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***Agrotis* Ochseneimer (Lepidoptera, Noctuidae): a systematic analysis of South American species**

GERMÁN SAN BLAS

Laboratorio de entomología, Instituto Argentino de Investigaciones de las Zonas Áridas (IADIZA, CCT-CONICET Mendoza). Av. A. Ruiz Leal s/n, Pque. Gral. San Martín, CC: 507, CP: 5500, Mendoza, Argentina. E-mail: gsanblas@mendoza-conicet.gob.ar



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GERMÁN SAN BLAS

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Abstract

The genus *Agrotis* Ochsenheimer, 1816 (Lepidoptera, Noctuidae) contains about 300 described species distributed worldwide, excepting the Poles. For South America 93 species have been described. Different diagnostic characters have been proposed for species from the northern Hemisphere, mostly from male genitalia. Recently, numerous South American species of the genus have been transferred to other genera. In this work, a systematic revision was undertaken of the South American species of *Agrotis*, restricting to 20 the number of species of this genus for the region and transferring the other species to different genera and/or synonymizing with other species. Based on a detailed study of the external morphology and genitalia of both sexes, several nomenclatural changes are proposed. New generic synonymy: *Mesembreuxoa* Hampson = *Feltia* Walker. New *Agrotis* synonymies include: *Scotia forsteri* Köhler = *A. propriens* (Dyar); *Agrotis peruviana hamptoni* Draudt, *Rhizagrotis triclava* Draudt, and *Euxoa andina* Köhler = *A. peruviana* (Hampson); *Lycophotia achromatica* Hampson, *Feltia malefida patagiata* Aurivillius, Prout and Meyrick, *Agrotis psammophila* Köhler, and *Scotia (Feltia) canietensis* Köhler = *A. malefida* Guenée; *Chorizagrotis benefida* Draudt = *A. experta* (Walker); *Agrotis livens* Köhler and *Agrotis capayana* Köhler = *A. araucaria* (Hampson). Species transferred to *Feltia* Walker tent. include: *Scotia aspersula* Köhler, n. comb.; *Porosagrotis brachystria* Hampson, n. comb.; *Agrotis carrascoi* Köhler, n. comb.; *Mesembreuxoa chilensis* Hampson, n. comb.; *Euxoa clavisigna* Dognin, n. comb.; *Euxoa conifrons* Draudt, n. comb.; *Agrotis consternans* Hayes, n. comb.; *Euxoa coquimbensis* Hampson, n. comb.; *Mesembreuxoa fascicola* Dyar, n. comb.; *Chorizagrotis forasmicans* Köhler, n. comb.; *Agrotis giselae* León, n. comb.; *Agrotis gypaetina* Guenée, n. comb.; *Agrotis hispidula* Guenée, n. comb.; *Euxoa incarum* Cockerell, n. comb.; *Agrotis india* Köhler, n. comb.; *Scotia mansa* Köhler, n. comb.; *Scotia picata* Köhler, n. comb.; *Agrotis rondanelli* León, n. comb.; *Euxoa senta* Draudt, n. comb.; and *Agrotis submontana* Köhler, n. comb. New *Feltia* tent. synonymies include: *Agrotis*

daguerrei Köhler, *Porosagrotis atricentrica* Hampson, and *Agrotis llanoi* Köhler = *F. brachystria*; *Lycophotia baeckstroemi* Aurivillius = *F. deprivata* (Walker); *Agrotis raveni* Köhler = *F. fascicola*; *Agrotis gentilii* Köhler = *F. forasmicans*; *Scotia nyei* Köhler, *Euxoa australis* Köhler, and *Scotia liniclinans* Köhler = *F. hispidula*; *Euxoa bosqui* Köhler and *Euxoa griseosparsa* Köhler = *F. lutescens* (Blanchard); *Euxoa praeocupata* Köhler, *Agrotis andinicola* Köhler, and *Scotia songoensis* Köhler = *F. subandina* (Köhler); *Agrotis maldonadoi* Köhler = *F. submontana*. New combinations of *Agrotis* species: *Anicla albiorbis* (Dyar), n. comb.; *Noctubourgognea chimaera* (Köhler), n. comb.; *Noctubourgognea dissociata* (Staudinger), n. comb.; *Pseudoleucania nigrocollaris* (Köhler), n. comb.; and *P. wittmeri* (Köhler), n. comb. One lectotype and one paralectotype are designated for *A. edmondsi* Butler. The 20 species of South American *Agrotis* are redescribed using characters of color pattern, external morphology of head and thorax, and internal morphology of male (including vesica) and female genitalia. This is the first time complete eversions and description of male genitalia (aedeagus and vesica) and female genitalia are done for almost all the South American species. Images of all described characters and dichotomous keys to identify South American species of *Agrotis* are included.

Key words: *Feltia* Walker, male genitalia, female genitalia

Introduction

Genus *Agrotis*. Genus *Agrotis* Ochsenheimer, 1816 includes about 300 species worldwide, 93 of which were described from South America (Poole 1989). *Agrotis* species are characterized by the vesica shape of the male genitalia. The vesica is an elongate, membranous, and scobinated tube, with a basal spined band. This is in accordance with the appendix bursae of female genitalia, which is longer than the corpus bursae and turns between one and several times inside the female abdomen (Common 1954). Lafontaine (2004) identifies the following diagnostic characters: in male genitalia vesica long and looping, with a basal swelling with numerous lobes, and absence of medial and apical diverticula; hook-like aedeagus apex on right side; valve with a differentiated round swelling between clasper base and costa; and appendix bursae of female genitalia long and looping, corresponding to aedeagus vesica.

Taxonomic history. *Agrotis* was described by Ochsenheimer (1816) to include 46 species, three new species and 43 species previously associated with other genera. Ochsenheimer (*op. cit.*) gives no explanation of why he groups these species into the same genus. Many of the species he included in *Agrotis* belong to different genera, even different subtribes.

Hübner (1821) regroups *Agrotis* species into other genera, some of them new, some later synonymized with *Agrotis*.

Curtis (1827) designates *Agrotis segetum* (Denis & Schiffermüller) as the generic type species. He also mentions the difficulty to characterize this group of variable species and makes three species groups based on types of the male antenna.

Boisduval (1829) publishes a checklist of European Lepidoptera. He includes within *Agrotis* many species that Hübner (1821) associated with other genera (e.g., *Peridroma saucia* (Hübner) and *Ochropleura plecta* (Linnaeus)), which were correctly associated according to the current classification.

Guenée, in Boisduval & Guenée (1852), mentions that only a few generic groups recognized by Hübner are natural and that his division of genera into many smaller genera is unjustified, since many of these groups are so structurally similar that many of Hübner's genera have been synonymized. He groups all the agrotids (*Agrotis*, *Heliophobus* Boisduval, *Chersotis* Boisduval, *Opigena* Boisduval, and *Spaelotis* Boisduval) into *Agrotis* to make more natural subdivisions of the genus. He also mentioned that it is not the time to group species into smaller genera because neither larva nor pupa nor adult seems to have differentiated generic-level characters.

Walker releases a series of publications on the British Museum Lepidoptera collection between 1854 and 1866. In volume IX, issued in 1856, he deals with noctuids and follows Guenée's classification. He admits that there are no characters that can group the species into smaller genera, which is why he follows Guenée.

Smith (1890) also mentions that past efforts to group *Agrotis* species have been poor, almost arbitrary, and dependent on the researcher. Those efforts had resulted in several divisions of *Agrotis* into numerous new genera, most of which had been previously synonymized. He stresses that there are no true characters that support those species groups. Despite this, Smith establishes various new genera, many of which are valid today. Also, he suggests that genitalic characters are very important for species identification. He points out that there are no characters useful for all groups and sometimes they show as much variability as non-sexual characters, but they are

useful to identify and differentiate species. Smith (1890) uses external morphologic characters for generic diagnoses (e.g., antennal types, tibial spines, forewing color pattern, and frons projections), but also uses male genitalic characters such as clasper and harpe (ampulla) shapes.

Hampson (1894) also mentions the difficulties in classifying noctuids and says that more studies on male genitalia, especially the clasper, are needed to reach a satisfactory classification. Despite this statement, Hampson groups the species using external morphological characters exclusively (mainly tibial spines and male antenna types). Later, in 1903 and in the series of works on the British Museum Phalaenids (1903, 1905b, 1906, 1908, 1909a, 1909b, 1910a, 1910b, 1912, 1913a, 1913b, 1920), Hampson continues to use that classification system, which results in several *Agrotis* species to be associated with different genera. This classification system was used for almost a century, despite been proven as not being natural groups (as indicated by Forbes 1933; McDunnough 1938; Kitching 1984; Lafontaine 2004).

Draudt (1924) revises the American Lepidoptera, giving a diagnosis for each species. He bases his work on Hampson's classification.

Forbes (1933) carries out a detailed analysis of the male genitalia, grouping various genera such as *Euxoa* and *Feltia* into *Agrotis*, preferring much larger generic groupings. In spite of this, many of the characters he uses are utilized today to define *Agrotis* and its species. Forbes (1933) performs a detailed analysis of male genitalic morphology; defining previously confusing structures such as the harpe and the correct use of clasper and ampulla. He also creates a similarity table to group agrotine (Noctuinae) genera. Forbes (1954) uses the same analysis for all Noctuidae.

McDunnough (1938) makes important changes to Hampson's classification based mainly on genitalic characters. He rearranges subfamilies, genera, and reevaluates species status, taking a major step toward the current classification.

Nye (1975) makes a world checklist of moth genera, mainly following the Hampson system for suprageneric classification.

Poole (1989) makes a checklist of world noctuids making several new combinations and new synonymies, approaching the current classification.

Lafontaine (2004) makes the last revision of the North American Agrotini, assembling a complete diagnosis of *Agrotis* with external morphology and genitalia of both sexes, and clarifies generic associations of several South American *Agrotis* species.

Taxonomic history in South America. Blanchard (1852) presents one of the first works on South American noctuids. Blanchard (*op. cit.*) describes several new species, three of them now placed in *Agrotis*, but cites them in different genera. Butler (1882) revises the Chilean species collected by Mr. Edmonds and bases his work on Guenée's (1852) classification system. Hampson (1903) and Draudt (1924) incorporate South American species into their respective works.

Descriptions of Argentinean noctuids (to a lesser extent on Peruvian and Bolivian noctuids) are almost exclusively by Köhler (1945; 1953a; 1953b; 1958; (1958) 1959; 1959; 1961; (1961) 1963; 1966; 1967; 1968; 1973; 1979a; 1979b). These works are mainly focused on the description of new species, only one treats the group as a whole (Köhler 1967), and only in three works does he describe and draw male genitalia (Köhler 1945; 1967; 1968).

In Chile, recent works on the genus are based on different points of view: economic importance (Angulo *et al.* 1990), immature stages (Artigas 1972; Angulo & Weigert 1975a; Weigert & Angulo 1977; Angulo 1978; Angulo & Jana-Sáenz 1984; Artigas, 1994; Angulo & Olivares 2001); female genitalia (Angulo 1994); differentiation of closely related species (Angulo & Quezada 1975; Velasquez Medina 1990); and description of new species (Angulo & Olivares 2006; León *et al.* 2010).

In spite of all the effort over the last 50 years, none of the studies treats all *Agrotis* species for the region; therefore, knowledge for most of the species is fragmented and incomplete. The objectives of this work are to 1) recapitulate all the information available for South American species of *Agrotis*, 2) organize the species of *Agrotis* using described diagnostic characters, 3) look for new diagnostic characters, and 4) provide a complete redescription of the species including a checklist, images of adults and genitalia of both sexes (when available), distribution maps, and a key to differentiate South American species.

Material and methods

Taxonomic material. Primary types of 111 species, subspecies, and synonymies of South American *Agrotis* were checked (48 types checked personally and 63 from photos). A total of 1266 additional specimens were revised. Material used in this study is deposited in the entomological collections at the following institutions: BMNH, Natural History Museum, London, U.K.; CNC, Canadian National Collection of Insects, Arachnids, and Nematodes, Ottawa, Canada; HNHM, Magyar Természettudományi Múzeum, Budapest, Hungary; IADIZA, Instituto Argentino de Investigaciones de las Zonas Áridas, Mendoza, Argentina; IMLA, Instituto y Fundación Miguel Lillo, Tucumán, Argentina; INTAc, Instituto Nacional de Tecnología Agropecuaria La Consulta, Mendoza, Argentina; MACN, Museo Argentino de Ciencias Naturales “Bernardino Rivadavia,” Buenos Aires, Argentina; MLP, Museo de La Plata, Buenos Aires, Argentina; MNHN, Muséum National d’Histoire Naturelle, Paris, France; NHRS, Naturhistoriska Riksmuseet, Stockholm, Sweden; SMF, Forschungsinstitut und Naturmuseum, Frankfurt, Germany; UCCC, Museo de Zoología de la Universidad de Concepción, Concepción, Chile; UNCOR, Universidad Nacional de Córdoba, Córdoba, Argentina; USNM, National Museum of Natural History, Smithsonian Institution, Washington, DC, USA; ZMHB, Museum für Naturkunde der Humboldt-Universität, Berlin, Germany; ZMUC, Statens Naturhistoriske Museum Zoologisk Museum, Copenhagen, Denmark; ZSM, Die Zoologische Staatssammlung München, Munich, Germany.

Almost all synonymic lists of species are ordered by publication year of the first work mentioning the specific name, except *A. malefida* and *A. ipsilon* whose synonymic lists are too long and, for them to be easier to read, they are arranged by specific names (independently of generic associations).

Species description and type material. There are probably several new species of *Agrotis*, but the aim of this study is to revise the described species in the genus. Descriptions of new species based only on a single specimen is not advisable, particularly when the new species is only slightly different from a closely related described species that is represented by a type specimen or by only a few specimens. Color pattern and genitalic variation make it necessary to have as many specimens as possible to check intraspecific variation and determine whether the variation seen corresponds to a new species.

Köhler’s collection was divided into two Museums: IMLA and ZSM. All the specimens and type material have been seen at IMLA, but one type specimen of each species only at ZSM. For this reason, when cotypes or syntypes are available, lectotypes are not designated. Lectotypes will be designated in a future work concerning the species described by Köhler and location of type material.



FIGURE 1. Example of procedure taken to measure male genitalic structures. Dotted line = valve length, continuous line = ampulla length.



FIGURE 2. Abdominal sclerotization pattern in male *Agrotis*.

Morphological dissections and imaging. Dissections of genitalia were conducted as described in Lafontaine (2004). Chlorazol Black E was used to stain the female genitalia and male aedeagus. Terminology for genitalia and

antenna types follow Lafontaine (2004). Size of the longest antennal segment was calculated by measuring its width, including branches, and dividing it by the width of the central shaft. Lengths of genital structures were calculated by taking a photo of them and drawing a line joining the structures midpoints (Fig. 1).

Adult images were taken with a Panasonic LZ8 digital camera. Genitalic images were taken with a Leica S6E stereoscopic microscope using a Canon Powershot S50 digital camera, stacked using CombineZP (Hadley 2013) and enhanced with image editing software. Distribution maps were made using Simplemapp (Shorthouse 2010).

Systematic account

Poole (1989) cites 93 valid South American species for the genus *Agrotis*. Those 93 species and 18 species/subspecies considered synonyms by Poole (1989) were examined for this study (excepting 12 species, see below). Five species not included in Poole's work were examined, as well as *Lycophotia atrifascia* Hampson (placed by Poole in "Lycophotia of authors"), and six species described after 1989. Fifty-five species/subspecies are referable to the genus *Feltia tent.* (including 20 new combinations and 15 new synonymies) which resulted in 30 valid species; 11 were transferred to other genera (5 new combinations); three species as *incertae sedis*, and 42 remained in *Agrotis*, including 11 new synonymies and 20 valid species. The following 12 species were not included in this work because they were represented by either the holotype or no identified specimens of those species were available to study: *Agrotis extincta* Maassen, *Agrotis faticana* Staudinger, *Agrotis heterochroma* Draudt, *Agrotis manabilis* Draudt, *Agrotis minimoides* Poole, *Agrotis oblimata* Draudt, *Agrotis obscurella* Maassen, *Agrotis orestica* Forbes, *Agrotis paramensis* Hampson, *Euxoa phaeochroa* Hampson, *Scotia picata* Köhler, *Agrotis xerophilina* Köhler. From the six recently described species added to this manuscript, only original descriptions of *Agrotis acronyctoides* Angulo & Olivares (2006) and *A. caliginosa* Angulo & Olivares (2006) are included because both of these species were described from a single female. Female characters are useful for generic association but not for specific level studies.

McDunnough ([1929] according to Lafontaine 2004), transfers *Noctua subterranea* Fabricius from *Agrotis* to *Feltia* based on male genitalic characters. Lafontaine (2004) associates numerous Neotropical species formally placed in *Agrotis* with the genus *Feltia* and places them in the *subterranea*-group based on male antenna type and male genitalia. A phylogenetic study (San Blas *in lit.*) shows that species of South American *Agrotis* here placed in *Feltia tent.* could be a different genus from *Feltia s. str.* Therefore, these species are tentatively placed in *Feltia* until additional studies can be conducted. Because many species in this study are associated with *Feltia tent.*, a diagnosis is presented for the South American species: male antenna doubly-biserrate, doubly bifasciculate (bifasciculate in some species); ampulla 1/2–1/3 × as long as valve length, swollen postbasally; vesica helical, with a variable number of tight loops, basal swelling absent, right basal diverticulum absent, medial, subapical, and/or apical diverticula present in some species, some species with a cornutus on one of those diverticula, basal spined band absent; female genitalia with appendix bursae as long as or shorter than corpus bursae, corpus bursae sac-like in most species.

The following is a list of South American species previously placed in *Agrotis*, but that belong to other genera:

Anicla Grote

A. albiorbis (Dyar), **new combination**

Caphornia Köhler

C. perdita (Staudinger), **stat. rev.**

Euxoamorpha Franclemont

E. samborombona (Köhler), **stat. rev.**

Feltia Walker *tent.* (= *Trichosilia* Hampson; *Mesembreuxoa* Hampson, **new synonymy**)

F. aspersula (Köhler), **new combination**

F. brachystria (Hampson) (= *Agrotis daguerrei* Köhler, **new synonymy**; *Porosagrotis atricentrica* Hampson, **new synonymy**; *Agrotis llanoi* Köhler, **new synonymy**), **new combination**

F. carrascoi (Köhler), **new combination**
F. chilensis (Hampson), **new combination**
F. clavisigna (Dognin), **new combination**
F. cleiducha (Dognin)
F. conifrons (Draudt), **new combination**
F. consternans (Hayes), **new combination**
F. coquimbensis (Hampson), **new combination**
F. deprivata (Walker) (= *Feltia atrifascia* Hampson; *Lycophotia baeckstroemi* Aurivillius, **new synonymy**; *Agrotis deprivata nuda* Köhler)
F. fascicola (Dyar) (= *Agrotis raveni* Köhler, **new synonymy**), **new combination**
F. forasmicans (Köhler) (= *Agrotis gentilii* Köhler, **new synonymy**), **new combination**
F. gahani (Köhler)
F. giselae (León), **new combination**
F. gypaetina (Guenée) (= *Agrotis pseudoplecta* Snellen), **new combination**
F. hispidula (Guenée) (*Scotia nyei* Köhler, **new synonymy**; *Euxoa australis* Köhler, **new synonymy**; *Scotia liniclinans* Köhler, **new synonymy**), **new combination**
F. incarum (Cockerell), **new combination**
F. india (Köhler), **new combination**
F. irritans (Köhler)
F. lilacina (Zerny)
F. lutescens (Blanchard) (= *Agrotis blanchardi* Berg; *Euxoa bosqui* Köhler, **new synonymy**; *Euxoa griseosparsa* Köhler, **new synonymy**)
F. mansa (Köhler), **new combination**
F. picata (Köhler), **new combination**
F. repleta (Walker)
F. rondanellii (León), **new combination**
F. subandina (Köhler) (= *Euxoa praeocupata* Köhler, **new synonymy**; *Agrotis andinicola* Köhler, **new synonymy**; *Scotia songoensis* Köhler, **new synonymy**)
F. senta (Draudt), **new combination**
F. submontana (Köhler) (= *Agrotis maldonadoi* Köhler, **new synonymy**), **new combination**
F. subterranea (Fabricius) (*Feltia annexa* Treitschke; *Agrotis decernens* Walker; *Agrotis interferens* Walker; *Agrotis interposita* Maassen)
F. williamsi (Schaus) (= *Agrotis galapagoensis* Köhler)

Magnagrotis Angulo & Badilla
M. oorti (Köhler)

Noctubourgognea Köhler
N. dissociata (Staudinger), **new combination**
N. chimaera (Köhler), **new combination**

Pseudoleucania Staudinger
P. nigrocollaris (Köhler), **new combination**
P. wittmeri (Köhler), **new combination**

Pyrgeia Köhler
P. huertai (Köhler), stat. rev.

Scriptania Hampson
S. americana (Blanchard, in Gay, 1852), stat. rev.

Tisagronia Köhler
T. reedi (Köhler), stat. rev.

Incertae sedis.

These three species belong neither to *Agrotis* nor to *Feltia* and their generic association are unknown. Slides of their genitalia are available but no genitalic characters associate them with other known genera.

Agrotis hirtipalpis Walker
Euxoa tocheata Dognin
Agrotis trisignata Maassen

Agrotis Ochsenheimer, 1816

- Agrotis* Hübner, 1806: 1. Work rejected for nomenclatural purposes by International Commission on Zoological Nomenclature, 1926, Smithsonian Miscellaneous Collections 73 (4) Opinion 97: 19. Also idem, 1954, Opinions and Declarations rendered by the International Commission on Zoological Nomenclature 6 Opinion 278: 140. Only included species: *Agrotis segetis*.
- Agrotis* Hübner, 1808: 4. Work rejected for nomenclatural purposes by International Commission on Zoological Nomenclature 1966, Bulletin of Zoological Nomenclature 23 Opinion 789: 213. Placed on the Official Index of Rejected and Invalid Generic Names in Zoology: Name No. 1826. Only included species: *Agrotis grata* Hübner (1808).
- Agrotis* Ochsenheimer, 1816: 66. Type species: *Noctua segetum* [Denis & Schiffermüller], 1775. Designated by Curtis, 1827: 165.
- Agronoma* Hübner, 1821: 227. Type species: *Noctua valligera* [Denis & Schiffermüller], 1775 = *Phalaena vestigialis* Hufnagel, 1766a. Designated by Grote, 1895: 64.
- Georyx* Hübner, 1821: 227. Type species: *Noctua segetum* [Denis & Schiffermüller], 1775. Designated by Hampson, 1903: 153.
- Scotia* Hübner, 1821: 226. Type species: *Noctua cinerea* [Denis & Schiffermüller], 1775. Designated by Hampson, 1903: 153.
- Noctua* Boisduval, 1829: 63. Type species: *Phalaena exclamationis* Linnaeus, 1758. Designated by Duponchel, 1829: 71. Note: *Noctua* Boisduval (1829) is pre-occupied by *Noctua* Linnaeus (1758), it is therefore a junior homonym of the latter.
- Psammophila* Stephens, 1850: 72. Type species: *Noctua ripae* Hübner, 1823. By monotypy. **Note:** *Psammophila* Stephens (1850) is pre-occupied by *Psammophila* Brown (1827), it is therefore a junior homonym of the latter.
- Tetrapyrgia* Walker, 1865b: 711. Type species: *Tetrapyrgia graphiphorides* Walker, 1865b = *Agrotis porphyricollis* Guenée, in Boisduval & Guenée, 1852. By monotypy.
- Elegarda* Walker, 1865b: 712. Type species: *Agrotis dorsicinis* Walker, 1858 = *Agrotis porphyricollis* Guenée, in Boisduval & Guenée, 1852. Designated by Nye, 1975: 173.
- Comophorus* Alphéraky, 1887: 168. Type species: *Comophorus villosus* Alphéraky, 1887. By monotypy. Note: *Comophorus* Alphéraky (1887) is pre-occupied by *Comophorus* Agassiz (1848), it is therefore a junior homonym of the latter. Objective replacement name is *Lycophorus* Staudinger.
- Porosagrotis* Smith, 1890: 11. Type species: *Agrotis muraenula* Grote & Robinson, 1868 = *Agrotis vetusta* Walker, 1856. By original designation.
- Lycophorus* Staudinger, in Staudinger & Rebel, 1901: 154. Type species: *Comophorus villosus* Alphéraky, 1887. By monotypy. Note: *Lycophorus* Staudinger is the objective replacement name for *Comophorus* Alphéraky (1887).
- Onychagrotis* Hampson, 1903: 465. Type species: *Agrotis rileyana* Morrison, 1875. By original designation.
- Neosema* Rebel, 1907: 55. Type species: *Neosema sesamioides* Rebel, 1907. By monotypy.
- Powellinia* Oberthür, 1912: 330. Type species: *Luperina lasserrei* Oberthür, 1881. By monotypy.
- Hermonassoides* Strand, 1915: 157. Type species: *Agrotis problematica* Strand, 1915. By monotypy.
- Brachypteragrotis* Viette, 1959: 25. Type species: *Brachypteragrotis patricei* Viette, 1959. By original designation.
- Crassagrotis* Beck, 1992: 180. Type species: *Noctua crassa* Hübner, 1803. By original designation.
- Putagrotis* Beck, 1992: 181. Type species: *Noctua puta* Hübner, 1803. By original designation.
- Leucagrotis* Beck, 1992: 181. Type species: *Agrotis graslinii* Rambur, 1848. By original designation.
- Militagrotis* Beck, 1992: 181. Type species: *Agrotis militaris* Staudinger, 1888. By original designation.
- Agrotis* subgenus *Striagrotis* Beck, 1996: 91. Type species: *Noctua fatidica* Hübner, 1824. By original designation.
- Agrotis* subgenus *Exagrotis* Beck, 1996: 91. Type species: *Phalaena exclamationis* Linnaeus, 1758. By original designation.
- Agrotis* subgenus *Ripagrotis* Beck, 1996: 92. Type species: *Noctua ripae* Hübner, 1823. By original designation.
- Agrotis* subgenus *Spinagrotis* Beck, 1996: 92. Type species: *Agrotis biconica* Kollar, in Kollar & Redtenbacher, 1844. By original designation.
- Agrotis* subgenus *Schawagrotis* Beck, 1996: 92. Type species: *Agrotis schawerdai* Bytinsky-Salz, 1937. By original designation.

Type species. *Noctua segetum* [Denis & Schiffermüller], 1775. Designated by Curtis, 1827: 165.

Etymology. *Agrotis* derives from the Greek word Ἀγρότις that means from the land or from the soil. Thus named by Ochseneimer (1816) because the larvae live in the soil.

Diagnosis. Lafontaine (2004) identifies six character states that define adults of the genus: 1) vesica of male genitalia with presence of a spiny bar near base on left side (absent in some primitive South American species); 2) basal swelling present, usually with numerous lobes; 3) long looping vesica in male genitalia and appendix bursae of female genitalia; 4) absence of medial and apical diverticula; 5) apex of aedeagus hook-like shaped on right side; and 6) costa margin with a marked rounded pouch close to ampulla base.

Diagnosis of South American species. The species of *Agrotis* can be differentiated from other South American Noctuidae genera by the characters listed above in addition to the following characters: 1) aedeagus with posterior half sclerotized and anterior half lightly sclerotized, almost membranous in some species, being confused with the bulbus ejaculatorius (*fausta*-group); 2) aedeagus projected into the vesica in the following way: a dorsal strip with posterior half projected ventrolaterally through right margin, a right ventrolateral strip, and a strip close to the latter, like a band with posterior 1/3 forming a 1/4 of a spiral; 3) vesica with right basal diverticulum present, absent only in some species; 4) vesica with postbasal, medial, subapical, and apical diverticula absent; 5) vesica lacking cornuti; and 6) tergum 8 sclerotized like a longitudinal rectangle, slightly narrowed anteriorly, with an anterior membranous area, and an anterior band slightly sclerotized and projected laterally. Other characters that can help to identify the species of this genus are: 1) male antenna never doubly-biserrate; 2) forewing costal band concolorous with forewing ground color or darker, never lighter; 3) forewing postmedial line with no strong basal projections on posterior half.

Generic redescription of South American species. *Head.* Frons smooth, with central pointed projection, or with a circular or subrectangular raised edge. When a raised edge is present, anterior surface rugous and can have a slightly pointed anterior projection. Antenna concolorous with forewing ground color, bifasciculate, biserrate or bipectinate in males, filiform in females. Labial palp with long hair-like scales on ventral margin of basal and medial segments, apical segment with short and wide scales. *Thorax.* Concolorous with forewing ground color; patagium concolorous with thorax, darker, or distally lighter, with transverse lines; tegulum concolorous with thorax, lighter, or darker, basal and marginal dark lines can be present. Legs with whitish rings on segment joints and on base and apex of tibial spurs. Forewing length in males: 10.6–20.9 mm and in females: 9.2–21.1 mm; veins R2, R3, and R4 stalked; R5 from anterior corner of areole; M1 from posterior corner of areole; M2, M3, and CuA1 adjacent, from posterior corner of discal cell; CuA2 from apical 1/3 of discal cell. Hind wing with vein Sc+R1 from basal 1/3 of discal cell; Rs and M1 stalked, from anterior corner of discal cell; M2 weak; M3 and CuA1 adjacent, from posterior corner of discal cell; CuA2 from apical 1/3 of discal cell. Under side of both wings with neither generic nor specific characters, the color pattern is composed of dark shadows not constant even in different specimens of the same species. *Abdomen.* Tergum 8 sclerotized like a longitudinal rectangle, slightly narrowed anteriorly, with an anterior membranous area, and an anterior band slightly sclerotized and projected laterally (Fig. 2). Sternum 8 sclerotized like a transverse rectangle, with a slightly sclerotized anterior oval area (Fig. 2). *Male genitalia.* Uncus uniformly curved over its entire length or sinuous, tapered apically, apex generally rounded; in *Agrotis ipsilon* apex very thin, like a spine; with no spine-like setae. Tegumen with strong or marked “shoulders,” arms extended to valve costa, pleurite like a vinculum contiguous structure, elongate and narrow, obliquely joined to end of tegumen arms. Juxta subrectangular, ventral 1/3 of lateral margins subquadrate and projected, ventral margin projected as a strongly sclerotized spine-like triangle. Anal tube with two ventrolateral bands with posterior half less sclerotized. Clavus varying from an undifferentiated area of hair-like scales to a long cylindrical projection, 4 × as long as wide. Valve with anterior margin convex near ampulla apex, posterior margin convex in dorsal half of valve, shape variable as follows: 1) subrectangular, neither narrowed nor widened in any part, 2) subrectangular, curved, elongate, very narrow, and 3) subrectangular, basal half narrow, then widened; cucullus apex strongly or slightly projected anterodorsally (some species with no projection at all); sacculus strongly sclerotized, with two possible shapes: 1) 3/5 × as wide as valve or 2) between 4/6–9/10 × as wide as valve; costa margin with a rounded pouch close to clasper base; digitus and editum absent; clasper proper absent; ampulla uniformly curved inward, 1/4–1/6 × as long as valve, teardrop shaped basally, with a flat ventral margin adjacent to valve, twisting 1/4 of a turn to apex, flat-ended; saccus subtriangular or hemispherical, ventrally projected as a spine, some species with a dorsal notch. Aedeagus completely sclerotized, or posterior half sclerotized and anterior half lightly sclerotized (anterior half almost membranous in some species), being confused with the bulbus

ejaculatorius; aedeagus projected onto base of vesica in following way: a dorsal strip with posterior half projected ventrolaterally through right margin, another right ventrolateral strip, and a third strip close to the latter, like a band with posterior 1/3 making a 1/4 turn; vesica 2–12 × as long as aedeagus, and consisting of a variable number of wide loops, basal swelling present, right basal diverticulum subtriangular, subcylindrical, or absent, no other diverticula present, basal spined band present on left side, absent in some species, vesica same diameter through entire length or gradually swelling toward apex. *Female genitalia*. Anal papillae slightly sclerotized, on lateral view 2 × as long as wide, with hair-like setae; posterior apophysis 1–2 × as long as anterior apophysis; ostium bursae membranous; ductus bursae 1.5–3 × as long as anterior apophysis, membranous; corpus bursae 3–12 × as long as anterior apophysis, with or without one or two signa, apex globose or subtriangular; appendix bursae 1.5–14 × as long as corpus bursae, consisting of a variable number of wide loops, apex globose or subtriangular; ductus seminalis originating at corpus bursae apex or laterally, near its apex.

Biology. Species of *Agrotis* are usually found in open xeric areas. In western North America, most Agrotini species avoid flying in summer, larvae feed during spring and aestivate during summer, with the adults emerging at the end of summer when temperatures are lower (Lafontaine 2004). According to material checked for this study, the flight period of *Agrotis* species in South America is mainly between late spring and autumn (from November to April), but some specimens are collected throughout the year, even in winter (Table 1).

