with short to medium-length setation along distal margins. Posterior apophyses short, reaching anterior margin of segment VIII, straight, thin, slightly enlarged before base. Tergite VIII a narrow ring. Anterior apophyses shorter that posterior apophyses, with wider triangular base, subapically curved. Ostium a large squarish plate with apical margin slightly produced medially, or not, also with a small squarish or tongue-shaped lamella postvaginalis. Ductus bursae rather wide and short. Corpus bursae an elongate simple sac only slightly widening and with short subapical extension.

Biology: Unknown except for the attraction to lights by the moths and that the species occurs at a wide range of elevations, nearly from sea level to the pampa zone, above 700 m.

Distribution: Presently known from the Galápagos islands of Pinta, San Cristóbal, Santa Cruz, and Santiago.

Remarks: Because of the morphological variation observed in this species, the type series is restricted to Santa Cruz Island, from where the largest series of specimens also comes. The variation in size and forewing pattern and colouration of the specimens of the type series mostly covers that of the other specimens studied. In wingspan some females reach a much larger 27.0-28.0 mm with respect to others and to the more evenly sized males. In pattern, two specimens from San Cristóbal have the median fascia more distinctly made of two dark brown lines contrasting with a paler background colour (Fig. 19). In male genitalia, within the type series, specimen MHNG-ENTO-85704 has bulkier uncus, gnathos, and phallus than those illustrated (Fig. 47) although both specimens were collected on the grounds of the Charles Darwin Research Station. Beyond the type series the uncus, gnathos and phallus of the specimens dissected are more similar to those illustrated, with the coecum penis narrower and directly in the middle in the San Cristóbal specimen dissected. The outer projection of the costal process of the valva may differ slightly in having a narrower apex, e.g., in a specimen from Santiago Island, but not in the second specimen dissected from that island.

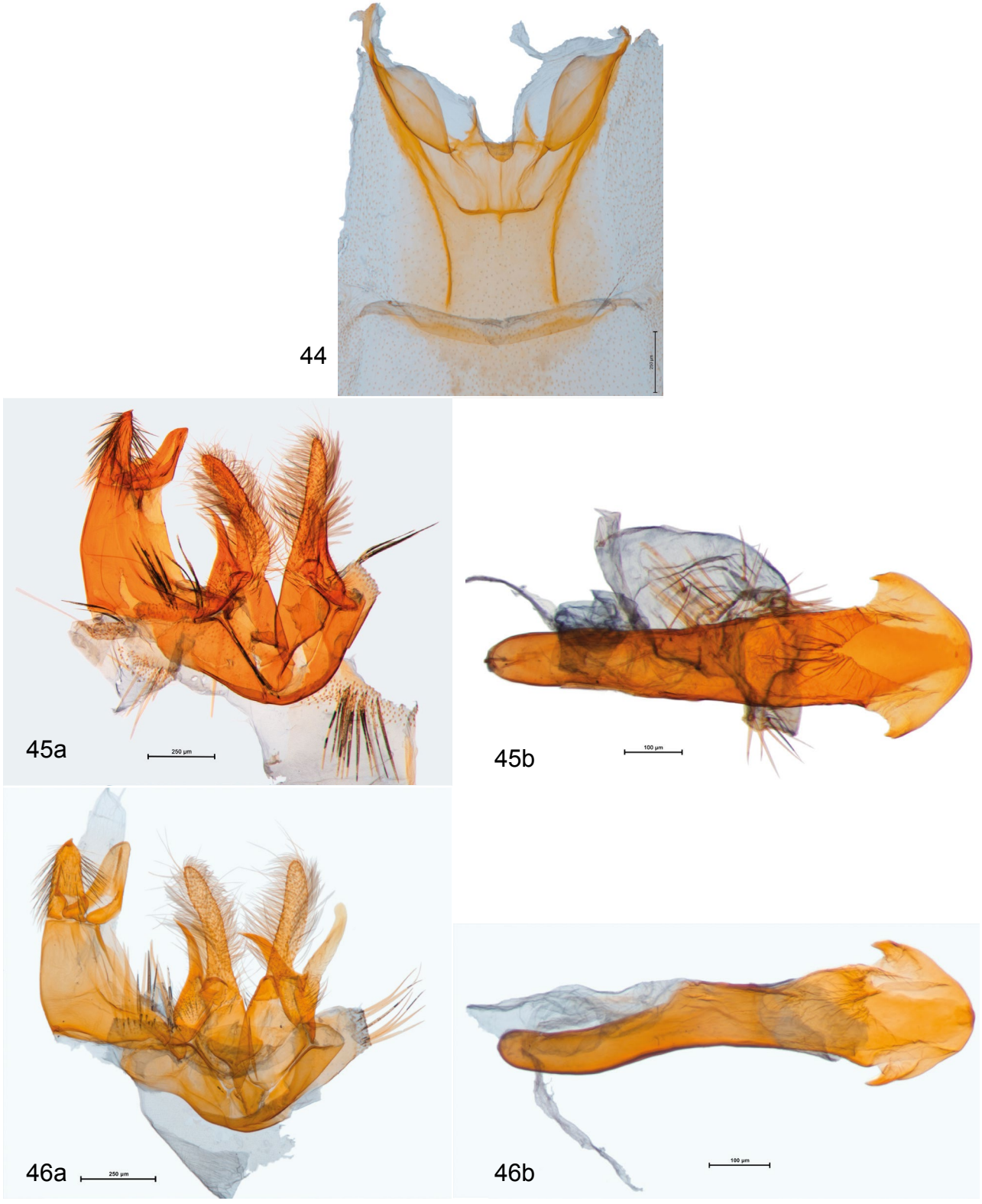
La wagneuri sp. nov.

