

A new species of the late genus *Letis* Hübner, [1821] from Ecuador : an exercise of symmetry (Lepidoptera: Noctuidae)

A. Zilli

Abstract

Feigeria pinasi sp.n., a conspicuous new species of catocaline noctuid moths, is described from Ecuador, where it inhabits montane forests of the Western Cordillera. The species appears to be a highly plesiomorphic member of the genus *Letis* HÜBNER, [1821] sensu lato, thus representing an indispensable reference taxon for further phylogenetic research on the *Letis*-group of genera. Of particular interest is the sharing in the new species of identical eye-spot-like discal spots between fore- and hindwing, probably unique in the family Noctuidae. An overview of the taxonomy of *Letis* is also presented. As the genus *Ronania* BERIO, [1991] is based on a misidentified type-species, *Phalaena noctua marmorides* CRAMER, 1775 is here fixed as type-species for this genus.

Zusammenfassung

Feigeria pinasi sp.n., eine neue Art von catocalinen Noctuiden aus Ecuador, wird beschrieben. Sie kommt dort in den Regenwäldern der Westlichen Cordillieren vor. Diese Art scheint ein extrem plesiomorphes Mitglied der Gattung *Letis* HÜBNER, [1821] sensu lato zu sein und repräsentiert daher ein unentbehrliches Referenztaxon für weitere phylogenetische Untersuchungen innerhalb der *Letis*-Gruppe. Von besonderem Interesse bei *F. pinasi* sp.n. sind die identischen augenfleckenähnlichen Diskalflecken auf Vorder- und Hinterflügel, die wahrscheinlich einzigartig innerhalb der Familie der Noctuiden sind. Außerdem wird ein Überblick über die Taxonomie der Gattung *Letis* präsentiert. Da die Gattung *Ronania* BERIO, [1991] auf einer falsch identifizierten Typusart basiert, wird in dieser Arbeit *Phalaena noctua marmorides* CRAMER, 1775 als Typusart für diese Gattung festgelegt.

Key words: Noctuidae, *Feigeria pinasi*, new species, *Letis*, taxonomy, Ecuador, species list.

Introduction

During the entomological expeditions in Ecuador by the "Dipartimento di Biologia Animale e dell'Uomo" of the University of Rome "La Sapienza", part of the sampling program was specifically designed to gather material on the most speciose lepidopteran family, viz. the Noctuidae, with the aim of tracing taxa of potential use for reconstructing the phylogenetic architecture of its remarkable diverse lineages (WELLER et al., 1994; SPEIDEL et al., 1996; KITCHING & RAWLINS, 1999; YELA & KITCHING,

1999). Accordingly, particular attention was dedicated to montane forests from both the Pacific and Amazonian slopes of the Andean Cordillera, as these could hypothetically host more ancient, relic and species-rich fauna. During a survey of the Otonga Nature Preserve in Cotopaxi Province, a conspicuous new species of the genus *Letis* HÜBNER, [1821], as defined by FEIGE (1977), was discovered. This species, showing a number of presumably plesiomorphic traits respecting close allies, was further located in some institutional collections and is described here, following an overview of the taxonomic uncertainties involving the genus.

Materials and Methods

Specimens collected by the author were attracted at night to a vertically positioned white sheet which was illuminated by a 250 W mercury vapour lamp (model HR250A37, General Electric Co., Waukesha, WI; ballast model HQINAV, New CTA s.r.l., Melito, Italy) powered by a portable generator (model EF600, Yamaha Motor Co., Shizuoka, Japan). Additional taxonomic material was located in The Carnegie Museum of Natural History, Pittsburgh, and Pontificia Universidad Católica del Ecuador, Quito.

Information on morphology, systematics and nomenclature of species was obtained from the holdings (including types) of The Natural History Museum (London), Zoölogisch Museum (Amsterdam), Museum für Naturkunde (Berlin), Zoologische Staatssammlung (München), Museo Civico di Zoologia (Rome), Museo di Zoologia dell'Università (Rome), the author's collection (Rome), taxonomic descriptions (cf. POOLE, 1989 and references therein) and other technical literature.

Genitalia preparations were made under low power of a dissecting microscope (model Wild M5, Leica Microsystems GmbH, Wetzlar, Germany) following the methodology summarized in HARDWICK (1950), with slight modifications. In particular, the vesica was everted by pumping distilled water into the aedeagus with a hypodermic syringe while immersed in distilled water. Staining was carried out in a 2% mercurochrome solution for 2 hours. The aedeagus was then soaked in 95% ethanol to stop staining and harden the inflated vesica. As valvae are maintained tightly adpressed by the robust juxta, in order to spread them for proper mounting, the inferior membranous connection between juxta and valvae was carefully cut with sharp microsurgical scissors (hereafter the slightly superiorly shifted position of juxta in relevant illustration). Permanent slides were eventually prepared by mounting the genitalic parts in Euparal. Illustrations of genitalia were drawn with the aid of a camera lucida (model Wild 181300, Leica Microsystems GmbH, Wetzlar, Germany) attached to the dissecting microscope. In order not to alter the shape of the vesica, the aedeagus was first drawn while immersed in ethanol; other parts were drawn from permanent slides.