Larvae of this genus belong to the “true cutworms,” because they cut stems and leaves of young plants and carry them to holes in the soil where they feed. In some cases, larvae also feed on plant roots. The combination of larval habits being subterranean, nocturnal, and living in desert areas (generally unoccupied by people), make studying immature stages difficult and result in poor biological knowledge of almost all species. Economically important species, such as *Agrotis ipsilon* (Hufnagel) and *A. malefida* Guenée, are best known biologically, but there are no detailed studies on host preferences or larval habits. Biology of the better-known species (e.g., *A. ipsilon* and *A. malefida*) indicates that egg-laying begins in spring and continues throughout the year. Each female lays up to 2,000 eggs. Larvae live buried in the ground, where they construct a protection cell. At dusk and at night they leave the cell to feed on stems and leaves of young plants. Larvae can spend the summer in diapause within the cell. Pupation occurs inside the cell. Adults can emerge all year long, but most emergences occur in autumn. Winter can be spent as larvae or pupae (Artigas 1994). In Argentina, depending on the species, there can be between two and six generations a year (Igarzábal *et al.* 1994). Their life cycle is related to temperature, humidity, and food availability, generally taking between 40 and 60 days to complete.

Economic importance and hosts. Numerous species of *Agrotis* are economically important in all areas the world, but only a few occur on more than one continent. Some species can damage 100% of seedlings (Artigas 1994). In Argentina, *Agrotis* species are not major pests, but one larva can cut between 10 and 15 young plants at ground level, causing the death of the plants (Igarzábal *et al.* 1994). Larvae can attack many different crops: alfalfa, corn, soybeans, tomatoes, peppers, potatoes, cabbage, melon, etc. (Chiesa Molinari 1942; Angulo & Weigert 1975a; Artigas 1994; Igarzábal *et al.* 1994; Pastrana 2004; Angulo & Olivares 2005). They also attack ornamental plants and weeds (Artigas 1994; Pastrana 2004). Bibliographical information about economically important hosts in Argentina was presented by Pastrana (2004).

Biological control. Biological control has only been studied for species of economic importance. There are numerous works about parasitoid species of *Agrotis* from all over the world. More common parasitoid families include: Braconidae (Hymenoptera), Ichneumonidae (Hymenoptera), and Tachinidae (Diptera).

Migrations. There are several migratory species including: *Agrotis segetum* and *A. exclamatoris* in Europe (Wood *et al.* 2009), *A. infusa* Boisduval in Australia (Common 1954), and *A. ipsilon* in New Zealand (Greenslade *et al.* 1999), Israel (Pedgley & Yathom 1993), and North America (Showers *et al.* 1993). In Northern Hemisphere countries, adults fly northward in spring and southward in fall. Showers *et al.* (1993) released *A. ipsilon* in Iowa, USA, and among the recaptured moths they found one live adult in Texas 11 days later and 1900 kilometers from the release site. In the Southern Hemisphere, the flight pattern is opposite; flying southward in spring and northward in fall. In Australia, *A. infusa* flies southward when the weather gets warm. Adults fly to the southern mountains in spring and return to breed in the North in fall (Common 1954). Migration is carried out with the help of prevailing winds and they can fly as high as 1500 meters (Pedgley & Yathom 1993). In South America there are no studies of noctuid migration. It is likely that *A. ipsilon* presents migratory behaviors similar to those displayed in the Southern Hemisphere.

TABLE 1. Number of specimens of *Agrotis* captured by species and months in South America.

Species\Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Specimen s/species
<i>Agrotis acronyctoides</i> Angulo & Olivares, 2006	1												1
<i>Agrotis caliginosa</i> Angulo & Olivares, 2006	1												1
<i>Agrotis steniptera</i> (Dognin, 1916)													0
<i>Agrotis propriens</i> (Dyar, 1913)								1	4	1			6
<i>Agrotis bistrigata</i> Maassen, 1890			2		1								3
<i>Agrotis dispar</i> Köhler (1958) 1959													0
<i>Agrotis peruviana</i> (Hampson, 1909)	2	4	1	4					2	2		2	17
<i>Agrotis elegans</i> (Köhler, 1945)	17	1	1									2	21
<i>Agrotis benitezi</i> León, 2010	10		3										13
<i>Agrotis leonoides</i> Poole, 1989			6	45									51
<i>Agrotis edmondsi</i> Butler, 1882	12	24	28	6						7	39	32	148
<i>Agrotis leucovenata</i> San Blas & Gentili, 2011		1	13										14
<i>Agrotis experta</i> (Walker, 1869)	1	3					4	1			3		12
<i>Agrotis fausta</i> (Köhler, 1958)		2	10	2									14
<i>Agrotis malefida</i> Guenée, 1852	1	6	21	4	7	3	10		8		19	1	80
<i>Agrotis canities</i> (Grote, 1902)	1	1	2	1	2				1	3	5	3	19
<i>Agrotis schreiteri</i> (Köhler, 1945)				4									4
<i>Agrotis araucaria</i> (Hampson, 1903)	37	55	33	13	2					16	24	16	196
<i>Agrotis ipsilon</i> (Hufnagel, 1766)	2		3	4	4		1	1	4	3	8	3	33
<i>Agrotis robusta</i> (Blanchard, 1852)	120	53	35	21	50		2			2	8	42	333
Specimens/month	205	150	158	104	66	3	17	3	19	34	106	101	966
Species/month	12	10	13	10	6	1	4	3	5	7	7	8	

Distribution. The main distribution of the genus comprises United States, southern Canada and Europe, southern South America, and South Africa, with fewer species in northern North America, northern South America, Mexico, North Africa, and India (Lafontaine 2004). In South America, the main distribution of *Agrotis* includes Chilean and Argentinean Patagonia extending northward along the Andes Mountains to Colombia, across the central and northern extra-Andean mountains of Argentina and Paraguay, and northeastwards as far as the

coasts of Argentina, Uruguay, and Brazil. Some species are present in the Falklands and Juan Fernandez Islands. As pointed out by Lafontaine (2004), diversity of the genus decreases to the north of South America, with few species in the Andes Mountains north of Argentina and Chile and in coastal regions of Uruguay and Brazil.

Species groups. Three species groups are proposed: *edmondsi*-group, *fausta*-group, and *robusta*-group based on differences seen on South American species. *fausta*- and *robusta*-groups share cucullus apex strongly projected anterodorsally, sacculus $3/5 \times$ as wide as valve, and saccus notched dorsally. *robusta*-group is characterized by valve subrectangular, basal half narrow, then widened and *fausta*-group by valve subrectangular, curved, elongate, and very narrow and aedeagus posterior half sclerotized and anterior half lightly sclerotized. Characters of *fausta*-group are shared with *Agrotis ceramophaea* Meyrick from Hawaii, even it is the only species seen of Hawaii it is likely other *Agrotis* from Hawaii belong to this group. *edmondsi*-group is characterized by valve subrectangular, neither narrowed nor widened in any part, cucullus apex slightly projected anterodorsally, sacculus between $4/6$ – $9/10 \times$ as wide as valve, and saccus without dorsal notch. *edmondsi*-group characters are shared with species from other continents, e.g., *A. cinerea* (Europe and Asia) and *A. exclamationis* (Europe), but combination of all this characters is unique for the group.

Checklist of *Agrotis* species of South America with new synonymies and type localities

Agrotis species with species group uncertain association

Agrotis acronyctoides Angulo & Olivares, 2006—Lago Salar Punta Negra, II Region, Chile

Agrotis caliginosa Angulo & Olivares, 2006—Lago Salar Punta Negra, II Region, Chile

edmondsi-species group

Agrotis steniptera (Dognin, 1916)—Cuzco, Perú

Agrotis propriens (Dyar, 1913)—Chuquibamba, Perú

Scotia forsteri Köhler, 1968, **n. syn.**—Chucuito, Puno, Perú

Agrotis bistrigata Maassen, 1890—Páramo de Chavez, Colombia

Agrotis dispar Köhler, (1958) 1959—Oruro, Bolivia

Agrotis peruviana (Hampson, 1909)—Agualani, Perú

Agrotis peruviana hampsoni Draudt, 1924, **n. syn.**—Agualani, S.E. Perú

Rhizagrotis triclava Draudt, 1924, **n. syn.**—Pacho, Colombia

Euxoa andina Köhler, 1945, **n. syn.**—Cerro de la Mina, Dpto. Tafí, Tucumán, Argentina

Agrotis elegans (Köhler, 1945)—Tierra del Fuego, Argentina

Agrotis benitezi León, 2010—Paso Internacional Pehuenche, VII Región, Chile

Agrotis leonoides Poole, 1989—General Roca, Río Negro, Argentina / Neuquén, Neuquén, Argentina

Agrotis edmondsi Butler, 1882—Valdivia, Chile

Agrotis leucovenata San Blas & Gentili, 2011—Quilquihue, Neuquén, Argentina

fausta-species group

Agrotis experta (Walker, 1869)—Perú

Chorizagrotis benefida Draudt, 1924, **n. syn.**—Rio Bamba, Ecuador

Agrotis fausta (Köhler, 1958)—Villa Gesell, Buenos Aires, Argentina

Agrotis malefida Guenée, 1852—North America

Lycophotia achromatica Hampson, 1903, **n. syn.**—Bahia, Brazil

Feltia malefida var *patagiata* Aurivillius, Prout, and Meyrick, 1922, **n. syn.**—Robinson Crusoe Island, Chile

Agrotis psammophila Köhler, 1961, **n. syn.**—Río Atuel, San Rafael, Mendoza, Argentina

Scotia (Feltia) canietensis Köhler, 1966, **n. syn.**—Las Cejas, Tucumán, Argentina

Agrotis canities (Grote, 1902)—Goya, Argentina / Buenos Aires, Argentina

robusta-species group

Agrotis schreiteri (Köhler, 1945)—San José, Tafí, Tucumán, Argentina

Agrotis araucaria (Hampson, 1903)—Valparaiso, Chile

Agrotis livens Köhler, 1958, n. syn.—Bolívar, Buenos Aires, Argentina

Agrotis capayana Köhler, (1958) 1959, n. syn.—Capayan, Los Angeles, Catamarca, Argentina

Agrotis ipsilon (Hufnagel, 1766)—Berlin Region, Germany

Agrotis robusta (Blanchard, 1852)—Chile

Key to South American species of the genus *Agrotis*

- 1 Forewing basal dash thick, dark, extending from wing base to or beyond claviform spot. 2
- 1' Forewing basal dash absent. 6
- 2 Forewing basal dash extending from wing base to base of claviform spot. Frons central projection with raised edge of rough surface, not projected anteriorly into a point. 3
- 2' Forewing basal dash extending from wing base to beyond claviform spot. Frons central projection with raised edge of rough surface, projected anteriorly into a point, or frons smooth. 4
- 3 Tegulum lighter than thorax. Male forewing length 10.6–11.4 mm. Antemedial line undifferentiated; subterminal line light brown and black edged basally, concave between veins, as small arrows, extended basally as a streak between M1–M2 veins. *Agrotis steniptera* (Dognin)
- 3' Tegulum concolorous with thorax. Male forewing length 15.2–15.9 mm. Antemedial line black, double; subterminal line light brown and black edged, strongly concave between veins, extending basally as arrows, longest arrows between M1–M2–M3 veins. *Agrotis propriens* (Dyar)
- 4 Tegulum lighter than thorax. Forewing subterminal line a series of light brown black-edged arrows between veins, arrows between M1–M2–M3 veins extending to postmedial line, first one joining with reniform streak like one continuous line. Frons central projection with raised edge of rough surface, projected anteriorly into a point. *Agrotis schreiteri* (Köhler)
- 4' Tegulum concolorous with thorax. Forewing subterminal line undifferentiated. Frons smooth, with no raised edge or central projection. 5
- 5 Forewing basal dash extending from wing base to wing outer margin, fading beyond claviform spot; reniform spot kidney shaped. Male antenna biserrate, widest segment 2.5 × as wide as central shaft. Patagium apical half slightly lighter than thorax. *Agrotis bistrigata* Maassen
- 5' Forewing basal dash extending from wing base to beyond claviform spot, never reaching wing outer margin; reniform spot shaped like a horizontal “Y.” Male antenna bipectinate, widest segment 3 × as wide as central shaft. Patagium concolorous with thorax. *Agrotis dispar* Köhler
- 6 Forewing subcostal band darker than forewing ground color. 7
- 6' Forewing subcostal band undifferentiated. 12
- 7 Tegulum with blackish marginal line widened anteriorly. 8
- 7' Tegulum without blackish marginal line, if present, not widened anteriorly. 10
- 8 Male antenna bipectinate, widest segment 3 × as wide as central shaft. Forewing ground color grayish to brownish gray; antemedial line not extended as a sharp tooth between 1A+2A vein and posterior margin; distal margin of reniform spot with a sharp streak extending between M1–M2 veins to postmedial line (absent in some specimens); fringe basal half whitish with darkish spots at apex of veins and distal half brown. *Agrotis fausta* (Köhler)
- 8' Male antenna biserrate, widest segment 2 × as wide as central shaft. Forewing ground color whitish to dark grayish brown; antemedial line extended as a sharp tooth between 1A+2A vein and posterior margin; distal margin of reniform spot with no streak, fringe concolorous with forewing ground color, with dark transverse lines at apex of veins. 9
- 9 Patagium with whitish postbasal line and blackish medial line, basal half dark brownish gray and distal half dark gray. Forewing subterminal line light brown, concave between veins, extended basally as small lighter arrows, longest ones placed between M1–M2–M3 veins, black edged basally. *Agrotis malefida* Guenée
- 9' Patagium dark grayish brown with black medial line. Forewing subterminal line faint, light brown and black edged, concave between veins, in some specimens like arrows, with no differentially longer arrows. *Agrotis canities* Grote
- 10 Male antenna bipectinate, widest segment 3 × as wide as central shaft, abruptly tapered at 3/4 its length. Patagium and tegulum concolorous with thorax. Forewing area between wing base and postmedial line darker than ground color (more evident in females). *Agrotis ipsilon* (Hufnagel)
- 10' Male antenna biserrate, widest segment 2 × as wide as central shaft. Patagium darker and tegulum darker or lighter than thorax. Forewing color constant (*Agrotis peruviana* Hampson with darker basal area, but not extending beyond antemedial line). 11
- 11 Forewing length 16.4–20.6 mm, ground color light brown; basal area and basal line undifferentiated; subterminal line light brown, extended basally as light arrows, longest ones placed between M1–M2–M3 veins, becoming two basally black and light brown-tipped arrows, arrows never contiguous with reniform streak; fringe concolorous with forewing ground color, dark transverse lines at apex of veins. Frons smooth, without raised edge or central projection. *Agrotis robusta* (Blanchard)
- 11' Forewing length 14.7–15.1 mm, ground color grayish brown; basal area darker than ground color; basal line black, double; subterminal line light brown and black edged, extended basally as arrows, longest ones between M1–M2–M3 veins, in some specimens first arrow joined with reniform streak like one continuous line; fringe light brown with brown basal, medial, and marginal lines. Frons central projection small, with raised edge of rough surface and projected anteriorly into a point. *Agrotis peruviana* (Hampson)

- 12 Forewing postmedial line black, double (some specimens of *Agrotis araucaria* with a single line, but not distally edged by a lighter shade) 13
- 12' Forewing postmedial line black, single, distally edged by a lighter shade 14
- 13 Patagium slightly darker than thorax, with black medial line, in some specimens dorsal half lighter than ventral half. Forewing discal cell concolorous with ground color; subterminal line light brown and black edged *Agrotis experta* (Walker)
- 13' Patagium concolorous with thorax, with black postbasal and medial lines. Forewing discal cell concolorous with ground color, with a black streak of variable width joining orbicular and reniform spots; subterminal line light brown, not black edged, undifferentiated in some specimens. *Agrotis araucaria* (Hampson)
- 14 Male antenna biserrate, widest segment 2–2.5 × as wide as central shaft 15
- 14' Male antenna bipectinate, widest segment 3–8 × as wide as central shaft 16
- 15 Posterior margin of reniform spot prolonged basally through medial vein; fringe light brown; arrows from subterminal line never contiguous with reniform streak. Known distribution: Southern Argentina *Agrotis elegans* (Köhler)
- 15' Posterior margin of reniform spot not prolonged basally; fringe light brown with dark medial line; arrows from subterminal line joined with reniform streak like one continuous line. Known distribution: Central East Chile *Agrotis benítezi* León
- 16 Male antenna bipectinate, widest segment 8 × as wide as central shaft. Patagium basal half concolorous with thorax and distal half lighter than basal half. Forewing basal line undifferentiated; discal cell almost entirely darker than ground color; subterminal line undifferentiated. *Agrotis leonoides* Poole
- 16' Male antenna bipectinate, widest segment 3–6 × as wide as central shaft. Patagium concolorous with thorax or darker. Forewing basal line black, double or single; discal cell concolorous with ground color, or with a black streak of variable width joining orbicular and reniform spots; subterminal line evident, extending basally as arrows, longest one between M1–M2 veins 17
- 17 Patagium slightly darker than thorax with black basal, medial, and submarginal lines. Forewing basal and antemedial lines black, double; discal cell concolorous with ground color, with a black streak of variable width joining orbicular and reniform spots. Male antenna bipectinate, widest segment 3 × as wide as central shaft. *Agrotis edmondsi* Butler
- 17' Patagium concolorous with thorax with black basal line and lighter marginal line. Forewing basal and antemedial lines black, single, light brown basally; discal cell concolorous with ground color. Male antenna bipectinate, widest segment 6 × as wide as central shaft. *Agrotis leucovenata* San Blas & Gentili

***Agrotis* species with species group uncertain association**

***Agrotis acronyctoides* Angulo & Olivares, 2006**

(Figs 3, 4)

Agrotis acronyctoides Angulo & Olivares, 2006: 267, Figs 7, 9. Holotype: 1 ♀ Chile, II Región, Lago Salar Punta Negra, 2968m (UTM 7266830 N, 498388 E), 29-I-2004 (Andrés & Gino Angulo Coll.) (MZUC). Examined.

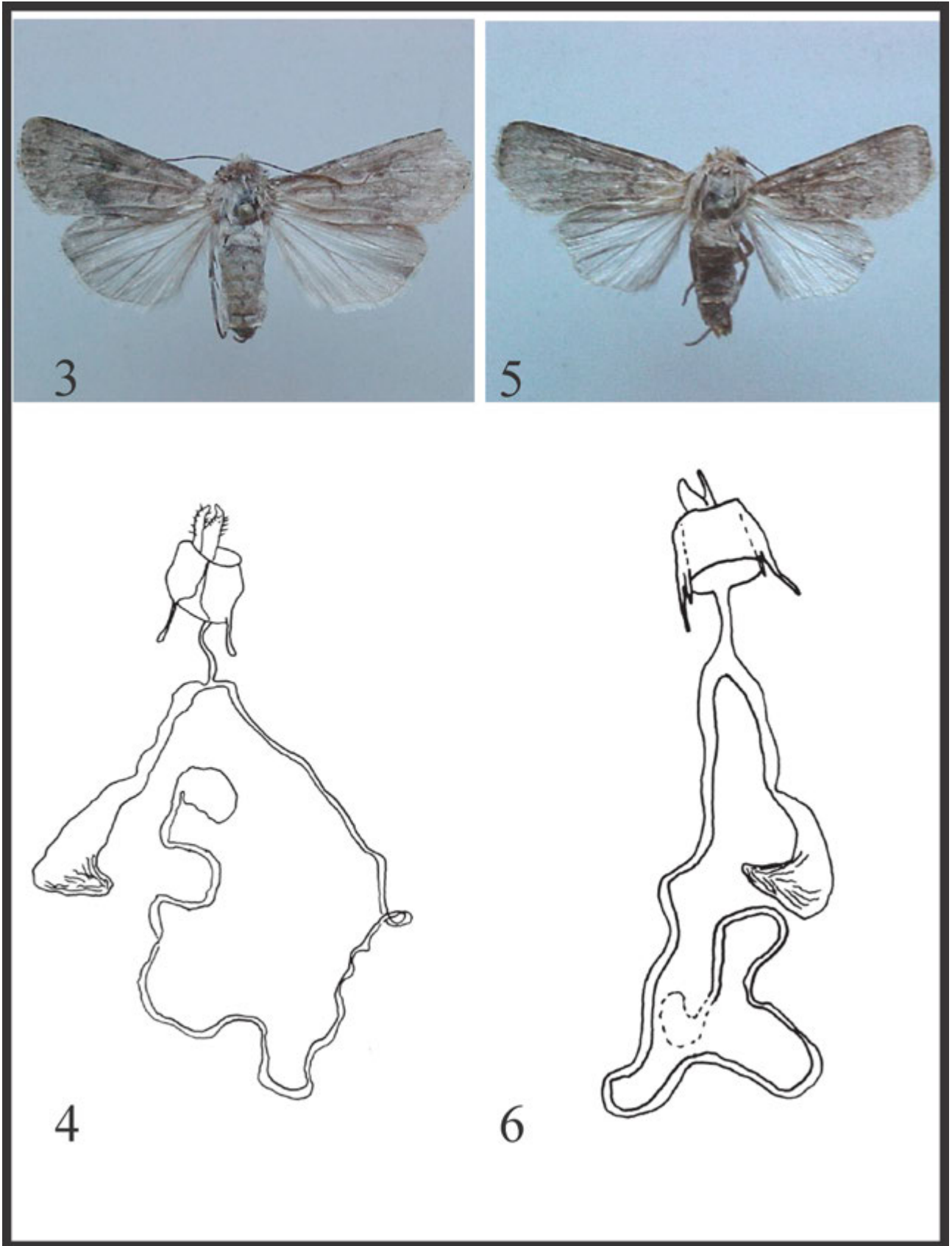
Description translation. *Female* (Fig. 3). Male antenna fasciculate, fasciculi 0.5 × as wide as antennal segment. Forewing with light-brown scales scattered with dark-brown scales, dark-brown scales between postmedial and medial lines; orbicular spot sub-ovate; reniform spot edged by dark-brown scales, center with light-brown scales; dark-brown scales between both spots and never touching orbicular spot; patagium and tegulum with scattered blackish and light-brown scales; palpi with concolorous scales; legs with light-brown scales, tibiae and tarsi with blackish scales. Hind wing with light-brown scales on costal border and distal portion; light-brown scales on veins. *Genitalia* (Fig. 4). Lengthened corpus bursae, soft striate, appendix bursae looping, 5 × as long as corpus bursae; anterior and posterior apophyses subequal in length. *Male*. Unknown.

***Agrotis caliginosa* Angulo & Olivares, 2006**

(Figs 5, 6)

Agrotis caliginosa Angulo & Olivares, 2006: 267–268, Figs 8, 10. Holotype: 1 ♀, Chile, II Región, Lago Salar Punta Negra, 2968 m (UTM 7266830 N, 498388 E), 29-I-2004 (Andrés & Gino Angulo Coll.) (MZUC). Examined.

Description translation. *Female* (Fig. 5). Forewing with light-brown scales scattered with dark-brown scales; patagium and tegulum concolorous with forewing, postmedial line with dark-brown scales, scalloped, without differentiated marks. Hind wing with light-brown scales, patagium and tegulum with lighter scales. Legs with light-brown scales, tibiae and tarsi with blackish scales. *Genitalia* (Fig. 6). Appendix bursae looping, looped twice on itself; anterior and posterior apophyses subequal in length. *Male*. Unknown.



FIGURES 3–6. *Agrotis acronyctoides* Angulo & Olivares: 3, female adult; 4, female genitalia. *Agrotis caliginosa* Angulo & Olivares: 5, female adult; 6, female genitalia. Taken from Angulo & Olivares (2006).

***edmondsi*-species group**

This species group is characterized by: in male genitalia uncus sinuous; tegumen with “shoulders” slightly marked; valve subrectangular, neither narrowed nor widened in any part; cucullus apex slightly projected anterodorsally; saccus between 4/6–9/10 × as wide as valve; saccus subtriangular or hemispherical, ventrally projected as a spine, without dorsal notch. Aedeagus fully sclerotized; vesica short, 2–7 × as long as aedeagus, excepting *Agrotis leonoides* (8 × as long as aedeagus). Female genitalia with appendix bursae short, less than 5 × as long as corpus bursae, excepting *Agrotis leonoides* (5 × as long as corpus bursae).

***Agrotis steniptera* (Dognin, 1916)**

(Figs 7, 46, 64, 94)

Euxoa steniptera Dognin, 1916: 9; Draudt, 1924: 49. Holotype: ♂ Peru, Cuzco, 3500m, (Fassl) (USNM, Cat. No. 32249, Genitalia slide No. 3976). Examined.

Agrotis steniptera (Dognin): Poole, 1989: 56 (new combination)

Diagnosis. *Agrotis steniptera* differs from other South American species of *Agrotis* by the following combination of characters: 1) forewing basal dash black, extending from wing base to base of claviform spot; 2) basal, antemedial, and postmedial lines undifferentiated; 3) subterminal line light brown and black edged basally, concave between veins as small arrows, extended basally as a streak between M1–M2 veins; 4) in male genitalia clavus barely differentiated as an area of piliform setae; 5) vesica 2 × as long as aedeagus; and 6) basal spined band present.

Redescription. *Male* (Fig. 7). *Head.* Frons central projection small, with raised edge of rough surface, not projected anteriorly into a point. Antenna bipectinate, widest at 1/4 its length, gradually tapering to apex, widest segment 4 × as wide as central shaft, anterior process 1.5 × as wide as posterior process. *Thorax.* Patagium slightly darker than thorax, with black medial line; tegulum lighter than thorax, with black basal line. Forewing length 10.6–11.4 mm; ground color grayish brown; subcostal band undifferentiated; basal dash black, extending from wing base to base of claviform spot; basal line undifferentiated; antemedial line undifferentiated; claviform spot wide, brown, and black edged; orbicular spot strongly oval, extending toward the reniform spot, never contiguous with the latter, concolorous with ground color, black edged with grayish center; reniform spot concolorous with orbicular spot, distal margin with two streaks extending between M1–M2–M3 veins to subterminal line; discal cell concolorous with ground color, with a black streak of variable width joining both spots; medial line undifferentiated; postmedial line undifferentiated; subterminal line light brown and black edged basally, concave between veins as small arrows, extended basally as a streak between M1–M2 veins, in some specimens joined with reniform streak like one continuous line; terminal line a series of darkish lunulae between veins; fringe slightly lighter than forewing ground color. Hind wing diffuse brown; fringe iridescent. *Abdomen.* Concolorous with forewing ground color. *Genitalia* (Fig. 46). Clavus barely differentiated as an area of piliform setae. Ampulla 1/4 × as long as valve, basal 2/3 expanded, then narrowed to half its widest diameter; saccus subtriangular. Vesica (Fig. 64) 2 × as long as aedeagus, consisting of 1 1/2 wide loop, right basal diverticulum absent, basal spined band present. *Female.* Unknown.

Distribution. Restricted to Southern Peru (Fig. 94).

Material examined. (1 ♂). PERU: Puno. 10km N Lampa, Quebrada Metara, 3900m, ♂ 31-III-3-IV-1987 (O. Karsholt) (ZMUC).

***Agrotis propriens* (Dyar, 1913)**

(Figs 8, 47, 65, 95)

Porosagrotis propriens Dyar, 1913: 643. Holotype: ♀ [Peru], Chuquibamba, 10,000 feet, October, 1911 (Yale Peruvian Expedition) (USNM, Cat. No. 15637, Genitalia slide No. 3972). Examined.

Scotia forsteri Köhler, 1968: 3, pl. 1 fig. 1, pl. 4 fig. 1. Holotype: ♂ Puno, Chucuito, 4000m, 28-VIII-1953 (W. Forster) (ZSM, Genitalia slide No. N20). Image examined. Paratypes: 12 ♂ Puno, Chucuito, 4000m, 28-VIII-1953 (W. Forster) (ZSM). Not examined. **New synonym.**

Agrotis forsteri (Köhler): Köhler, 1979b: 37 (new combination); Poole, 1989: 48 (world noctuid checklist).

Agrotis propriens (Dyar): Poole, 1989: 54 (new combination).

Diagnosis. *Agrotis propriens* differs from other South American species of *Agrotis* by the following combination of characters: 1) forewing basal dash black, extending from wing base to base of claviform spot; 2) antemedial and postmedial lines black, double; 3) subterminal line light brown and black edged, extended basally as arrows, longest ones placed between M1–M2–M3 veins; 4) in male genitalia vesica 6 × as long as aedeagus; and 6) right basal diverticulum and basal spined band present.

Redescription. *Male* (Fig. 8). *Head.* Palpus whitish ventrally; frons central projection with raised edge of rough surface, not projected anteriorly into a point. Antenna bipectinate, widest at 1/3 its length, gradually tapering to apex, widest segment 3 × as wide as central shaft, anterior process 1.5 × as wide as posterior process. *Thorax.* Patagium slightly darker than thorax, with black medial line and diffuse brown marginal line; tegulum without differentiated lines. Forewing length 15.2–15.9 mm; ground color light brown; subcostal band undifferentiated; basal dash black, extending from wing base to base of claviform spot; basal line undifferentiated; antemedial line black, double, convex between veins, strongly extended as a sharp tooth between 1A+2A vein and posterior margin, not differentiated in light specimens; claviform spot wide, dark grayish brown and black edged; orbicular spot strongly oval, extending toward the reniform spot, never contiguous with the latter, concolorous with ground color, black edged with dark grayish brown center; reniform spot concolorous with orbicular spot, with a streak extending between M1–M2 veins to subterminal line; discal cell dark grayish brown; medial line undifferentiated; postmedial line black, double, concave between veins; subterminal line light brown and black edged, strongly concave between veins, extended basally as arrows, longest ones between M1–M2–M3 veins, in some specimens first arrow joined with reniform streak like one continuous line; terminal line a series of darkish lunulae between veins; fringe light brown with darker medial and marginal lines. Hind wing iridescent with diffuse light brown margins, or diffuse light brown; fringe iridescent, with light brown medial line. *Abdomen.* Concolorous with forewing ground color. *Genitalia* (Fig. 47). Clavus barely differentiated as an area of piliform setae. Ampulla 1/5 × as long as valve, basal 1/3 expanded, then narrowed to half its widest diameter; saccus subtriangular. Vesica (Fig. 65) 6 × as long as aedeagus, consisting of 1 1/2 wide loop, right basal diverticulum subtriangular, basal spined band present. *Female.* *Differences from male.* Forewing length: 14.8 mm; antenna filiform; forewing and hind wing slightly darker than males. *Genitalia.* Posterior apophysis as long as anterior apophysis; ductus bursae 1.5 × as long as anterior apophysis; corpus bursae 3 × as long as anterior apophysis, signum absent, apex subtriangular.

Distribution. Restricted to the southern part of Peru (Fig. 95).

Material examined. (4 ♂). PERU: Cuzco. Cuzco, 3800m, 4 ♂ 14-IX-1963 (IMLA).

***Agrotis bistrigata* Maassen, 1890**

(Figs 9, 10, 48, 66, 81, 96)

Agrotis bistrigata Maassen, in Weymer & Maassen, 1890: 142, pl. 6 fig. 13; Poole, 1989: 45 (world noctuid checklist); Lafontaine, 2004: 23. Syntypes: 5 specimens [Colombia], Páramo de Chavez, 3200m (ZMHB). One male image examined.

Epipsilia bistrigata (Maassen): Draudt, 1924: 64, pl. 10 row i (new combination).

Diagnosis. *Agrotis bistrigata* differs from other South American species of *Agrotis* by the following combination of characters: 1) male antenna biserrate, widest segment 2.5 × as wide as central shaft; 2) forewing basal dash extending from wing base to wing outer margin, fading beyond claviform spot; 3) basal, antemedial, postmedial, and subterminal lines undifferentiated; 4) in male genitalia clavus cylindrical, short, 2 × as long as wide; and 5) basal spined band absent.

Redescription. *Male* (Fig. 9). *Head.* Palpus whitish ventrally; frons smooth, central projection and raised edge absent. Antenna basal 2/3 biserrate, widest at 1/5 its length, gradually tapering to apex, widest segment 2.5 × as wide as central shaft, anterior process 1.5 × as wide as posterior process. *Thorax.* Patagium with black medial line, apical half slightly lighter than thorax; tegulum without lines. Forewing length 14.1 mm; ground color light grayish brown to grayish brown; subcostal band undifferentiated; basal dash thick, black, extending from wing base to wing outer margin, fading beyond claviform spot; basal line undifferentiated; antemedial line undifferentiated;

claviform spot wide, darkish; orbicular spot slightly differentiated as a small light oval area; reniform spot concolorous with ground color and black edged, in some specimens distal margin with a streak extending between M2–M3 veins to wing outer margin; discal cell darkish; medial line undifferentiated; postmedial line undifferentiated; subterminal line undifferentiated; terminal line a series of darkish lunulae between veins; fringe concolorous with forewing ground color, grayish medial line. Hind wing diffuse brown; fringe iridescent. *Abdomen*. Concolorous with forewing ground color. *Genitalia* (Fig. 48). Clavus cylindrical, short, 2 × as long as wide. Ampulla 1/4 × as long as valve, basal half expanded, then narrowed to half its widest diameter; saccus subtriangular. Vesica (Fig. 66) 3 × as long as aedeagus, consisting of one wide loop, right basal diverticulum subcylindrical, basal spined band absent, vesica gradually swollen on apical 1/4. *Female* (Fig. 10). *Differences from male*. Forewing length: 15.5–19.2 mm; antenna filiform; forewing ground color darker than male; fringe light brown; hind wing from iridescent to diffuse brown. *Genitalia* (Fig. 81). Posterior apophysis 1.4 × as long as anterior apophysis; ductus bursae 2 × as long as anterior apophysis; corpus bursae 3 × as long as anterior apophysis, signum absent, apex globose; appendix bursae 3 × as long as corpus bursae, consisting of 1 1/4 wide loop, apex globose; ductus seminalis originating laterally very close to corpus bursae apex.