Figs 21-26, 48, 59

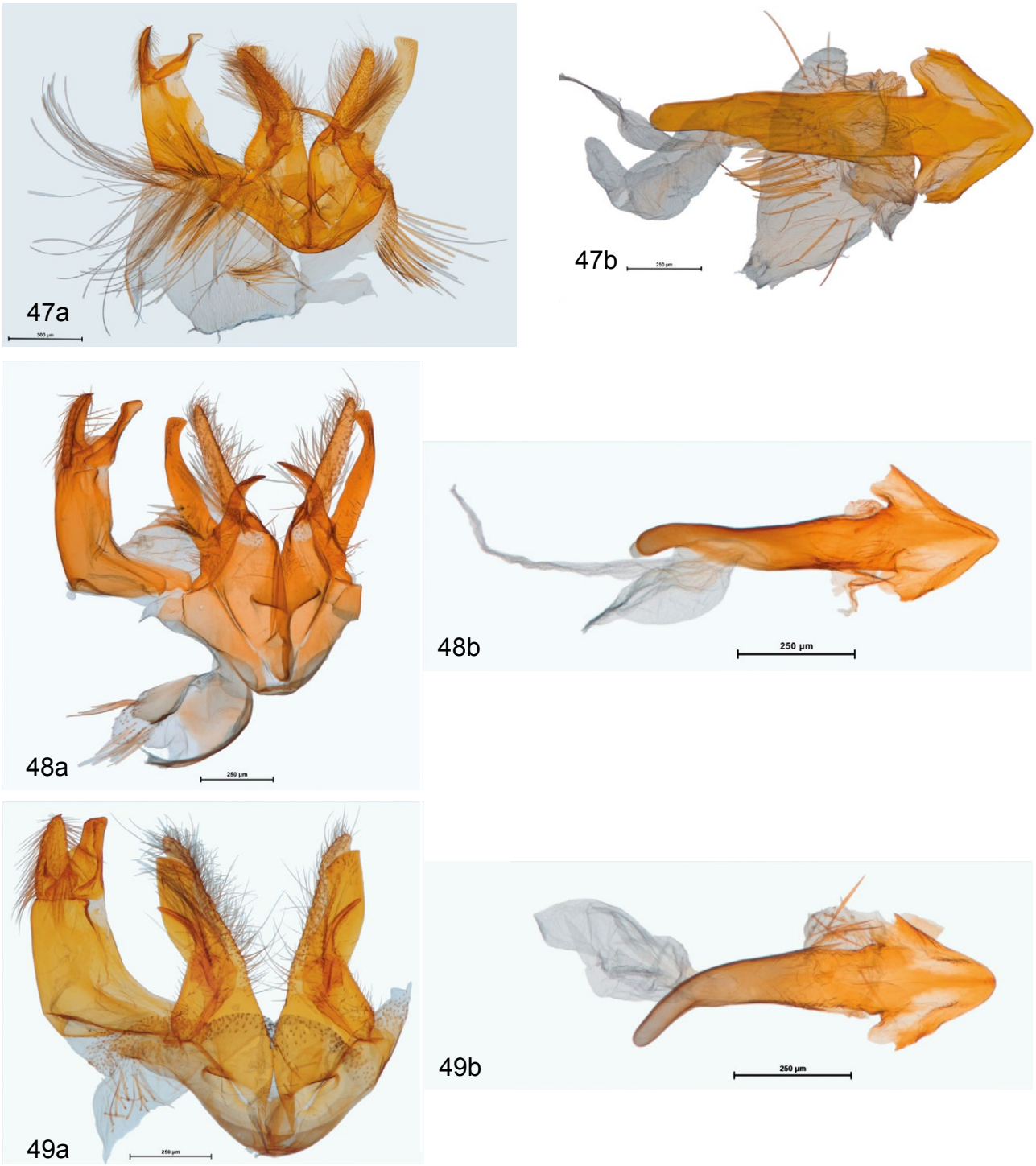
Material examined: *Holotype*: ♂, 'ECU[ADOR]., GALAPAGOS | Isabela, V[olcan]. Darwin | 300 m elev[ation]., 15.v.1992 | M[ercury]V[apour]L[ight], *leg*[*it*]. B. Landry'; 'HOLOTYPE | La | wagneuri | Landry & Léger'; 'MHNG | ENTO | 00085756'. Deposited in MHNG.

Paratypes: 37 ♂, 10 ♀ from the Galápagos Island of Isabela, Darwin Volcano. 1 ♂, V[olcan]. Darwin, 700 m, 13.ii.1999, U[ltra].V[iolet].L[ight]. (L. Roque, n° 99.17); 1 ♂, Volcán Darwin, 700 ms[obre el]n[ivel del]m[ar], 4.iii.2000, UV-W[hite]L[ight] trap (L. Roque, n° 2000-09); 1 ♀, Tagus Cove, 13.v.1992, M[ercury]V[apour] L[ight] (B. Landry); 14 ♂, 1 ♀, same data as holotype; 4 ♂, 2 ♀, V. Darwin, 630 m elev., 16.v.1992, MVL (B. Landry); 2 ♂, 3 ♀, V. Darwin, 630 m elev., 17.v.1992, MVL (B. Landry); 7 ♂, 2 ♀, V. Darwin, 1000 m elev., 18.v.1992, MVL (B. Landry); 3 ♂, V. Darwin, 1240 m elev., 19.v.1992, MVL (B. Landry); 2 ♂ (one dissected, MHNG-ENTO-85682), 1 ♀ (dissected, MHNG-ENTO-85681), V. Darwin, 300 m elev., 20.v.1992, MVL (B. Landry); 2 ♂ (one dissected, MHNG-ENTO-85683), n[ea]r Tagus Cove, 100 m elev., 21.v.1992, MVL (B. Landry). Deposited in CDRS and MHNG.

Additional material examined: 34 ♂, 8 ♀ from the Galápagos Islands. – *Fernandina*: 3 ♂ (one dissected, MHNG-ENTO-85710), 1 ♀, SW side, GPS: 352 m elev[ation]., S00°20.503', W091°36.969', 10.ii.2005, u[ltra].v[iolet].l[ight]. (B. Landry, P. Schmitz); 2 ♂, SW side, crater rim, GPS: 1341 m elev., S00°21.910', W091°34.034', 12.ii.2005, uvl (B. Landry, P. Schmitz); 1 ♂ (dissected, MHNG-ENTO-85712), 1 ♀ (dissected, MHNG-ENTO-85711), SW side, GPS: 815 m elev., S00°21.270', W091°35.341', 14.ii.2005, uvl (B. Landry, P. Schmitz). *Isabela, Alcedo Volcano*: 1 ♀, NE slope Alcedo, near pega-pega camp, GPS: 483 m elev., S00°24.029', W91°02.895', 31.iii.2004, uvl (B. Landry, P. Schmitz); 3 ♂ (one dissected, MHNG-ENTO-85678), NE slope Alcedo, ca. 400 m up (S) Los Guayabillos Camp, GPS: elev. 892 m, S00°25.208', W91°04.765', 1.iv.2004, uvl (B. Landry, P. Schmitz); 1 ♂, 1 ♀, V[olcán]. Alcedo, Lado Este [east slope], 200 m[e]ter]s elev., 4.iv.1999, UVL-F[luorescent].L[ight]. (L. Roque); 5 ♂ (one dissected, MHNG-ENTO-85679), 1 ♀ (dissected, MHNG-ENTO-85680), Alcedo, lado NE, 200 m, camp arida alta, 14.iv.2002, uvl (B. Landry, L. Roque); 1 ♂, Alcedo, lado NE, 400 m, camp pega-pega, 15.iv.2002, uvl (B. Landry, L. Roque); 1 ♂, Alcedo, lado NE, 700 m, camp guayabillos, 16.iv.2002, uvl (B. Landry, L. Roque). – *Isabela, Sierra Negra Volcano*: 1 ♀, 11 km N Puerto Villamil, 9.iii.1989, M[ercury]V[apour] L[ight] (B. Landry); 6 ♂ (2 dissected, BL 182 and 1185), Sierra Negra, pampa zone, 1000 m, 12.iii.1989, MVL (B. Landry); 2 ♂, 11 km N Puerto Villamil, 13.iii.1989, MVL (B. Landry); 2 ♂ (one dissected, MHNG-ENTO-85684), 1 ♀ (dissected, MHNG-ENTO-248653), ± 15 km N P[uer]to Villamil, 25.v.1992, MVL (B. Landry). – *Marchena*: 1 ♂, Playa Negra, 3.iii.2001, uvl (L. Roque, A. Mieles); 3 ♂, no precise locality, 12.iii.1992, MVL (B. Landry); 3 ♂ (one dissected, MHNG-ENTO-85699), 1 ♀ (dissected, MHNG-ENTO-85700), no precise locality, 23.iii.1992, MVL (B. Landry).



Figs 44-46. Base of abdomen and male genitalia of *La* species. (44, 45) *La florenciae* sp. nov. (44) Base of abdomen, female paratype, MHNG-ENTO-85714. (45) Male genitalia, paratype MHNG-ENTO-85713. (45a) Genitalia without phallus. (45b) Phallus. (46) *La grisea* sp. nov., paratype MHNG-ENTO-85702. (46a) Genitalia without phallus. (46b) Phallus.