The description of the antennal segment relates to middle part of the flagellum, the position of sensory processes being referred to with the segment in lateral view from middorsal to midventral line. Forewing measurements were made with a sheet of transparent millimeter paper from the base of the wing to the apex, including the fringe. Terminology for the morphological details follows that extensively used in KRISTENSEN (1999), and for elements of wing pattern FEIGE (1977).

Abbreviations, depositories and symbols are as follows: AMNH, American Museum of Natural History, New York; CMNH, Carnegie Museum of Natural History, Pittsburgh; MCZR, Museo Civico di Zoologia, Rome; MZUR, Museo di Zoologia dell'Università, Rome; NHM, Natural History Museum, London; PUCE, Pontificia Universidad Católica del Ecuador, Quito; n = sample size; s.l., sensu lato; s.str., sensu stricto.

Taxonomy

Paradoxically, taxonomic information on the Lepidoptera groups that encompass large-sized species is often scanty. This is mainly because most species were described in early time so that there is a general confidence that the systematics of the groups were already thoroughly worked out. However, several long-established genera often remain not correctly defined and delegation of new species are mostly based on visual characters. This situation also occurs with large noctuids which are commonly ascribed to *Letis* HÜBNER, [1821], a nominal genus the delimitation of which respecting close allies is still unsatisfactory.

Following studies on the morphology of the tympanum, RICHARDS (1933) identified a tighter relationship between species of *Letis* s.l. (cited as *Blosyris* HÜBNER, [1822]) and *Hemeroblemma* HÜBNER, 1818, *Latebraria* GUENÉE, 1852, *Ascalapha* HÜBNER, [1809] (cited as *Erebus* LATREILLE, 1810), and *Thysania* DALMAN, 1824. FORBES (1954) suggested that *Letis* s.l. might have merged with *Ascalapha* (cited as *Erebus*) as part, together with *Thysania* and *Lesmone* HÜBNER, 1818 (cited as *Bendis* HÜBNER, [1821]), of a tribe "Erebini". BERIO (1959, 1992) eventually recognized that *Letis* s.l. is closely related to *Ascalapha*, *Thysania* (cited as *Syrnia* HÜBNER, [1821]), *Hemeroblemma* (cited as *Blosyris*), *Cyclopis* HÜBNER, [1821], and *Teinoletis* HAMPSON, 1926.

Also the inclusiveness of the genus itself has suffered from different opinions. After much uncertainty about the systematics of *Letis*, which was seldomly tackled within classical works on the Noctuidae, e.g. only partially by DRAUDT & GAEDE (1944), FEIGE (1971, 1973, 1974, 1975, 1977) was eventually responsible for detailed systematic accounts. FEIGE (1977) defined *Letis* in a rather broad sense treating the genus as comprehensive with species previously included in *Syrnia* HÜBNER, [1821] (= *Blosyris* sensu DRAUDT & GAEDE, 1944 nec HÜBNER, [1822]) and, following examination of type material in major museums, circumstantially recognized valid species and established synonymies (FEIGE, 1973, 1977). Since FEIGE's contributions, there has been general consensus on his taxonomic delimitation (cf. POOLE, 1989) until BERIO's ([1991]) splitting of *Letis* between five genera, namely *Letis* s.str., *Syrnia* HÜBNER, [1821], *Feigeria* BERIO, [1991], *Ronania* BERIO, [1991], and *Latebraria* GUENÉE, 1852.

BERIO ([1991]) delegated all the species of the "Syrnia-group" sensu FEIGE (1977) to *Latebraria*, except of *Syrnia hypnois* HÜBNER, [1821] (in *Syrnia*), and remaining species of *Letis* s.l. to *Feigeria*, except of *Letis specularis* HÜBNER, [1821] (in *Letis*) and "*Phalaena Noctua occidua* LINNAEUS, 1758" (to *Ronania*). It should be noted that the type-species designation of *Ronania* by BERIO ([1991]) is invalid. In fact, MIKKOLA & HONEY (1993) have demonstrated that *Phalaena (Noctua) occidua* LINNAEUS, 1758 is a junior subjective synonym of *Erebus crepuscularis* (LINNAEUS, 1758), so that the name *Letis marmorides* CRAMER, 1775 was reinstated to refer to the species commonly known as *occidua* (cf. POOLE, 1989). Accordingly, under the provisions of Article 70.3 of the Code (ICZN, 1999), the type-species of *Ronania* BERIO, [1991] is here fixed as *Phalaena Noctua marmorides* CRAMER, 1775, misidentified as *Phalaena Noctua occidua* LINNAEUS, 1758 in the original designation by BERIO ([1991]).