Distribution. Ecuador and Colombia (Fig. 96).

Material examined. (3 ♂, 3 ♀). ECUADOR: Loja. Environs de Loja, ♂ (Dognin) (CNC), 1892 ♂ (Dognin) (USNM, Genitalia slide No. 1642), 1887 ♀ (Dognin) (USNM, Genitalia slide No. 1643); Loja, 2500m, 25-III-1965 ♀ (L.E. Peña) (CNC); Valle de Loja, “may 96” ♀ (USNM). Tinajillas. S. of Cuenca, 3100m, ♂ 18–21-III-1965 (L.E. Peña) (CNC).

***Agrotis dispar* Köhler, (1958) 1959**

(Figs 11, 12, 49, 67, 97)

Agrotis dispar Köhler, (1958)1959: 52; Köhler, 1967: 331, figs 66, 67; Poole, 1989: 47. Syntypes: ♂ ♀ Bolivia, Oruro, 3700m (W. Wittmer) (IMLA); ♂ (W. Wittmer) (ZSM). *Note*: Köhler ((1958)1959) designates holotype, allotype, and paratypes for this species, but at IMLA and ZSM collections only cotypes were found. In Köhler's (1967) catalog there are two photos of female specimens labeled as “Cotype.” Possibly Köhler never labeled the specimens he designated in the species description.

Diagnosis. *Agrotis dispar* differs from other South American species of *Agrotis* by the following combination of characters: 1) male antenna bipectinate, widest segment 3 × as wide as central shaft; 2) forewing basal dash extending from wing base to beyond claviform spot, not reaching wing outer margin; 3) reniform spot shaped like a horizontal “Y;” 4) basal, antemedial, postmedial, and subterminal lines undifferentiated; 5) in male genitalia ampulla 1/5 × as long as valve; and 6) basal spined band absent.

Redescription. *Male* (Fig. 11). *Head*. Palpus whitish ventrally; frons smooth, central projection and raised edge absent. Antenna bipectinate, widest at 1/5 its length, gradually tapering to apex, widest segment 3 × as wide as central shaft, anterior process 2 × as wide as posterior process. *Thorax*. Patagium with a black medial line; tegulum with a black marginal line. Forewing length 14 mm; ground color light brown; subcostal band undifferentiated; basal dash thick, brown, from wing base to beyond claviform spot, not reaching wing outer margin; basal line undifferentiated; antemedial line undifferentiated; claviform spot slightly differentiated, dark brown; orbicular spot slightly oval, light brown, black edged with grayish center; reniform spot concolorous with orbicular spot, shaped like a horizontal “Y;” discal cell brown; medial line undifferentiated; postmedial line undifferentiated; subterminal line undifferentiated; terminal line a series of darkish lunulae between veins; fringe concolorous with forewing ground color. Hind wing iridescent; discal spot blackish; fringe iridescent. *Abdomen*. Light brown. *Genitalia* (Fig. 49). Clavus slightly sclerotized, cylindrical, short, 2 × as long as wide. Ampulla 1/5 × as long as valve, basal 1/3 expanded, then narrowed to 1/3 its widest diameter; saccus subtriangular. Vesica (Fig. 67) 4 × as long as aedeagus, consisting of 1 1/2 wide loop, right basal diverticulum subtriangular, basal spined band absent. *Female* (Fig. 12). *Differences from male*. Forewing length: 9.2 mm; antenna filiform; forewing ground color slightly darker than male; hind wing diffuse brown, with slightly darker discal spot and postmedial band. *Genitalia*. Not examined.

Remarks. Köhler ((1958)1959) describes wing span in males as 28–40 mm and in females as 17–25 mm. These measurements could not be checked because of unavailability of more material to examine.

Distribution. Restricted to type locality of Oruro, Bolivia (Fig. 97).

Agrotis peruviana (Hampson, 1909)

(Figs 13, 50, 68, 98)

Porosagrotis peruviana Hampson, 1909a: 367; Draudt, 1924: 35 (diagnosis). Syntypes: 2 ♂ S.E. Perú, Agualani (Ockenden) (BMNH). Image examined.

Porosagrotis peruviana form *hampsoni* Draudt, 1924: 35. Type: ♂ S.E. Perú, Agualani (Ockenden) (BMNH). Not examined. According to 45.6.4 ICZN article: "it is subspecific if first published before 1961 and its author expressly used one of the terms "variety" or "form" (including use of the terms "var.", "forma", "v." and "f."), unless its author also expressly gave it infrasubspecific rank, or the content of the work unambiguously reveals that the name was proposed for an infrasubspecific entity, in which case it is infrasubspecific." As mentioned before, and because there is no evidence that Draudt (1924) has referred to this taxon as lower in rank than subspecies, I considered it a subspecies and objective junior synonym of *Agrotis peruviana*. **New synonym.** *Note:* Hampson (1909a) describes *Porosagrotis peruviana* from two male specimens and mentions that one of those males is an aberration, differentiated by: "forewing with black streak from claviform to postmedial line above submedian fold; hind wing wholly tinged with brown." Draudt (1924) designates this species aberration by the name of *Porosagrotis peruviana* form *hampsoni*.

Rhizagrotis triclava Draudt, 1924: 51, pl. 8, row f. Type/s: Colombia [Pacho]. Not found. **New synonym.**

Euxoa andina Köhler, 1945: 86. Holotype: ♂ [Tucumán] Dpto. Tafí, Cerro de la Mina 3000m, IX-1933 (IMLA). Examined. **New synonym.** *Note:* There is some confusion as to the sex and identity of the original holotype. Köhler (1945) describes *Euxoa andina* from a female and called it allotype. In Köhler's (1967) catalog there is a photo of a specimen labeled as "alotipo (m)" [allotype (male)]. At IMLA there is a male specimen labeled as Holotype that agrees with Köhler's (1967) description and photo. There are two possibilities: 1) Köhler described the species with a female and labeled Allotype (females were traditionally called allotype), when he illustrated a male in 1967 he probably would have called it an allotype male, meaning it isn't the holotype, but being a male he later put it in the collection as the holotype; hence, there are two "type" specimens; or 2) as type specimen and 1967 photo are the same specimen, it is likely he realized it was a male after description and put it in the collection as holotype. Because there is no evidence Köhler had more than one specimen at moment of description, and both, description type locality and holotype at IMLA, has same locality information, I use the holotype at IMLA to define this species.

Scotia andina (Köhler): Köhler, 1967: 295, fig. 29; Köhler, 1968: 4, pl. 1, fig. 2, pl. 4, fig. 2.

Scotia andina form *obscurior* Köhler, 1968: 4, pl. 1, figs 3, 4. According to the 15.2 ICZN article: "A new name published after 1960 expressly as the name of a "variety" or "form" is deemed to be infrasubspecific and as such it is not regulated by the Code [Art. 1.1.1] and it is excluded from its provisions [Arts. 1.3.4, 45.6.3]."

Agrotis peruviana (Hampson): Poole, 1989: 53 (new combination).

Agrotis triclava (Draudt): Poole, 1989: 57 (new combination).

Agrotis andina (Köhler): Poole, 1989: 43 (new combination); Velázquez Medina, 1990: 24–26, figs 17, 27–29 (redescription); Angulo, 1994: 56, 60, 61, fig. 11 (female genitalia); Angulo & Olivares, 2005: 131, 134–135 (diagnosis, male genitalia).

Diagnosis. *Agrotis peruviana* differs from other South American species of *Agrotis* by the following combination of characters: 1) forewing subcostal band darker than ground color; 2) subterminal line light brown and black edged, strongly concave between veins, extended basally as arrows, longest ones between M1–M2–M3 veins; 3) hind wing pellucid brown; 4) in male genitalia vesica 6–7 × as long as aedeagus; and 5) basal spined band absent.

Redescription. *Male* (Fig. 13). *Head.* Palpus whitish ventrally; frons central projection small, with raised edge of rough surface, projected anteriorly into a point. Antenna basal 2/3 biserrate, widest at 1/5 its length, gradually tapering to apex, widest segment 2 × as wide as central shaft, anterior process 1.3 × as wide as posterior process. *Thorax.* Patagium brown, with black medial line; tegulum slightly lighter than patagium, with black basal and marginal lines. Forewing length 14.7–15.1 mm; ground color grayish brown; subcostal band darker than ground color; basal area brownish; basal line black, double; antemedial line black, double, convex between veins, strongly extended as a sharp tooth between 1A+2A vein and posterior margin, reaching medial line; claviform spot dark grayish brown, black edged; orbicular spot strongly oval, extending toward reniform spot, in some specimens contiguous with the latter, grayish brown, black edged with grayish center; reniform spot concolorous with orbicular spot, distal margin with a sharp streak extended between M1–M2 veins to postmedial line; discal cell concolorous with ground color; medial line faint, as a dark thick waved band; postmedial line black, double, concave between veins; subterminal line light brown and black edged, strongly concave between veins, extended basally as arrows, longest ones between M1–M2–M3 veins, in some specimens the first arrow joined with reniform streak like one continuous line; terminal line a series of darkish lunulae between veins; fringe light brown with brown basal, medial, and marginal lines. Hind wing pellucid brown, basal and distal margins diffuse brown; discal spot blackish; fringe whitish. *Abdomen.* Concolorous with forewing ground color. *Genitalia* (Fig. 50). Clavus barely differentiated as an area of piliform setae. Ampulla 1/4 × as long as valve, basal 1/3 expanded, then

narrowed to 2/3 its widest diameter; saccus hemispherical. Vesica (Fig. 68) 6–7 × as long as aedeagus, consisting of 1 1/2 wide loop, right basal diverticulum subtriangular, basal spined band absent, vesica swollen on apical 1/4. *Female*. Unknown.

Distribution. North of Argentina, Bolivia, Peru, and Colombia (Fig. 98). According to Angulo & Olivares (2005), this species is distributed in Chile from VII Region del Maule, Alto Vilches to VIII Region del Biobío, Cobquecura.

Material examined. (10 ♂). BOLIVIA. Songotal. Cuticucho, 3700m, ♂ 2-II-1954 (Forster) (ZSM); Cuticucho, Valle del río Songo, 3700m, ♂ 1-XII-1953 (W. Forster) (ZSM), 2 ♂ 2-XII-1953 (W. Forster) (ZSM), 2 ♂ 30-I-1954 (W. Forster) (ZSM). PERU. Cuzco. Cuzco, ♂ III-1969 (IMLA). Lima. 45 km NE Chosica, Millo Valley, Quebrada Yanac, 4000m, 2 ♂ 26–28-I-1987 (Karsholt) (ZMUC). Puno. 10 km N Lampa, Quebrada Metara, 3900m, ♂ 31-III-3-IV-1987 (Karsholt) (ZMUC).

Discussion. Honey (1988) mentions that guided by the description and specimens in the BMNH, he transferred *Rhizagrotis triclava* Draudt to *Agrotis* v. near *andina* Köhler. After reading the description of *R. triclava* and the drawing in Draudt's publication, I agree with the observation made by Honey (*op. cit.*).

***Agrotis elegans* (Köhler, 1945)**

(Figs 14, 15, 51, 69, 82, 99)

Euxoa elegans Köhler, 1945: 89, fig. 7a. Holotype: ♂ [Argentina] Tierra del Fuego (ZSM). Image examined. Allotype: ♀ same locality (MACN). Examined.

Scotia elegans (Köhler): Köhler, 1967: 302 (new combination).

Agrotis elegans (Köhler): Poole, 1989: 47 (new combination).

Diagnosis. *Agrotis elegans* differs from other South American species of *Agrotis* by the following combination of characters: 1) patagium concolorous with thorax and tegulum lighter than thorax; 2) claviform spot wide; 3) posterior margin of reniform spot prolonged basally through medial vein; 4) in male genitalia vesica 6–7 × as long as aedeagus; 5) in female genitalia posterior apophysis 2 × as long as anterior apophysis; and 6) corpus bursae 8 × as long as anterior apophysis.

Redescription. *Male* (Fig. 14). *Head*. Palpus whitish ventrally; frons central projection small, with raised edge of rough surface, projected anteriorly into a point, some specimens without this projection. Antenna basal 2/3 biserrate, widest at 1/5 its length, gradually tapering to apex, widest segment 2 × as wide as central shaft, anterior process 2 × as wide as posterior process. *Thorax*. Patagium with black medial line, some specimens with light gray submarginal line; tegulum gray, with black basal and submarginal lines. Forewing length 15.7–17.8 mm; ground color grayish brown to dark grayish brown; veins undifferentiated; subcostal band undifferentiated; basal area diffuse gray; basal line black, double, convex between veins; antemedial line black, double, basal margin diffuse, convex between veins, strongly extended as a sharp tooth between 1A+2A vein and posterior margin, coming near to medial line; claviform spot wide, dark grayish brown and black edged; orbicular spot variable in size, strongly oval, extending toward reniform spot, never contiguous, light brown, black edged with grayish brown center; reniform spot concolorous with orbicular spot, posterior margin prolonged basally through medial vein, distal margin never attached to postmedial line, with a streak extending between M1–M2 veins to postmedial line; discal cell concolorous with ground color, with a black streak of variable width joining both spots; medial line faint, as a dark thick waved band; postmedial line black, single, concave between veins, distally edged by a light shade; subterminal line light brown and black edged, concave between veins, extended basally as arrows, longest ones between M1–M2–M3 veins, arrows never contiguous with reniform streak; terminal line a series of darkish lunulae between veins; fringe light brown. Hind wing from fully iridescent to iridescent with veins and margins diffuse light brown; fringe iridescent. *Abdomen*. Concolorous with forewing ground color. *Genitalia* (Fig. 51). Clavus barely differentiated as an area of piliform setae. Ampulla 1/5 × as long as valve, basal 1/3 expanded, then narrowed to 1/3 its widest diameter; saccus subtriangular. Vesica (Fig. 69) 6–7 × as long as aedeagus, consisting of 1 1/2 wide loop, right basal diverticulum subtriangular, basal spined band present, vesica gradually swollen on apical 1/4, in some specimens it duplicates minor diameter. *Female* (Fig. 15). *Differences from male*. Forewing length: 16.3–18.2 mm; antenna filiform; hind wing diffuse dark brown with light brown fringe. *Genitalia* (Fig. 82). Posterior apophysis 2 × as long as anterior apophysis; ductus bursae 4 × as long as anterior apophysis; corpus

bursae 8 × as long as anterior apophysis, signum absent, apex globose; appendix bursae 4 × as long as corpus bursae, consisting of 1 1/2 wide loop, apex globose; ductus seminalis originating laterally very close to corpus bursae apex.

Distribution. Restricted to Argentinean Patagonia (Fig. 99).

Material examined. (47 ♂, 11 ♀). ARGENTINA: Neuquén. Arroyo Pantojo, 1100m, ♂ ♀ 12-I-1985 (M. y P. Gentili) (IADIZA); Chapelco, Refugio Graeff, 1750m, ♀ 12-I-1977 (M. Gentili) (IADIZA), ♂ 26-XII-1980 (M. Gentili) (IADIZA); Chapelco Lengua, 1700m, ♂ 11-I-1983 (M y P. Gentili) (IADIZA); Copahue, 1925m, ♂ ♀ 18-I-1964 (M. Gentili) (IADIZA), ♀ 24-I-1969 (M. Gentili) (IADIZA), ♀ 25-I-1969 (M. Gentili) (IADIZA), ♂ 20-II-1973 (M. Gentili) (IADIZA), ♂ ♀ 16-I-1980 (M. Gentili) (IADIZA); Cordón Chapelco, 1750m, 4 ♀ 3-I-1967 (M. Gentili) (IADIZA), ♂ 1-I-1982 (M. y P. Gentili) (IADIZA), 2 ♂ 12-I-1982 (M. y P. Gentili) (IADIZA), 15 ♂ ♀ 11-I-1983 (M. y P. Gentili) (IADIZA), 20 ♂ 22-I-1985 (M. y P. Gentili) (IADIZA); Moquehue Icalma, 1250m, 2 ♂ 2-III-1984 (M. y P. Gentili) (IADIZA); Pampa Quillen, 1250m, ♂ 12-XII-1967 (M. Gentili) (IADIZA).

***Agrotis benitezi* León, 2010**

(Figs 16, 17, 52, 70, 83, 100)

Agrotis benitezi León, in León *et al.*, 2010: 330, figs 1, 5–7. Holotype: ♂ Chile, VII región, Paso Internacional Pehuenche, 2500m, 1–15-I-1996 (R. Badilla coll.) (UCCC). Examined. Allotype: ♀ Chile, VII región, Paso Internacional Pehuenche, 2500m, 1–15-I-1996 (R. Badilla coll.) (UCCC). Examined. Paratypes: 2 ♂ ♀ Chile, VII región, Paso Internacional Pehuenche, 2500m, 1–15-I-1996 (R. Badilla coll.) (UCCC), 3 ♂ 16–30-III-1996 (R. Badilla coll.) (UCCC), 2 ♂ 1–15-I-1997 (R. Badilla coll.) (UCCC); 2 ♂ ♀ 16–30-I-1997 (R. Badilla coll.) (UCCC). Examined.

Diagnosis. *Agrotis benitezi* differs from other South American species of *Agrotis* by the following combination of characters: 1) tegulum lighter than thorax; 2) forewing subterminal line light brown; 3) basal and antemedial lines double, postmedial line single; 4) in male genitalia vesica 2–3 × as long as aedeagus; and 5) basal spined band present.

Redescription. *Male* (Figs 16, 52, 70). *Female* (Figs 17, 83). (see León *et al.*, 2010: 330).

Distribution. Restricted to Chile, Region VII, Pehuenche border crossing (Fig. 100).

***Agrotis leonoides* Poole, 1989**

(Figs 18–21, 53, 71, 84, 101)

Agrotis leonina Köhler, 1958: 12. *Note:* Köhler (1958) mentions localities for material used for the description as: “Río Negro: General Roca (14-IV-1953, Köhler) Cipolletti (19-IV-1954, Fleiss); Neuquén: Neuquén (15-III-1955) Petrowsky y Köhler,.” but he does not designate any type. In entomological collections of IMLA, MLP, and ZSM there is no material designated as type. Köhler (1967) exhibits two photos, male and female specimens designated as “ideotypes.” At IMLA there is one male specimen with no locality label, but with cotype label, whose photo corresponds to figure 69 in Köhler’s (1967) publication and this is the specimen used to redescribed this species.

Scotia leonina (Köhler): Köhler, 1967: 331, figs 69, 71 (new combination).

Agrotis leonoides Poole, 1989: 50. Objective replacement name for *Agrotis leonina* Köhler (1958) junior secondary homonym of *Agrotis leonina* Staudinger (1877).

Diagnosis. *Agrotis leonoides* differs from other South American species of *Agrotis* by the following combination of characters: 1) male antenna bipectinate, widest segment 8 × as wide as central shaft; 2) forewing discal cell almost entirely black; 3) reniform spot never adjacent to postmedial line; 4) reniform spot streak absent, when present it is only one continuous broad streak between M1–M3 veins and reaching postmedial line; 5) in male genitalia vesica 8 × as long as aedeagus; 6) basal spined band absent; 7) in female genitalia corpus bursae with one signum; 8) appendix bursae 5 × as long as corpus bursae; and 9) ductus seminalis originating from apex of appendix bursae.

Redescription. *Male* (Figs 18, 19). *Head.* Palpus whitish ventrally; frons smooth, central projection and raised edge absent. Antenna bipectinate, widest at half its length, gradually tapering to apex, widest segment 8 × as wide as central shaft, anterior process 1.5 × as wide as posterior process. *Thorax.* Patagium with black basal and medial lines, basal half concolorous with thorax and distal half lighter than thorax; tegulum with black basal and marginal

lines, sometimes lighter than thorax. Forewing length 14.5–18.5 mm; ground color whitish gray to grayish brown; subcostal band undifferentiated; basal area diffuse gray in some specimens; basal line undifferentiated; antemedial line slightly differentiated, in some specimens marked as a black line, double, convex between veins, extended as a sharp tooth between 1A+2A vein and posterior margin, coming near to forewing center; claviform spot black; orbicular spot variable in size, strongly oval, contiguous with reniform spot, light brown, black edged with grayish center; reniform spot concolorous with orbicular spot, never contiguous with postmedial line, in some specimens distal margin with a thick streak extending between M1–M3 veins to postmedial line; discal cell almost entirely black; medial line undifferentiated; postmedial line black, single, concave between veins, distally edged by a lighter shade; subterminal line undifferentiated, with no arrows between postmedial and terminal line; terminal line differentiated only in some specimens as darkish lunulae between veins; fringe concolorous with forewing ground color. Hind wing iridescent on light specimens and diffuse brown in dark specimens; fringe iridescent. *Abdomen*. Concolorous with forewing ground color. *Genitalia* (Fig. 53). Clavus slightly sclerotized, cylindrical, 2–4 × as long as wide. Ampulla 1/4 × as long as valve, basal 1/3 expanded, then narrowed to 1/4 its widest diameter; saccus subtriangular. Vesica (Fig. 71) 8 × as long as aedeagus, consisting of 1 1/2 wide loop, right basal diverticulum cylindrical, basal spined band absent, vesica gradually swollen on apical 1/3. *Female* (Figs 20, 21). *Differences from male*. Forewing length: 18.2–18.5 mm; antenna filiform; forewing ground color darker than male; orbicular spot light grayish brown with grayish center and black edged; hind wing diffuse light brown. *Genitalia* (Fig. 84). Posterior apophysis 1.5 × as long as anterior apophysis; ductus bursae 2.3 × as long as anterior apophysis; corpus bursae 4 × as long as anterior apophysis, with one dorsal signum, apex globose; appendix bursae 5 × as long as corpus bursae, consisting of 1 1/2 wide loop, apex subtriangular; ductus seminalis originating from corpus bursae apex.

Biology. Köhler (1958) mentions that Mr. Erwin Fleiss reared specimens of this species from eggs. In spite of having immature states, there are no publications about them.

Hosts. There is no information on host plants. According to Köhler (1958), Mr. Fleiss reared larvae, but no host information is given.

Distribution. Restricted to Argentinean Patagonia (Fig. 101).

Material examined. (31 ♂, 14 ♀). ARGENTINA: Buenos Aires. Villa Gesell, ♀ 17-IV-1966 (IMLA). Neuquén. Zapala, ♂ 6-IV-1968 (M. Gentili) (USNM), 9 ♂ (M. Gentili) (IADIZA). Río Negro. Cipolletti, El Cuy, 10 ♂ 3 ♀ 1–10-IV-1956 (Fleiss) (IMLA), 6 ♂ 4 ♀ (Fleiss) (IADIZA), ♀ 10-IV-1956 (Fleiss) (MLP), 2 ♂ 3 ♀ 4-IV-1957 (E. Fleiss) (IMLA), 3 ♂ ♀ 20-III-1961 (Fleiss) (IADIZA). San Juan. Tudcun, ♀ 20-III-1960 (IMLA).

Agrotis edmondsi Butler, 1882

(Figs 22–25, 54, 72, 85, 102)

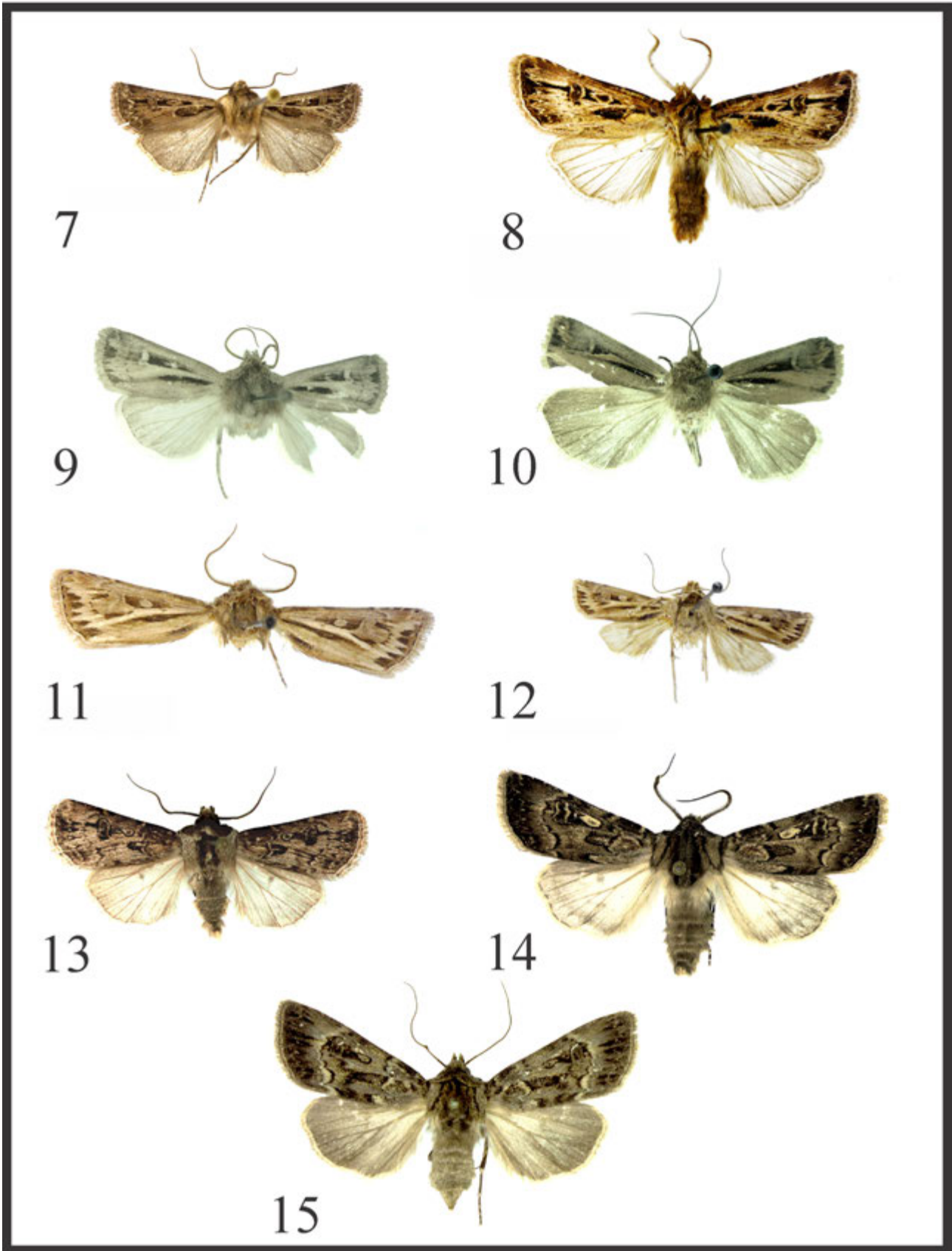
Agrotis edmondsi Butler, 1882: 131; Parra *et al.*, 1986: 88–89, figs 34, 74–76 (diagnosis and male genitalia); Poole, 1989: 47 (world noctuid checklist); Velasquez Medina, 1990: 28–30, figs 14, 18–20 (redescription); Angulo, 1994: 56, 60, 61, figs 3, 4 (female genitalia); Artigas, 1994: 563–564, pl. 27, fig. 5 (diagnosis, life cycle, biological control, damages, hosts, economic importance, distribution, and international implications); Angulo & Olivares, 2005: 35 (redescription). Lectotype: ♂ Chile [Valdivia February according to original publication] (Edmonds) (BMNH). Present designation. Image examined. Paralectotype: ♀ Chile [Valdivia February according to original publication] (Edmonds) (BMNH). Not examined. Present designation.

Euxoa edmondsi (Butler): Hampson, 1903: pl. 60, fig. 18 (diagnosis); Köhler, 1945: 82, fig. 8-c (male genitalia).

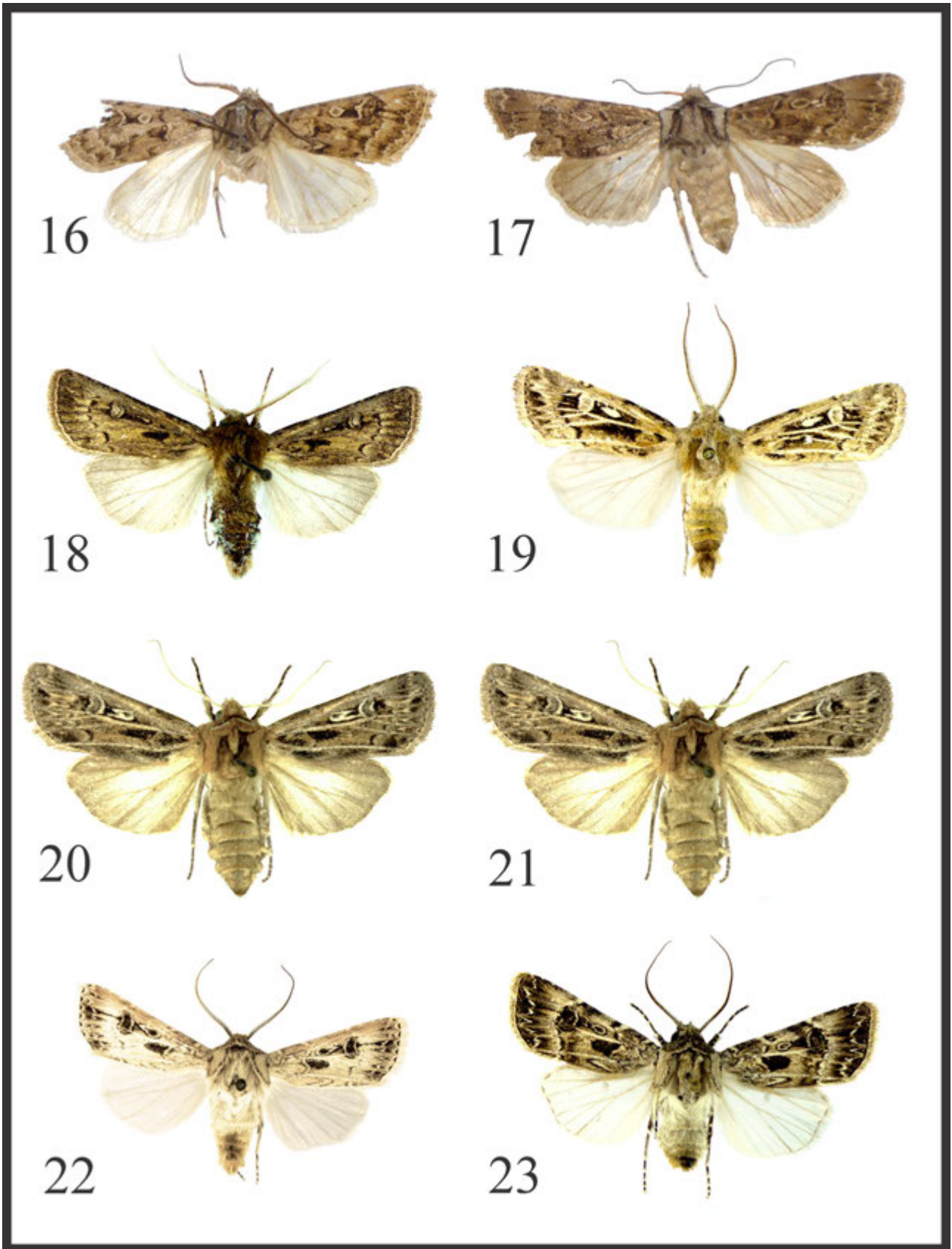
Scotia edmondsi (Butler): Köhler, 1967: 302, figs 31, 33 (new combination).

Scotia araucaria auct. non. Hampson, 1903: Köhler, 1967: figs 30, 32 (misidentification).