Figs 47-49. Male genitalia of *La* specimens from the Galápagos. (47) *La galapagensis* sp. nov., paratype, MHNG-ENTO-85707. (47a) Genitalia without phallus. (47b) Phallus. (48) *La wagneuri* sp. nov., paratype, MHNG-ENTO-85692. (48a) Genitalia without phallus. (48b) Phallus. (49) *La paquitae* sp. nov., paratype, MHNG-ENTO-85691. (49a) Genitalia without phallus. (49b) Phallus.

Etymology: This species is dedicated to Philippe Wagneur, photograph at the MHNG, for his beautiful photos of the specimens published here and in other papers by BL.

Diagnosis: Among the brown cluster of *La* species in the Galapagos, this one is recognized by its generally smaller size (wingspan: 11.5-19.0 mm) and darker blackish brown colour of the forewings (Figs 21-26). From the other smaller species of the cluster, *La paquitae* sp. nov. (Figs 27, 28), it differs in having transverse markings on the forewing and uniformly coloured hindwings contrasting with the longitudinal forewing pattern and white veins of the hindwing of *La paquitae* sp. nov. The male genitalia of this species (Fig. 48) and *La paquitae* sp. nov. (Fig. 49) have the tegumen with the lateral arms shorter than the dorsal section as opposed to a shorter dorsal section in *La galapagensis* sp. nov. (Fig. 47) and the tegumen arms are at right angle with the tegumen dorsal roof as opposed to presenting a broadly concave ventral margin in *La galapagensis* sp. nov.; the median projection of the costal process of the valva is thicker and curving in apical half as opposed to the thinner and basally curving process of *La galapagensis* sp. nov., and the outer projection of the costal process is distinctly narrowing and curving subapically whereas in *La galapagensis* sp. nov. it is not narrowing and only slightly curving subapically.

Description: *Male* (n=72) (Figs 21, 22, 24, 26). Head with frons slightly rounded, not produced; vestiture greyish brown, with scales white tipped, more conspicuously white at base of antennae medially, sometimes more uniformly pale greyish fawn, with thin scales behind eyes blackish brown, with some white tipped. Antenna on scape blackish brown, on antennomeres dark greyish brown. Maxillary palpus vestiture expanded apically as feather duster, greyish brown, darker laterally at base, lighter to sometimes white medially, with apical scales tipped white. Labial palpus with third segment slightly drooping; vestiture greyish brown, darker laterally on first two palpomeres, with longer scales projecting anteriorly, especially ventrally on second palpomere, with some scales tipped white on all three segments, especially the last. Haustellum pale greyish brown. Thorax mostly greyish brown with scales white tipped, with darker scales at bases of patagia and tegulae, and on mesoscutellum, with metathorax mostly pale fawn with pale greyish brown medially. Forewing length: 5.0-7.0 mm (holotype: 7.0 mm); wingspan: 11.5-15.5 mm (holotype: 15.5 mm). Ratio length/width (n=4): 3.0-3.2. Wings with colour and pattern as illustrated (Figs 21, 22, 24, 26). Prothoracic leg coxa dirty white, with uniformly pale fawn scales apically; femur greyish brown with some white-tipped scales, darker at apex; tibia greyish brown; tarsomeres greyish brown with apical scales paler on each tarsomere. Mesothoracic leg coxa dirty white with uniformly pale fawn scales apically; femur greyish brown with darker scales at base and apex, with dirty white dorsolaterally on second half; tibia greyish brown at base, dirty white to pale fawn postmedially, pale greyish brown subapically, white at apex; tarsomeres greyish brown, inconspicuously paler at their apices. Metathoracic leg coxa dirty white and pure white, with uniformly pale fawn scales apically; femur pale greyish brown with darker scales at base and apex; tibia white to whitish fawn, with greyish brown subapically; tarsomere I pale fawn to dirty white with lighter apical scaling; tarsomeres II-V darker, greyish brown, with distinct ring of paler whitish scales apically. Abdomen dorsally greyish fawn with darker brown along apical margin on tergites I-III, darker brown on subsequent tergites; ventrally white to pale greyish brown with scattered darker greyish brown scales on median sternites.

Male genitalia (n=9) (Fig. 48). Uncus rather short (0.67 length of tegumen dorsally, n=2), slightly downcurved and pointed apically. Gnathos narrow, with downward-bent apical bulge and dorsomedial cleft apically. Tegumen with lateral arms of medium width, shorter than dorsal section, with more or less complete extension of sclerotization midventrally. Valva with cucullus narrow, tapering toward apex, apically rounded; mediobasal projection reduced, apically rounded, with thickened apical margin; costal process with projections of unequal lengths; median projection shorter, strong, pointed, curving in apical half, with few short setae at base laterally; outer projection flat, longer, almost reaching cucullus apex, slightly wider than cucullus medially, slightly constricted and curving inwards subapically, with apex blunt. Vinculum enlarging laterally; basal margin medially narrowly rounded, forming short, upturned saccus. Pseudosaccus slightly longer than wide, with short, flat crest. Phallus rather short, 750 µm long (n=1), narrow and slightly enlarging along mid-section, with narrower coecum penis slightly curved upward and about 0.2 length of whole phallus, with apex rather narrowly rounded, with basolateral projections weakly sclerotized, with spine of apicolateral projections very short, and with median margin of opening apparently membranous, indistinct, with long wrinkles; vesica without cornuti.

Female (n=18) (Figs 23, 25). Head with frons as male's. Antenna filiform, with scaling more abundant than in males. Forewing length: 7.0-9.0 mm (wingspan: 15.0-19.0 mm). Ratio length/width (n=2): 3.30-3.37. Frenulum with 2 fused acanthae. Abdominal segment VII broadly sclerotized medially on sternite, slightly more thickly sclerotized on distal half of tergite.

Female genitalia (n=3) (Fig. 59). Papillae anales small, with more thickly sclerotized area about twice as wide at bases of posterior apophyses, distinctly produced medially, with short to medium length sparse setation. Posterior apophyses short, reaching anterior margin of

segment VIII, straight, thin with base slightly enlarged. Tergite VIII a narrow ring. Anterior apophyses shorter than posterior apophyses, with wider triangular base, subapically curved. Ostium bursae a large squarish plate with apical margin sometimes slightly produced and sometimes medially notched, also with a small squarish lamella postvaginalis. Ductus bursae wide and short, not well delimited from corpus bursae. Corpus bursae an elongate simple sac only slightly widening.

Biology: Unknown except that moths come to light and that specimens were found between sea level up to the highest elevations on Isabela and Fernandina, at 1341 m on the latter island.

Distribution: Presently known from Fernandina, Isabela and Marchena islands.

Remarks: On account of the phenotypic variation observed in this species, the type series is restricted to Darwin Volcano, on Isabela Island, where the largest series of specimens available also comes from. The series of specimens from Alcedo Volcano and Fernandina and most from Sierra Negra fall within the range of the phenotypic variation of the paratypes, but four specimens of the Sierra Negra series are more similar in colour and forewing pattern to specimens of *La galapagensis* sp. nov. (e.g., Fig. 17) while one other from Sierra Negra even has a striped pattern similar to that of *La paquitae* sp. nov. (Figs 27, 28). The specimens from Marchena island are also small and with a pattern like that of the type series, but theirs is less contrasting. In male genitalia, specimens other than the type series (Fig. 48) may have the outer projection of the costal process of the valva subapically not narrowing and less curved, but the median projection remains stouter than in *La galapagensis* sp. nov. (Fig. 47). In female genitalia, the apical margin of the ostium plate is slightly variable as seen in all available females from brushing the scales off over the ventral tip of the abdomen, and the corpus bursae may be slightly widened laterally as observed in *La galapagensis* sp. nov. (Fig. 58).