Unfortunately, BERIO's ([1991]) rationale for his revolutionary arrangement is weak. As a matter of fact, many of the reported characters do not hold diagnostic value, as they are shared among all the proposed genera, while others are subject to considerable variation. This is the case with the configuration of the frons of males, which was checked only in the type-species and deemed to be diagnostic. However, this is a variable sexually dimorphic trait between BERIO's "congeners" as well, depending on the relative enlargement of the eyes in the male sex. This enlargement also affects the extent to which the second joint of labial palpus exceeds the profile of the eye in side view, a trait to which BERIO conferred some importance, that also varies according to the position in which palpus underwent drying in collection specimens. Other characteristics of the palpi and morphological features such as the antennae show a great intrageneric variation. Last but not least, body parts of potential taxonomic value such as aedeagus vesica and female genitalia were not analysed at all by BERIO.

It is easy to conclude that BERIO ([1991]) largely relied on FEIGE's slides of male genitalia of species of *Letis*, the drawings of which were published posthumously through the intervention of BERIO himself (FEIGE, [1991]), sorted them by discrete visual groups, selected type-species from these groups, and described genera relying solely on male samples from these representatives. Consequently, other species remained therefore delegated to the genera by virtue of similarity of the male genitalia. Due to difficulties in tracing taxonomic information in BERIO's contributions on this subject, e.g. some taxa were described in footnotes, an annotated list of the currently recognised taxa within *Letis* HÜBNER, [1821] s.l., is given in the appendix at the end of this article.

Despite BERIO's ([1991]) based methodology, for the sake of stability of nomenclature it would be unwise to reject his arrangement prior to the systematic relationships involving *Letis* s.l. and allied genera being assessed. Accordingly, the species here described is placed within *Feigeria* BERIO, [1991], as the shape of the valva and uncus is characteristic of this nominal genus.

Feigeria pinasi sp. n.

(Figs 1-5)

Type material:

Holotype: ♂, Ecuador, Cotopaxi Province, San Francisco de Las Pampas, Otonga, 2000 m, 31.V.1997, A. Di Giulio & A. Zilli leg., MZUR.

Paratypes: 1 ♂, same locality as holotype, 30/31.VIII.1993, E. Tapia, G. Onore & C. Young leg., CMNH; 3 ♀♀, same locality, 30.V.1997, A. Di Giulio & A. Zilli leg., AMNH, MCZR, and MZUR; 1 ♀, same locality, 31.V.1997, A. Di Giulio & A. Zilli leg., NHM; 1 ♂, 1 ♀, same locality, 23.II.1998, F. Piñas leg., PUCE; 1 ♀, same locality, 2200 m, 22.II.1998, F. Piñas leg., PUCE; 1 ♂, 1 ♀, Pichincha Province, Tandapá, 25.XII.1995, F. Piñas leg., PUCE; 1 ♂, Mindo, 6.XII.1996, F. Piñas leg., PUCE; 1 ♀, La Virgen, 2000 m, 5.VIII.1999, F. Piñas leg., PUCE.

Description

Derivatio nominis: The species is named after Father Francisco Piñas (Quito) in recognition of his extensive contribution in the survey of Ecuadorian Lepidoptera.

Male (Figs 1-2): Length of forewing 43.5 mm (holotype).

Head: Frons with naked longitudinal carina below mid eye, thickly scaled above; vertex thickly scaled; scales erect, dark brown interspersed by yellowish brown. Eye dark brown, ocellus shiny orange. Antenna long, filiform, slightly incrassate mesially; antennal segment subrectangular in lateral view, dorsally convex and smoothly scaled, ventrally triangular in cross-section and unscaled, deep orange, with sparse short adpressed hairs becoming denser and erect toward midventral line; scales bicoloured, basally pale and distally dark brown, arranged into two transverse rows. Sensory processes as follows: Thin dorsolateral bristle from socket in-between rows of scales, lateral spine at inner inferior corner of ventral part, series of ciliar bristles arranged into "figure-of-V" with apex from lateral spine and branches, respectively, toward outer inferior corner and middle of midventral line, superior branch made of shorter cilia and ending close to spine inserted just before line. Pilifer and proboscis well-developed. Labial palpus obliquely ascending and very compressed laterally, densely clothed by dark brown with sparse yellowish scales, second segment elongate rectangular in lateral view, third segment thin, rod-like, nearly two-thirds as long as second.

Thorax: Dark brown irrorated by pale brown scales; two blackish-brown transverse bands across base of tegulae and anterior mesoscutum, and across middle of tegulae and posterior mesoscutum, with traces of third band on metascutellum. Legs slender, dark brown irrorated by pale brown and whitish scales, particularly at distal end of tarsal segments, outer spurs of mid- and hindtibia half as long as inner ones, tarsal spining triseriate. Forewing: shape compact, little elongate apically; background dark brown with sparse pale brown scales, yellowish hue in discal and subterminal fields beyond transverse lines and around stigmata, some whitish scaling in basal field, above radius and around superior part of postmedial line; overall bluish reflectance on wing varying with incidence of light; stigmata chocolate brown defined by black ring, orbicular nearly round, a little elongate, reniform round, enclosing thin transparent trait at discocellular crossvein; transverse lines blackish-brown, well discernible, except for fading second and third medials at middle of disc and submarginal; trend of medials and postmedial concordant and little produced outwardly toward apical region; submarginal faint dark hue, forming suffused blackish spots in interspaces R_4 - R_5 and R_5 - M_1 ; antemarginal black, little waved; terminal thin; margin little waved; cilia dark brown, basally yellowish. Underside brownish, interspersed with yellowish; discal stigma outstanding, round and black, encircled by bright yellow, medials and postmedial discernible, submarginal fading in superior half, with yellow hue beyond it in lower third, antemarginal thin, reduced to interrupted strokes superiorly, terminal line and cilia as on upperside. Hindwing concolourous with forewing, with more evident yellowish taint around discal stigma and beyond transverse lines; shape and colour of stigma as forewing reniform, submarginal well evident, antemarginal and marginal more waved than in forewing, cilia as in forewing, margin scalloped on veins. Underside: background dark brown sharply contrasting with yellow around black discal stigma, beyond transverse lines and in apical and subterminal areas so as to produce distinct tabby appearance.