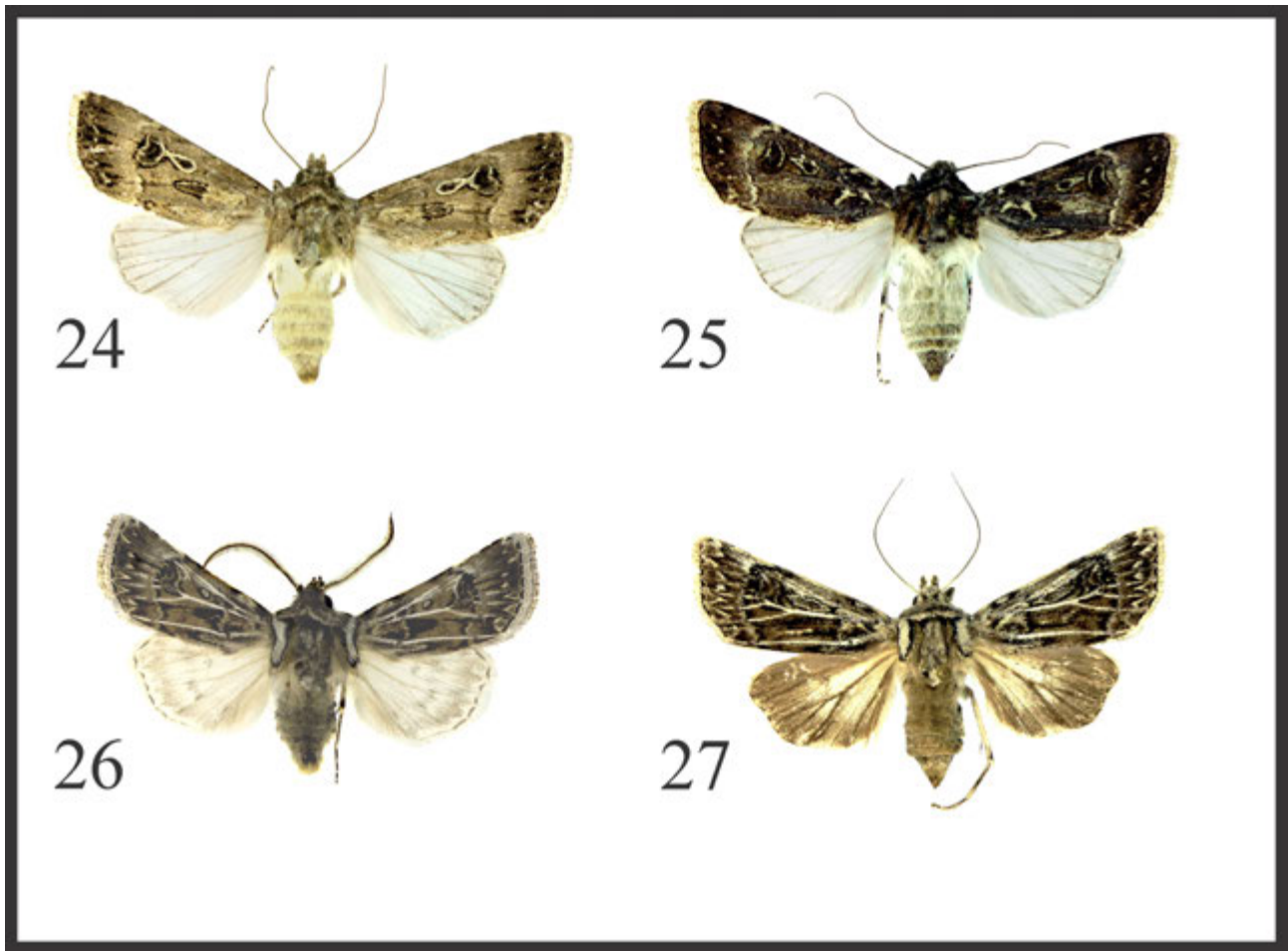
Diagnosis. *Agrotis edmondsi* differs from other South American species of *Agrotis* by the following combination of characters: 1) patagium darker than thorax and tegulum lighter than thorax; 2) forewing claviform spot wide; 3) reniform spot contiguous with postmedial line, otherwise, with a streak to postmedial line between M1–M2 veins; 4) in male genitalia vesica with right basal diverticulum and basal spined band present; 5) in female genitalia corpus bursae 6 × as long as anterior apophysis, and 6) signum absent.



FIGURES 7–15. Adults of *Agrotis* species, *edmonsi*-group. 7, *A. steniptera*, ♂. 8, *A. propriens*, ♂. 9, *A. bistrigata*, ♂. 10, *A. bistrigata*, ♀. 11, *A. dispar*, ♂. 12, *A. dispar*, ♀. 13, *A. peruviana*, ♂. 14, *A. elegans*, ♂. 15, *A. elegans*, ♀. Actual size.



FIGURES 16–23. Adults of *Agrotis* species, *edmondsi*-group. 16, *A. benitezi*, holotype, ♂. 17, *A. benitezi*, allotype, ♀. 18–19, *A. leonoides*, ♂. 20–21, *A. leonoides*, ♀. 22–23, *A. edmondsi*, ♂. Actual size.



FIGURES 24–27. Adults of *Agrotis* species, *edmondsi*-group. 24–25, *A. edmondsi*, ♀. 26, *A. leucovenata*, ♂. 27, *A. leucovenata*, ♀. Actual size.

Redescription. *Male* (Figs 22, 23). *Head.* Palpus whitish ventrally; frons central projection small, with raised edge of rough surface, not projected anteriorly into a point. Antenna basal 2/3 bipectinate, widest at 1/5 its length, gradually tapering to apex, widest segment 3 × as wide as central shaft, anterior process 1–3 × as wide as posterior process. *Thorax.* Patagium slightly darker than thorax, with black basal, medial, and submarginal lines; tegulum slightly lighter than thorax, with black basal and marginal lines, the former undifferentiated in some specimens. Forewing length 12.3–16.9 mm; ground color whitish gray to grayish brown; veins undifferentiated; subcostal band undifferentiated; basal area diffuse gray in some specimens; basal line black, double, convex between veins; antemedial line black, double, basal margin diffuse, convex between veins, strongly extended as a sharp tooth between 1A+2A vein and posterior margin, coming near to medial line; claviform spot wide, dark grayish brown and black edged; orbicular spot variable in size, strongly oval, extending toward reniform spot, contiguous in some specimens, concolorous with forewing ground color, black edged with grayish center; reniform spot concolorous with orbicular spot, in some specimens contiguous with postmedial line, when not contiguous, distal margin has a streak extending between M1–M2 veins to postmedial line; discal cell concolorous with ground color, with a black streak of variable width joining both spots; medial line faint, as a dark thick wavy band; postmedial line black, single, concave between veins, distally edged by a light brown shade; subterminal line light brown and black edged, concave between veins, extended basally as arrows, longest one between M1–M2 veins, in some specimens joining with reniform streak like one continuous line; terminal line a series of darkish lunulae between veins; fringe lighter than forewing ground color. Hind wing iridescent; fringe iridescent. *Abdomen.* Concolorous with forewing ground color. *Genitalia* (Fig. 54). Clavus barely differentiated as an area of piliform setae. Ampulla 1/5 × as long as valve, basal 1/3 expanded, then narrowed to 1/3 its widest diameter; saccus subtriangular. Vesica (Fig. 72) 6 × as long as aedeagus, consisting of 1 1/2 wide loop, right basal diverticulum subtriangular, basal spined band present,

vesica gradually swollen on apical 1/3. *Female* (Figs 24, 25). *Differences from male*. Forewing length: 15.5–19.2 mm; antenna filiform; forewing ground color darker than male; fringe light brown; hind wing from iridescent to diffuse brown. *Genitalia* (Fig. 85). Posterior apophysis 1.7 × as long as anterior apophysis; ductus bursae 3 × as long as anterior apophysis; corpus bursae 6 × as long as anterior apophysis, signum absent, apex subtriangular; appendix bursae 4 × as long as corpus bursae, consisting of 1 1/2 wide loop, apex globose; ductus seminalis originating laterally very close to corpus bursae apex.

Remarks. In Köhler (1967) figures 31 and 33 of *Scotia edmondsi* (= *Agrotis edmondsi*) are correct, but figures 30 and 32 of *Scotia araucaria* (= *Agrotis araucaria*) correspond to light specimens of *Agrotis edmondsi*.

Distribution. Restricted to Argentinean and Chilean Patagonia (Fig. 102).

Material examined. (141 ♂, 105 ♀). ARGENTINA: Chubut. El Bolsón, Lago Puelo, 220m, 2 ♂ 18-XI-1978 (Misión Científica Danesa) (ZMC), ♂ 21-XI-1978 (Misión Científica Danesa) (IADIZA); Esquel, 574m, ♂ 8-I-1960 (IMLA); Lago Puelo, 205m, ♀ 16-II-1982 (M. y P. Gentili) (IADIZA); Sierra Negra, 850m, ♂ 14-II-1982 (M. y P. Gentili) (IADIZA); Trevelin, 475m, ♀ 13-II-1982 (M. y P. Gentili) (IADIZA). Neuquén. Aeropuerto Chapelco, 780m, 3 ♂ 6 ♀ 19-XI-1981 (M. y P. Gentili) (IADIZA), 7 ♂ ♀ 27-XI-1981 (M. y P. Gentili) (IADIZA), 2 ♂ ♀ 30-XI-1981 (M. y P. Gentili) (IADIZA), 2 ♂ ♀ 1-XII-1981 (M. y P. Gentili) (IADIZA), 4 ♂ 2-XII-1981 (M. y P. Gentili) (IADIZA), 3 ♂ ♀ 6-XII-1981 (M. y P. Gentili) (IADIZA), 5 ♂ 8-XII-1981 (M. y P. Gentili) (IADIZA), 4 ♂ ♀ 9-XII-1981 (M. y P. Gentili) (IADIZA), ♀ 10-XII-1981 (M. y P. Gentili) (IADIZA), 2 ♀ 15-XII-1981 (M. y P. Gentili) (IADIZA), ♂ 23-XII-1981 (M. y P. Gentili) (IADIZA), ♀ 26-XII-1981 (M. y P. Gentili) (IADIZA), ♀ 28-XII-1981 (M. y P. Gentili) (IADIZA), ♀ 30-XII-1981 (M. y P. Gentili) (IADIZA), 3 ♀ 14-II-1988 (M. y P. Gentili) (IADIZA); Aguada Florencio, 870m, ♀ 17-XII-1982 (M. y P. Gentili) (IADIZA); Aluminé, 900m, ♀ 4-XII-1971 (M. Gentili) (IADIZA); Bajada Los Molles, 920m, 7 ♂ 26-XI-1961 (M. Gentili) (IADIZA); Bajada Marucho, 870m, ♀ 19-IV-1972 (M. Gentili) (IADIZA), ♂ 14-I-1980 (M. Gentili) (IADIZA), ♀ 24-III-1981 (M. Gentili) (IADIZA), 6 ♀ 27-X-1981 (M. Gentili) (IADIZA); Catan Lil, Puesto la Bañadera, 900m, ♀ 11-XII-1972 (M. Gentili) (IADIZA); Catan Lil, Salitral, 1050m, ♂ 24-XII-1972 (M. Gentili) (IADIZA); Confluencia Trafal, 690m, ♂ 15-XI-1964 (M. Gentili) (IADIZA), ♀ 18-XI-1968 (M. Gentili) (IADIZA), 8 ♂ 2 ♀ 4-III-1975 (M. Gentili) (IADIZA), ♀ 17-II-1982 (M. y P. Gentili) (IADIZA); Cordón Chapelco - Arroyo Chapelco Grande, 900m, ♀ 15-III-1979 (M. Gentili) (IADIZA); Covunco – Usina, 825m, 3 ♂ 4 ♀ 29-X-1962 (M. Gentili) (IADIZA), ♂ 19-XII-1963 (M. Gentili) (IADIZA); Cuyín Manzano, 750m, ♂ 2 ♀ 5-III-1975 (M. Gentili) (IADIZA); Estancia Alicura, 650m, 3 ♂ 2 ♀ 20-III-1972 (M. Gentili) (IADIZA); Estancia Chacabuco, 650m, ♂ 11-XI-1969 (M. Gentili) (IADIZA); Estancia Chacayal, 675m, 2 ♀ 26-XI-1968 (M. Gentili) (IADIZA); Lago Tromen, Rodeo Grande, 900m, ♂ 30-XII-1978 (Misión Científica Danesa) (ZMC); Las Lagunas Epulafquen, Campamento, 1350m, ♂ 8-I-1989 (M. y P. Gentili) (IADIZA); Loncopué, 1000m, ♂ 5-XI-1959 (M. Gentili) (IADIZA), 3 ♂ 14-XI-1959 (M. Gentili) (IADIZA); Moquehue, 1200m, 2 ♂ 10-II-1978 (H. Giganti) (IADIZA); P. Leufu – Meriño, 1100m, ♂ 13-XI-1973 (M. Gentili) (IADIZA); Paso Córdoba, 1200–1300m, 10 ♂ 3 ♀ 20-II-1980 (M. Gentili) (IADIZA), ♀ 12-III-1982 (M. y P. Gentili) (IADIZA); Piedra del Águila, 525m, 2 ♂ ♀ 5-XI-1966 (M. Gentili) (IADIZA), 2 ♀ 23-XII-1978 (Misión Científica Danesa) (ZMC), ♂ 22-XI-1990 (M. y P. Gentili) (IADIZA); Quilquihue, 750m, ♀ 8-III-1980 (M. Gentili) (IADIZA), 5 ♀ 7-XII-1980 (M. Gentili) (IADIZA), 2 ♀ 12-XII-1980 (M. Gentili) (IADIZA), 3 ♀ 28-III-1981 (M. Gentili) (IADIZA), 3 ♀ 15-XI-1981 (M. y P. Gentili) (IADIZA), ♀ 16-XI-1981 (M. y P. Gentili) (IADIZA), 2 ♀ 18-XI-1981 (M. y P. Gentili) (IADIZA), 3 ♀ 6-XII-1982 (M. y P. Gentili) (IADIZA), 2 ♀ 21-III-1983 (M. y P. Gentili) (IADIZA), ♀ 23-IV-1983 (M. y P. Gentili) (IADIZA), Río Aluminé, 1000m, ♂ 21-XII-1984 (M. y P. Gentili) (IADIZA); Río Aluminé, Pulmarí, 925m, ♀ 27-II-1978 (M. Gentili) (IADIZA); Río Limay, Arroyito, ♂ 17-XI-1978 (Misión Científica Danesa) (CNC); Río Limay, Confluencia, 2 ♂ ♀ 3-III-1978 (C.M & O.S. Flint, Jr.) (USNM); Río Litrán, 9 km N. Lago Aluminé, 1200m, ♂ 3-II-1987 (C.M & O.S. Flint, Jr.) (USNM); San Martín de los Andes - Estancia Tipiliuke, ♂ 25-XI-1959 (M. Gentili) (IADIZA), 4 ♂ ♀ 6-III-1960 (M. Gentili) (IADIZA), ♂ ♀ 13-XI-1962 (M. Gentili) (IADIZA), ♂ ♀ 17-XI-1965 (M. Gentili) (IADIZA); San Martín de los Andes, 647m, ♂ II-1957 (M. Gentili) (IADIZA), ♂ ♀ III-1957 (M. Gentili) (IADIZA), ♂ XII-1957 (M. Gentili) (IADIZA), ♀ 24-XI-1957 (M. Gentili) (IADIZA), ♂ 4-I-1958 (M. Gentili) (IADIZA), 2 ♂ 11-II-1958 (M. Gentili) (IADIZA), ♂ 21-II-1958 (M. Gentili) (IADIZA), ♂ 10-III-1958 (M. Gentili) (IADIZA), 2 ♂ 11-X-1958 (M. Gentili) (IADIZA), ♀ 30-XI-1958 (M. Gentili) (IADIZA), ♂ 7-XII-1958 (M. Gentili) (IADIZA), ♀ 18-XII-1958 (M. Gentili) (IADIZA), ♂ 31-I-1959 (M. Gentili) (IADIZA), ♀ 14-II-1959 (M. Gentili) (IADIZA), ♀ 5-III-1959 (M. Gentili) (IADIZA), ♀ 20-III-1959 (M. Gentili) (IADIZA), ♀ 14-XI-1959 (M. Gentili) (IADIZA), ♀ 7-III-1960 (M. Gentili) (IADIZA), ♂ 1-IV-1961 (M. Gentili) (IADIZA), ♂ 2-II-1968 (M. Gentili) (IADIZA), 2 ♂

♀ 20-III-1978 (M. Gentili) (IADIZA); Trocoquén, 1500m, 2 ♂ 4-IV-1969 (M. Gentili) (IADIZA); Varvarco, 1200m, ♂ 2 ♀ 12-XI-1968 (M. Gentili) (IADIZA); Zapala, 1012m, ♂ 27-XI-1961 (M. Gentili) (IADIZA); 4 ♂ ♀ 6-IV-1968 (M. Gentili) (IADIZA); Zapala, Los Catutos, 1048m, ♀ XII-1961 (M. Gentili) (IADIZA). Río Negro. Lamarque, 130m, ♀ XII-1959 (Fritz) (IADIZA); Paso Flores - Pto. (117), 600m, ♂ ♀ 12-XI-1987 (M. y P. Gentili) (USNM); Paso Flores, 570m, ♂ 19-XII-1959 (M. Gentili) (IADIZA). Santa Cruz. Punta Bandera - Lago Argentino, 185m, ♀ I-1962 (IMLA), 2 ♂ I-1963 (IMLA); ♀ I-1963 (Margh.) (IADIZA); El Chaltén, Estancia Ricanor, 4 ♂ 23-I-2007 (GSB & A. Srur) (IADIZA). CHILE. Region IV, Coquimbo. Coquimbo, Canela baja, ♂ 23-X-1961 (L. Peña) (CNC). Region V, Valparaíso. Aconcagua, Lo Molles, ca. 10 km S. Pichidanguí, 25m, ♀ 15-17-XI-1981 (D. & M. Davis) (USNM). Region VII, Maule. Constitución, ♂ 20-XI-1953 (L. E. Peña) (CNC); Talca, Laguna del Maule, La Mina, 1000m, 2 ♂ ♀ 24-III-1979 (Misión Científica Danesa) (CNC). Region IX, Araucanía. Angol, ♂ 25-III-1925 (E.S. Bullock) (USNM); Cautín, 3km NE Tolten, 3m, ♂ 26-II-1979 (D. & M. Davis & B. Akebergs) (USNM); Cautín, Fundo el Coigue, 500 mtrs 27 km NE Villarrica, ♂ 28-II-3-III-1979 (D. & M. Davis & B. Akebergs) (USNM); Cautín, Vol. Villarrica, 1090m, ♀ 25-I-1978 (C.M & O.S. Flint, Jr.) (USNM); Malleco, Cord. de las Raíces, 40 km E Curacautín, 1650m, 2 ♂ ♀ 7-8-II-1979 (D.M. Davis & B. Akebergs) (USNM); Pehuenco, ♂ (L. Peña) (CNC). Region X, Los Lagos. Maullín, ♂ X-1942 (L. Peña) (CNC); Palena, Camping Arrayanes, 5km NW Chaitén, ♂ 21-I-1987 (C.M & O.S. Flint, Jr.) (USNM).

Agrotis leuconata San Blas & Gentili, 2011

(Figs 26, 27, 55, 73, 86, 103)

Agrotis leuconata San Blas & Gentili, 2011: 93–97, figs 1–6. Holotype: ♂ Argentina, Neuquén, Quilquihue, 750m, 21-III-1983 (M. y P. Gentili) (IADIZA). Allotype: ♀ Argentina, Neuquén, Laguna Blanca, 1270m, 25-III-1981 (M. Gentili) (IADIZA). Paratypes: 3 ♂ 1 ♀ Argentina, Neuquén, Aeropuerto Chapelco, 780m, 30-III-1982 (M. y P. Gentili) (IADIZA), 1 ♂ 15-III-1988 (M. y P. Gentili) (IADIZA); 1 ♀ Caviahue, 1550m, 25-II-1962 (M. Gentili) (IADIZA); 1 ♀ Laguna Blanca, 1270m, 21-III-1965 (M. Gentili) (CNC), 1 ♀ 25-III-1981 (M. Gentili) (USNM); 2 ♂ Las Coloradas, Antena, 1000m, 2-III-1990 (M. y P. Gentili) (IADIZA); 2 ♂ Pampa Puttkamer, 975m, 25-III-1988 (M. y P. Gentili) (IADIZA); 1 ♀ Primeros Pinos, Haichol 20-III-1974 (M. Gentili) (IADIZA); 1 ♀ Quilquihue, 750m, 8-III-1980 (M. Gentili) (IADIZA), 1 ♀ 8-III-1980 (M. Gentili) (IMLA), 1 ♀ 28-III-1981 (M. Gentili) (IADIZA), 1 ♀ 28-III-1981 (M. Gentili) (MACN), 41 ♂ 21-III-1983 (M. y P. Gentili) (IADIZA), 2 ♂ 21-III-1983 (M. y P. Gentili) (IMLA), 2 ♂ 21-III-1983 (M. y P. Gentili) (MACN), 2 ♂ 21-III-1983 (M. y P. Gentili) (USNM), 2 ♂ 21-III-1983 (M. y P. Gentili) (CNC).

Diagnosis. *Agrotis leuconata* differs from other South American species of *Agrotis* by the following combination of characters: 1) male antenna bipectinate, widest segment 6 × as wide as central shaft; 2) forewing veins strongly whitish; 3) basal and antemedial lines black, single, basally edged by a light brown shade; 4) in male genitalia vesica 4–5 × as long as aedeagus; 4) right basal diverticulum absent, and 5) in female genitalia appendix bursae less than 2 × as long as corpus bursae.

Redescription. *Male* (Figs 26, 55, 73). Forewing length 10.8–15.5 mm. *Female* (Figs 27, 86). Forewing length 12–15.5 mm. (see San Blas & Gentili, 2011: 93–97).

Distribution. Restricted to Neuquén province, Argentina (Fig. 103).

Discussion. *Agrotis leuconata* is similar to *A. elegans* and *A. edmondsi*. Forewing veins strongly whitish and antenna strongly bipectinate in males allowing quick differentiation of this species. Distinct genitalic characters include the male vesica with no basal diverticulum and female appendix bursae less than 2 × as long as corpus bursae.

fausta-species group

This species group is characterized by: in male genitalia tegumen with “shoulders” strongly marked; valve subrectangular, curved, elongate, and very narrow; cucullus apex strongly projected anterodorsally; sacculus 3/5 × as wide as valve; saccus hemispherical or subtriangular, ventrally projected as a spine and notched dorsally. Aedeagus posterior half sclerotized and anterior half lightly sclerotized; vesica long, 10–12 × as long as aedeagus, except *Agrotis canities* (8 × as long as aedeagus), basal spined band present. Female genitalia with appendix bursae long, 6–14 × as long as corpus bursae, except *Agrotis fausta* (5 × as long as corpus bursae).

Agrotis experta (Walker, 1869)

(Figs 28, 29, 56, 74, 87, 104)

Laphygma experta Walker, 1869: 30. Holotype: ♂ Peru (BMNH). Image examined.

Laphygma innotabilis Walker, 1869: 31; Hampson, 1903: 356 (new synonym); Poole, 1989: 50. Holotype: ♂ Peru (BMNH). Image examined.

Feltia experta (Walker): Hampson, 1903: 356, pl. 68 fig. 18; Draudt, 1924: 55; Artigas, 1994: 582–583 (diagnosis, life cycle, biological control, damages, hosts, economic importance, distribution, and international implications).

Chorizagrotis benefida Draudt, 1924: 51, pl.13 row e. **New synonym.** Type/s: Ecuador, Rio Bamba. Type/s not found.

Agrotis experta (Walker): Forbes, 1933: 20; Poole, 1989: 48 (world noctuid checklist); Angulo & Olivares, 2002: 6; Angulo & Olivares, 2005: 130 (diagnosis, male genitalia).

Scotia experta (Walker): Köhler, 1967: 303, figs 37, 38 (new combination).

Agrotis benefida (Draudt): Poole, 1989: 44 (new combination).

Diagnosis. *Agrotis experta* differs from other South American species of *Agrotis* by the following combination of characters: 1) forewing subcostal band and basal area undifferentiated; 2) discal cell concolorous with forewing ground color; 3) subterminal line not extended basally; 4) in male genitalia clavus subquadrate; 5) vesica $12 \times$ as long as aedeagus; 6) in female genitalia corpus bursae $5 \times$ as long as anterior apophysis; and 7) appendix bursae $12 \times$ as long as corpus bursae.

Redescription. *Male* (Fig. 28). *Head.* Palpus whitish ventrally; frons central projection with raised edge of rough surface, projected anteriorly into a faint point. Antenna basal half biserrate, widest at $1/5$ its length, gradually tapering to apex, with apical half filiform, widest segment $2 \times$ as wide as central shaft, anterior process slightly wider than posterior process. *Thorax.* Patagium slightly darker than thorax, with black medial line, in some specimens dorsal half lighter than ventral half; tegulum with black diffuse basal and marginal lines. Forewing length 15.8–17.6 mm; ground color light grayish brown to grayish brown; subcostal band and basal area undifferentiated; basal line black, double, convex between veins; antemedial line black, double, convex between veins, strongly extended as a sharp tooth between 1A+2A vein and posterior margin, coming near to wing center; claviform spot dark brown; orbicular spot oval, extending toward reniform spot, contiguous in some specimens, concolorous with ground color, black edged with grayish center; reniform spot concolorous with orbicular spot, with no streaks; discal cell concolorous with ground color; medial line undifferentiated; postmedial line black, double, concave between veins; subterminal line light brown and black edged, concave between veins; terminal line a series of darkish lunulae between veins; fringe light brown with brown medial line. Hind wing iridescent; fringe iridescent. *Abdomen.* Light brown. *Genitalia* (Fig. 56). Uncus sinuous. Clavus subquadrate, as long as wide. Ampulla $1/5 \times$ as long as valve, basal $1/3$ expanded, then narrowed to half its widest diameter; saccus subtriangular. Vesica (Fig. 74) $12 \times$ as long as aedeagus, consisting of five wide loops, right basal diverticulum subtriangular. *Female* (Fig. 29). *Differences from male.* Forewing length: 14.8–18.7 mm; antenna filiform; forewing ground color darker than male. *Genitalia* (Fig. 87). Posterior apophysis less than $1.5 \times$ as long as anterior apophysis; ductus bursae $3 \times$ as long as anterior apophysis; corpus bursae $5 \times$ as long as anterior apophysis, signum absent, apex subtriangular; appendix bursae $12 \times$ as long as corpus bursae, consisting of five wide loops, apex globose; ductus seminalis originating at corpus bursae apex.

Biology. Artigas (1994) gives a short diagnosis and mentions that it takes from five to eight weeks to complete the life cycle.

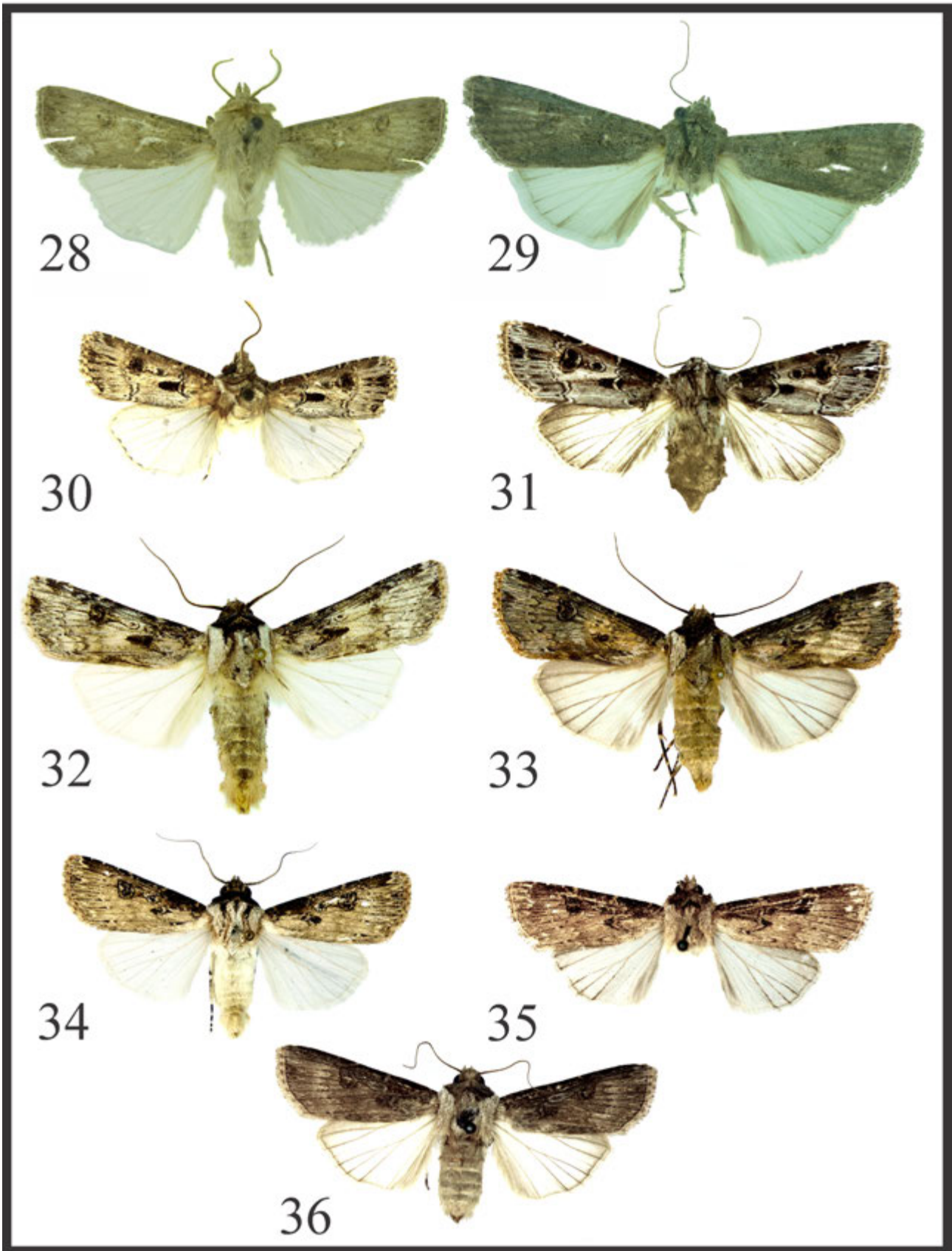
Hosts. Economically important hosts include: chard, sesame, alfalfa, cotton, beans, potatoes, tobacco, and tomato (Artigas 1994).

Remarks. Either in males or females forewing pattern can be very diffuse, in some specimens with only reniform spot differentiated and orbicular spot and a single postmedial line slightly distinguished.

The description and drawing of the adult of *Chorizagrotis benefida* (Draudt 1924) corresponds to light specimens of *Agrotis experta*.

Distribution. Peru, Ecuador, and northern Chile (Fig. 104).

Material examined. (13 ♂, 13 ♀). 3 ♀ (USNM), ♂ (Raven) (IMLA). CHILE: Tarapacá. Iquique, ♀ VIII-1987 (Crockwell) (USNM). PERU: ♂ 9-II-1999 (USNM), ♂ (USNM). Lima. Cañete, ♂ 25-I-1941 (E.J. Hambleton) (USNM); Huaral, ♂ (USNM); Lima, ♂ 2 ♀ 19-II-1923 (D.S. Bullock) (USNM), ♂ 10-XI-1963 (Raven) (IMLA), 2 ♂ 01-VII-1964 (Raven) (IMLA), ♀ 10-VII-1964 (Raven) (IMLA), ♀ 18-VII-1964 (Raven) (IMLA), ♂ 15-XI-1964 (Raven) (IMLA); Tupe, 2 ♂ 2-XI-1926 (H.T. Tomms) (USNM). La Libertad. Trujillo, ♂ 5 ♀ (USNM).



FIGURES 28–36. Adults of *Agrotis* species, *fausta*-group. 28, *A. experta*, ♂. 29, *A. experta*, ♀. 30, *A. fausta*, ♂. 31, *A. fausta*, ♀. 32, *A. malefida*, ♂. 33, *A. malefida*, ♀. 34–35, *A. canities*, ♂. 36, *A. canities*, ♀. Actual size.

***Agrotis fausta* (Köhler, 1958)**

(Figs 30, 31, 57, 75, 88, 105)

Feltia fausta Köhler, 1958: 12. Holotype: ♂ Argentina, Buenos Aires, Villa Gesell 6-III-1957 (B. Petrowsky) (ZSM). Image examined. Paratypes: Juancho 7 ♂ 5 ♀ III-1957 (Petrowsky) (IMLA); Villa Gesell ♂ III (Petrowsky) (IMLA), 2 ♂ 22-II-1957 (MLP), ♂ 22-III-1957 (Petrowsky) (IMLA). Examined. *Note*: Köhler (1958) cites locality information as follows: "HABITAT: Prov. Buenos Aires, Pdo. General Madariaga, Juancho, Villa Gesell, 6-III-1957 (Petrowsky). HOLOTYPUS, ALLOTYPUS Y PARATYPI col. del autor; numerosos PARATYPI en col. Petrowsky [Holotype, allotype, and paratypes in author's collection, paratypes at Petrowsky's collection]." Neither at IMLA nor ZSM was a specimen labeled as Allotype found. Underlined paratypes correspond to specimens labeled as Paratypes but whose dates do not agree with any of those cited by Köhler. Regardless of this, these specimens were maintained as Paratypes because their collection locality corresponds with one of those cited by Köhler, and they are conspecific with this species.

Agrotis fausta (Köhler): Poole, 1989: 48 (new combination).

Diagnosis. *Agrotis fausta* differs from other South American species of *Agrotis* by the following combination of characters: 1) frons smooth; 2) male antenna bipectinate, widest segment 3 × as wide as central shaft; 3) forewing length in males 15.2–16.9 mm, in females 17.1–17.5 mm; 4) ground color gray to brownish gray; 5) patagium basal half lighter than distal half; 6) in male genitalia uncus uniformly curved over its entire length; 7) ampulla 1/6 × as long as valve; and 8) in female genitalia appendix bursae 5 × as long as corpus bursae.