La paquitae sp. nov.

Figs 27, 28, 49

Material examined: *Holotype*: ♂, 'ECU[ADOR]., GALAPAGOS | Isabela, V[olcan]. Darwin | 1240 m elev[ation]., 19.v.1992 | M[ercury]V[apour]L[ight], *leg*[*it*]. B. Landry'; 'HOLOTYPE | La | paquitae | Landry & Léger'; 'MHNG | ENTO | 00085762'. Deposited in MHNG.

Paratypes: 18 ♂, from the Galápagos Island of Isabela. 1 ♂, V[olcan]. Darwin, 300 m elev[ation]., 15.v.1992, M[ercury]V[apour]L[ight] (B. Landry); 7 ♂ (one dissected, MHNG-ENTO-85761), V. Darwin, 630 m elev[ation]., 16.v.1992, MVL (B. Landry); 5 ♂ (two dissected, MHNG-ENTO-85689 and 85691), V. Darwin, 1000 m elev[ation]., 18.v.1992, MVL (B. Landry); 1 ♀ (dissected, MHNG-ENTO-85690), same data as holotype; 1 ♂, V. Darwin, 300 m elev[ation]., 20.v.1992, MVL (B. Landry); 1 ♂, Volcán Darwin, 300 m s[obre el]n[ivel del]m[ar], 6.iii.2000, U[ltra]V[iolet]L[ight] -W[hite]L[ight] trap (L. Roque). Deposited in CDRS and MHNG.

Etymology: This new species is dedicated to Dr Paquita Hoeck, ornithologist and member of the Council of the Association of the Swiss Friends of the Galápagos since 2018 and before that running the office of that association for three years.

Diagnosis: This mostly small species (wingspan 10.5-16.5 mm) is easily separated from the other members of the brown cluster of *La* in the Galápagos by the white longitudinal stripe in the middle of the forewing with dark blackish brown above and below, and usually without or with very faint transverse pattern elements (Figs 27, 28). The presence of white scales on some of the hindwing veins is also diagnostic. The male genitalia (Fig. 49) are very similar to those of *La wagneuri* sp. nov. (Fig. 48), but the gnathos apex is ventrally less produced, the outer projection of the costal process of the valva is wider, not narrowing subapically, and its apex is narrowly rounded instead of blunt. The female is unknown.

Description: *Male* (n=19) (Figs 27, 28). Head with frons slightly rounded, not projecting; vestiture pale greyish brown, mostly white-tipped, with darker, unicolorous greyish brown behind eyes, and paler unicolourous dirty white around antennae. Antenna dark brown, sometimes with paler scales on scape and basal flagellomeres. Maxillary palpus vestiture expanded apically as feather duster, greyish brown, darker laterally, lighter to sometimes white medially, with apical scales tipped white. Labial palpus with third segment slightly drooping; vestiture greyish brown, warmer brown on median segment laterally, with some scales tipped white on all three segments. Haustellum pale greyish brown. Thorax dark brown anteriorly, sometimes with many scales white-tipped; paler, greyish brown on metathorax. Forewing length: 4.5-7.5 mm (holotype: 6.0 mm); wingspan: 10.5-16.5 mm (holotype: 13.5 mm). Ratio length/width (n=2): 3.26-3.33. Wings with colour and pattern as illustrated (Figs 27, 28). Prothoracic leg coxa light greyish brown to dark greyish brown with white along medial margin; femur light greyish brown to dark greyish brown with white along ventral margin; tibia pale to dark greyish brown; tarsomeres greyish brown with inconspicuous paler tips, especially on last three tarsomeres. Mesothoracic leg coxa dirty white; femur pale greyish brown to white, with darker greyish brown base and tip; tibia mostly dirty white or with greyish brown at base dorsally;

tarsomeres dirty white to pale greyish brown, sometimes with paler apex on apical segments. Metathoracic leg coxa dirty white medially, greyish brown laterally; femur greyish brown with white along margin dorsally and sometimes on large apical section; tibia mostly dirty white, sometimes with some darker greyish brown subapically; tarsomeres dirty white, with greyish brown on last four at their bases. Abdomen dorsally dirty white to greyish brown, sometimes with some warmer brown on basal three tergites, ventrally dirty white to pale greyish brown, sometimes with scattered darker blackish brown scales on most sternites.

Male genitalia (n=3) (Fig. 49). Uncus rather short (0.66-0.68 length of tegumen dorsal section), slightly downcurved and pointed apically. Gnathos narrow, with downward-bent apical bulge and dorsomedial cleft apically weakly developed. Tegumen medium-sized, with lateral arms of medium width, about as long as dorsal section, with partial extension of sclerotization midventrally. Valva with cucullus narrow, apically rounded; mediobasal projection short, apically rounded, with thickened apical margin; costal process with projections of unequal lengths; median projection shorter, rather strong, pointed, curving medially, with few, mostly short setae at base laterally; outer projection flat, longer, almost reaching cucullus apex, slightly wider than cucullus, slightly curving subapically, with apex slightly rounded. Vinculum of medium width and slightly enlarging laterally; basal margin medially broadly rounded and upturned shortly, forming short saccus. Pseudosaccus slightly longer than wide, with short, flat crest. Phallus rather short, 800 µm long (n=1), narrow and slightly enlarging along mid-section, with narrower coecum penis, slightly curved upward (or sideways as on Fig. 49b) and about 0.2 length of whole phallus, with apex rather narrowly rounded, with basolateral projections short and weakly sclerotized, with spine of apicolateral projections very short; median margin of opening with deep narrow cleft, about 0.2 length of whole phallus, with short wrinkles; vesica without cornuti.

Female: Unknown.

Biology: Unknown other than the facts that moths are attracted to lights and that they were found between 300 m and 1240 m in elevation, at the top of Alcedo.

Distribution: Presently known from Alcedo Volcano only, on the island of Isabela, in the Galápagos.

Remarks: The few diagnostic characters of the male genitalia between this species and *La wagneuri* sp. nov. invite a cautionary interpretation of this Alcedo population of *La* as a different species from *La wagneuri* sp. nov., but the fact that they occur sympatrically and at the same time, as well as their very different forewing patterns, based on the material collected in 1992, are indicative of probable distinctness at the species level. Some behavioral or pheromonal characters may be key to exclude their hybridization, but an in-depth molecular analysis of several genes and several specimens would be necessary to bring forth a more definitive assessment.

Parapediasia Błeszyński, 1966

This is a relatively small genus known to contain 12 species described from the Western Hemisphere (Nuss *et al.*, 2024), i.e., the United States of America, the Antilles, Colombia, and Brazil. Only *P. teterrellus* (Zincken, 1821) has been reported from outside its region of origin, i.e., in the Canary Islands, China and Japan, where it is considered an invasive species (Slamka, 2008; Gao *et al*., 2013). The monophyly of the genus was established by Landry (1995) on the basis of the presence of sclerotized projections on the phallus dorsoapically. The placement of the unique Galápagos species described here is based on the presence of this character. Larval host plants are known for *P. teterrellus*, an economically important turf grass moth known as the bluegrass webworm, and *P. decorellus* (Zincken, 1821), both reared on Poaceae.

Parapediasia galapagensis sp. nov.

Figs 29-36, 50, 60

Material examined: *Holotype*: ♂, 'ECU[ADOR]., GALAPAGOS | Santiago, Central [camp] | 700 m elev[ation]., 10.iv.1992 | M[ercury]V[apour]L[ight], *leg*[*it*]. B. Landry'; 'HOLOTYPE | Parapediasia | galapagensis | Landry & Léger'; 'MHNG | ENTO | 00085740'. Deposited in MHNG.