Abdomen: Dark brown dorsally, with paler scaling at middorsal line and on underside, thin blackish stripe before apex.

Male genitalia (Figs 5a-5b): Tegumen slender and narrow, vinculum long and slender, without produced saccus, valva broad and flat, with small flat projection at middle of distal edge, clasper flat, in form of sinuous elongate plaque with small rounded distal projection, juxta 'hill-shaped', with trapezoidal ventral part and small incurved sclerotization facing against aedeagus; uncus stout, strongly hooked at base and incurved ventrally, distally swollen with long dorsal setae and pointed apex; scaphium long, nastriform. Aedeagus long, tubular, with little diverging anterior caecum, vesica with lateral angled diverticulum from corpus, two small sack-like heterolateral diverticula, inferior swelling and distal diverticulum apically swollen and blunt ending with cornutus made of several small thorns on common sclerotized plate.

Female (Figs 3-4): Length of forewing 45-49 mm (n = 4).

Head: Essentially as described for male, except antenna, thinner, with segment convex also ventrally, devoid of series of ciliar bristles and with shorter spines, and eye, barely smaller, hereafter frons being slightly wider.

Thorax: As described for male, with broader wings; Variability occurs as to degree of pale brown and yellowish irroration and absolute size of stigmata. Underside as in male, but overall more yellowish.

Abdomen: More uniformly brown than in male, with paler apical tufting.

Female genitalia (Fig. 5c): Abdominal segment eighth uniform sclerotized belt interrupted ventrally with evenly curved margins and leaving wide ventral chitinous area, apophyses anteriores slender, barely flattened and dilated apically, as long as three-fourths of posteriores, ostium bursae broad, sclerotized, subrectangular transverse, with anterior margin in form of wide 'V', ductus bursae sclerotized, elongate subrectangular, bursa posteriorly cone-shaped with several sclerotized longitudinal ribs, anterior corpus ovoidal; ductus seminalis originating from little posterior projection of bursa close to ductus. Ovipositor rather long, blunt, with subquadrate papillae anales bearing sparse setae and punctures, apophyses posteriores slender, rod-like.

Distribution: Hitherto known only from a restricted area of the Pacific slope of the western Cordillera in the Provinces of Cotopaxi and Pichincha (Ecuador).

Biology: Immature stages unknown. Based on data from collected material, adults are on the wing all the year round and the species is therefore probably continuously brooded. The imago is nocturnal.

Discussion: This species does not superficially resemble any other species of *Feigeria* or supposedly related genera, i.e. *Letis* s.str., *Ronania*, *Syrnia*, *Latebraria*, *Teinoletis*, *Cyclopis*, *Ascalapha*, *Thysania*, and *Hemeroblemma*, being characterized externally by circular discal spots which are alike between wings, so that these show an outstanding eye-spot at the discocellular crossvein. Distinctly circular discal spots occur only in *Feigeria claricostata* (DOGNIN, 1912) and *Cyclopis caecutiens* HÜBNER, [1821], but they are restricted to the forewings. Peculiarly, there is only a weak sexual dimorphism, the forewing of the male being not as elongate, the eye of the male not as enlarged, and wing pattern not as different between sexes as in the vast majority of other species of *Feigeria*. Interestingly, in addition to the eye-spot-like reniform stigma, *F. claricostata* shows the greatest similarities with *F. pinasi* with low sexual dimorphism and in configuration of aedeagus vesica, so that these two species are assumed to be systematically related.

The most remarkable feature of the wing pattern of *F. pinasi* is the occurrence of the eye-spot-like discal spots on both fore- and hindwing, so that there is virtually no difference between the forewing "reniform" and the hindwing discal stigmata. This similarity between fore- and hindwing does not only consist of colour symmetry in pigment deposition between homologous elements (cf. NIJHOUT, 1991) but also in their shape, as in the case of discal spots. The same theme, moreover, reoccurs on the underside, with the only difference in the spots being that they are entirely black. This pattern gives the species an

appearance reminiscent of many Saturniidae that has little equal, if any, in the family Noctuidae as a whole. As a matter of fact, in the author's experience and following extensive search through the richest in iconography noctuid literature (e.g. HAMPSON, 1903-1913; SEITZ, 1909-1914, 1912-1938, 1913-1940, 1919-1944, 1931-1938) no known species of the World Noctuidae can rival with *F. pinasi* as far as symmetry levels of the discal spots are concerned (within spot, between fore- and hindwing, and between upper- and underside).