Redescription. *Male* (Fig. 30). *Head*. Frons smooth, central projection and raised edge absent. Antenna bipectinate, widest at 1/5 its length, gradually tapering to apex, widest segment 3 × as wide as central shaft, anterior process 2–3 × as wide as posterior process. *Thorax*. Patagium with black medial and marginal lines, basal half lighter than distal half; tegulum with blackish marginal line widened anteriorly. Forewing length 15.2–16.9 mm; ground color grayish to brownish gray; subcostal band and basal area dark grayish brown; basal line black, double; antemedial line black, double, convex between veins, not extending between 1A+2A vein and posterior margin; claviform spot black; orbicular spot slightly to strongly oval, extending toward reniform spot, contiguous in some specimens, concolorous with ground color, black edged with grayish center; reniform spot concolorous with orbicular spot, in some specimens distal margin with a sharp streak extending between M1–M2 veins to postmedial line; discal cell concolorous with ground color, with black streak of variable width joining both spots; medial line undifferentiated; postmedial line black, double, concave between veins; subterminal line light brown, concave between veins, black edged basally and distally, extended basally as dark arrows, longest ones between M1–M2–M3 veins, in some specimens first arrow joined with reniform streak like one continuous line; terminal line a series of darkish lunulae between veins; fringe basal half whitish with darkish spots at apex of veins and distal half brown. Hind wing iridescent, terminal line brown, lunulae between veins; fringe iridescent. *Abdomen*. Light brown. *Genitalia* (Fig. 57). Uncus uniformly curved over its entire length. Clavus cylindrical, short, 2 × as long as wide. Ampulla 1/6 × as long as valve, basal half expanded, then narrowed to 1/5 its widest diameter; saccus hemispherical, ventrally projected as a spine. Vesica (Fig. 75) 12 × as long as aedeagus, consisting of four wide loops, right basal diverticulum subtriangular, vesica slightly swollen on apical 1/5. *Female* (Fig. 31). *Differences from male*. Forewing length: 17.1–17.5 mm; antenna filiform; ground color dark grayish; hind wing with dark brown veins, anal and apical margins diffuse dark brown. *Genitalia* (Fig. 88). Posterior apophysis 1.4 × as long as anterior apophysis; ductus bursae 2 × as long as anterior apophysis; corpus bursae 7 × as long as anterior apophysis, signum absent, apex globose; appendix bursae 5 × as long as corpus bursae, consisting of four wide loops, apex globose; ductus seminalis originating laterally near corpus bursae apex.

Distribution. Restricted to Buenos Aires province, Argentina (Fig. 105).

Material examined. (1 ♂, 3 ♀). ARGENTINA. Buenos Aires. Juancho, ♀ III-1957 (Petrowsky) (IMLA); Villa Gesell, 2 ♀ 17-IV-1966 (IMLA), ♂ 1-III-1957 (IADIZA).

Discussion. This species is very similar to *A. malefida* and *A. canities*, but based on differences in adult size, forewing ground color, male genitalia (mainly shape of uncus and vesica length) and length of appendix bursae of female genitalia, I decide to leave them as different species.

Agrotis malefida Guenée, 1852

(Figs 32, 33, 58, 76, 89, 106)

Agrotis malefida Guenée, in Boisduval & Guenée, 1852: 267; Walker, (1857)1856: 328 (diagnosis); Boisduval, 1869: 89 (collected at California, USA); Lintner, 1873: 200 (checklist); Harvey, 1875: 5 (collected at Alabama, USA); Snow, 1883: 37 (collected at Nuevo México, USA); Edwards, 1889: 85 (bibliographic catalog); Druce, 1881–1900: 282 (distribution and color pattern variation); Forbes, 1933: 20, fig. 17 (relation with other South American *Agrotis*); Chiesa Molinari, 1942: 571 (economic importance); Forbes, 1954: 35, 48–49 (redescription of adult and larvae); Crumb, 1956: 86 (larval diagnosis, distribution, and identification key); Godfrey, 1987: 567 (preimaginal stages); Poole, 1989: 51 (world noctuid checklist); Lafontaine, 2004: 248–249, pl. L, figs 33–35, pl. 34, fig. 4, pl. 50, fig. 2, fig. 134 (larval and adult diagnosis); Specht *et al.*, 2004: 12 (collected at Brazil); Specht *et al.*, 2005: 132, 136 (collected at Brazil); Pogue, 2006: 21 (diagnosis, flight period, hosts); San Blas & Barrionuevo, 2013: 1157, figs 3E–3H (differences with *A. ipsilon* and *A. robusta*). Lectotype: ♀ North America (Boisduval) (BMNH). Not examined.

Feltia malefida (Guenée): Smith, 1890: 122–123 (diagnosis); Verrill, 1902: 769 (collected at Bermuda Islands); Hampson, 1903: 353–354, pl. 68, fig. 15 (adult and larval redescription and distribution); Draudt, 1924: 55 (diagnosis).

Agrotis malefida (Treitschke) authorship error: Hayward, 1969: 42 (hosts).

Feltia malefida variety *patagiata* Aurivillius, Prout, and Meyrick, 1922: 256. According to 45.6.4 ICZN article: “it is subspecific if first published before 1961 and its author expressly used one of the terms “variety” or “form” (including use of the terms “var.,” “forma,” “v.” and “f.”), unless its author also expressly gave it infrasubspecific rank, or the content of the work unambiguously reveals that the name was proposed for an infrasubspecific entity, in which case it is infrasubspecific.” As mentioned before, and because there is no evidence that Aurivillius, Prout, and Meyrick (1922) have referred to this taxon as lower in rank than subspecies, I consider it a subspecies and subjective junior synonym of *Agrotis malefida*. Type/s: ♀ [Chile] Robinson Crusoe Island. Not examined. **New synonym.**

Agrotis inspinosa Guenée, in Boisduval & Guenée, 1852: 269; Hampson, 1903: 353–354 (= *Feltia malefida* (Guenée)). Holotype: ♀ Brasil, Nouvelle-Fribourg (Guenée) (BMNH). Image examined.

Agrotis consueta Walker, (1857)1856: 334; Butler, 1882: 126 (= *A. hostilis* Walker *in part* and = *A. bipars* Walker *in part*); Butler, 1889: 378 (= *Agrotis bipars*); Druce, 1881–1900: 282 (= *Agrotis malefida* Guenée). Lectotype: ♂ Venezuela (Dyson) (BMNH), designated by Lafontaine (2004). Image examined.

Lycophotia achromatica Hampson, 1903: 518, pl. 73 fig. 32; Draudt, 1924: 67, pl. 11 row b. Syntypes: 3 ♂ Brazil, Bahia (Lacerda, O. Thomas) (BMNH). Image examined. **New synonym.**

Agrotis achromatica (Hampson): Poole, 1989: 43 (new combination).

Agrotis psammophila Köhler, 1961: 69; Hayward, 1969: 42 (hosts); Poole, 1989: 54 (world noctuid checklist); Pastrana, 2004: 157 (hosts). Holotype: ♂ [Argentina], [Mendoza], [San Rafael], Río Atuel 20-III-1961 (IMLA). Examined. Paratype: ♂ [Argentina], [Mendoza], [San Rafael], Río Atuel 20-III-1961 (IMLA). Examined. **New synonym.**

Scotia (Feltia) canietensis Köhler, 1966: 100, fig. 2. Holotype: ♂ [Argentina], [Tucumán], Las Cejas (Köhler) (IMLA). Examined. Allotype: ♀ [Argentina], [Tucumán], Río Nío, 1000m, 27-IX-1965 (IMLA). Examined. Paratypes: 3 ♂ [Argentina], [Córdoba], Río Seco 30-XI (Köhler) (IMLA); ♀ [Argentina], Salta, Rosario de la Frontera, Rearte Norte 27-II-1956 (Pierrotti) (IMLA); ♂ ♀ [Argentina], [Tucumán], Río Nío, 1000m, 27-IX (IMLA); ♂ ♀ [Argentina], [Tucumán], ♀ Río Chuscha, 1000m, 28-IX-1965 (IMLA); 2 ♂ [Argentina], Tucumán 22-IV (IMLA); 4 ♀ [Argentina], [Tucumán], Las Cejas (Köhler) (IMLA), ♂ 20-V (Köhler) (IMLA); 2 ♂ [Argentina], [Tucumán], Río Nío, 1000m, 12-V (IMLA). Examined. **New synonym.** Note: Köhler cites locality information as follows: “Holo, Alo y Paratipos: En la colección del autor. [Holotype, allotype, and paratypes: at author’s collection];” “Procedencia [Habitat]: Cañete, 800m Tucumán, 22-IV-1964, Köhler; Río Nío, 1.000m, Tucumán, 12-V-1965, Köhler; Taficillo, 1.000m, Tucumán, 27-IX-1965, Köhler; Las Cejas, 800m, 20-V-1965, Köhler; Río Chuscha, 1.000m, Tucumán, Köhler; Río Seco, 900m, Córdoba, 20-XI-1962, Köhler; Rosario de la Frontera, 1.200m, Salta, 27-II-1956, Perrotti.” Types underlined correspond to specimens for which locality data do not agree entirely with any of those given by Köhler. Cited materials correspond to specimens at IMLA, no material was found at ZSM. Despite cited material does not fully agree with the data given in the description, these specimens are maintained as types because part of the information does agree and they are conspecific with *Scotia (Feltia) canietensis*.

Agrotis canietensis (Köhler): Poole, 1989: 45 (new combination); Pastrana, 2004: 15 (hosts).

Diagnosis. *Agrotis malefida* differs from other South American species of *Agrotis* by the following combination of characters: 1) patagium basal half dark brownish gray and distal half dark gray; 2) forewing length in males 19.5–20.9 mm, in females 18.8–21.1 mm; 3) ground color whitish to dark grayish brown; 4) subterminal line light brown; 5) in male genitalia vesica 10 × as long as aedeagus; and 6) in female genitalia appendix bursae 14 × as long as corpus bursae.

Redescription. *Male* (Fig. 32). *Head.* Frons central projection small, with raised edge of rough surface, projected anteriorly into a point, some specimens with no projection. Antenna biserrate, widest at 1/5 its length, gradually tapering to apex, widest segment 2 × as wide as central shaft, anterior process 2 × as wide as posterior

process. *Thorax*. Patagium with whitish postbasal line and blackish medial line, basal half dark brownish gray and distal half dark gray; tegulum light gray, with blackish basal and marginal lines, later widened anteriorly. Forewing length 19.5–20.9 mm; ground color whitish to dark grayish brown; subcostal band dark grayish brown; basal area darker than ground color; basal line black, double; antemedial line black, double, convex between veins, extended as a sharp tooth between 1A+2A vein and posterior margin, in some specimens it coming near to medial line; claviform spot black; orbicular spot strongly oval, extending toward reniform spot, contiguous in some specimens, concolorous with ground color, black edged with grayish center; reniform spot concolorous with orbicular spot, distal margin with no streak; discal cell concolorous with ground color, with black streak of variable width joining both spots; medial line faint, as a dark thick wavy band; postmedial line black, double, concave between veins; subterminal line light brown, concave between veins, extending basally as small light arrows, longest ones between M1–M2–M3 veins, black edged basally, arrows never contiguous with postmedial line; terminal line a series of darkish lunulae between veins; fringe concolorous with ground color with dark transversal lines at apex of veins. Hind wing iridescent, in dark specimens wing margins diffuse brown; fringe iridescent. *Abdomen*. Light grayish brown, with dark dorsal line. *Genitalia* (Fig. 58). Uncus sinuous. Clavus cylindrical, short, 2 × as long as wide. Ampulla 1/5 × as long as valve, basal 1/3 expanded, then narrowed to half its widest diameter; saccus hemispherical. Vesica (Fig. 76) 10 × as long as aedeagus, consisting of six wide loops, right basal diverticulum subtriangular, vesica slightly swollen on apical 1/5. *Female* (Fig. 33). *Differences from male*. Forewing length: 18.8–21.1 mm; antenna filiform; ground color dark grayish; hind wing with dark brown veins, anal and apical margins diffuse dark brown. *Genitalia* (Fig. 89). Posterior apophysis 2 × as long as anterior apophysis; ductus bursae 2 × as long as anterior apophysis; corpus bursae 7 × as long as anterior apophysis, signum absent, apex subtriangular; appendix bursae 14 × as long as corpus bursae, consisting of six wide loops, apex globose; ductus seminalis originating laterally near corpus bursae apex.

Variation. Specimens from Brazil are much lighter than the others, with color pattern very diffuse. Claviform and orbicular spots almost undifferentiated and transverse lines not well defined.

Immature stages and hosts. Crumb (1956) makes a detailed description of all stages and biology of this species, Hampson (1903), Forbes (1954), Crumb (1956), Godfrey (1987), and Lafontaine (2004) make a larval diagnosis. Chiesa Molinari (1942), Hayward (1969), and Pastrana (2004) (as *A. psammophila* and *A. canietensis*) make lists of economically important host species.

Distribution. Western Hemisphere, except Poles (Fig. 106).

Material examined. (40 ♂, 38 ♀). ARGENTINA: Soitue, ♀ 16-XI-1961 (IMLA). Catamarca. Sierra de Ancasti, Villa el Alto, 1000m, 2 ♂ 20-III (IMLA). Córdoba. Río Seco, ♂ 21-XI (Köhler) (IMLA); San Alberto, Nono, ♀ 19-XI-2006 (GSB, F. Ocampo y E. Ruiz Manzanos) (IADIZA); Tulumba, Alto Flores, ♀ 26-XI-2006 (GSB, F. Ocampo y E. Ruiz Manzanos) (IADIZA). Mendoza. Malargüe, ♂ 2 ♀ 18-XI-1961 (IMLA). Neuquén. Pucará, ♂ (IMLA). BRAZIL. Rio Grande do Norte. Natal, ♂ 22-I-1917 (E.C. Green) (USNM). São Paulo. Itanhaem, ♀ 8–10-X-1971 (E.G. + I. Munroe) (CNC). UNITED STATES OF AMERICA. Arizona. Huachuca Mts., ♂ 4 ♀ (USNM); Maricopa, Chandler, ♀ 27-III-1978 (Ford) (USNM); Pima, Baboquivaria Mts., 4 ♂ 2 ♀ 1–15-IX-1924 (C.C. Poling) (USNM), 2 ♂ ♀ 15–30-VI-1924 (C.C. Poling) (USNM); Redington, ♂ ♀ (USNM). Florida. Highlands, Archbold Biological Station, ♀ 26-III-1962 (D.C. Ferguson) (USNM), ♀ 27-III-1962 (D.C. Ferguson) (USNM), ♂ 28-III-1962 (D.C. Ferguson) (USNM), ♀ 30-III-1962 (D.C. Ferguson) (USNM). Georgia. Atlanta, ♂ 9-VII-1944 (P.W. Fattig) (USNM). Virgin Islands. Saint Croix, 1mi W Airport, 11 ♂ 13 ♀ 6–16-VII-1967 (E.L. Todd) (USNM). Kansas. Garden City, 2 ♂ ♀ 16-XI-1935 (H.H. Walkden) (USNM). GUATEMALA. Jalapa. Mataquesuintla, ♂ 3-XII-1986 (L. LeSage) (CNC). Zacapa. San Lorenzo, ♀ 12-VII-1986 (L. LeSage) (CNC). MEXICO. Chiapas. San Cristóbal de las casas, ♀ 5-V-1969 (J.E.H. Martin) (CNC), ♀ 15-VI-1969 (J.E.H. Martin) (CNC), ♂ 9-VII-1969 (D. Kritsch) (CNC), ♂ 18-VII-1969 (D. Kritsch) (CNC), 2 ♂ ♀ 19-VII-1969 (D. Kritsch) (CNC), ♀ 31-VII-1969 (D. Kritsch) (CNC). PERU. Trujillo. Trujillo, 2 ♂ 2 ♀ (USNM). DOMINICAN REPUBLIC. La Vega. Constanza, Hotel Nueva Suiza, 1164m, 5 ♂ 29-V-1973 (Don & Mignon Davis) (USNM).

Data from bibliographical sources. ARGENTINA. Falklands. Corrientes. Goya (Hampson, 1903). BRAZIL. Rio Grande do Sul. São Leopoldo (Aurivillius *et al.*, 1922); Guarani das Missões (Specht *et al.*, 2004); Pelotas (Specht *et al.*, 2004).

Discussion. Köhler (1961) describes *A. psammophila* based on dark specimens collected at San Rafael, Mendoza, Argentina. Nevertheless, those specimens have the same thoracic lines, forewing lines, spot pattern, and genitalia of both sexes are identical to *A. malefida*. Founded on these similarities, I decide to synonymize the

species. Hampson (1903) describes *Lycophotia achromatica* with three male specimens from Bahia, Brazil. These specimens have forewing ground color whitish with diffuse spots and transverse lines. Adults share with *A. malefida* the patagium and tegulum color patterns and male genitalic characters. Based on these resemblances, I decide to synonymize the species.

***Agrotis canities* (Grote, 1902)**

(Figs 34–36, 59, 77, 90, 107)

Peridroma canities Grote, 1902: 295. Syntypes: 2 ♀ Argentina, Goya (Perrins) (BMNH); 2 ♂ Buenos Aires (Schimpfer) (BMNH). One male syntype image examined.

Feltia canities (Grote): Hampson, 1903: 355, pl. 68, fig. 17 (new combination); Draudt, 1924: 55, pl. 9, row b (diagnosis); Köhler, 1945: 100, pl. 1, figs f and 8c (redescription).

Agrotis canities (Grote): Forbes, 1933: 21 (new combination); Poole, 1989: 45 (world noctuid checklist); Specht *et al.*, 2004: 12 (collected at Brazil); Specht *et al.*, 2005: 132, 136 (collected at Brazil).

Scotia canities (Grote): Köhler, 1967: 299, fig. 65 (new combination).

Diagnosis. *Agrotis canities* differs from other South American species of *Agrotis* by the following combination of characters: 1) forewing length in males 15.2–17.3 mm, in females 15.3–15.6 mm; 2) ground color light grayish brown; 3) in male genitalia vesica 8 × as long as aedeagus; 4) right basal diverticulum absent; and 5) in female genitalia appendix bursae 6–7 × as long as corpus bursae.

Redescription. *Male* (Figs 34, 35). *Head.* Frons central projection small, with raised edge of rough surface, not projected anteriorly, some specimens with central projection without raised edge. Antenna biserrate, widest at 1/5 its length, gradually tapering to apex, widest segment 2 × as wide as central shaft, anterior process 1.3 × as wide as posterior process. *Thorax.* Patagium dark grayish brown, with black medial line; tegulum light gray, with blackish marginal line widened anteriorly. Forewing length 15.2–17.3 mm; ground color light grayish brown; subcostal band dark grayish brown; basal area darker than ground color; basal line black, double, undifferentiated in some specimens; antemedial line black, double, convex between veins, extended as a sharp tooth between 1A+2A vein and posterior margin, never close to medial line; claviform spot black; orbicular spot strongly oval, extending toward reniform spot, contiguous in some specimens, concolorous with ground color, black edged with grayish center; reniform spot concolorous with orbicular spot, distal margin with no streak; discal cell concolorous with ground color, with black streak of variable width joining both spots; medial line faint, as a dark thick waved band; postmedial line black, double, concave between veins, some specimens with a single line, extending on veins to apical margin; subterminal line faint, light brown and black edged, concave between veins, in some specimens like arrows, never contiguous with postmedial line; terminal line a series of darkish lunulae between veins; fringe concolorous with forewing ground color with dark transverse lines at veins apex. Hind wing iridescent; fringe iridescent. *Abdomen.* Light grayish brown, with dark dorsal line. *Genitalia* (Fig. 59). Uncus sinuous. Clavus cylindrical, short, 2 × as long as wide. Ampulla 1/5 × as long as valve, basal 1/3 expanded, then narrowed to half its widest diameter; saccus hemispherical. Vesica (Fig. 77) 8 × as long as aedeagus, consisting of four wide loops, right basal diverticulum absent, vesica slightly swollen on apical 1/5. *Female* (Fig. 36). *Differences from male.* Forewing length: 15.3–15.6 mm; antenna filiform; ground color light grayish brown to grayish brown; hind wing iridescent or with dark brown veins and anal and apical margins diffuse dark brown. *Genitalia* (Fig. 90). Posterior apophysis 1.5 × as long as anterior apophysis; ductus bursae 2 × as long as anterior apophysis; corpus bursae 7 × as long as anterior apophysis, signum absent, apex subtriangular; appendix bursae 6–7 × as long as corpus bursae, consisting of six wide loops, apex globose; ductus seminalis originating laterally near corpus bursae apex.

Distribution. Center and North of Argentina (Fig. 107). Specht *et al.* (2004, 2005) cite this species for South of Brazil.

Material examined. (21 ♂, 5 ♀). ARGENTINA: Catamarca. Belén, Barrame Lanza, 2 ♂ II-1937 (IMLA); Choya, 2 ♂ X-1961 (IMLA); Sierra de Ancasti, Ipizca, 1000m, ♂ 15-V-1961 (IMLA). Córdoba. La Paz, ♀ 1–15-I-1929 (Bruch) (MACN); Obispo Trejo, ♂ 3-XI-1962 (Köhler) (IMLA), ♂ (Köhler) (IADIZA); Yacanto, ♀ (Köhler) (MACN). La Rioja. La Rioja, 2 ♂ 20-XI-1958 (IMLA), ♂ (MACN); Patquia, Guayapa, ♂ 1–19-X-1954 (Hayward) (IMLA). Mendoza. Malargüe, 2 ♀ 18-XI-1961 (IMLA); San Rafael, ♂ 17-XII-1964 (IMLA); ♂ 20-XII (IMLA); Tunuyán, Tunuyán, 1500m, 2 ♂ 15-III-1954 (IMLA). Santiago del Estero. La Banda, ♂ 26-IV (Köhler) (IMLA).

Salta. Galpón, ♀ 15-IX-1966 (IMLA); Orán, Aguas Blancas, ♂ (Vollenwelder) (IMLA); Tunal, 2 ♂ 24-XI-1967 (IMLA). Tucumán. Las Cejas, 2 ♂ 20-V (Köhler) (IMLA). Data from bibliographical sources. BRAZIL. Río Grande do Sul. Pelotas (Specht *et al.*, 2004); Reserva Biológica do Ibirapuitã (Specht *et al.*, 2005)

robusta-species group

This species group is characterized by: in male genitalia tegumen with “shoulders” strongly marked; valve subrectangular, basal half narrow, then widened; cucullus apex strongly projected anterodorsally; sacculus 3/5 × as wide as valve; saccus hemispherical, notched dorsally and ventrally projected as a spine. Aedeagus fully sclerotized; vesica long, 8–10 × as long as aedeagus, excepting *A. ipsilon* (6 × as long as aedeagus). Female genitalia with appendix bursae long, 4–6 × as long as corpus bursae, excepting *A. ipsilon* (1.5–2 × as long as corpus bursae).

***Agrotis schreiteri* (Köhler, 1945)**

(Figs 37, 60, 108)

Euxoa schreiteri Köhler, 1945: 91, fig. 7b. Syntypes: ♂ ♀ [Argentina], [Tucumán], Tafi, San José, 2500m, IV-1933 (Schreiter) (IMLA). Examined.

Scotia schreiteri (Köhler): Köhler, 1967: 317, fig. 58 (new combination).

Agrotis schreiteri (Köhler): Köhler, 1973: 17 (new combination); Poole, 1989: 55 (world noctuid checklist).

Feltia schreiteri (Köhler): Lafontaine, 2004: 220 (new combination).

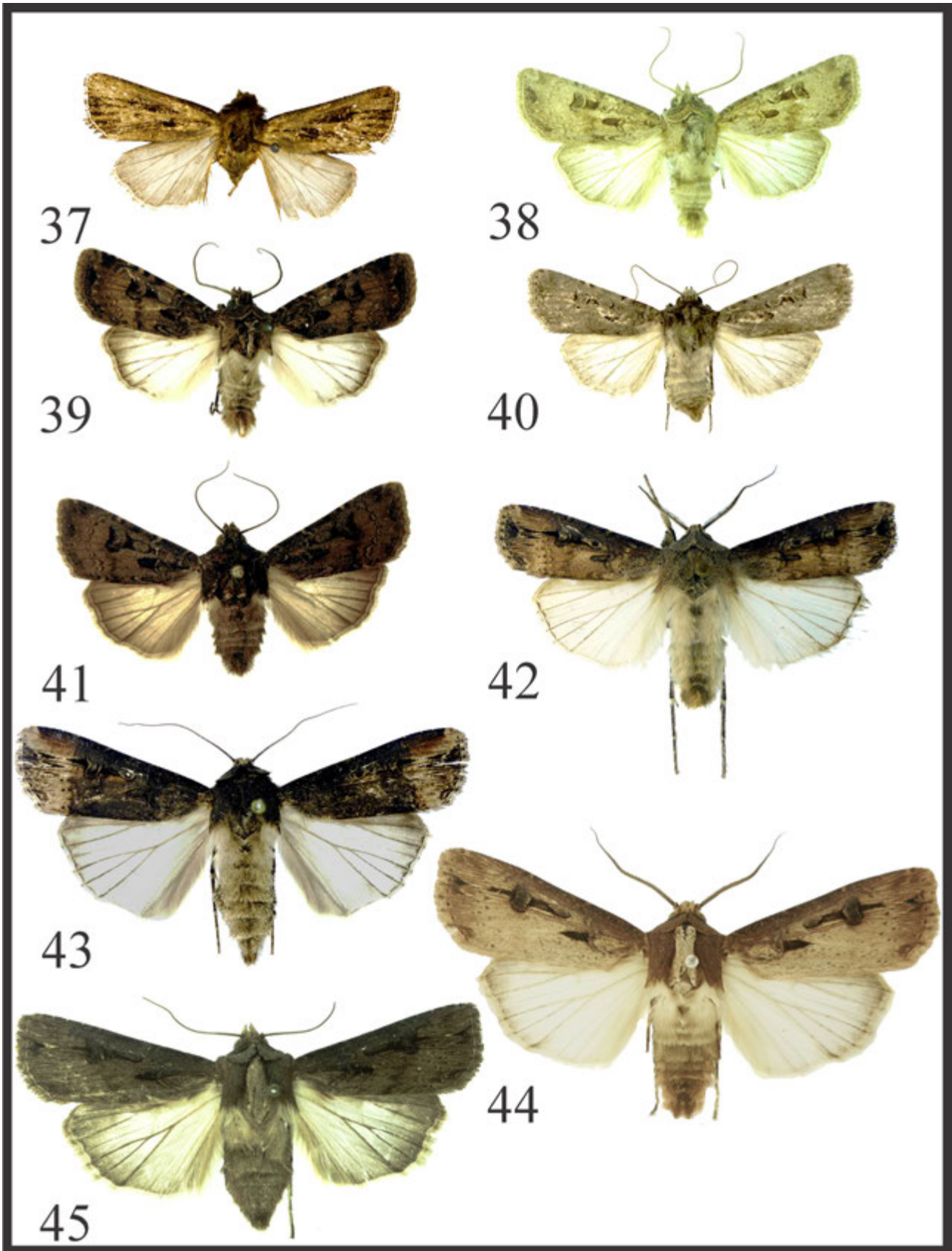
Diagnosis. *Agrotis schreiteri* differs from other South American species of *Agrotis* by the following combination of characters: 1) male antenna bipectinate, widest segment 3 × as wide as central shaft; 2) patagium darker than thorax and tegulum lighter than thorax; 3) forewing basal dash thick, extending from wing base to beyond claviform spot, not reaching wing outer margin; 4) basal, antemedial, and postmedial lines undifferentiated; and 5) in male genitalia clavus barely differentiated as an area of piliform setae.

Redescription. *Male* (Fig. 37). *Head.* Frons central projection small, with raised edge of rough surface, projected anteriorly into a point. Antenna bipectinate, widest at half its length, gradually tapering to apex, widest segment 3 × as wide as central shaft, anterior process 2 × as wide as posterior process. *Thorax.* Patagium darker than thorax, with black medial line; tegulum lighter than thorax, with no lines. Forewing length 14.5–15.1 mm; ground color grayish brown; subcostal band undifferentiated; basal dash thick, black, extending from wing base to beyond claviform spot, not reaching wing outer margin; basal line undifferentiated; antemedial line undifferentiated; claviform spot dark brownish and black edged; orbicular spot oval, light grayish brown with grayish center and black edged; reniform spot concolorous with orbicular spot, distal margin with one or two sharp streaks extending between M1–M2–M3 veins to postmedial line; discal cell dark brown; medial line undifferentiated; postmedial line undifferentiated; subterminal line light brown black-edged arrows between veins, arrows between M1–M2–M3 veins extending to postmedial line, first arrow contiguous with reniform streak like one continuous line; terminal line black; fringe concolorous with forewing ground color with light brown basal line. Hind wing dark brown diffuse to wing base; fringe whitish, with light brown medial line. *Abdomen.* Grayish brown. *Genitalia* (Fig. 60). Uncus sinuous. Clavus barely differentiated as an area of piliform setae. Ampulla 1/5 × as long as valve, basal 1/4 expanded, then narrows to 1/3 its widest diameter. Aedeagus not examined. *Female.* *Differences from male.* Forewing length: 16.7 mm; antenna filiform. *Genitalia.* Not examined.

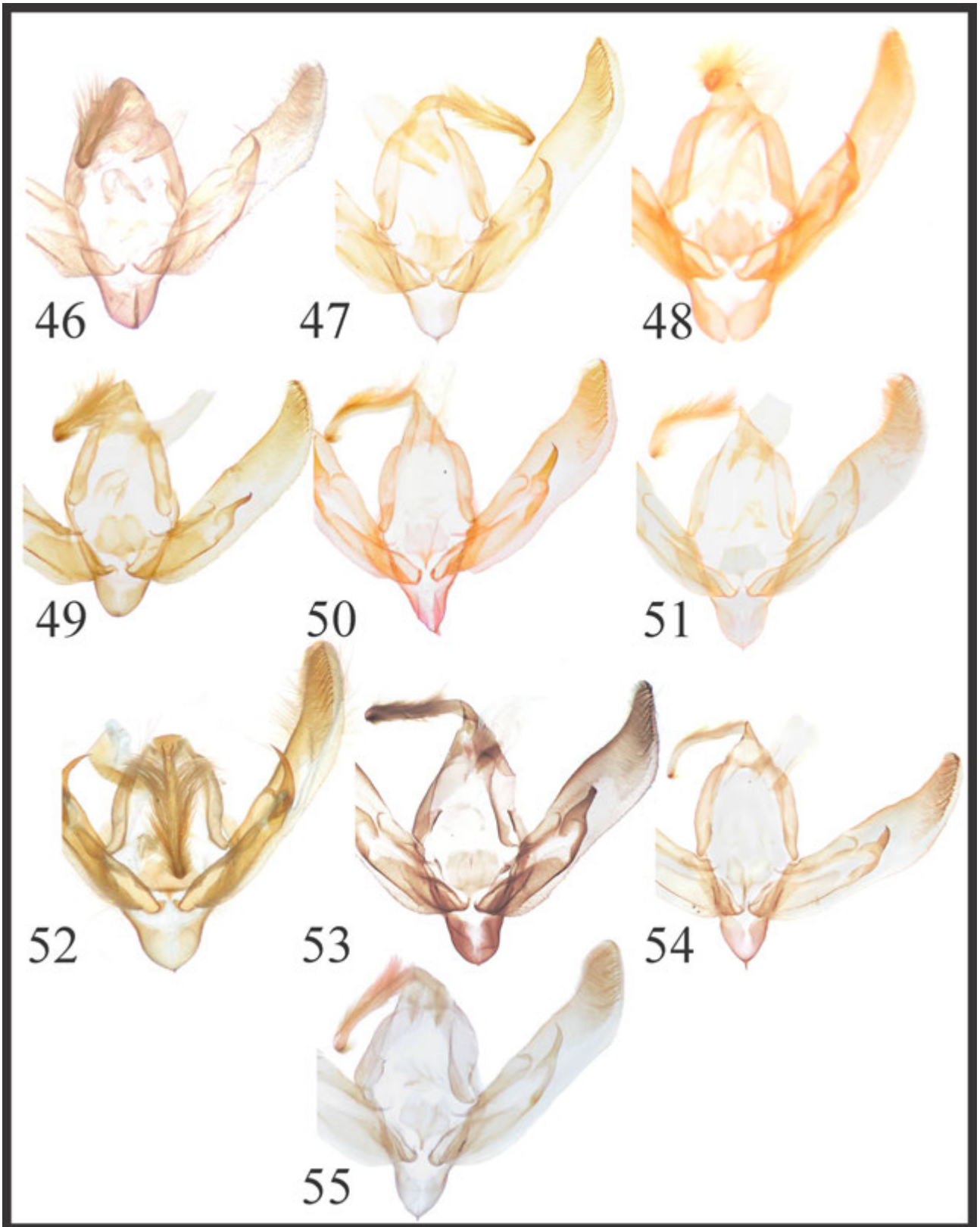
Distribution. Restricted to Tucumán province, Argentina (Fig. 108).

Remarks. Specimens examined are poorly preserved, characters as patagium and tegulum may vary on better preserved specimens. Male genitalia description is based on a slide made by Köhler, where aedeagus was lacking. Male specimens cited under examined material were dissected by Köhler and slides are not at IMLA.