Paratypes: 39 ♂, 235 ♀, 2 of sex undetermined from the Galápagos Islands. – *Fernandina*: 1 ♀, North side, 300 m, S 00°20.541', W 091°36.815', 12.i.2002, U[ltra] V[iolet]L[ight] (L. Roque, C. Causton); 1 ♀, North side, 1300 m, S 00°21.862', 091°34.308', 15.i.2002, UVL (L. Roque, C. Causton); 1 ♂, SW side, GPS: 352 m elev[ation]., S 00°20.503', W 091°36.969', 10.ii.2005, uvl (B. Landry, P. Schmitz); 2 ♀, SW side, GPS: 815 m elev., S 00°21.270', W 091°35.341', 11.ii.2005, day time (B. Landry, P. Schmitz); 3 ♀ (one dissected, MHNG-ENTO-85726), same data except 'uvl'; 1 ♂ (dissected, MHNG-ENTO-85727), 2 ♀ (one dissected, MHNG-ENTO-85728), SW side, crater rim, GPS: 1341 m elev., S 00°21.910', W 091°34.034', 12.ii.2005, uvl (B. Landry, P. Schmitz); 2 ♀, same data except 13.ii.2005; 3 ♀, SW side, GPS: 815 m elev., S 00°21.270', W 091°35.341', 14.ii.2005, day time (B. Landry, P. Schmitz). – *Floreana*: 2 ♀ (one MHNG-ENTO-85725), Scalesias near Cerro Pajas, GPS: 329 m elev., S 01°17.743', W 90°27.111', 12.iv.2004, uvl (P. Schmitz).– *Isabela (Alcedo volcano)*: 3 ♀ (one MHNG-ENTO-85746; one dissected MHNG-ENTO-85732), NE slope, about 400 m S Los Guayabillos camp, GPS: 892 m elev., S 00°25.208', W 091°04.765',

1.iv.2004, uvl (B. Landry, P. Schmitz); 1 ♀, cumbre [summit], caseta [cabin], 1200 m elev., 9.iv.1999, UVL-F[luorescent]L[ight] (L. Roque); 1 ♀, lado [side] NE, 200 m [elev.], camp arida alta, 14.iv.2002, uvl (B. Landry, L. Roque); 2 ♀, lado NE, camp pega-pega, 400 m [elev.], 15.iv.2002, uvl (B. Landry, L. Roque); 5 ♀, lado NE, camp guayabillos, 700 m [elev.], 16.iv.2002, uvl (B. Landry, L. Roque); 3 ♀, lado NE, cumbre, caseta Cayot, 1100 m [elev.], 17.iv.2002, uvl (B. Landry, L. Roque); 1 ♀, 850 m elev., 12.x.1998, uvl (L. Roque); 2 ♀, 1100 m elev., 13.x.1998, uvl (L. Roque); 1 ♀, 900 m elev., 30.x.2000, UVL (L. Roque, coll. # 2000-021). – *Isabela (Darwin volcano)*: 2 ♀, 1200 m [elev.], 15.ii.1999, UVL (L. Roque, coll. # 99.19); 5 ♀, 900 m elev., 6.iii.2000, UVL-W[hite]L[ight] trap (L. Roque, coll. #2000-010.); 1 ♀, Tagus Cove, 13.v.1992, MVL (B. Landry); 3 ♀ (one dissected, MHNG-ENTO-85729), 300 m elev., 15.v.1992, MVL (B. Landry); 1 ♂ (dissected, MHNG-ENTO-85730), 5 ♀, 630 m elev., 16.v.1992, MVL (B. Landry); 3 ♀, same data except 17.v.1992; 1 ♂, 4 ♀, 1000 m elev., 18.v.1992, MVL (B. Landry); 3 ♀, 1240 m elev., 19.v.1992, MVL (B. Landry); 1 ♀, 300 m elev., 20.v.1992, MVL (B. Landry). – *Isabela (Sierra Negra volcano)*: 2 sex undetermined, Albermarle I[sland]., San[to] Tomas, 1200 f[ee]t., 22.viii.[19]06 (F. X. Williams); 1 ♀, same data except 23.viii.[19]06; 1 ♀, 1 km W Puerto Villamil, 3.iii.1989, MVL (B. Landry); 1 ♂ (dissected, slide BL 181), 5 ♀, 3 km W S[an]to Tómas, Agr[iculture]. zone, 8.iii.1989, MVL (B. Landry); 2 ♀, 11 km N Puerto Villamil, 9.iii.1989, MVL (B. Landry); 3 ♂, 9 ♀, pampa zone, 1000 m [elev.], 12.iii.1989, MVL (B. Landry); 2 ♂ (one dissected, MHNG-ENTO-85731), 2 ♀, ± 15 km N P[uer]to Villamil, 25.v.1992, MVL (B. Landry); 1 ♀, NE slope, SE volcan Chico, xi.1974 (T. J. de Vries, B.M. 1976-58); 2 ♀, Corazon Verde, 19-20. xii.1975 (T. J. de Vries, B.M. 1976-58). – *Pinta*: 6 ♂ (one MHNG-ENTO-85721), 1 ♀, 200 m elev., 16.iii.1992, M[ercury]V[apour]L[ight] (B. Landry); 2 ♂ (one MHNG-ENTO-85722), 7 ♀ (one MHNG-ENTO-85723; one MHNG-ENTO-85724), 400 m elev., 17.iii.1992, MVL (B. Landry); 1 ♂, 2 ♀, same data except 18.iii.1992; 2 ♂ (one MHNG-ENTO-85741), 2 ♀, 400-650 m elev., 18.iii.1992, day [swept with net] (B. Landry). – *San Cristóbal*: 8 ♀ (one dissected, slide BL 1186), 4 km SE P[uer]to Baquarizo [sic], 12.ii.1989, MVL (B. Landry); 3 ♀, 1 km S El Progreso, 14.ii.1989, MVL (B. Landry); 1 ♂, 4 ♀, pampa zone, 15.ii.1989, MVL (B. Landry); 2 ♂ (one dissected, MHNG-ENTO-87618), 12 ♀, pampa zone, 18.ii.1989, MVL (B. Landry); 1 ♀, 4 km SE P[uer]to Baquarizo [sic], 20.ii.1989, MVL (B. Landry); 3 ♀, base of Cerro Pelado, 22.ii.1989, MVL (B. Landry); 5 ♀ (two dissected: MHNG-ENTO-85733, 85734); 1 ♀, transition zone, SW El Progreso, GPS: 75 m elev., S 00°56.359', W 089°32.906', 15.iii.2004, uvl (B. Landry, P. Schmitz); 1 ♀, shore of El Junco, GPS: 655 m elev., S 00°53.714', W 089°28.869', 17.iii.2004, [swept with a] net, 17h00 (B. Landry, P. Schmitz). – *Santa Cruz*: 1 ♀, 4 km N Puerto Ayora, 20.i.1989, MVL (B. Landry); 11 ♂, 5 ♀, pampa zone, Media Luna, 21.i.1989, MVL (B. Landry); 1 ♂, 5 ♀, Los Gemelos, 31.i.1989, MVL (B. Landry); 1 ♀, pampa zone, Media Luna, 2.ii.1989, swept [with a net] (B. Landry); 3 ♀, Tortuga Res[erve]., W S[an]ta Rosa, 6.ii.1989, MVL (B. Landry); 1 ♂, 3 ♀, pampa zone, Media Luna, 8.ii.1989, MVL (B. Landry); 1 ♀, same data except 26.ii.1989; 4 ♀ (one dissected, slide BL 1184), 2 km W Bella Vista, 27.ii.1989, MVL (B. Landry); 2 ♀, transition zone, recently cut road, GPS: S 00°45.528', W 090°18.849', 12.iii.2004, uvl (B. Landry, P. Schmitz);