The discovery of *F. pinasi* opens new perspectives for a proper elucidation of systematic relationships within the whole group of *Letis* s.l. and related genera. In fact, the low expression of traits which are sexually dimorphic in other species, the presence of eye-spot-like discal spots, and these being shared between fore- and hindwings, suggest that *F. pinasi* is a highly plesiomorphic taxon, any alternative hypothesis being far less parsimonious. The relic distribution of the species in the montane forests of the Pacific slope of the Western Ecuadorian Cordillera further corroborates this view. NIJHOUT (1991) recognizes that radially symmetrical elements, such as eye-spot, are likely to be controlled by point sources for pattern determination at their centre, and any deviation from circularity must be achieved through additional information to the system. The gaining of radial symmetry from an asymmetrical precursor shape, as well as the acquisition of shape symmetry of pattern elements between wings, wing surfaces and sexes, and the reversal of sexual dimorphism in general, would therefore require the release of long-established developmental constraints in parallel to selection accounting for these changes. Also outgroup comparisons suggest that *F. pinasi* has primitive characters states. Eye-spot-like reniform stigmata are considered a shared characteristic of the "Erebinae" assemblage by KITCHING & RAWLINS (1999) and they occur in the genera considered by BERIO (1959, 1992) as the most basal of this group, namely *Erebus* LATREILLE, 1810 and *Cyligramma* BOISDUVAL, 1833, although the pigment deposition pattern inside the spots is not radially symmetric.

Acknowledgments

The author is deeply indebted to Axel Hausmann (Zoologische Staatssammlung, München), Willem Hogenes (Zoologisch Museum, Amsterdam), Martin Honey (The Natural History Museum, London), Wolfram Mey (Museum für Naturkunde, Berlin), Giovanni Onore and Francisco Piñas (Pontificia Universidad Católica del Ecuador, Quito), Eric L. Quinter (American Museum of Natural History, New York), John E. Rawlins (Carnegie Museum of Natural History, Pittsburgh) and A. Vigna Taglianti (Museo di Zoologia dell'Università, Rome) for allowing the examination of the material under their care and their invaluable collaboration, the latter also for financing and allowing the author joining field expeditions. Grateful thanks go also to Mark Parsons (British Butterfly Conservation Society, London) for his kind polishing the English style. Last but not least, the Natural History Museum (London) is gratefully acknowledged for the use of original information stored in the "Noctuid Card Index". This research was financially supported by a grant from the MURST (40 %) to the University of Rome "La Sapienza".

Taxonomic appendix

Annotated list of currently recognised taxa within the late genus *Letis* HÜBNER, [1821], following the arrangement proposed by BERIO ([1991]), the recentmost contributions on the group and, marked with an asterisk (*), original information supplied by courtesy of the Natural History Museum (London).

Letis HÜBNER, [1821] (Type-species: *Letis specularis* HÜBNER, [1821])

= *Blosyris* [partim]; sensu auct. nec HÜBNER, [1822]

Letis specularis HÜBNER, [1821]

*Notes. *Letis discopalina* WALKER, 1858, and *Letis intracta* WALKER, 1858, quoted by POOLE (1989) in the genus *Letis*, belong to *Peteroma* SCHAUS, 1901, and *Hemeroblema* HÜBNER, 1818, respectively.

Feigeria BERIO, [1991] (Type-species: *Phalaena herilia* STOLL, 1790, but cited as *herilia* CRAMER, 1780, an incorrect authorship)

Feigeria scops (GUENÉE, 1852) (Letis)

Feigeria feigei BERIO, [1991]

Feigeria scopoides BERIO, [1991]

Feigeria alauda (GUENÉE, 1852) (Letis)

*= *Letis trailii* BUTLER, 1879

Feigeria xylia (GUENÉE, 1852) (Letis)

= *Letis suava* MÖSCHLER, 1880

Feigeria xylina [BERIO, in FEIGE, [1991]]

Feigeria buteo (GUENÉE, 1852) (Letis)

= *Letis vittifera* WALKER, 1858

= *Letis albicans* WALKER, 1858

Feigeria letiformis (GUENÉE, 1852) (Syrnia)

= *Letis integra* WALKER, 1858

Note. BERIO treated in the same year *Syrnia letiformis* GUENÉE, 1852 as a synonym of *Letis buteo* GUENÉE, 1852 based on a colour form (in FEIGE, [1991]) and as a valid species (BERIO, [1991]). Preliminary investigations support the view that this name actually represents a valid species. The synonymy with *Letis integra* WALKER, 1858 is tentative.