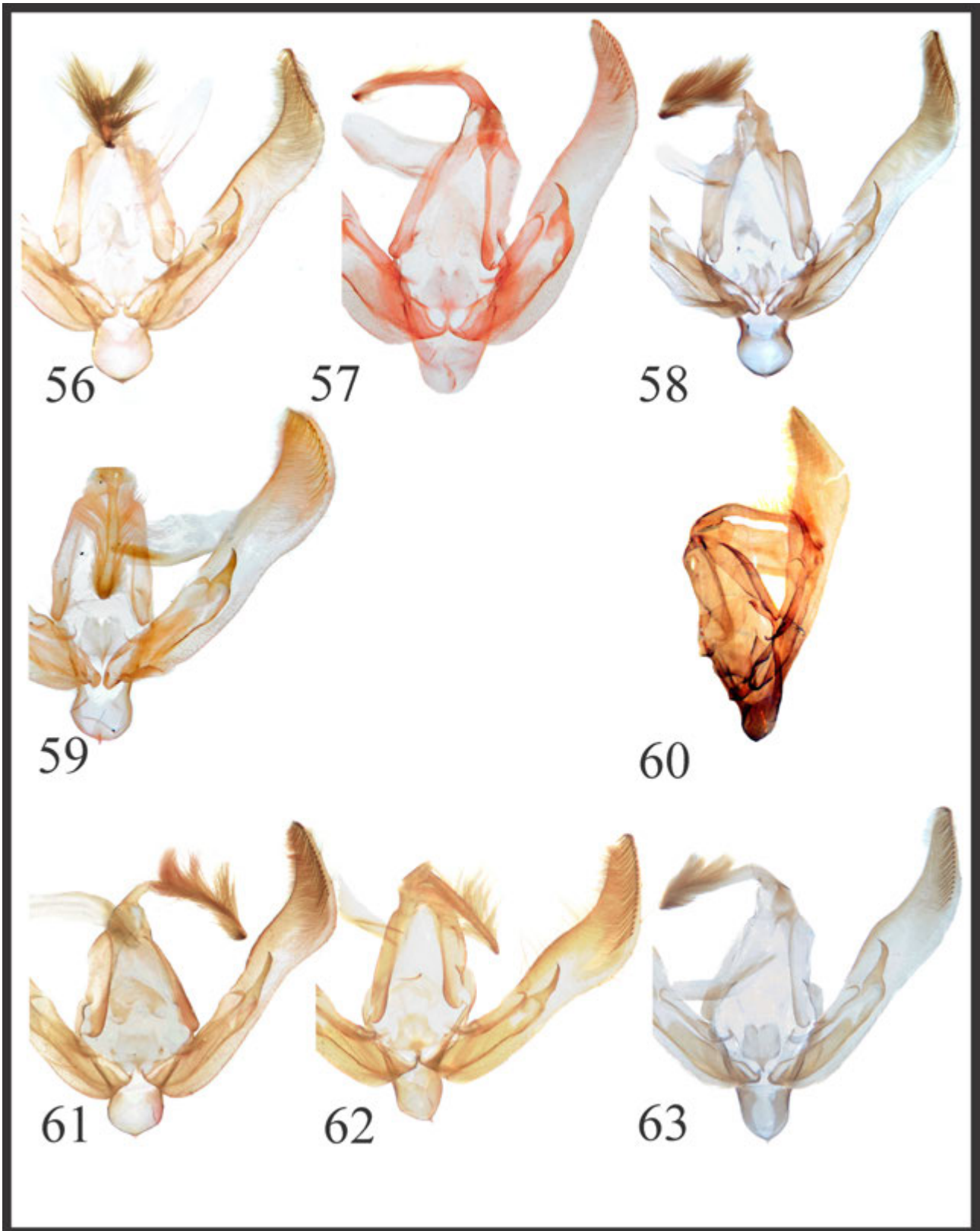
Material examined. (2 ♂) ARGENTINA. Tucumán. Tafi, San José, 2500m, ♂ IV-1933 (Schreiter) (IMLA); Cerro de la Mina, 3000m, ♂ IV-1933 (IMLA).



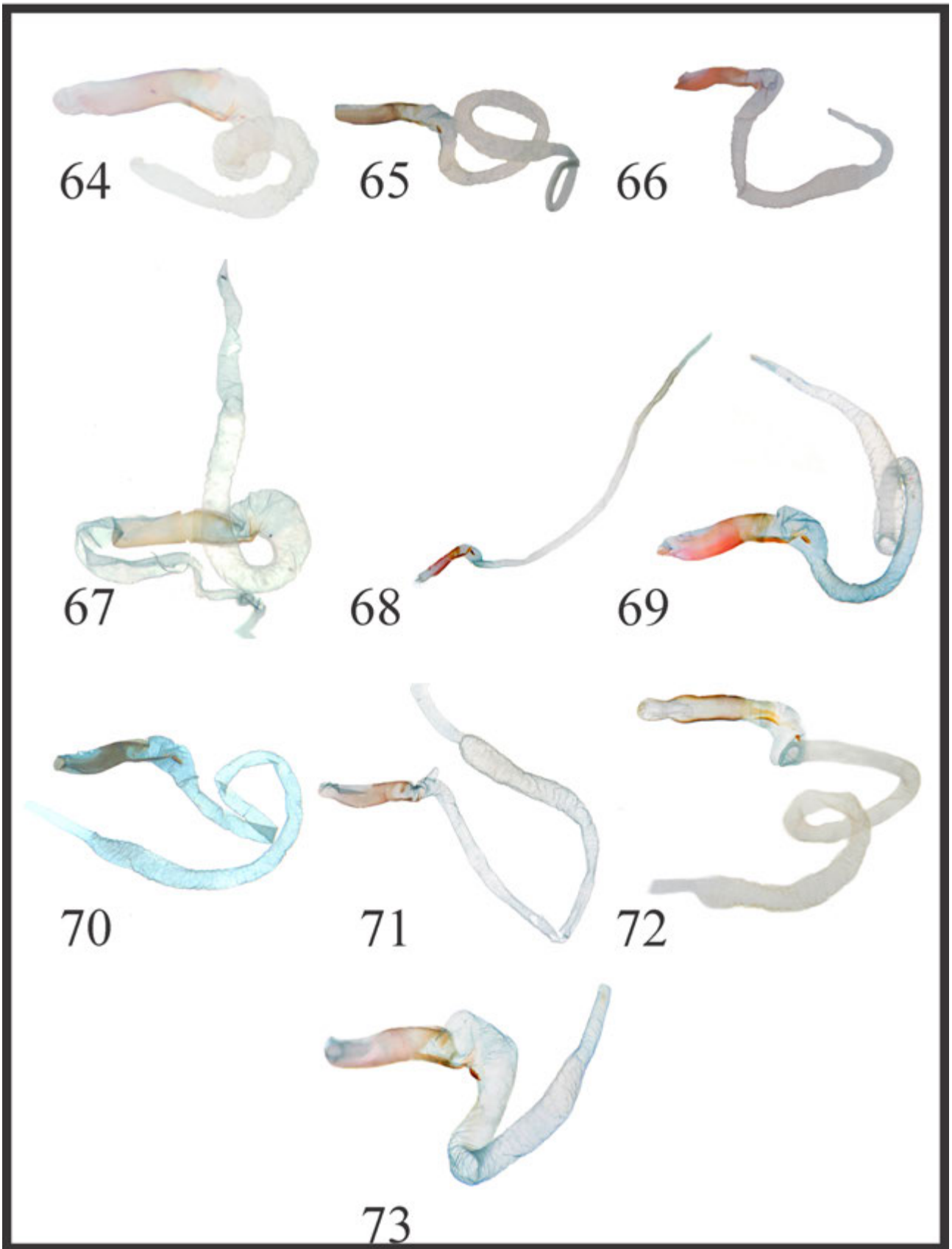
FIGURES 37–45. Adults of *Agrotis* species, *robusta*-group. 37, *A. schreiteri*, ♂. 38–39, *A. araucaria*, ♂. 40–41, *A. araucaria*, ♀. 42, *A. ipsilon*, ♂. 43, *A. ipsilon*, ♀. 44, *A. robusta*, ♂. 45, *A. robusta*, ♀. Actual size.



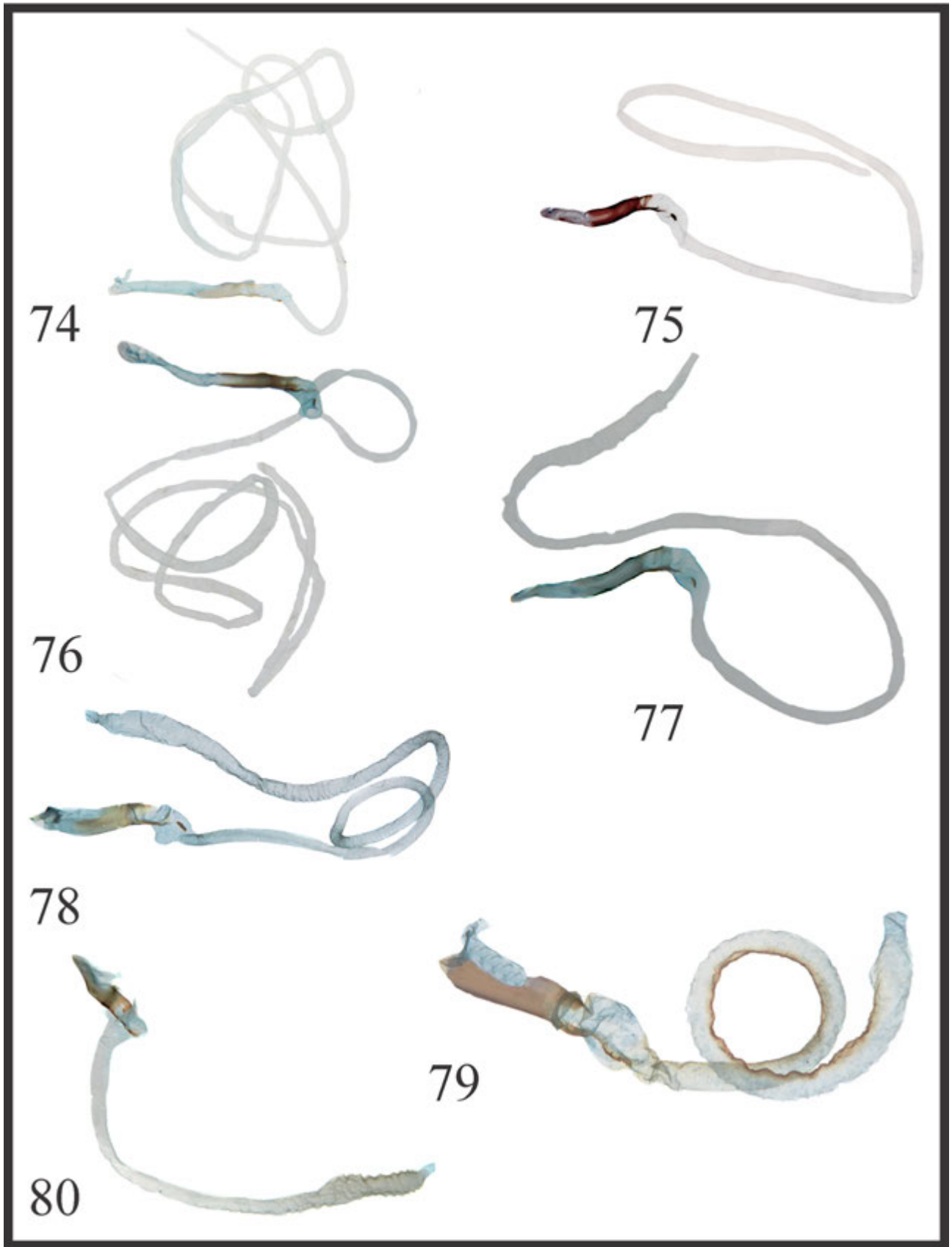
FIGURES 46–55. Male genitalia of *Agrotis* species, *edmondsi*-group. 46, *A. steniptera*. 47, *A. propriens*. 48, *A. bistrigata*. 49, *A. dispar*. 50, *A. peruviana*. 51, *A. elegans*. 52, *A. benitezi*. 53, *A. leonoides*. 54, *A. edmondsi*. 55, *A. leucovenata*.



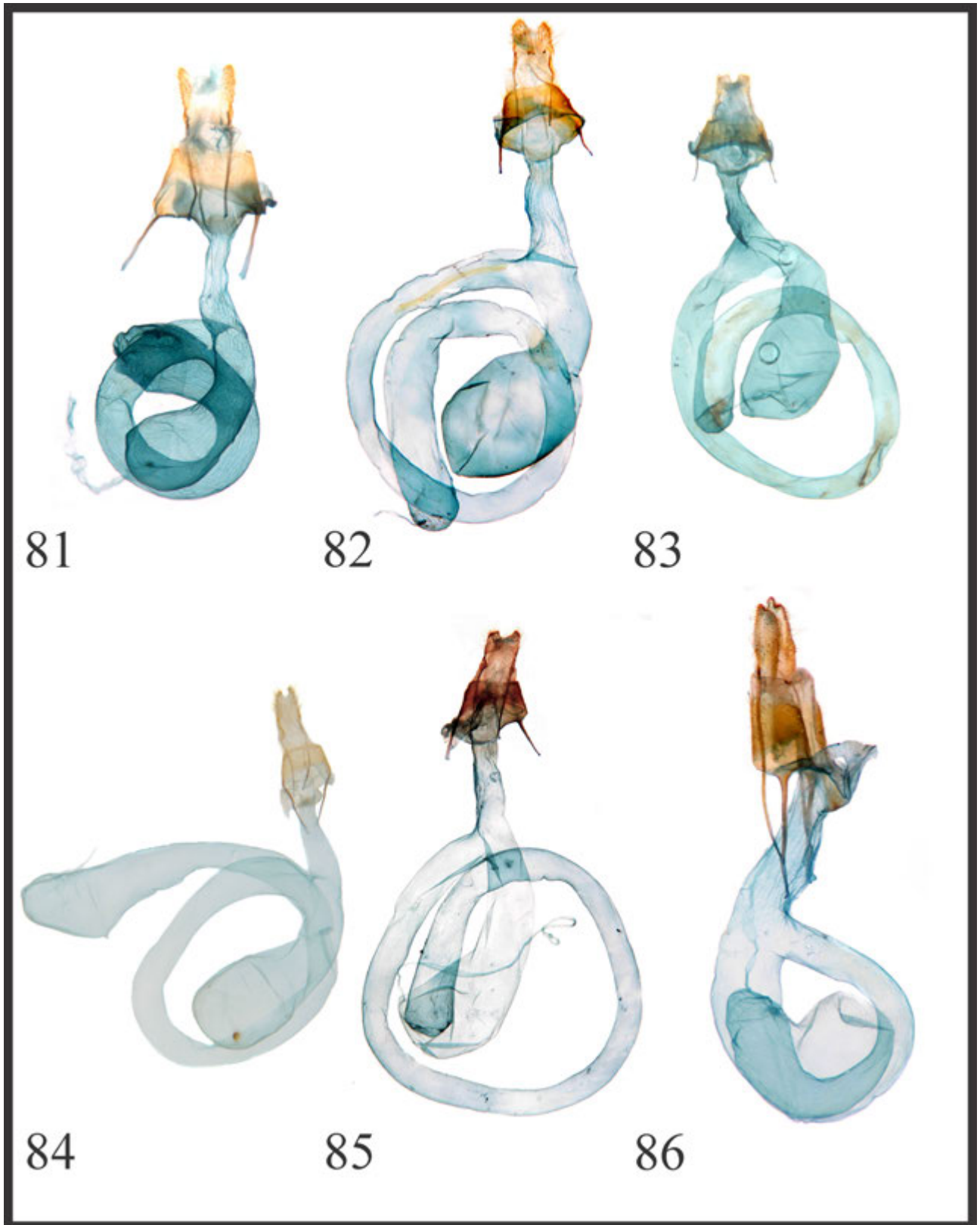
FIGURES 56–63. Male genitalia of *Agrotis* species, *fausta*- and *robusta*-group. 56, *A. experta*. 57, *A. fausta*. 58, *A. malefida*. 59, *A. canities*. 60, *A. schreiteri*. 61, *A. araucaria*. 62, *A. ipsilon*. 63, *A. robusta*.



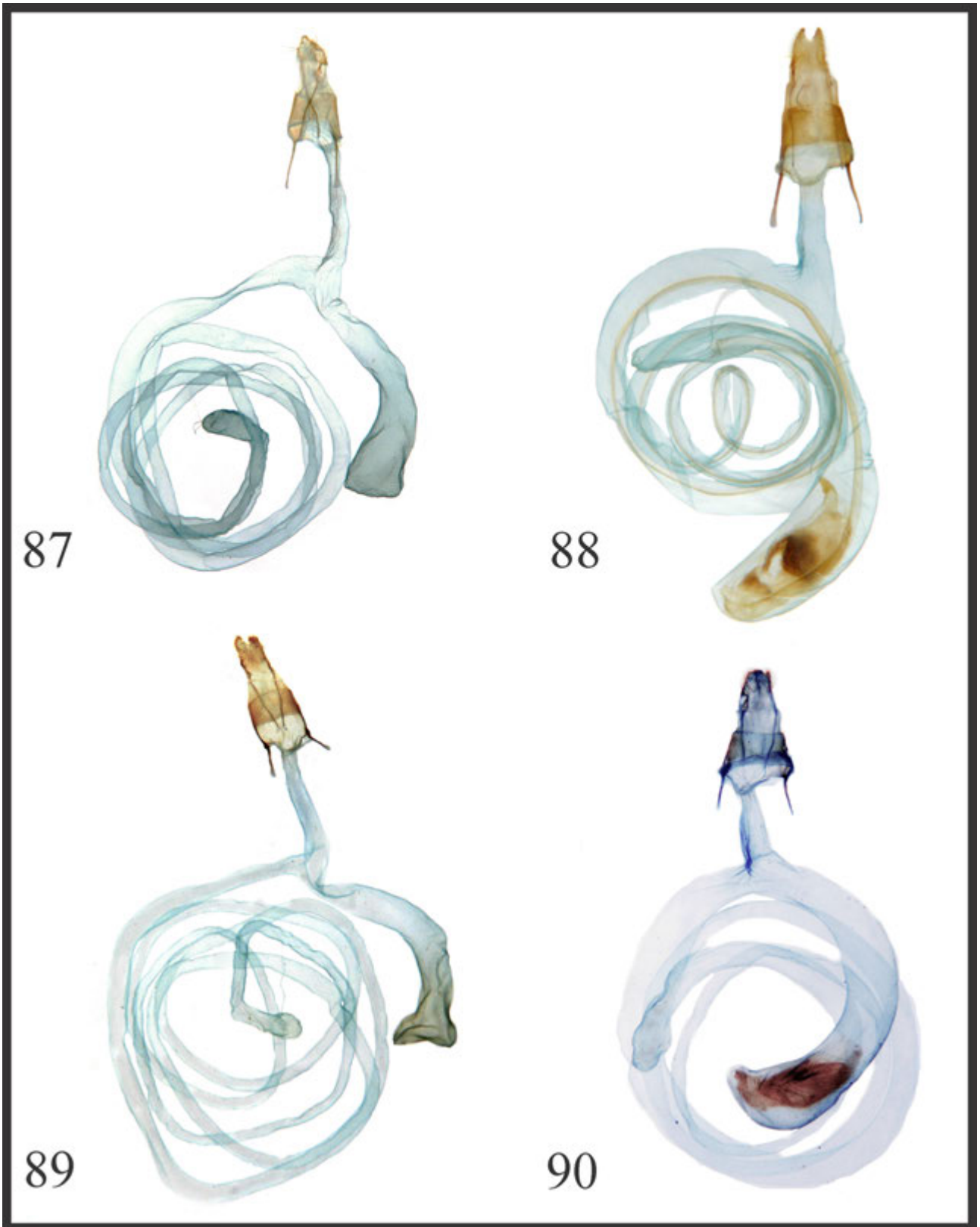
FIGURES 64–73. Male genitalia aedeagus of *Agrotis* species, *edmondsi*-group. 64, *A. steniptera*. 65, *A. propriens*. 66, *A. bistrigata*. 67, *A. dispar*. 68, *A. peruviana*. 69, *A. elegans*. 70, *A. benitezi*. 71, *A. leonoides*. 72, *A. edmondsi*. 73, *A. leucovenata*.



FIGURES 74–80. Male genitalia aedeagus of *Agrotis* species, *fausta*- and *robusta*-group. 74, *A. experta*. 75, *A. fausta*. 76, *A. malefida*. 77, *A. canities*. 78, *A. araucaria*. 79, *A. ipsilon*. 80, *A. robusta*.



FIGURES 81–86. Female genitalia of *Agrotis* species, *edmondsi*-group. 81, *A. bistrigata*. 82, *A. elegans*. 83, *A. benitezi*. 84, *A. leonoides*. 85, *A. edmondsi*. 86, *A. leucovenata*.



FIGURES 87–90. Female genitalia of *Agrotis* species, *fausta*-group. 87, *A. experta*. 88, *A. fausta*. 89, *A. malefida*. 90, *A. canities*.



FIGURES 91–93. Female genitalia of *Agrotis* species, *robusta*-group. 91, *A. araucaria*. 92, *A. ipsilon*. 93, *A. robusta*.

***Agrotis araucaria* (Hampson, 1903)**

(Figs 38–41, 61, 78, 91, 109)

Euxoa araucaria Hampson, 1903: 182, pl. 60, fig. 21; Draudt, 1924: 36, pl. 4, row h (diagnosis); Köhler, 1945: 82, fig. 8a (male genitalia). Holotype: ♂ [Chile], Valparaíso (J. J. Walker) (BMNH). Image examined.

Euxoa araucaria form *argentina* Draudt, 1924: 36. Holotype: ♂ Argentina, Andes (Fitzgerald) (BMNH). Image examined. According to 45.6.4 ICZN article: “it is subspecific if first published before 1961 and its author expressly used one of the terms “variety” or “form” (including use of the terms “var.,” “forma,” “v.” and “f.”), unless its author also expressly gave it infrasubspecific rank, or the content of the work unambiguously reveals that the name was proposed for an infrasubspecific entity, in which case it is infrasubspecific.” As mentioned before, and because there is no evidence that Draudt (1924) has referred to this taxon as lower in rank than subspecies, I consider it a subspecies and I agree with Poole (1989) to consider this subspecies as synonym of *Euxoa araucaria* Hampson.

Agrotis livens Köhler, 1958: 13; Poole, 1989: 51 (world noctuid checklist). Paratype: ♂ [Argentina] [Buenos Aires] Bolívar (IMLA). Examined. **New synonym.**

Agrotis livens Köhler (1958)1959: 53; Poole, 1989: 51 (as junior secondary homonym and synonym of *Agrotis livens* Köhler, 1958). *Note:* Köhler describes *A. livens* in two different publications: 1958 and (1958)1959. In both publications he designates holotype, allotype, and paratypes, but he does not specify locality of each one, he only mentions habitat. The habitat cited in both works is not exactly the same, in 1958: “Buenos Aires; Pedro Luro (6-IV-1946, Gahan). Bolívar (Llano)” and in (1958)1959: “Pedro Luro, Río Colorado, Bs. Aires, 6-IV-1946, II. Gahan, leg.” Poole (1989) designates *A. livens* Köhler (1958)1959 as a junior primary homonym and synonym of *A. livens* Köhler (1958). Despite habitat is not the same for both species, I agree with Poole (1989) in synonymizing both species because descriptions are almost the same, there are no differences between these species, and there is no material either at IMLA or ZSM that shows evidence Köhler designates different types for the species.

Agrotis capayana Köhler, (1958)1959: 54; Poole, 1989: 45 (world noctuid checklist). Holotype: ♂ Argentina, Catamarca, Los Ángeles, Capayan, 1800m, II-1941 (Schäfer) (ZSB). Image examined. Allotype: ♀ Argentina, Catamarca, Hualfín, 1870m, III-1941 (Pierrotti) (ZSB). Not examined. **New synonym.** *Note:* Köhler ((1958)1959) describes *A. capayana* from

two specimens of different sex collected at Catamarca, Argentina. At IMLA there is one female labeled as allotype with same locality as mentioned by Köhler but neither the date nor the collector's information matches. For this reason, allotype information (underlined) given consists of the data mentioned by Köhler and the data on the "allotype" at IMLA is placed as examined material.

Scotia araucaria (Hampson): Köhler, 1967: 296 (new combination).

Scotia araucaria argentina (Draudt): Köhler, 1967: 296, figs 35, 36 (new combination).

Scotia capayana (Köhler): Köhler, 1967: 299 (new combination).

Scotia livens (Köhler): Köhler, 1967: 309, fig. 34 (new combination).

Agrotis araucaria (Hampson): Hayward, 1969: 41 (new combination, hosts); Poole, 1989: 44 (world noctuid checklist); Velasquez Medina, 1990: 26, figs 16, 24–26 (redescription); Angulo, 1994: 56, 60–61, fig. 9 (female genitalia); Giganti *et al.*, 1994: 70, 73 (associated to Andean Patagonic Forest); Dapoto *et al.*, 2003: 101 (= *A. edmondsi* Butler); Pastrana, 2004: 155 (hosts); Angulo & Olivares, 2005: 131–134 (diagnosis).

Agrotis argentina (Draudt): Hayward, 1969: 41 (hosts).

Agrotis araucaria argentina (Draudt): Poole, 1989: 44 (= *A. araucaria* Hampson).

Diagnosis. *Agrotis araucaria* differs from other South American species of *Agrotis* by the following combination of characters: 1) patagium concolorous with thorax and tegulum concolorous with patagium or lighter; 2) forewing basal line double; 3) distal margin of reniform spot with no streak, 4) in male genitalia uncus slightly curved, narrowed toward apex; 5) clavus cylindrical, 2–4 × as long as wide; 6) vesica 10 × as long as aedeagus; 7) in female genitalia ductus bursae 3 × as long as anterior apophysis; and 8) corpus bursae 9 × as long as anterior apophysis.

Redescription. *Male* (Figs 38, 39). *Head.* Palpus slightly dark; frons central projection small, with circular or subrectangular raised edge of rough surface and faintly projected anteriorly into a point. Antenna basal 2/3 biserrate, widest at 1/5 its length, gradually tapering to apex, with apical 1/3 filiform, widest segment 2 × as wide as central shaft, anterior process 2 × as wide as posterior process. *Thorax.* Patagium with black postbasal and medial lines; tegulum concolorous with thorax to light gray, with black basal and submarginal lines. Forewing length 13.5–17.1 mm; ground color whitish gray to dark grayish brown; subcostal band undifferentiated; basal area slightly darker in some specimens; basal line black, double, convex between veins; antemedial line black, double, convex between veins, extended as a sharp tooth between 1A+2A vein and posterior margin, in some specimens coming near to medial line; claviform spot dark brown edged by a black line; orbicular spot from circular to slightly oval, grayish, with an external light brown band and black edged; reniform spot concolorous with orbicular spot, distal margin with no streak; discal cell concolorous with ground color, with a black streak of variable width joining both spots; medial line on lighter specimens as a dark thick wavy band; postmedial line black, double, concave between veins, in some specimens as a single line; subterminal line light brown, strongly concave between veins, undifferentiated in some specimens; terminal line a series of darkish lunulae between veins; fringe lighter than ground color with slightly darker medial line only differentiated in some specimens. Hind wing iridescent, with light brown veins on light specimens and diffuse dark brown with iridescent base in darker specimens; fringe light brown with slightly darker medial line only differentiated in some specimens. *Abdomen.* Concolorous with forewing ground color. *Genitalia* (Fig. 61). Uncus slightly curved, narrowed toward apex. Clavus slightly sclerotized, cylindrical, 2–4 × as long as wide. Ampulla 1/5 × as long as valve, basal 1/3 expanded, then narrowed to half its widest diameter. Vesica (Fig. 78) 10 × as long as aedeagus, consisting of three wide loops, right basal diverticulum subcylindrical of variable length, in some specimens almost undifferentiated, basal spined band present, vesica gradually swollen on apical 1/5, in some specimens it triplicates minor diameter. *Female* (Figs 40, 41). *Differences from male.* Forewing length: 13–16.7 mm; antenna filiform. Generally darker than males with hind wings diffuse dark brown, but there are specimens as light as males with iridescent hind wing. *Genitalia* (Fig. 91). Posterior apophysis 1.2 × as long as anterior apophysis; ductus bursae 3 × as long as anterior apophysis; corpus bursae 9 × as long as anterior apophysis, signum absent, apex subtriangular; appendix bursae 5–6 × as long as corpus bursae, consisting of three wide loops, apex globose; ductus seminalis originating laterally near corpus bursae apex.

Distribution. In Argentina from North of Mendoza to Chubut and Chile from V to XII Regions (Fig. 109).

Biology. Weigert & Angulo (1977) describe the egg and give an identification key. Alcázar *et al.* (2004) give a diagnosis for each stage. In both works this species is treated as *A. hispidula*.

Hosts. Pastrana (2004) provides a host list for the species (as *A. hispidula*).

Remarks. *Agrotis hispidula* Guenée has been misidentified with *A. araucaria* in several works: as *Euxoa*

hispidula [Hampson, 1903: 289, pl. 66, fig. 3 (redescription); Draudt, 1924: 48, pl. 8, row b (diagnosis); Köhler, 1945: 80, fig. 6b (male genitalia)], or *Agrotis hispidula* [Weigert & Angulo, 1977: 21, figs 3, 4, 14 (egg description); Parra *et al.*, 1986: 89, figs 35, 77–79 (redescription); Velasquez Medina, 1990: 30, figs 15, 21–23 (redescription); Angulo, 1994: 56, 60, 61, fig. 10 (female genitalia); Artigas, 1994: 565, pl. 27, fig. 6 (diagnosis, life cycle, biological control, damages, hosts, economic importance, distribution, and international implications); Alcázar *et al.*, 2004: 60–65, fig. 14 (hosts and life cycle); Pastrana, 2004: 156 (hosts); Angulo & Olivares, 2005: 137 (redescription)]. In *A. hispidula* forewing orbicular and reniform spots and fringe are lighter than ground color. Comparing dissections of several specimens in the IADIZA collection and comparing with the type image of *A. hispidula*, I determined that the correct generic association for this species is *Feltia hispidula* **new combination**. Pastrana (2004) makes a bibliographic compilation of host species for Argentinean Lepidoptera. Pastrana (*op. cit.*) takes all data of *A. hispidula* from Köhler's publications, cited as "Dirección de Sanidad Vegetal, Informe Mensual, Enero 1941 y Febrero 1941" [Vegetable Sanity Directorate, Monthly Report, January 1941 and February 1941]. Köhler used to misidentify *A. araucaria* with *Agrotis hispidula*. For this reason, I believe the host information given in Pastrana (2004) is referred to *A. araucaria* and not to *A. hispidula*.