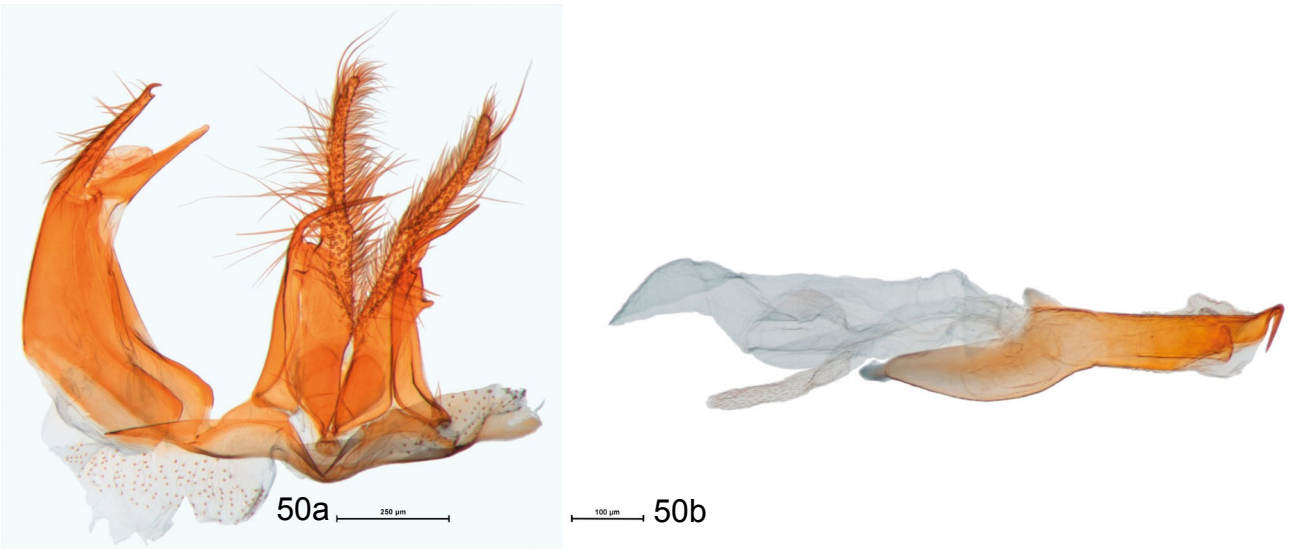
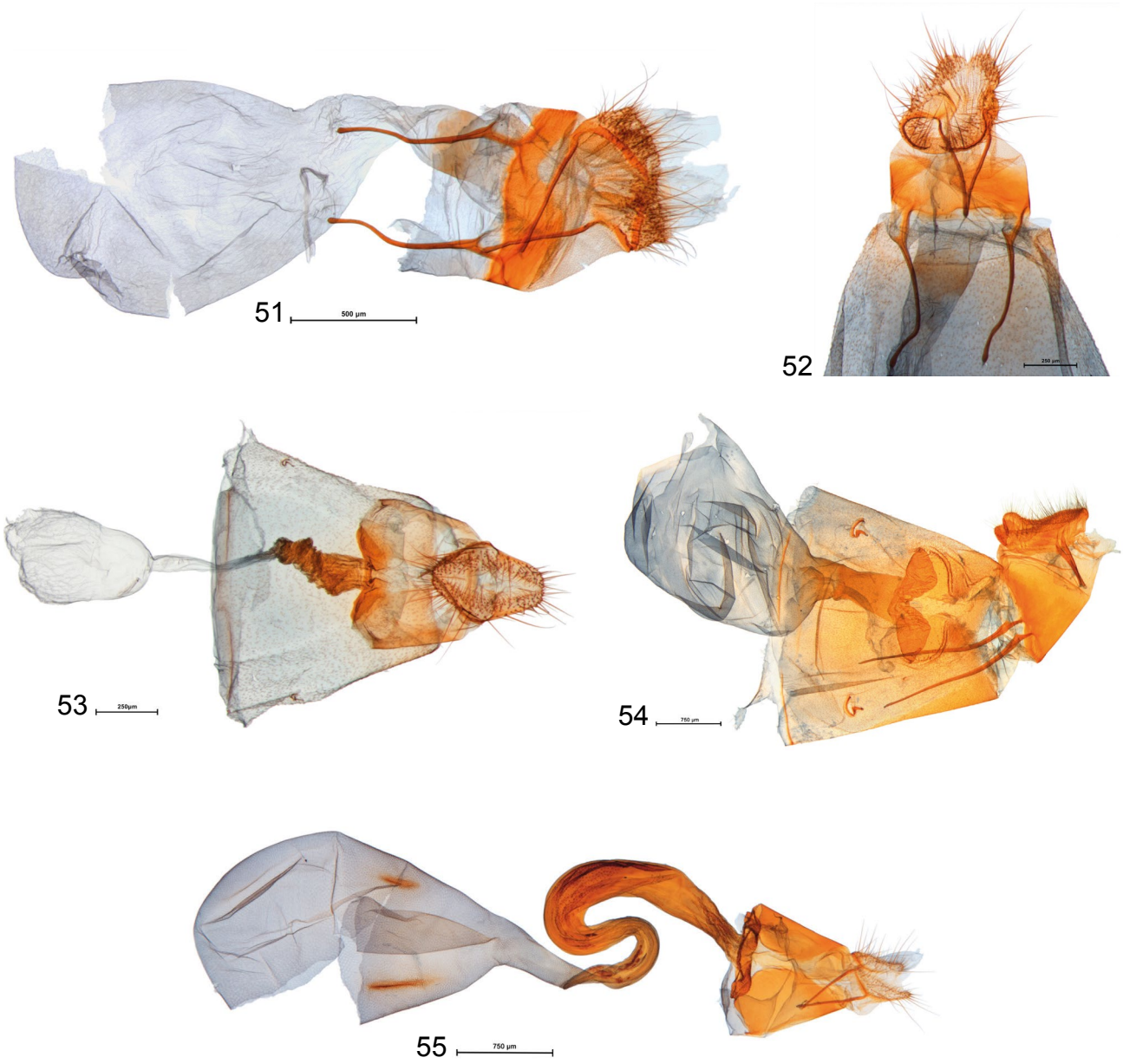


Fig. 50. Male genitalia of *Parapediasia galapagensis* sp. nov., paratype from Pinta, MHNG-ENTO-85722. (50a) Genitalia without phallus. (50b) Phallus.