Feigeria hercyna (DRURY, 1773) (*Phalaena Noctua*)

Feigeria lignitis (HAMPSON, 1926) (*Blosyris*)

= *Letis mineis*; sensu auct. nec HÜBNER, [1821]

Feigeria dichroa (HAMPSON, 1926) (*Blosyris*)

Feigeria melba (FELDER & ROGENHOFER, 1874) (Letis)

= *Letis sophia* MÖSCHLER, 1880

= *Blosyris leucomicta* HAMPSON, 1926

Feigeria orcynia (DRUCE, 1890) (Letis)

Feigeria nero (FEIGE, 1975) (Letis)

Feigeria caligula (MAASSEN, 1890) (Letis)

= *Letis orcynia* var.; sensu DRUCE, 1890

Feigeria mycerina (CRAMER, 1777) (*Phalaena Noctua*)

= *Letis nycteis* GUENÉE, 1852

= *Letis fusa* GUENÉE, 1852

= *Letis atricolor* GUENÉE, 1852

Feigeria mineis (HÜBNER, [1821]) (Syrnia)

= *Letis cortex* GUENÉE, 1852

= *Letis implens* WALKER, 1858

Feigeria vultura (DRUCE, 1890) (Letis)

Feigeria magna (GMELIN, 1789) (*Phalaena Noctua*)

= *Brujas laticincta* (WALKER, 1858)

= *Letis aptissima* WALKER, 1858

= *Letis abrupta* WALKER, 1858

= *Letis falco* MÖSCHLER, 1880

Feigeria herilia (STOLL, 1789) (*Phalaena Noctua*)

*= *Letis securivitta* WALKER, 1867

Feigeria claricostata (DOGNIN, 1912) (Letis)

Feigeria pinasi sp. n. (here described)

Feigeria arpi (A.E. PROUT, 1921) (*Blosyris*)

Feigeria maculicollis (WALKER, 1858) (*Brujas*)

= *Blosyris marmorides*; sensu DRAUDT & GAEDE, 1944 nec CRAMER, 1775

Feigeria tiasa (DRUCE, 1890) (*Thysania*)

Ronania BERIO, [1991] (Type-species: *Phalaena Noctua marmorides* CRAMER, 1775)

Ronania marmorides (CRAMER, 1775) (*Phalaena Noctua*)

= *Phalaena Noctua corisandra* STOLL, 1780

= *Phalaena Noctua occidua*; sensu auct. nec LINNAEUS, 1758

Note. As BERIO ([1991]) established for the genus a misidentified type-species, viz. *Phalaena Noctua occidua* LINNAEUS, 1758 (cf. MIKKOLA & HONEY, 1993), by virtue of the provisions of Article 70.3 of the Code (ICZN 1999), the type-species of *Ronania* BERIO, [1991], is here fixed as *Phalaena Noctua marmorides* CRAMER, 1775.

Syrnia HÜBNER, [1821] (Type-species: *Syrnia hypnois* HÜBNER, [1821])
 = *Blosyris* [partim]; sensu auct. nec HÜBNER, [1822]
Syrnia hypnois HÜBNER, [1821]

Latebraria GUENÉE, 1852 (Type-species: *Latebraria amphipyroides* GUENÉE, 1852)
Latebraria amphipyroides GUENÉE, 1852
 = *Latebraria errans* WALKER, 1858
Latebraria doliaris (GUENÉE, 1852) (*Syrnia*)
 = *Syrnia confundens* WALKER, 1858
 = *Letis cytheris* MÖSCHLER, 1880
 = *Blosyris scopsella* HAMPSON, 1926
 = *Letis ketupa* GUENÉE, 1852
Latebraria orcus (FEIGE, 1971) (*Blosyris*)
Latebraria arcana (FEIGE, 1974) (*Letis*)
Latebraria iphianasse (CRAMER, 1777) (*Phalaena Noctua*)
 = *Letis steatornis* FELDER, 1874
Latebraria janthinea (DOGNIN, 1914) (*Blosyris*)
Latebraria albidentina (HAMPSON, 1926) (*Blosyris*)
Latebraria albifimbria (WALKER, 1858) (*Syrnia*)
 = *Letis albociliata* SCHAUS, 1911
Latebraria tuisana (SCHAUS, 1911) (*Letis*)
 = *Blosyris nocticoelum* FEIGE, 1971
Latebraria nymphaloides (WALKER, 1858) (*Ramphia*)
 = *Letis opalisans* FELDER, 1874