Material examined. (189 ♂, 155 ♀). ARGENTINA. Catamarca. Hualfin, ♀ 3-I-1949 (Pierrotti) (IMLA). Chubut. 3 km N Trevelin, ♂ 28-I-1987 (C.M & O.S. Flint, Jr.) (USNM); Esquel, 4 ♂ 8-II-1960 (IMLA), ♂ (Köhler) (IMLA); Futalaufquen, 550m, 2 ♀ 15-II-1982 (M. Gentili) (IADIZA); Gualjaina, 550m, 3 ♂ 19-XII-1981 (M. y P. Gentili) (IADIZA), ♂ 12-II-1982 (M. y P. Gentili) (IADIZA); La Máquina-C. R., 240m, ♀ 4-IV-1970 (M. Gentili) (IADIZA); Los Cipreses, 650m, 14 ♂ 14 ♀ 13-II-1982 (M. y P. Gentili) (IADIZA). Mendoza. Pismata, 2 ♀ 19-X-1966 (IMLA); Puente del Inca, 2750m, ♂ 29-III-1979 (Misión Científica Danesa) (ZCM); Tambillos, 2000m, 3 ♀ (IMLA), ♂ 2 ♀ I-1966 (IMLA), 2 ♀ II-1966 (IMLA). Misiones. Iguazú, ♂ 30-I-13-III-1945 (Hayward, Willink y Goldbach) (IMLA). Neuquén. Achicó, 2 ♂ 22-X-1958 (M. Gentili) (IMLA); Aeropuerto Chapelco, 780m, ♀ 3-IV-1982 (M. y P. Gentili) (IADIZA); Aluminé-Aucapa, 750m, ♂ 21-I-1972 (M. Gentili) (IADIZA); Arroyito, 325m, ♀ 16-III-1973 (M. Gentili) (IADIZA); Bajada Marucho, 870m, 3 ♀ 24-III-1981 (M. Gentili) (IADIZA), 14 ♂ 9 ♀ 27-X-1981 (M. y P. Gentili) (IADIZA); Carrincura, 720m, ♀ 18-I-1957 (M. Gentili) (IADIZA); Chapelco, 3 ♂ 3 ♀ 17-XI-1965 (IMLA), ♂ ♀ 27-II-1971 (M. Gentili) (IADIZA), ♂ 20-III-1973 (M. Gentili) (IADIZA); Chapelco, Lengua, 1650m, 2 ♀ 1-III-1981 (M. Gentili) (IADIZA); Chapelco, Portezuelo Trahunco, 1750m, ♂ 12-II-1978 (M. Gentili) (IADIZA), 3 ♀ 13-II-1978 (M. Gentili) (IADIZA); Chapelco, Techos, 1400m, 3 ♀ 25-II-1982 (M. y P. Gentili) (IADIZA), 3 ♀ 22-IV-1982 (M. y P. Gentili) (IADIZA); Collón Curá, 623m, ♂ 13-I-1958 (M. Gentili) (IADIZA); Confluencia, ♂ ♀ 5-II-1959 (M. Gentili) (IADIZA); Confluencia Trafal, 690m, ♂ 4-III-1975 (M. Gentili) (IADIZA), ♂ ♀ 6-IV-1981 (M. Gentili) (IADIZA), ♂ 17-X-1981 (M. Gentili) (IADIZA), 2 ♂ 17-II-1982 (M. Gentili) (IADIZA); Cordon Chapelco, Lago La Kika, 1750m, ♂ 24-I-1979 (M. Gentili) (IADIZA); Covunco, ♂ XII-1963 (IADIZA); Covunco – Usina, ♂ 29-X-1962 (M. Gentili) (IMLA); Curruhue Escorial, 950m, 2 ♂ 1-III-1982 (M. y P. Gentili) (IADIZA); Cuyín Manzano, 750m, ♂ ♀ 5-III-1975 (M. Gentili) (IMLA); Dique Piedra del Águila, 730m, ♀ 22-XI-1990 (M. y P. Gentili) (IADIZA); Huayilon, ♂ 8-I-1965 (M. Gentili) (IADIZA); Lago Aluminé, 1100m, ♀ 18-II-1968 (M. Gentili) (IADIZA); Lago Lacar, Nonthue, 650m, 2 ♂ 19-I-1982 (M. y P. Gentili) (IADIZA), 4 ♂ 26-I-1982 (M. y P. Gentili) (IADIZA), 3 ♂ ♀ 22-II-1982 (M. y P. Gentili) (IADIZA), ♀ 4-III-1982 (M. y P. Gentili) (IADIZA), ♀ 9-III-1983 (M. y P. Gentili) (IADIZA); Lago Lacar, Trompul, 1000m, ♀ 8-IV-1983 (M. y P. Gentili) (IADIZA); Lago Rucachoroi, 1300m, 2 ♀ 1-III-1978 (M. Gentili) (IADIZA); Lago Tromen, Rodeo Grande, 900m, ♂ 12-III-1979 (Misión Científica Danesa) (ZMC); Lago Villarino, 900m, ♀ 5-III-1958 (M. Gentili) (IADIZA); Laguna Blanca, 1127m, ♂ 21-XII-1959 (IADIZA); Laguna Blanca, 1270m, 2 ♀ 20-XII-1965 (M. Gentili) (IADIZA), ♀ 18-II-1974 (M. Gentili) (IADIZA), ♂ 4 ♀ 25-III-1981 (M. Gentili) (IADIZA); Las Coloradas-Antena, 1000m, ♂ 17-II-1988 (M. y P. Gentili) (IADIZA); Loncopué, 1000m, 3 ♂ 5-XI-1959 (IMLA), 5 ♂ 14-XI-1959 (M. y P. Gentili) (IADIZA); Mallín Largo, 800m, ♀ 9-XI-1972 (M. Gentili) (IADIZA); Moquehue, 1200m, ♀ 28-II-1978 (M. Gentili) (IADIZA); Nacientes Río Litrán, 1500m, ♂ 27-XII-1969 (M. Gentili) (IADIZA); Pampa Puttkamer, 975m, ♂ ♀ 2-I-1969 (M. y P. Gentili) (USNM), ♂ 14-II-1988 (M. y P. Gentili) (IADIZA), ♀ 2-I-1989 (M. y P. Gentili) (IADIZA); Paso Córdoba, 1200–1300m, 13 ♂ 23 ♀ 12-III-1982 (M. y P. Gentili) (USNM); Piedra del Águila, 525m, ♀ 5-XI-1966 (M. Gentili) (IADIZA), ♂ 18-XII-1978 (Misión Científica Danesa) (IADIZA); Pilmaute, 1200m, ♂ 25-XI-1964 (M. Gentili) (IADIZA), 2 ♂ 12-V-1964 (M. Gentili) (IADIZA); Primero Pinos-Haichol, 1500m, ♂ 20-III-1974 (M. Gentili) (IADIZA); Pucará, 630m, ♂ 19-I-1959 (M. Gentili) (IADIZA); Quemquemtreu, Cañada del Camino, 850m, ♂ 4 ♀ 2-II-1979 (M. Gentili) (IADIZA); Quilahuintos, 1100m, ♀ 4-IV-1981 (M. Gentili) (IADIZA); Quilquihue, 750m, ♀ 28-III-1981

(M. Gentili) (IADIZA); Río Aluminé, 5 km S Pilolil, 700m, 4 ♂ 2-II-1987 (C.M & O.S. Flint, Jr.) (USNM); Río Aluminé, Pulmarí, 925m, ♂ 27-II-1978 (M. Gentili) (IADIZA); Río Litrán, 9 km N. Lago Aluminé, 1200m, ♂ 3-II-1987 (C.M & O.S. Flint, Jr.) (USNM); San Martín de los Andes, ♀ III-1950 (L. Schajovskoy) (IMLA), ♀ 28-I-1958 (M. Gentili) (IADIZA), ♀ 22-II-1958 (M. Gentili) (IADIZA), ♀ 1-III-1958 (M. Gentili) (IADIZA), ♀ 18-XII-1958 (M. Gentili) (IADIZA), 3 ♂ 30-XI-1958 (M. Gentili) (IADIZA), 2 ♀ 30-I-1959 (M. Gentili) (IADIZA), ♂ ♀ 10-II-1959 (M. Gentili) (IADIZA), 2 ♂ 2 ♀ 31-I-1959 (M. Gentili) (IADIZA), ♂ 3-XII-1959 (M. y P. Gentili) (IADIZA), ♀ 3-I-1960 (M. Gentili) (IADIZA), ♂ 7-III-1960 (M. Gentili) (IADIZA), ♀ 30-XII-1960 (M. Gentili) (IADIZA), ♂ ♀ 15-IV-1961 (M. y P. Gentili) (IADIZA), ♀ 5-II-1962 (M. Gentili) (IADIZA), ♀ 30-I-1963 (M. Gentili) (IADIZA), ♂ 15-II-1963 (M. y P. Gentili) (IADIZA), ♂ 25-IV-1963 (M. Gentili) (IADIZA), 2 ♂ 2-II-1968 (M. Gentili) (IADIZA), ♀ 30-IV-1978 (M. Gentili) (IADIZA), 2 ♀ 20-III-1981 (M. Gentili) (IADIZA), ♀ 20-IV-1983 (M. y P. Gentili) (IADIZA); San Martín de los Andes - Parque Nacional Lanin, 3 ♀ III-1951 (L. Schajovskoy) (IMLA); Zapala, los Catutos, 1048m, ♀ 17-X-1966 (M. Gentili) (IADIZA). Neuquén-Río Negro. Paso Limay, ♀ 21-X-1958 (M. Gentili) (IMLA). Río Negro. Choele Choel, 3 ♂ 3 ♀ 21–24-XI-1946 (Hayward y Willink) (IMLA); Cipolletti, El Cuy, 2 ♂ 13-XI-1965 (IMLA). Santa Cruz. Cancha Carrera, 240m, ♂ 25-I-1976 (M. Gentili) (IADIZA); El Turbio, 200m, ♂ ♀ 20-I-1976 (M. Gentili) (IADIZA); Lago Argentino, Península Magallanes, ♂ 10-I-1979 (Misión Científica Danesa) (ZMC). CHILE. Los Maitenes, ♂ 2-III-1964 (L.E. Peña) (CNC); Río Blanco, 3 ♂ 10-III-1969 (USNM). Metropolitan region. Río Colorado, ca. 40 km SE Santiago, 1100m, ♀ 29–31-X-1981 (D.M. Davis & B. Akebergs) (USNM); Santiago, El Alfalfal, 3 ♂ 29-II-1968 (Flint & Peña) (USNM); Santiago, nr. Pta. Yeso, ca. 70 km SE Santiago, 1250m, 2 ♂ 4 ♀ 27–28-X-1981 (D. & M. Davis) (USNM). Region V, Valparaíso. Aconcagua, Cuesta el Melón, ca. 8 km N La Calera, 500m, ♀ 2–3-XI-1981 (Don & M. Davis) (USNM); Aconcagua, Los Molles, ca. 10 km S. Pichidangui, 25m, ♀ 15–17-XI-1981 (D. & M. Davis) (USNM); Aconcagua, Portillo, ♂ 2 ♀ 12-II-1994 (G. & M. Wood) (CNC). Region VI, O'Higgins. Los Cipreses, 1000m, ♂ 14-I-1968 (L.E. Peña) (CNC). Region VII, Maule. Linares, Puente Malcho, 600 meters near Longavi River, 4 ♂ 4 ♀ 13–15-I-1979 (D.M. Davis & B. Akebergs) (USNM); Linares, Tranque de Bullileo, 800m, ♀ 10–12-I-1979, (D.M. Davis & B. Akebergs) (USNM); Talca, Alto Vilches, 5 ♂ ♀ 29–31-X-1969 (O. S. Flint, Jr) (USNM). Region VIII, Bio Bio. Bio Bio, ca. 4 km N Salto de Laja, 200m, ♂ 12-I-1982 (D.R. Davis) (USNM); Ñuble, Alto Tregualemu, ca. 20 km SE Chovellen, 500m, ♂ 26–27-I-1979 (D.M. Davis & B. Akebergs) (USNM). Region IX, Araucanía. Fundo el Coigue, 27 km NE Villarrica, 500m, 20 ♂ 2 ♀ 28-II al 3-III-1979 (D.M. Davis & B. Akebergs) (USNM); Malleco, Cord. de las Raices, 40 km E Curacautín, 1650m, 4 ♂ 5–6-II-1979 (D.M. Davis & B. Akebergs) (USNM); Malleco, Curacautín, Termas de Manzanar, 700m, 2 ♂ ♀ 19-III-1979 (Misión Científica Danesa) (ZMC); Malleco, Río Manzanares, ♂ 19-X-1969 (Flint & Barria) (USNM); Malleco, Curacautín, Río Blanco, 1100m, ♂ II-1964 (L.E. Peña) (CNC); Temuco, ♂ 27-II-1922 (D.S. Bullock) (USNM). Region XII, Magallanes y Antártica Chilena. Punta Arenas, ♀ XII-1893 (V. Izquierdo) (CNC).

***Agrotis ipsilon* (Hufnagel, 1766)**

(Figs 42, 43, 62, 79, 92, 110)

Phalaena ipsilon Hufnagel, 1766b: 416. Type: [Alemania] Berlín region. Destroyed.

Phalaena ypsilon (Hufnagel) typo: Rottenburg, 1776: 141.

Phalaena ypsilon Rottenburg typo and authorship error: Treitschke, 1825: 152 (= *A. suffusa*).

Phalaena-Noctua ypsilon (Hufnagel) typo: Stephens, 1829: 66 (= *A. suffusa*).

Agrotis ypsilon (Rottenburg) typo and authorship error: Staudinger, 1871: 421; Anonymous a, 1875: 67; Berg, 1882: 280; Meyrick, 1886: 32; Edwards, 1889: 85; Leech, 1889a: 132; Beutenmüller, 1890: 212 (hosts); Butler, 1890: 691; Druce, 1881–1900: 281; Berg, 1892: 236 (larval cannibalism); Tutt, 1892: 7 (systematic notes); Smith, 1893: 66 (synonymies); Hampson, 1894: 182 (diagnosis); Harvey & Knight, 1897: 79; Coquillett, 1897: 13, 15, 18, 21, 23 (Diptera and Tachinidae parasitoid species); Hudson, 1898: 30; Meyrick, 1899: 143 (collected at Hawaii Islands); Forbes, 1900: 104 (biology); Walsingham & Durrant, 1900: 8; Dyar, 1901: 453 (collected at Florida, USA); Verrill, 1902: 769, fig. 131a, b; Needham, 1903: 25 (sipping nectar from “Acebo común,” *Cephalanthus occidentalis* L.); Hampson, 1903: 368; Dyar, 1904: 821 (collected at British Columbia, Canada); Hampson, 1905a: 702 (synonymies); Forbes, 1905: 17, 21, 22, 240 (biology); Gibson, 1905: 107; Swezey, 1907: 118 (on *Sonchus* sp.); Froggatt, 1909: 52 (clover and cotton as hosts); Smith, 1909: 780–781 (Diptera and Tachinidae parasitoid species); Henninger, 1910: 238; Swezey, 1910: 132 (collected at Hawaii, sugarcane and snuff as hosts); Foaden & Fletcher, 1910: 446 (cotton as host); King, 1911: 95, 132–134 (biology and damages); Davis, 1912: 17; Perkins, 1913: 145–146 (*Agrotis* Hawaiian checklist); Swezey, 1913: 234 (collected at Hawaii); Titus, 1914: 151 (damages and treatment); Rothschild, 1914: 319; Holland, 1903: 182, fig. 103; Rothschild,

- 1915: 230; Anonymous b, 1916: 145 (captured in the cabin of a ship); Jones, 1918: 5 (damages at Louisiana); McAlpine, 1918: 20 (attracted to molasses); Rothschild, 1920: 118; Moore, 1922: 17; Thomson, 1922: 524 (as exotic species at New Zealand); Illingworth, 1923: 278; Ripley, 1923: 179, 280, 281, 285, 302, 314, 317, 320, 321 (larval development and postembryology); Aldrich & Webber, 1924: 24, 88 (Diptera parasitoid species); Anonymous c, 1924: 353 (*Berecynthus* sp. as parasitoid species); Muesebeck, 1924: 32 (Ichneumonidae parasitoid species); Seitz, 1924: 56, pl. 9, row d (diagnosis); Williams, 1930: 283, 300, 401 (migration and economic importance); Williams, 1941: 62 (relationship between spermatophore and female genitalia); Chiesa Molinari, 1942: 328–329 (diagnosis and control); Sellers, 1943: 44 (parasitoids); Köhler, 1945: 101–102, pl. II, figs a, b (male genitalia); Quintanilla, 1946: 404–405 (diagnosis and control); Hedges, 1949: 75; Pepper *et al.*, 1954: 12 (beetroot as host); Roeder, 1963: 203, figs 2, 4 (ultrasound produced by adult in flight); Artigas, 1972: 7, 11–14 (biology); Moulding & Madenjian, 1979: 138 (sampling in USA oak forests).
- Agrotis ypsilon* (Hufnagel) typo: Grote, 1875b: 313; Pagenstecher, 1902: 278; Holloway, 1967: 41 (migration).
- Peridroma ypsilon* (Rottenburg): Butler, 1889: 380 (new combination); Butler, 1890: 691 (corrects the error, mentions that it was a *lapsus calami*).
- Rhyacia ipsilon* (Hufnagel): Franssen, 1935: 109–137 (biology).
- Agrotis ypsilon* Linnaeus authorship error: Forbes, 1954: 48.
- Agrotis ipsilon* (Hufnagel): Linsley & Usinger, 1966: 159 (collected at Galápagos Islands); Hayward, 1969: 42 (hosts); Angulo & Weigert, 1975a: 69–70, 98, 129, 133, figs 118, 119, 154, 175 (egg, larvae, and pupae); Angulo & Weigert, 1975b: 173 (mimicry of aggression in larvae); Angulo & Quezada, 1975: 117–124, figs 1, 3, 5, 7 (description of all stages and differences with *Agrotis malefida* Guenée *auct. nec. Agrotis robusta* Blanchard); Hayes, 1975: 163, figs 31–32 (diagnosis and collected at Galápagos Islands); Zewadski, 1976: 154–155 (biology); Linsley, 1977: 29 (collected at Galápagos Islands); Angulo, 1978: 15–16 (larval behavior); Krombein & Hurd, 1979: 259, 260, 282, 284, 650, 651, 676, 698 (parasitoids); Pautler *et al.*, 1979: 3–7 (virgin female trap); Kogan & Kuhlman, 1982: 31 (biology); Troester *et al.*, 1982: 1–33 (USA attack prediction model); Fisher, 1983: 24 (photoperiod related to copulatory changes); Angulo & Jana-Saenz, 1984: 77, 82 (larval integument); Parra *et al.*, 1986: 82, 89–90, 98, 100, figs 41, 80–82 (diagnosis, male genitalia, and key); Godfrey, 1987: 567, Fig. 26.404 (larvae); Carrillo *et al.*, 1988: 34–35 (biology and collecting curve); Olivares & Angulo, 1989: 24, 25 (head and larval integument); Jana-Sáenz, 1989: 63, 66–68, figs 2, 7, 8, 11 (diagnosis, male genitalia, and key); Poole, 1989: 43 (world noctuid checklist); López, *et al.*, 1990: 3479–3491 (use of different species pheromone traps at the same time); Salama *et al.*, 1990: 147–151 (control with *Bacillus thuringiensis* Berliner); Pedgley & Yathom, 1993: 67–71 (migration in Israel); Showers *et al.*, 1993: 2303–2314 (migration in USA); Artigas, 1994: 567–569, pl. 27, fig. 7 (diagnosis, life cycle, biological control, damages, hosts, economic importance, distribution, and international implications); Igarzábal *et al.*, 1994: 103–104, 123, 125, figs 1, 19, 37, 55, 73, 97–99 (damage, biology, and larval key); McNeil *et al.*, 1995: 282, 284, 286, 287, 296, 298 (migration); Gadenne *et al.*, 1997 (morphology and hybrid communication system of *Agrotis ipsilon* and *A. segetum*); Greenslade *et al.*, 1999: 1162, 1163, 1166 (migration to Subantarctic Island); Beshkov & Goater, 2000: 42 (attracted by aphids secretions); Koch & Waterhouse, 2000: 24, 51, 53, 55, 58, 60, 62, 64, 66, 68, 71, 76, 86, 98, 119, 121, 123, 125, 128, 130, 132, 134, 136, 138, 141, 146, 158, 172, 196, 198, 201, 224 (agricultural and forestry importance); Angulo & Olivares, 2001: 56 (pupa key); Carrillo *et al.*, 2001: 28 (winter larvae at Valdivia, Chile); Fullard, 2001: 1376, 1378 (auditory system response to a Hawaiian species of bat); Silvegren, 2003: 24, 27, 28, 31–33 (pheromone production); Lafontaine, 2004: 250–251, fig. 136, pl. L, figs 36–38, pl. 34, fig. 6, lam 50, fig. 4 (larval and adult diagnosis); Pastrana, 2004: 156–157 (hosts); Specht *et al.*, 2004: 400; Angulo & Olivares, 2005: 138 (diagnosis, genitalia of both sexes, and hosts); Specht *et al.*, 2005: 136 (collected at Rio Grande do Sul, Brazil); Angulo *et al.*, 2006: 556 (immature stages on a high altitude salar); Capinera, 2006: 1–5 (diagnosis, life cycle, and control); Pogue, 2006: 3, 13, 19, 20, 67, fig. 9, map 6 (diagnosis and distribution); Carrero & Planes, 2008: 284 (biology); Wood *et al.*, 2009: 532 (migration); San Blas & Barrionuevo, 2013: 1157, figs 3A–3D (differences with *A. malefida* and *A. robusta*).
- Agrostis ypsilon* (Rottenburg) generic and specific typo and authorship error: Ortiz Romero & Zanabria, 1979: 122 (pest); Giménez, 1988: 81 (sunflower as host).
- Agrostis ipsilon* (Hufnagel) generic typo: Reyes Vaca, 1988: 106 (sunflower as host).
- Noctua suffusa* [Denis & Schiffermüller], 1775: 80. Type: [Austria] Región de Viena. Destroyed.
- Agrotis suffusa* ([Denis & Schiffermüller]): Treitschke, 1825: 152; Stephens, 1829: 66; Boisduval & Guenée, 1852: 268–269; Stephens, 1856: 65; Staudinger, 1871: 421 (= *A. ypsilon* Rottenburg); Butler, 1874: 33 (collected at New Zealand); Grote, 1874: 135; Grote, 1875a: 193; Butler, 1877: 383; Butler, 1882: 126; Butler, 1883: 160 (collected at India); Meyrick, 1886: 32; Cotes & Swinhoe, 1888: 309 (collected at India); Leech, 1889a: 132; Leech, 1889b: 499 (collected at Japan and Korea); Poole, 1989: 57 (= *A. ipsilon* Hufnagel).
- Phalaena Bombyx idonea* Cramer, 1780: 150, pl. 275, fig. h; Cotes & Swinhoe, 1888: 309 (= *A. suffusa*). Type: [USA] New York. Unknown location.
- Agrotis idonea* (Cramer): Boisduval & Guenée, 1852: 269 (as a variety of *A. suffusa*); Poole, 1989: 49 (= *A. ipsilon* Hufnagel).
- Bombyx spinula* Esper, 1786: pl. 63, figs 6, 7; Treitschke, 1825: 152 (= *A. suffusa*); Stephens, 1829: 66 (= *A. suffusa*); Godart *et al.*, 1837: 255 (= *N. suffusa*); Druce, 1881–1900: 281 (= *A. ypsilon* Rottenburg); Poole, 1989: 56 (= *A. ipsilon* Hufnagel). Type: type designation not mentioned.
- Phalaena Bombyx spinifera* Villers, 1789: 174; Stephens, 1829: 66 (= *A. suffusa*); Godart *et al.*, 1837: 255 (= *N. suffusa*). Type: France. Unknown location.

Noctua spinifera (Villers): Treitschke, 1825: 152 (= *A. suffusa*); Stephens, 1829: 66 (= *A. suffusa*).

Agrotis spinifera (Villers): Treitschke, 1827: 382–383; Stephens, 1829: 66 (= *A. suffusa*); Poole, 1989: 56 (= *A. ipsilon* Hufnagel).

Phalaena spinula Donovan, 1801: 52, pl. 345, figs 2–3; Poole, 1989: 56 (new homonym of *Bombyx spinula* Esper). Junior secondary homonym of *Bombyx spinula* Esper. Type: type designation not mentioned.

Agrotis telifera Harris, 1841: 323; Riley, 1869: 80 (redescription, stages, and economic importance); Grote, 1874: 135 (= *A. suffusa*); Grote, 1875a: 193 (= *A. suffusa*); Grote, 1875b: 313 (= *A. ypsilon* Hufnagel); Saunders *et al.*, 1880: 40 (diagnosis of larvae and adult); Treat, 1882: 65 (damages); Druce, 1881–1900: 281 (= *A. ypsilon* Rottenburg). Poole, 1989: 57 (= *A. ipsilon* Hufnagel, junior secondary homonym of *Agrotis telifera* Donzel, 1837). Type: [USA] Massachusetts. Lafontaine (2004) mentions that it is likely to be found at MCZ, but it has not yet been found.

Noctua robusta of authors, not Blanchard, 1852: 75; Berg, 1882: 280 (= *A. ypsilon* Rottenburg); Butler, 1882: 126 (= *A. suffusa*). See *Agrotis robusta*.

Agrotis bipars Walker, (1857)1856: 334; Leech, 1889a: 378; Druce, 1881–1900: 281 (= *A. ypsilon* Rottenburg); Poole, 1989: 45 (= *A. ipsilon* Hufnagel). Holotype: ♀ Venezuela (BMNH). Image examined.

Agrotis consueta Walker, (1857)1856: 334; Butler, 1882: 126 (= *A. hostilis* Walker *in part* and = *A. bipars* Walker *in part*); Butler, 1889: 378 (= *Agrotis bipars*); Hampson, 1903: 353 (= *Feltia malefida* (Guenée)). See *Agrotis malefida*.

Agrotis frivola Wallengren, 1860: 169; Berg, 1882: 280 (= *A. ypsilon* Rottenburg); Poole, 1989: 48 (= *A. ipsilon* Hufnagel). Type: ♂ [Uruguay] Montevideo (NRS). Not examined.

Noctua aneituma Walker, 1865a: 701. Type: ♂ Nuevas Hébridias (BMNH). Image examined.

Agrotis aneituma (Walker): Butler, 1889: 376 (= *Agrotis munda* Walker); Walsingham & Durrant, 1900: 7–8 (= *Agrotis munda* Walker); Hampson, 1903: 164 (= *Euxoa infusa* (Boisduval)); Poole, 1989: 43 (world noctuid checklist); Lafontaine, 2004: 250–251 (= *A. ipsilon* Hufnagel).

Agrotis ipsilon aneituma (Walker): Holloway, 1977: 55, 60, 143, 157, 177, 201, 220, 208, 209, 214, 217, 218, 242, 274 (diagnosis, biology, and migration); Common, 1990: 55, 64, 467, 485 (brief diagnosis, ectoparasites, and hosts).

Agrotis suffusa var. *pepoli* Bertoloni, 1874: 139; Hampson, 1903: 368 (= *A. ypsilon* Rottenburg); Poole, 1989: 53 (= *A. ipsilon* Hufnagel). Type: Bondeno, Italy. Unknown location.

Diagnosis. *Agrotis ipsilon* differs from other South American species of *Agrotis* by the following combination of characters: 1) male antenna bipectinate, widest segment 3 × as wide as central shaft, abruptly tapered at 3/4 its length; 2) forewing area between wing base and postmedial line darker than ground color, in some specimens as dark diffuse flecks; 3) reniform spot distal margin with a sharp streak extending between M1–M2 veins, reaching postmedial line; 4) in male genitalia uncus slightly curved, narrowed to the apex; 5) vesica with right basal diverticulum absent; 6) in female genitalia appendix bursae 1.5–2 × as long as corpus bursae; and 7) corpus bursae with one signum.

Redescription. *Male* (Fig. 42). *Head.* Palpus whitish ventrally; frons smooth, central projection and raised edge absent. Antenna basal 2/3 bipectinate, widest at 1/5 its length, abruptly tapered at 3/4 its length, widest segment 3 × as wide as central shaft, anterior process 4 × as wide as posterior process. *Thorax.* Patagium with brown postbasal line and black medial line; tegulum without lines. Forewing length 16.2–19.5 mm; ground color grayish brown, area between wing base and postmedial line darker than ground color, in some specimens as dark diffuse flecks; subcostal band dark grayish brown; basal area undifferentiated; basal line undifferentiated; antemedial line black, double, convex between veins, extended as a short sharp tooth between 1A+2A vein and posterior margin, never close to medial line; claviform spot concolorous with ground color, black edged; orbicular spot strongly oval, extending toward reniform spot, rarely contiguous with reniform spot, grayish brown, black edged with grayish center, some specimens with orbicular spot concolorous with subcostal band, slightly differentiated by black edge; reniform spot concolorous with orbicular spot, distal margin with a sharp streak extending between M1–M2 veins to postmedial line; discal cell concolorous with ground color, some specimens with a black streak of variable width joining both spots; medial line differentiated in light specimens as a dark thick waved band; postmedial line black, double, concave between veins; subterminal line light brown and black edged, strongly concave between veins, extended basally as arrows, longest ones placed between M1–M2–M3 veins, in some specimens the first arrow joined with reniform streak like one continuous line; terminal line a series of darkish lunulae between veins; fringe concolorous with forewing ground color with dark transverse lines at veins apex. Hind wing iridescent, with light brown veins in lighter specimens and distal margin grayish brown on darker specimens; fringe iridescent, dark at apex of veins. *Abdomen.* Light grayish brown with dark dorsal line. *Genitalia* (Fig. 62). Uncus slightly curved, narrowed to the apex, spine-like ended. Clavus slightly sclerotized, cylindrical, short, 2 × as long as wide. Ampulla 1/5 × as long as valve, basal half expanded, then narrowed to half its widest diameter. Vesica (Fig. 79) 6 × as long as aedeagus, consisting of 1 1/2 wide loop, right basal diverticulum absent,

basal spined band present, vesica swollen in apical 1/7, in some specimens it duplicates minor diameter. *Female* (Fig. 43). *Differences from male*. Forewing length: 15.4–20.6 mm; antenna filiform; forewing uniformly dark grayish brown between wing base and postmedial line; hind wing hyaline diffuse grayish brown on veins and margins. *Genitalia* (Fig. 92). Posterior apophysis 1.5 × as long as anterior apophysis; ductus bursae 2 × as long as anterior apophysis; corpus bursae 12 × as long as anterior apophysis, with one signum, apex globose; appendix bursae 1.5–2 × as long as corpus bursae, consisting of one wide loop, apex globose; ductus seminalis originating laterally near corpus bursae apex.

Biology. For Argentina and Chile there are several works that treat the biology of this species. Carrillo *et al.* (1988) describes the biology with temporal distribution and abundance for Chile. Angulo *et al.* (1990) and Angulo & Olivares (2005) give keys to larvae and adults. Igarzábal *et al.* (1994) do something similar but from the viewpoint of their economic importance to Argentina. Lafontaine (2004) makes a larval diagnosis.

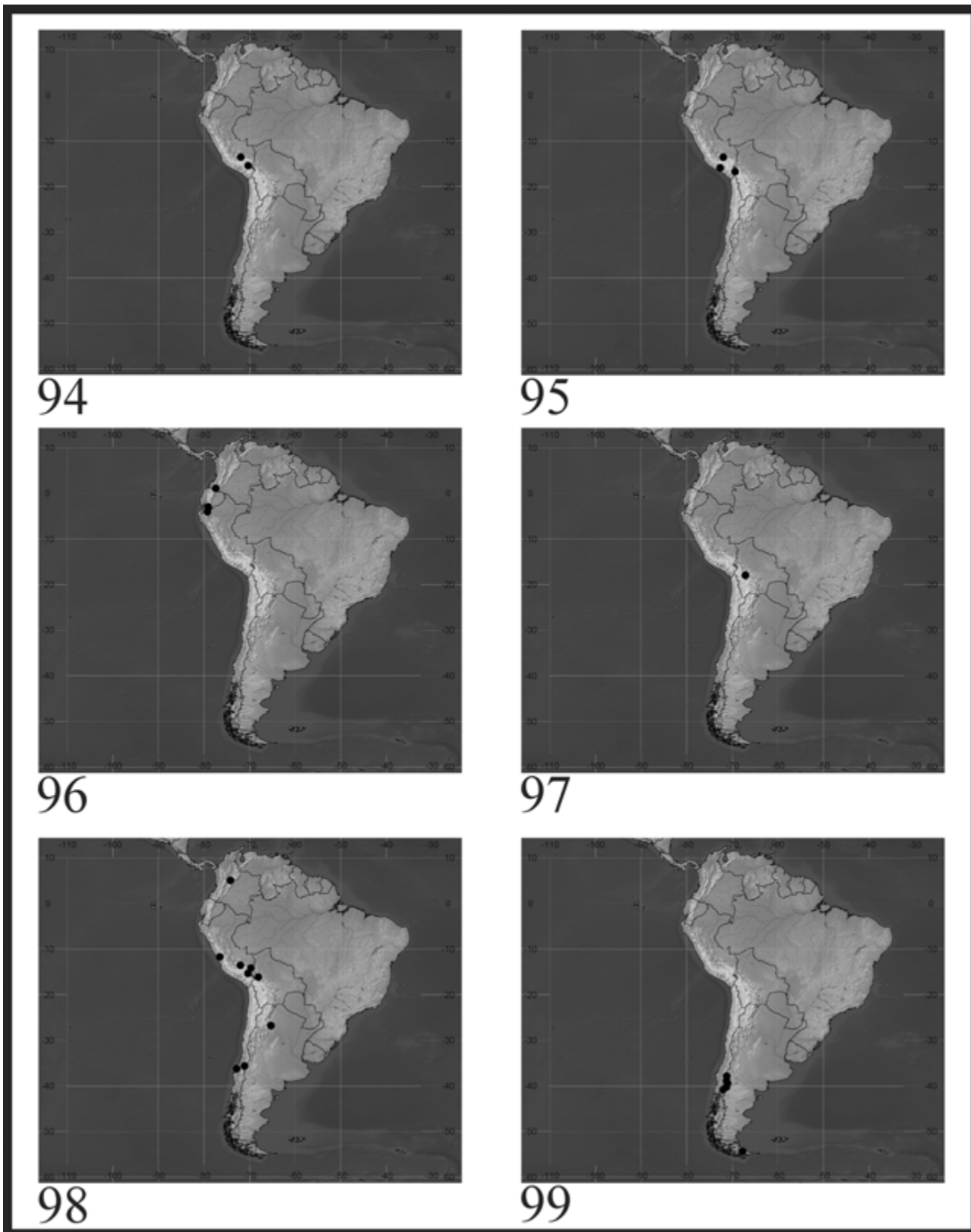
Parasitoids. The following list parasitoids for *A. ipsilon*: Harvey & Knight (1897), Smith (1909), Aldrich & Webber (1924), Muesebeck (1924), Sellers (1943), Krombein & Hurd (1979), and Common (1990). Artigas (1994) lists the following parasitoids: HYMENOPTERA. Braconidae: *Apanteles bourquini* Blanchard, *Macrocentrus collaris* Spinola, *Meteorus rubens* Nees. Ichneumonidae: *Amblyteles* sp., *Ophion* sp. DIPTERA. Tachinidae: *Archytas cirphis* Curran, *Bonnetia comta* (Fallen), *Carcelia formosa* (Aldrich & Webber), *Chaetogaecia monticola* (Bigot), *Eucelatoria armigera* (Coquillet), *Euphorocera claripennis* (Macquart), *Gonia longipulvilli* Tothill, *Gonia sequax* Williston, *Lespesia archippivora* (Riley), *Madremyia saundersii* (Williston), *Sisyropa eudryae* (Townsend), *Tachinomyia panaetius* (Walker), *Prosopochaeta fidelis* (Reinhard).