1 ♀ (dissected, MHNG-ENTO-85735), low agriculture zone, GPS: S 00°42.132', W 090°19.156', 13.iii.2004, uvl (B. Landry, P. Schmitz); 6 ♀, Finca S[teve]. Devine, 17.iii.1989, MVL (B. Landry); 1 ♀, Hornemann Farm, 220 m [elev.], 25.iii.1964 (D.Q. Cavagnaro); 3 ♀, agriculture zone, near (NNW) Bella Vista, GPS : 223 m elev., S 00°41.297, W 090°19.670', 7.iv.2004, uvl (B. Landry); 2 ♀ (one MHNG-ENTO-85745), agriculture zone, finca C. Troya, N Bella Vista, GPS: 294 m elev., S 00°40.756', W 090°18.671', 9.iv.2004, uvl (B. Landry); 4 ♀, Los Gemelos, 4.v.2002, uvl (B. Landry, L. Roque); 6 ♀, Los Gemelos, 27.v.1992, MVL (B. Landry); 1 ♀, [no precise locality] v-vi.1970 (R. Perry, Tj. de Vries, Ref No. L-114, B.M. 1970-371); 2 ♀, Miconia pampa zone, Media Luna, 580 msn [elev.], S 00°39'28.7'', W 090°19'37.8'', 14.x.1996, fluorescent light trap (L. Roque). – *Santiago*: 3 ♀ (one MHNG-ENTO-85719), N side, GPS: 437 m elev., S 00°13.316', W 090°43.808', 3.iii.2005, uvl (P. Schmitz); 1 ♂ (MHNG-ENTO-85720), 3 ♀, N side, GPS: 527 m elev., S 00°13.690', W 090° 44.135', 5.iii.2005 (P. Schmitz); 1 ♂, NE side, close to caseta, GPS: 686 m elev., S 00°14.177', W 090°44.619', 6.iii.2005 (P. Schmitz); 2 ♀, Bahía Espumilla, 4.iv.1992, MVL (B. Landry); 3 ♀, 200 m elev., MVL (B. Landry); 3 ♀, Aguacate], 520 m elev., MVL (B. Landry); 1 ♀, Jaboncillo [camp], ± 850 m elev., MVL (B. Landry);



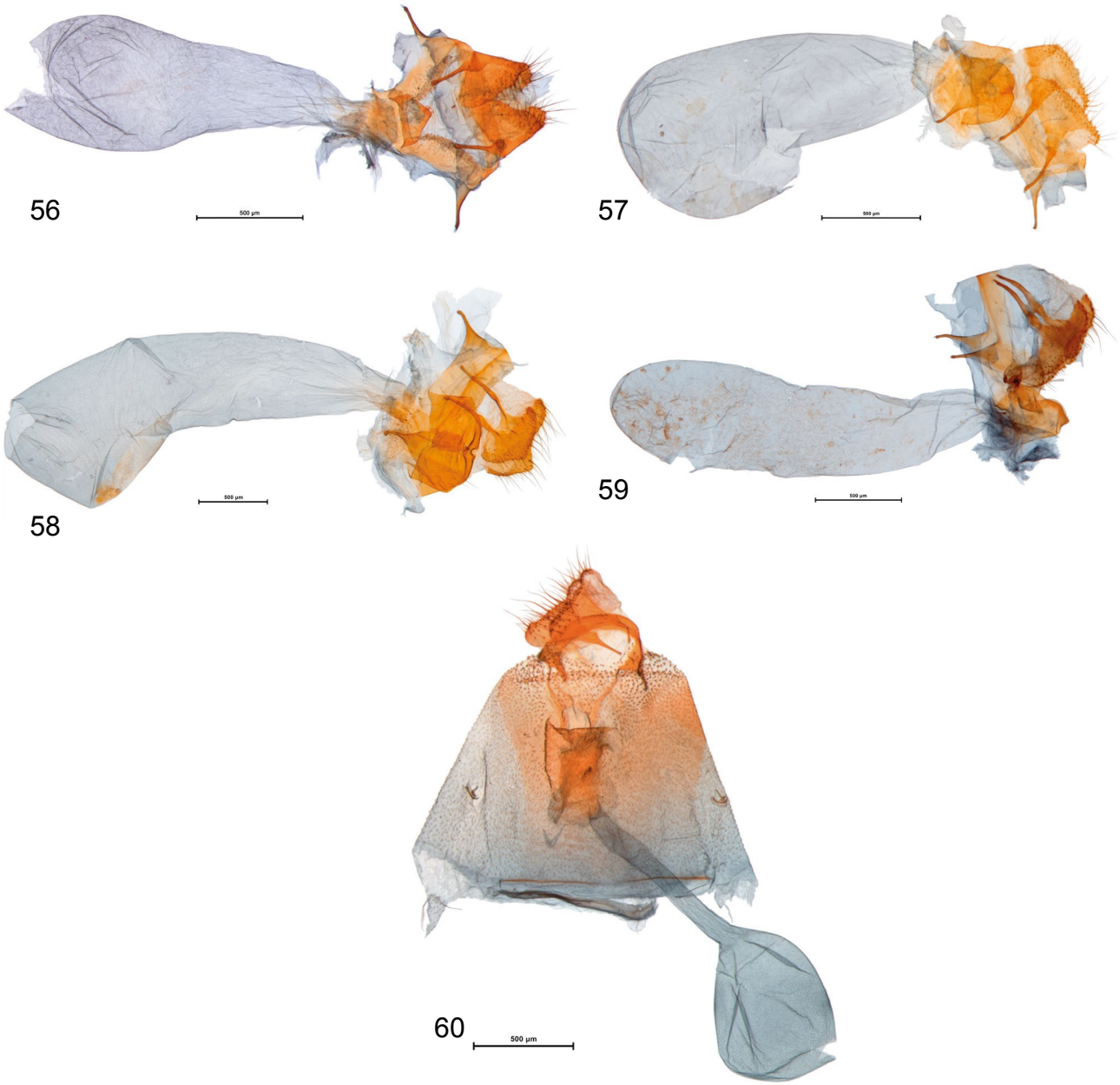
Figs 51-55. Female genitalia of Galápagos Crambinae. (51, 52) *Mesolia christinae* sp. nov. (51) paratype, MHNG-ENTO-85537. (52) paratype, MHNG-ENTO-85552. (53) *Argyria lacteella* (Fab.), specimen from Isabela, MHNG-ENTO-85675. (54) *Diatraea saccharalis* (Fab.), specimen from San Cristóbal, slide BL 1585. (55) *Euchromius galapagosalis* Capps, specimen from Española, MHNG-ENTO-86740.

13 ♀, Central [camp], 700 m elev., MVL (B. Landry); 19 ♀, same data as holotype (three labelled MHNG-ENTO-85742 to 85744); 3 ♀, Aguacate, 520 m elev., 12.iv.1992, MVL (B. Landry). Deposited in CAS, CDRS, CNC, MHNG and NHMUK.

Additional material examined (in poor condition): – *San Cristóbal*: 19 ♀, 1 sex undetermined, vic[inity]. "El Junco" (crater lake), Alt[itude]. ± 700 m, 15-16. iv.[19]70 (R. Silberglied). – *Santa Cruz*: 3 ♂, 15 ♀, vic. "Mirador" (W of Media Luna), Alt. ± 620 m, 26.v.[19]70 (R. Silberglied). Deposited in MCZ.

Etymology: The new name refers to the region of origin, in recognition of the fact that this species is probably endemic to the Galápagos.

Diagnosis: In the Galápagos Islands this species will be recognized among Crambinae by its mostly white hindwings contrasting with the generally darker forewings (Figs 29-36), except for *Diatraea saccharalis* (Fig. 6), but the latter is a larger species (18-39 mm wingspan) without a continuous subterminal line following the forewing outer margin as can be observed in *P. galapagensis* sp. nov. However, in the darkest



Figs 56-60. Female genitalia of Galápagos Crambinae. (56) *La florenciae* sp. nov., paratype, MHNG-ENTO-85360. (57) *La grisea* sp. nov., paratype, MHNG-ENTO-85701. (58) *La galapagensis* sp. nov., paratype, MHNG-ENTO-85706. (59) *La wagneuri* sp. nov., paratype, MHNG-ENTO-85681. (60) *Parapediasia galapagensis* sp. nov., paratype from Pinta, MHNG-ENTO-85723.

specimens of *P. galapagensis* sp. nov., the subterminal line can be obscured to the point of obliteration (Fig. 36). Among other species of *Parapediasia, P. galapagensis* sp. nov. is most similar in male genitalia to *P. atalanta* Błeszyński, 1963, described from the State of Pará, Brazil, by virtue of the thin cucullus, costal projection of valva, uncus, gnathos, and shape of the apical projection of the phallus. However, in *P. atalanta* the forewing is grey with a white dorsum and a well-formed postmedian line similar in aspect to the subterminal line, and the veins are overlaid with straw yellow from the base to the subterminal line. Also, in *P. atalanta* the uncus apically doesn't have a distinct hook, the gnathos is bulging distally, the cucullus and costal projection of the valva are subequal in length, and the phallus has a shorter coecum penis and a larger and ribbon shaped apical process.