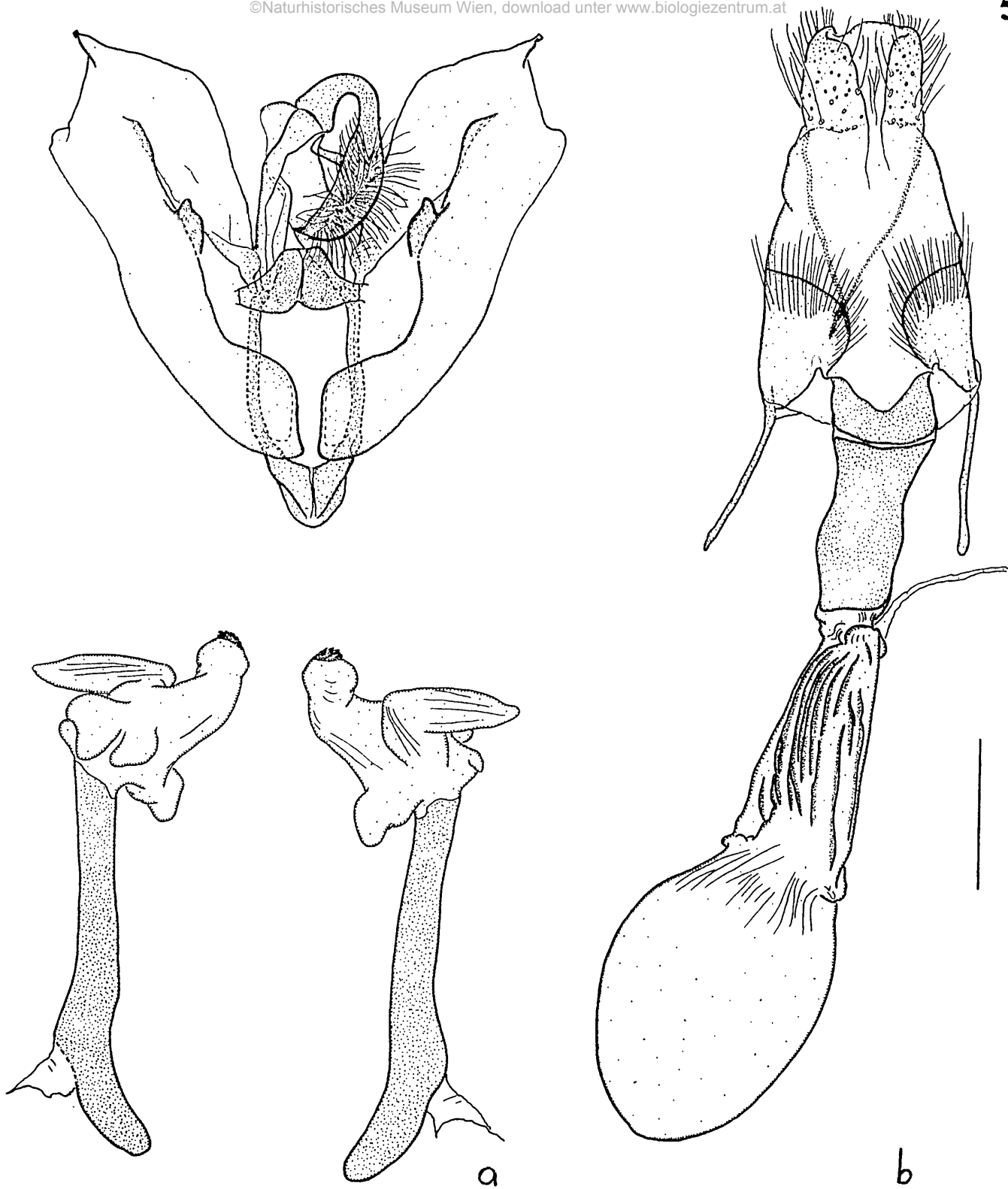
Figs. 1-4 on the next page:

Feigeria pinasi sp.n. (1) ♂, Holotype, Ecuador, Cotopaxi, Otonga. (2) idem, underside. (3) ♀, Paratype, Ecuador, Otonga. (4) idem, underside.

Fig. 5 on page 150:

Genitalia of *Feigeria pinasi* sp.n., Ecuador, Cotopaxi, Otonga. (a) Male (holotype). (b) Aedeagus, lateral views. (c) Female (paratype). Scale bar = 2 (a-b), 2.148 mm (c).