Hosts. Angulo *et al.* (1990) and Angulo & Olivares (2005) cite economically important hosts. Artigas (1994) and Pastrana (2004) give a list of cited hosts for Argentina. Some economically important hosts are: chard, peppers, alfalfa, cotton, celery, oats, broccoli, onions, cereals including corn, cauliflower, chrysanthemum, crucifers, dahlia, asparagus, raspberries, strawberries, lettuce, peanuts, melons, potatoes, paprika, pine (roots), beet, cabbage, watermelon, snuff, tomato, clover, wheat, carrots, squash, etc. (Artigas, 1994; Pastrana, 2004) There are several works on hosts for other parts of the World: Beutenmüller (1890), Froggatt (1909), Swezey (1910), Foaden & Fletcher (1910), King (1911), Pepper *et al.* (1954), Riley (1869), and Common (1990).

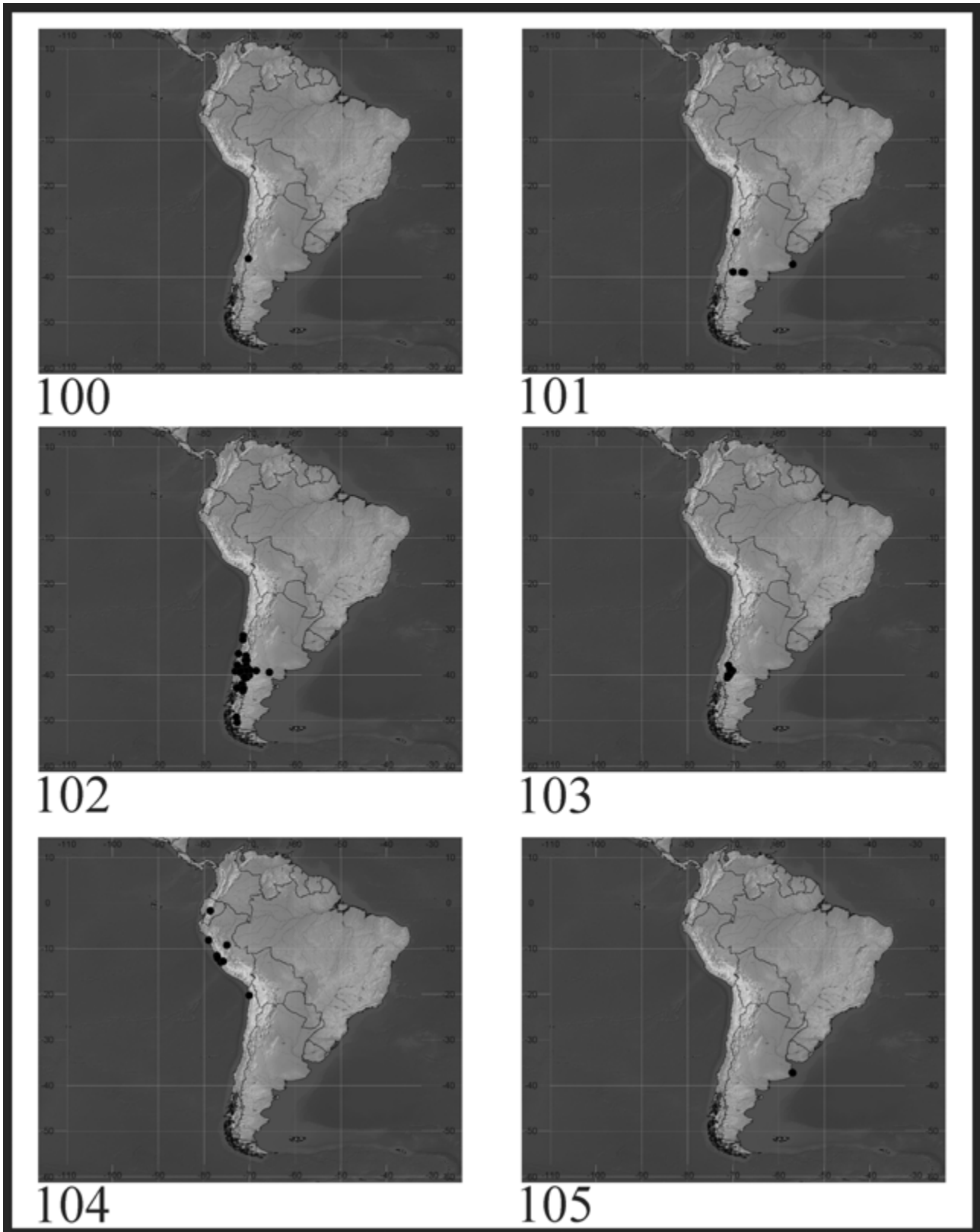
Distribution. Worldwide distribution, except Poles (Fig. 110).

Material examined. (28 ♂, 24 ♀). ARGENTINA: Córdoba. Córdoba, ♂ 23-X-1947 (F.P. López) (IMLA). Mendoza. Las Heras, Reserva Villavicencio, 1265m, 2 ♂ 3 ♀ 22-XI-2007 (GSB) (IADIZA); Santa Rosa, Reserva Ñacuñán, 561m, 2 ♀ 9-IX-2006 (GSB & E. Ruiz Manzanos) (IADIZA); Las Heras, Tambillos, 2462m, ♂ 11-XII-2007 (GSB & E. Scheibler) (IADIZA). Neuquén. Pucará, 707m, ♂ XII-1959 (Orron) (IADIZA). Río Negro. Cipolletti, El Cuy, ♂ 13-XI-1965 (IMLA). Salta. 2 km N Cafayate, 1585m, ♂ 24-XI-2006 (GSB & E. Ruiz Manzanos) (IADIZA); El Galpón, ♂ ♀ 15-IX-1966 (IMLA). Tucumán. Trancas, La Higuera, ♂ ♀ 8-XI-1966 (Köhler) (IMLA). BERMUDA: Botanical Gardens Paget, ♂ 8-XI-1987 (D.J. Hilburn) (USNM); Brighton Hill, Devonshire Park, ♀ 12-III-1988 (D.C. Ferguson) (USNM); Spittal Pond Nature Reserve, Smith's Parish, 2 ♀ 18-III-1988 (D.C. Ferguson) (USNM). BOLIVIA: Cochabamba. El Limbo, ♀ (IMLA). CANADA: Labrador. Hopedale, 4 ♂ 5 ♀ 24–30-X (USNM). New Foundland. Gros Morne National Park near Rocky Harbour, 2 ♂ 12-VII-1983 (D.C. Ferguson) (USNM). CHILE. Metropolitan region. Santiago, La Granja, 600m, 3 ♂ 16-IV-1969 (IMLA). COLOMBIA: La Estrella. Antioquia, 1800m, ♀ (IMLA). Cundinamarca. Moteredondo, 1420m, ♀ (IMLA). ECUADOR. Tungurahua. Baños de Agua Santa Cascadas de Río chico, ♂ ♀ 27-I-1976 (Spangler) (IADIZA). UNITED STATES OF AMERICA. Arizona. Maricopa, Chandler, ♂ 16-IV-1978 (V.M. Ford) (USNM), ♂ 19-IV-1978 (V.M. Ford) (USNM); Mohave, Pierce Ferry, 366m, 3 ♂ 5–7-V-1967 (D.R. Davis) (USNM). Maryland. Prince George's, Temple Hills, 84m, ♀ 19-XII-1975 (G.F. Hevel) (IADIZA), ♂ 1-IX-1974 (G.F. Hevel) (IADIZA). MEXICO: Chiapas. San Cristobal de las Casas, 7200 ft., ♂ 6-V-1969 (J.E.H. Martin) (CNC); ♀ 27-VII-1969 (D. Kritsch) (CNC). PERU. Huánuco. Tingo María, 610m, ♀ (Weyrauch) (IMLA). SRI LANKA. Badulla. Ella Resthouse, 1130m, ♂ 17–20-XI-1974 (C. Gans, P. Fernando & S. Farook) (IADIZA). Kandy. NE Dist. Kandy, Ela, 2100m, ♀ 31-V-2-VI-1976 (K.V. Krombein, S. Karunaratne & D.W. Balasooriya) (IADIZA). SOUTH AFRICA. Cape town. Ravens Wood, Keiskama River, nr. Rt. N2 Bridge, 125m, ♀ 5-III-1978 (D. & M. Davis & B. Akebergs) (IADIZA). Data from bibliographical sources. BRAZIL. Rio Grande do Sul. Guarani das Missões; Pelotas (Specht *et al.*, 2004); Reserva Biológica do Ibirapuitã (Specht *et al.*, 2005); Parque Estadual de Rondinha (Specht *et al.*, 2005). CHILE: Easter Island. (Angulo & Olivares, 2005). ECUADOR: Islas Galápagos (Linsley & Usinger, 1966).

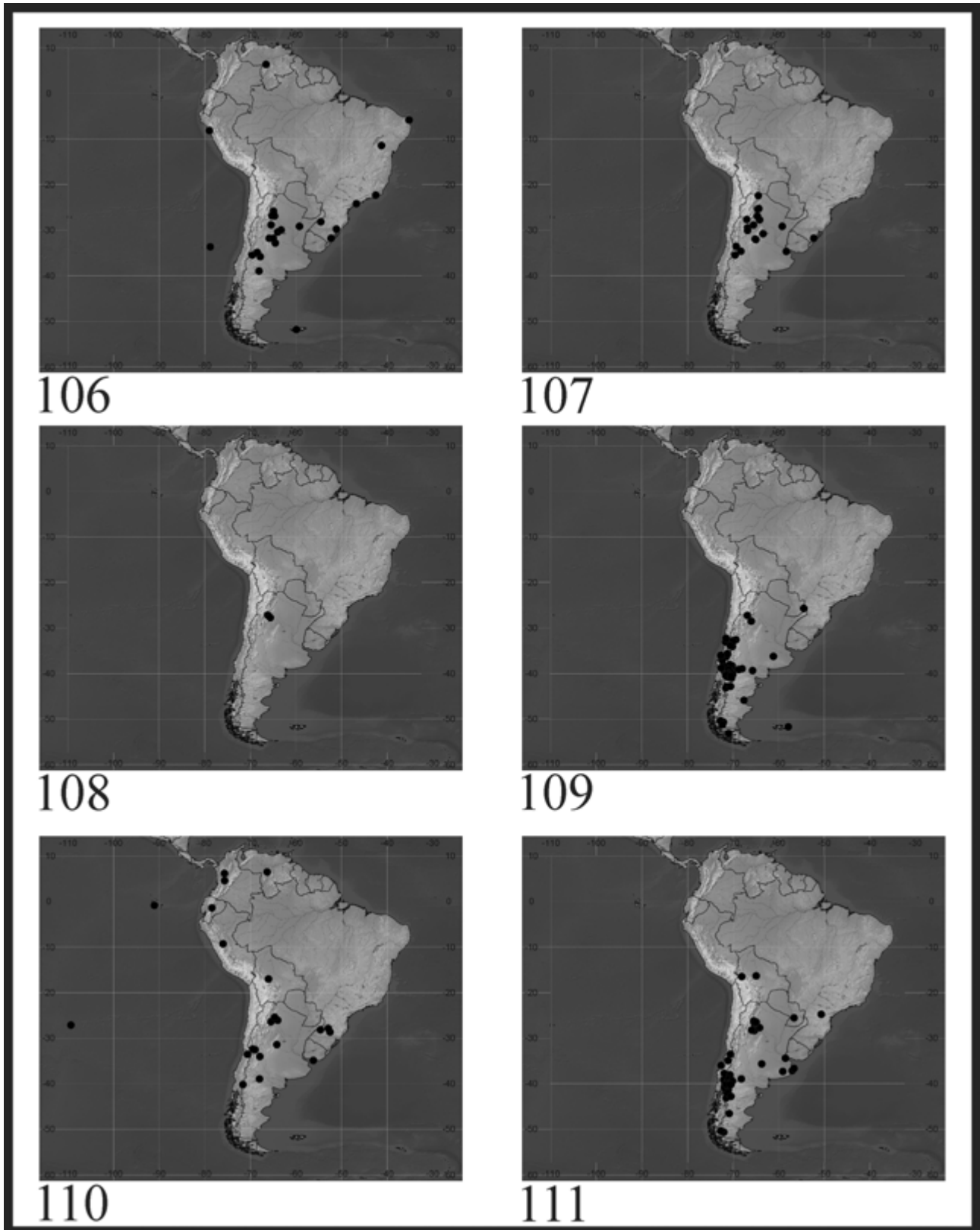
Discussion. *Agrotis ipsilon* is confused in several works with *A. robusta* and *A. consueta* (= *A. malefida*), but it can be differentiated by: 1) forewing area between wing base and postmedial line darker than ground color and 2) patagium and tegulum concolorous with thorax.



FIGURES 94–99. Distribution maps of *Agrotis* species, *edmonsi*-group. 94, *A. steniptera*. 95, *A. propriens*. 96, *A. bistrigata*. 97, *A. dispar*. 98, *A. peruviana*. 99, *A. elegans*.



FIGURES 100–105. Distribution map of *Agrotis* species, *edmondsi*- and *fausta*-group. 100, *A. benitezi*. 101, *A. leonoides*. 102, *A. edmondsi*. 103, *A. leuconata*. 104, *A. experta*. 105.



FIGURES 106–111. Distribution maps of *Agrotis* species, *fausta*- and *robusta*-group. *A. fausta*. 106, *A. malefida*. 107, *A. canities* 108, *A. schreiteri*. 109, *A. araucaria*. 110, *A. ipsilon*. 111, *A. robusta*.

***Agrotis robusta* (Blanchard, 1852)**

(Figs 44, 45, 63, 80, 93, 111)

Noctua robusta Blanchard, 1852: 75 pl. 6, fig. 9. Holotype: ♂ Chile (MNHN). Image examined.

Agrotis aureolum Schaus, 1898: 107; Hampson, 1903: 368 (= *A. ypsilon* Rottenburg); Poole, 1989: 56 (= *A. ypsilon* Hufnagel); San Blas & Barrionuevo, 2013: 1154 (new synonym). Holotype: ♂ [Brazil], Paraná, Castro (USNM). Examined.

Agrotis ypsilon robusta (Blanchard): Druce, 1881–1900: 281.

Agrotis robusta (Blanchard): Berg, 1882: 280 (= *Agrotis ypsilon* (Rottenburg)); Butler, 1882: 126 (= *Agrotis suffusa* (Denis & Schiffermüller)); Hampson, 1903: 368 (= *A. ypsilon* (Huf.)); Hampson, 1905a: 702 (= *A. ypsilon* (Huf.)); Forbes, 1933: 19 (= *A. ypsilon* (Huf.)); Poole, 1989: 55 (= *A. malefida* Gn.); San Blas & Barrionuevo, 2013: 1153–1158, figs 1A–1E, 2, 3I–3L (redescription and misidentification).

Scotia koehleri Berio, 1963: 12, figs 1–3; Köhler, 1967: 331, fig. 74; Margheritis & Rizzo, 1970: 164 (collected at Aluminé Lake, Neuquén, Argentina). Holotype: ♂ [Argentina], Tandil, Buenos Aires III-IV-1953 (Walz). Not examined. Allotype: ♀ same data. Not examined. Paratypes: 19 ♂ 11 ♀ [Argentina], Tandil, Buenos Aires III-IV-1953 (Walz). Not examined. *Note*: In the description of *A. koehleri*, Berio (1963) mentions that holotype, allotype, and 30 paratypes, all of the same locality, are deposited in his collection and one paratype of the same locality and 42 paratypes of different localities are deposited in Köhler's collection. IMLA Köhler's collection contains eight paratypes in which labels agree with localities cited by Berio but with different dates.

Scotia (Feltia) fulvaurea Köhler, 1966: 97, figs 1, 3. Holotype: ♂ [Argentina], Tucumán, Siambón, 2000m, 11-V (IMLA). Examined. Paratypes: 3 ♂ 3 ♀ [Argentina], Tucumán, Río Nío, 1000m, 12-V (IMLA); 7 ♂ 5 ♀ [Argentina], Tucumán, Siambón, 2000m, 11-V (IMLA), 3 ♂ 3 ♀ 11-V-1965 (IMLA); ♂ [Argentina], Tucumán, [San Pedro de Colalao] 22-IV (IMLA); 2 ♂ 2 ♀ [Argentina], Tucumán, San Pedro de Colalao 22-IV-1961 (IMLA); ♂ [Bolivia], [Cochabamba], Alto Palmar-Chaparé, 1100m, (IMLA); ♂ Bolivia, La Paz, 3600–4000m, 25-VII-1954 (Forster) (IMLA). Examined. *Note*: When Köhler (1966) describes *Scotia (Feltia) fulvaurea*, he cites type information and its localities as follow: “Holotipo, Alotipo y 120 Paratipos: en la colección del autor, paratipos en el Instituto Lillo [Holotype, allotype, and 120 paratypes: hosted in his collection, paratypes at IMLA]. Procedencias [Provenance]: Siambón, Tucumán, 2.000m, II-V-1965, Köhler; Río Nío, Tucumán, 1.600m, 13-V-1965, Köhler; Rosario de la Frontera, Salta, 27-II-1956, Pierrotti; San Pedro de Colalao, Tucumán, 22-IV-1961, Köhler; La Paz, Bolivia, 3.600/4.000m, 25-V-1954, Forster; La Banda, Santiago del Estero, 20-IV-1960, Köhler; Alto Palmar, Río Chapare, Bolivia, 2.000m, Andrae; Río Chuscha, Tucumán, 1.000m, 12-V-1965, Köhler; Cochabamba, Bolivia, 2.000m, Andrae; Puno, Perú, 3.000m, II-1945, Weyrauch.” I have not found the Allotype either at IMLA or ZSM. At IMLA there is one specimen labeled as allotype with the following locality data: “El Rodeo 2000m ♀ (IMLA).” Because this locality data does not agree with any of those cited by Köhler, I do not cite it as type material. Underlined paratypes correspond to specimens labeled as paratype in which labels do not agree completely with those cited by Köhler.

Scotia fulvaurea form *extrema* Köhler, 1966: 100. According to the 15.2 ICZN article: “A new name published after 1960 expressly as the name of a “variety” or “form” is deemed to be infrasubspecific and as such is not regulated by the Code [Art. 1.1.1] and is excluded from its provisions [Arts. 1.3.4, 45.6.3].”

Scotia (Feltia) ancastiensis Köhler, 1966: 101. Holotype: ♂ [Argentina], Catamarca, Sierra de Ancasti, El Alto, 1000m, 21-III (IMLA). Examined. Paratypes: ♂ [Argentina], Catamarca, Sierra de Ancasti, El Alto, 1000m, 21-III (IMLA). Examined.

Agrotis anacastiensis (Köhler) [*sic*]: Poole, 1989: 43 (new combination).

Agrotis fulvaurea (Köhler): Hayward, 1969: 41 (hosts); Poole, 1989: 48 (world noctuid checklist); Pastrana, 2004: 155; San Blas & Barrionuevo, 2013: 1154 (new synonym).

Agrotis koehleri (Berio): Dapoto *et al.*, 2003: 70; Fibiger, 1990: 74 (cited as a probable synonym of *A. robusta* Blanchard); San Blas & Barrionuevo, 2013: 1154 (new synonym).

Agrotis ancastiensis (Köhler): San Blas & Barrionuevo, 2013: 1154 (new synonym).

Diagnosis. *Agrotis robusta* differs from other South American species of *Agrotis* by the following combination of characters: 1) male forewing ground color light brown and female grayish brown; 2) patagium and tegulum darker than thorax; 3) subterminal line light brown, extending basally between M1–M2–M3 veins seeming two basally black and light brown-tipped arrows; 4) in male genitalia vesica with basal spined band absent; 5) in female genitalia corpus bursae with two signa; and 6) appendix bursae 4–5 × as long as corpus bursae.

Redescription. *Male* (Figs 44, 63, 80). Forewing length 16.4–20.6 mm. *Female* (Figs 45, 93). Forewing length 17.2–20.8 mm. (see San Blas & Barrionuevo, 2013).

Distribution. From Paraguay, Brazil, and Bolivia to Southern Chile and Argentina (Fig. 111). In Argentina, it occurs in almost every province, from Salta to Santa Cruz.

Remarks. *Agrotis robusta* has been confused with *A. ypsilon* and *A. malefida* on several works (see San Blas & Barrionuevo, 2013). The first one can be easily differentiated from the others by the darker color of tegulum and patagium compared to thorax.

In Southern South America, specifically Argentina, Chile, Paraguay, and Bolivia, *A. malefida* is considered a pest of several crops, but in fact most of those specimens correspond to *A. robusta*. *Agrotis malefida* is relatively rare in Southern South America, supported by the number of specimens in collections. Even though pest species are not always well represented in museum collections and this could be a sample bias, evidence from various publications, including those related to agriculture, may indicate that *A. malefida* it is not a pest species in this region as could it be *A. robusta*. Further work is needed, together with an accurate identification of specimens, to validate this affirmation.

Material examined. (238 ♂ and 125 ♀). ARGENTINA. La Lucila, ♂ 14-IV-1952 (Fleiss) (IMLA). Buenos Aires. Capital, ♂ III-1963 (Köhler) (IMLA); Juancho, ♂ III-1957 (Petrowsky) (IMLA); Tandil, 3 ♂ (IMLA); Tigre, 7 ♂ II-1964 (IMLA). Catamarca. El Rodeo, 2000m, 9 ♂ ♀ (IMLA), ♀ 15-IV-1964 (Köhler) (IMLA); Sierra de Ancasti, Villa el Alto, 1000m, ♂ 20-III (IMLA). Chubut. El Maitén, 700m, 2 ♂ ♀ 16-I-1986 (M. y P. Gentili) (IADIZA); Esquel, 3 ♂ I-1969 (IMLA); Futalaufquen, 550m, ♂ 15-II-1982 (M. Gentili) (IADIZA); Gualjaina, 550m, ♀ 19-XII-1981 (M. y P. Gentili) (IADIZA); Los Cipreses, 650m, ♂ 13-II-1982 (M. y P. Gentili) (IADIZA). La Pampa. General Pico, ♂ (Williamson) (IMLA), ♂ IV-1967 (Williamson) (IMLA), 5 ♂ 15-V-1967 (IMLA). Neuquén. Aeropuerto Chapelco, 780m, ♂ 12-XII-1981 (M. y P. Gentili) (IADIZA), ♂ 30-XII-1981 (M. y P. Gentili) (IADIZA), 2 ♂ 7-IV-1982 (M. y P. Gentili) (IADIZA); Aguada Florencio, 870m, ♀ 6-I-1985 (M. y P. Gentili) (IADIZA); Aluminé Rahue, 900m, ♀ 17-I-1972 (M. Gentili) (IADIZA); Arroyo Remeco, 1250m, ♂ 17-I-1984 (M. y P. Gentili) (IADIZA); Bajada Marucho, 870m, ♂ 6-I-1967 (M. Gentili) (IADIZA); Cerro de los Pinos, 950m, ♂ 9-XII-1972 (M. Gentili) (IADIZA); Chapelco, 1700m, ♀ 20-II-1973 (M. Gentili) (IADIZA); Chapelco Lengua, 1700m, ♂ 28-XI-1983 (M. y P. Gentili) (IADIZA), ♂ 3-I-1984 (M. y P. Gentili) (IADIZA), ♂ ♀ 24-I-1984 (M. y P. Gentili) (IADIZA); Chapelco Ñire, 1000m, ♀ 24-I-1982 (M. y P. Gentili) (IADIZA); Chapelco Techos, 1400m, ♀ 19-I-1982 (M. y P. Gentili) (IADIZA), 2 ♂ 28-I-1982 (M. y P. Gentili) (IADIZA), 2 ♂ 30-I-1982 (M. y P. Gentili) (IADIZA), ♀ 31-I-1982 (M. y P. Gentili) (IADIZA), ♀ 16-II-1982 (M. y P. Gentili) (IADIZA), 3 ♂ 19-II-1982 (M. y P. Gentili) (IADIZA), ♂ 21-II-1982 (M. y P. Gentili) (IADIZA), ♀ 23-II-1982 (M. y P. Gentili) (IADIZA), ♂ 1-III-1982 (M. y P. Gentili) (IADIZA), 2 ♀ 30-III-1982 (M. y P. Gentili) (IADIZA); ♂ 24-I-1984 (M. y P. Gentili) (IADIZA); Cerdón Chachil, 1350m, ♀ 24-I-1970 (M. y P. Gentili) (IADIZA); Cerdón Chapelco, 1750m, 7 ♂ 6 ♀ 14-I-1982 (M. y P. Gentili) (IADIZA), ♀ 21-I-1982 (M. y P. Gentili) (IADIZA), 13 ♂ 6 ♀ 28-I-1982 (M. y P. Gentili) (IADIZA), ♀ 19-II-1982 (M. y P. Gentili) (IADIZA), 4 ♂ 23-II-1982 (M. y P. Gentili) (IADIZA), 2 ♂ ♀ 22-I-1985 (M. y P. Gentili) (IADIZA); Currhue Escorial, 950m, ♀ 29-III-1982 (M. y P. Gentili) (IADIZA); Estancia Collunco, 900m, ♀ 19-XII-1973 (M. Gentili) (IADIZA); Hua Hum, ♂ 8-17-X-1964 (Hayward & Willink) (IMLA); Lago Lacar, Nonthue, 650m, ♂ 27-XII-1981 (M. y P. Gentili) (IADIZA), 4 ♂ 19-I-1982 (M. y P. Gentili) (IADIZA), 2 ♂ 2 ♀ 26-I-1982 (M. y P. Gentili) (IADIZA), ♀ 22-II-1983 (M. y P. Gentili) (IADIZA), ♀ 2-XII-1983 (M. y P. Gentili) (IADIZA), 3 ♂ 2 ♀ 2-I-1984 (M. y P. Gentili) (IADIZA), ♂ 12-I-1984 (M. y P. Gentili) (IADIZA); Lago Lacar, Trompul, 1000m, ♂ 6-I-1983 (M. y P. Gentili) (IADIZA), 2 ♂ 6-XII-1983 (M. y P. Gentili) (IADIZA); Lago Queñi, 875m, ♂ ♀ 13-I-1984 (M. y P. Gentili) (IADIZA); Loncopué, Catán Lil, Estancia Santa Isabel, 900m, ♀ 24-III-1973 (M. Gentili) (IADIZA); Moquehue Icalma, 1250m, ♀ 2-III-1984 (M. y P. Gentili) (IADIZA); Neuquén ♂ 23-III-1952 (IMLA); Paso Córdoba, 1200–1300m, ♂ 21-I-1984 (M. y P. Gentili) (IADIZA); Paso Puyehue, 1350m, ♂ 11-I-1985 (M. y P. Gentili) (IADIZA); Pino Hachado, 1750m, ♀ 30-I-1974 (M. Gentili) (IADIZA); Pucará, 3 ♂ 5 ♀ III-1959 (IMLA); Pucará, Parque Nacional Lanin, 2 ♂ 2 ♀ I-1951 (Schajovskoy) (IMLA); Quilahuintos, 1100m, ♂ 30-XII-1981 (M. y P. Gentili) (IADIZA); Río Aluminé, Pulmarí, 925m, 2 ♂ ♀ 27-II-1978 (M. Gentili) (IADIZA); Río Collón Cura, 650m, ♂ ♀ 29-XII-1994 (M. Gentili) (IADIZA); Sainuco, Kilca, 1700m, 2 ♂ 13-XII-1969 (M. Gentili) (IADIZA); San Martín de los Andes, 647m, ♂ 4-I-1958 (M. Gentili) (IADIZA), ♂ 11-II-1958 (M. Gentili) (IADIZA), ♀ 21-II-1958 (M. Gentili) (IADIZA), ♀ 30-XII-1958 (M. Gentili) (IADIZA), 2 ♂ 31-XII-1958 (M. Gentili) (IADIZA), ♀ 16-I-1959 (M. Gentili) (IADIZA), 2 ♂ 3 ♀ 31-I-1959 (M. Gentili) (IADIZA), ♀ 10-II-1959 (M. Gentili) (IADIZA), ♂ 3-I-1960 (M. Gentili) (IADIZA), ♂ 24-I-1960 (M. Gentili) (IADIZA), ♀ 30-XII-1960 (M. Gentili) (IADIZA), 4 ♀ 15-I-1961 (M. Gentili) (IADIZA), ♂ 1-XII-1961 (M. Gentili) (IADIZA), 2 ♂ 30-XII-1962 (M. Gentili) (IADIZA), ♀ 15-I-1963 (M. Gentili) (IADIZA), ♂ 10-I-1964 (M. Gentili) (IADIZA), ♂ 16-III-1964 (M. Gentili) (IADIZA), ♀ 1-XII-1964 (M. Gentili) (IADIZA), ♀ 5-III-1965 (M. Gentili) (IADIZA), ♀ 2-II-1968 (M. Gentili) (IADIZA), ♀ 4-V-1968 (M. Gentili) (IADIZA), ♂ ♀ 6-II-1978 (M. Gentili) (IADIZA), ♀ 26-XII-1978 (M. Gentili) (IADIZA); San Martín de los Andes, ♀ XII-1949 (Schajovskoy) (IMLA), ♂ III-1959 (IMLA); San Martín de los Andes, Truran Kura, 1000m, ♂ 2-XII-1985 (M. y P. Gentili) (IADIZA), 2 ♂ 15-XI-1995 (M. Gentili) (IADIZA); Sañicó, 752m, ♀ 14-III-1972 (M. Gentili) (IADIZA). Río Negro. Arroyo Pichileufú, 1100m, ♂ 17-I-1986 (M. y P. Gentili) (IADIZA);

El Bolsón, Cerro Piltriquitrón, 1000m, ♂ 2 ♀ 22-XII-1981 (M. y P. Gentili) (IADIZA); El Tronador, ♀ II-1946 (Vellard) (IMLA); San Carlos de Bariloche, Colonia Suiza, 810m, ♂ 9-I-1979 (Misión Científica Danesa) (CNC). Salta. Salta, ♂ (Breyer) (IMLA). Santa Cruz. 1 km S Perito Moreno, 422m, (46°34'18.9"S, 70°53'27.1"O) ♂ 17-I-2007 (GSB & A. Srur) (IADIZA); El Turbio, 200m, ♂ 20-I-1976 (M. Gentili) (IADIZA); Punta Bandera-Lago Argentino, 3 ♂ I-1963 (IMLA). Santiago del Estero. Frías, ♂ 21-IV-1961 (IMLA); La Banda, ♂ (IMLA), ♂ 20-V-1963 (IMLA). Tucumán. Quebrada de Lules, 2 ♂ II-1925 (IMLA); Río Nío, 1000m, 2 ♀ 12-V (IMLA); San Pedro de Colalao, 2 ♂ 22-IV-1961 (IMLA); Sunchal, ♂ IV-1964 (IMLA); Tafi Viejo, Siambón, 2000m, 2 ♀ 11-V-1965 (IMLA), 3 ♂ 13 ♀ 16-V-1965 (IMLA), 20 ♂ 4 ♀ V-1965 (Köhler) (IMLA), 2 ♀ 16-V-1965 (IMLA), 2 ♀ 11-V (IMLA). CHILE. Metropolitan region. Santiago, La Granja, 2 ♂ ♀ 15-III-1969 (IMLA). Region VII, Maule. Curicó, 1km N Curicó, 7 ♂ 2 ♀ 29-XI-1982 (R.L. Brown) (USNM). Region VIII, Bio Bio. Nuble, Alto Tregualemu, 500 mtrs, ca. 20 km SE Chovellen, 3 ♂ 5 ♀ 26–27-I-1979 (D.M. Davis & B. Akebergs) (USNM); Nuble, Las Trancas, ♀ I-III-1967 (CNC). Region IX, Araucanía. Cautín, Fundo el Coigue, 500 mtrs 27 km NE Villarrica, 379m, 3 ♂ 4 ♀ 28-II-3-III-1979 (D.M. Davis & B. Akebergs) (USNM); Malleco, Curacautín, Río Blanco, 1100m, ♂ ♀ II-1964 (Peña) (CNC); Malleco, nr. Los Gringos Camp., Parque Nacional Nahuelbuta, 1300m, 10 ♂ ♀ 6–11-I-1982 (D.R. Davis) (USNM), 30 ♂ 8 ♀ 29-I-5-II-1979 (D. & M. Davis & B. Akebergs) (USNM); Malleco, Parque Nacional Nahuelbuta, Pichinahuel, 500m, ♂ 16–20-XII-1993 (G. & M. Wood) (CNC); Temuco, Fundo La Selva, 48km NW Nueva Imperial, 700m, 8 ♂ ♀ 9–11-XII-1981 (D.R. Davis) (USNM). PARAGUAY. Caaguazú. Carumbé, 2 ♂ 28-I-10-III-1965 (IMLA).

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