Description: *Male* (n=43) (Figs 34, 35). Head light buff dorsally, white with some light buff on fronto-clypeus; frons slightly rounded, not projecting. Antenna laminate, with flagellomeres slightly wider than long; flagellomeres uniformly buff; scape and pedicel buff, sometimes with white ventrally. Maxillary palpus mostly buff to light greyish brown with white at base, apical scales forming light buff to white fan. Labial palpus with first palpomere mostly white, second palpomere dorsally buff, laterally light greyish brown, ventrally edged white, third palpomere buff with light greyish brown laterally. Haustellum white to light buff. Thorax as illustrated. Forewing length: 5.3-7.0 mm (holotype: 7.0 mm); wingspan: 10.5-15.0 mm (holotype: 15.0 mm). Wings with colours and pattern as illustrated (Figs 34, 35); pattern often poorly expressed. Prothoracic leg coxa laterally greyish brown, medially light buff; femur laterally dark greyish brown, medially and along ventral edge light buff; tibia greyish brown laterally, white to buff medially; tarsomeres I-IV greyish brown laterally, buff ventrally, tarsomere V buff. Mesothoracic leg coxa white; trochanter light buff; femur light buff with touch of light greyish brown at apex laterally; tibia light buff; tarsomeres buff. Metathoracic leg coxa as mesothoracic leg, with tibia slightly paler except on spines. Abdomen dorsally as illustrated, concolorous ventrally, with slightly darker buff band laterally. Tergum VIII with more thickly sclerotized basal band with median triangle reaching before middle of segment. Sternum VIII with more thickly sclerotized basal section sporting short triangular extensions laterally, reaching about 2/3 length of segment. Intersegmental membrane VII-VIII with long, hair-like scales mostly laterally, scattered, except for small, more concentrated patch dorsally.

Male genitalia (n=7) (Fig. 50). Uncus thin, nearly straight, with distinct apical hook. Gnathos thin, straight with rounded apex. Tegumen with dorsal section slightly longer than uncus, with lateral arms rather wide. Valva with cucullus thin, directed dorsally at half right angle, with thinner distal half laterally compressed and slightly curving medially; costal process slender, shorter than cucullus, directed dorsally at almost right angle, slightly curving medially, pointed; basal sclerotized section of valva dorsally adorned subapically with short, flat, triangular projection pointing dorsally at right angle. Juxta shaped like conventional heart symbol. Vinculum narrow medially, with short projecting point, laterally enlarged. Pseudosaccus small, rhomboid. Phallus short, 590 µm long (n=1), straight in dorsal view, with elongate, tapering coecum penis slightly angled from shaft, ending in pointed projection first directly dorsally at half right angle, then directed to right side at right angle, and apically pointing downward; vesica without cornuti.

Female (n=275) (Figs 29-33, 36). Head with frons as in male. Antenna filiform, with scape and pedicel coloured as in male; flagellomeres dorsally greyish brown, ventrally paler, buff. Forewing length: 4.5-9.0 mm (wingspan: 10.0-20.0 mm). Frenulum with 2-3 acanthae strongly fused. Abdominal segment VII with tergite widely sclerotized in enlarging truncated triangle apically extending laterally; sternite with sclerotized patch on distal half slightly enlarging to about 2/3 of sternite's width at apex.

Female genitalia (n=13) (Fig. 60). Papillae anales small, very narrowly sclerotized especially at short, rounded, dorsal knob. Posterior apophyses on elongated triangular bases, straight, short, reaching into segment VII. Tergite VIII a narrow ring, wider dorsally, very narrow ventrally and expanded ventrally around base of ostium base. Anterior apophyses short, straight, on well-sclerotized elongated triangular bases, reaching into segment VII. Ostium bursae a short triangular pouch. Ductus bursae from ostium at right angle to left, then turning anteriorly at right angle, just before mid-length, of same rather narrow girth all along, with faintly sclerotized ridges. Corpus bursae globular, 5/6 of ductus bursae length, spiculate throughout, without signum.

Biology: Unknown except that the moths are attracted to lights, but they can be collected in the daytime as well. Also, most specimens were collected at higher elevations, although the species was found also closer to the seashore, for example at Tagus Cove, on Isabela Island.

Distribution: Presently known only from the Galápagos Islands on the islands of Fernandina, Floreana, Isabela, Pinta, San Cristóbal, Santa Cruz, and Santiago.

Remarks: The size variation in the female moths, between 10 and 20 mm in wingspan, is noteworthy, as well as the forewing pattern variation; the available males do not vary that much in those respects.

DISCUSSION

This first taxonomic revision of the Galápagos Crambinae is probably relatively complete in terms of species coverage because of the extensive collecting efforts made, both with respect to localities covered and time in the field although Wolf and Cerro Azul volcanoes on Isabela Island have not been sampled for moths. The northern islands of Darwin and Wolf have not been sampled either, although one would not expect unusual moth discoveries from these smaller islands.

The situation with respect to the delimitations of the species of *La* suggests that the speciation process is possibly not complete. This is the reason for the selection of restricted series of specimens as types from one island in the three species dispersed on more than one island. A study involving mitochondrial and nuclear DNA markers would probably help to refine the species delimitation in this group.

The small radiation of five Galápagos species of *La* is notable for there are only three more Lepidoptera radiations (more than three species) known on the Galápagos presently, i.e., *Galagete* (Autostichidae) with 12 species, '*Scythris*' (Scythrididae) with nine species (unpublished), and *Utetheisa* (Erebidae) with five species. It is the only pyraloid group with a substantial radiation, which makes it interesting for future phylogeographical investigations.

Furthermore, the radiation of *La* species is interesting because, to our knowledge, there are only two other known radiation of Crambini on oceanic islands of the World, i.e., that of *Fernandocrambus* Aurivillius (in Aurivillius *et al*., 1922) on the Juan Fernandez Islands (Clarke, 1965) and that of *Orocrambus* Purdie, 1884 (Gaskin, 1975). The important reduction of tympanal organs in the Galápagos radiation of *La* is somewhat confounding because presumably, such a loss, which probably includes the inability to hear the ultrasounds of bats, should not happen in an environment where bats are known to occur, which is the case on the Galápagos islands of Santa Cruz, San Cristóbal, Isabela, Floreana and Santiago (McCracken *et al*., 1997). It may be that the *La* radiation started to evolve before the arrival of bats on the archipelago, but data are currently lacking to test this hypothesis. Reduced tympanal organs are also observed in *Helenoscoparia* Nuss, 1999 (Scopariinae), a small radiation of five species occurring on St Helena Island, where no bats occur (https://en.wikipedia.org/wiki/List_of_mammals_of_Saint_Helena). Finally, it is worth noting that the *La* radiation heavily tilts the endemicity of the Crambinae on the archipelago to the high percentage of 80 whereas for the whole 82 identified species of Pyraloidea in the Galápagos, 42.7% are considered endemic.

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