Literature

- BERIO, E. 1959: Studi sulla sistematica delle cosiddette "Catocalinae" e "Othreinae" (Lepidoptera, Noctuidae).- Annali del Museo Civico di Storia Naturale "Giacomo Doria" di Genova 71: 276-327.
- BERIO, E. [1991]: La sistematica dell'antico genere neotropicale *Letis* HBN. (e *Blosyris* HBN.) (Lepidoptera, Noctuidae, Catocalinae, Ophiderini) con descrizione di 2 nuove specie.- Frustula Entomologica (n.s.) 11 (1988): 31-40.
- BERIO, E. 1992: Ricerca di possibili modelli sistematici per le Catocalinae e Ophiderinae del Globo (Lepidoptera Noctuidae). Memorie della Società Entomologica Italiana 70(2) (1991): 287-303.
- DRAUDT, M. & GAEDE, M. 1944: Unterfamilie Noctuinae. [in] SEITZ A. (Ed.): Die Gross-Schmetterlinge der Erde 7: 471-508, pls 73-83, 85-86, 88-91, 93-94, 96. A. Kern, Stuttgart.
- FEIGE, R. 1971: Zwei neue *Blosyris*-Arten aus Venezuela. (Lep., Noctuidae).- Deutsche Entomologische Zeitschrift (N.F.) 18: 265-269.
- FEIGE, R. 1973: Notizen zur Synonymie einiger Arten der Gattung *Letis* HBN. (Lep., Noctuidae).- Deutsche Entomologische Zeitschrift (N.F.) 20: 171.
- FEIGE, R. 1974: *Letis arcana* spec. nov. (Lep., Noctuidae).- Deutsche Entomologische Zeitschrift (N.F.) 21: 149-150.
- FEIGE, R. 1975: *Letis nero* n. sp., eine neue Noctuide aus Venezuela (Lep.).- Entomologische Zeitschrift 85: 101-104.
- FEIGE, R. 1977: Kurze Darstellung der neotropischen Gattung *Letis* HBN. und ihrer Arten (Lep. Noctuidae).- Deutsche Entomologische Zeitschrift (N.F.) 24: 123-139.
- FEIGE, R. [1991]: Drawings of the male genitalia of genus *Letis* species.- Frustula Entomologica (n.s.) 11 (1988): 19-29.
- FORBES, W.T.M. 1954: Lepidoptera of New York and neighboring states 3. Noctuidae.- Cornell University Agricultural Experiment Station, Memoir 329: 1-433.
- HAMPSON, G.F. 1903-1913: Catalogue of the Lepidoptera Phalaenae in the collection of the British Museum, 4-13.- Trustees of the British Museum, London, xx + 689, xiv + 634, xiv + 532, xv + 709, xiv + 583, xv + 552, xix + 829, xvii + 689, xiii + 626, xvi + 609 pp., 185 pls (55-239).
- HARDWICK, D.F. 1950: Preparation of slide mounts of lepidopterous genitalia.- The Canadian Entomologist 82: 231-235.
- ICZN 1999: International code of zoological nomenclature. 4th edition. The International Trust for Zoological Nomenclature, London, xxix + 306 pp.
- KITCHING, I.J. & RAWLINS, J.E. 1999: The Noctuoidea. [in] KRISTENSEN N.P. (Ed.): Handbuch der Zoologie 4.35. Lepidoptera, Moths and Butterflies 1: 355-401. W. de Gruyter, Berlin.
- KRISTENSEN, N.P. (Ed.) 1999: Handbuch der Zoologie 4.35. Lepidoptera, Moths and Butterflies 1. W. de Gruyter, Berlin, x + 487 pp.
- MIKKOLA, K. & HONEY, M.R. 1993: The Noctuoidea (Lepidoptera) described by Linnaeus.- The Zoological Journal of the Linnean Society of London 108: 103-169.
- NIJHOUT, H.F. 1991: The development and evolution of butterfly wing patterns.- Smithsonian Institution Press, Washington, xvi + 297 pp.
- POOLE, R.W. 1989: Noctuidae. [in] HEPPNER J.B. (Ed.): Lepidopterorum catalogus (n.s.) 118: i-xii, 1-1314. Brill-Flora & Fauna Publ., Leiden & New York.
- RICHARDS, A.G. 1933: Comparative skeletal morphology of the noctuid tympanum.- Entomologica Americana (n.s.) 13 (1932): 1-43, pls 1-20.
- SEITZ, A. (Ed.) 1909-1914: Die Gross-Schmetterlinge der Erde 3.- A. Kern, Stuttgart, iii + 511 pp., 75 pls.

- SEITZ, A. (Ed.) 1912-1938: Die Gross-Schmetterlinge der Erde 11.- A. Kernen, Stuttgart, ii + 496 pp., 57 pls (1-41, 41A, 42-56).
- SEITZ, A. (Ed.) 1913-1940: Die Gross-Schmetterlinge der Erde 15.- A. Kernen, Stuttgart, iii + 358 pp., 41 pls.
- SEITZ, A. (Ed.) 1919-1944: Die Gross-Schmetterlinge der Erde 7.- A. Kernen, Stuttgart, ii + 508 pp., 87 pls (1-49, 55-83, 85-86, 88-91, 93-94, 96).
- SEITZ, A. (Ed.) 1931-1938: Die Gross-Schmetterlinge der Erde. Supplement 3.- A. Kernen, Stuttgart, vi + 332 pp., 26 pls.
- SPEIDEL, W., FÄNGER H. & NAUMANN C.M. 1996: The phylogeny of the Noctuidae (Lepidoptera).- *Systematic Entomology* 21: 219-251.
- WELTER, S.J., PASHLEY D.P., MARTIN J.A. & CONSTABLE J.L. 1994: Phylogeny of noctuid moths and the utility of combining independent nuclear and mitochondrial genes.- *Systematic Biology* 43: 194-211.
- YEI A, J.L. & KITCHING I.J. 1999: La filogenia de Noctuidos, revisada (Insecta: Lepidoptera, Noctuidae). *Boletín de la Sociedad Entomológica Aragonesa* 26: 485-520.

Author's address

Dr. Alberto Zilli, Museum of Zoology, Via U. Aldrovandi 18, I-00197 Rome, Italy.- e-mail: a.zilli@comune.roma.it

ZOBODAT - www.zobodat.at

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Quadrifina](#)

Jahr/Year: 2003

Band/Volume: [6](#)

Autor(en)/Author(s): Zilli Alberto

Artikel/Article: [A new species of the late genus Letis HÜBNER \[1821 \] from Ecuador: an exercise of symmetry \(Lepidoptera: Noctuidae\). 141-152](#)