

# The genera *Cosmopterix* Hübner and *Pebobs* Hodges in the New World with special attention to the Neotropical fauna (Lepidoptera: Cosmopterigidae)

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The genera *Cosmopterix* Hübner, [1825] and *Pebobs* Hodges, 1978 (Cosmopterigidae) of the New World are revised, for the Neotropical fauna for the first time. A total of 102 species is recognized and 49 species are described as new: *Cosmopterix adrastea* spec. nov., *C. amalthea* spec. nov., *C. ananke* spec. nov., *C. argentifera* spec. nov., *C. aurotegulae* spec. nov., *C. beckeri* spec. nov., *C. callisto* spec. nov., *C. carpo* spec. nov., *C. chaldene* spec. nov., *C. chalupae* spec. nov., *C. erinome* spec. nov., *C. etmylaurae* spec. nov., *C. euanthe* spec. nov., *C. eukelade* spec. nov., *C. euporie* spec. nov., *C. ganymedes* spec. nov., *C. gielisorum* spec. nov., *C. gomezpompai* spec. nov., *C. harpalyke* spec. nov., *C. helike* spec. nov., *C. hermippe* spec. nov., *C. himalia* spec. nov., *C. io* spec. nov., *C. iocaste* spec. nov., *C. karsholti* spec. nov., *C. langmaidi* spec. nov., *C. lummyae* spec. nov., *C. lysithea* spec. nov., *C. metis* spec. nov., *C. mneme* spec. nov., *C. navarroi* spec. nov., *C. nieukerkeni* spec. nov., *C. nishidai* spec. nov., *C. orthosie* spec. nov., *C. pimmaarteni* spec. nov., *C. praxidike* spec. nov., *C. saltensis* spec. nov., *C. schouteni* spec. nov., *C. taygete* spec. nov., *C. thebe* spec. nov., *C. thelxinoe* spec. nov., *C. themisto* spec. nov., *C. thyone* spec. nov., *C. trifasciella* spec. nov., *C. vanderwolfi* spec. nov., and *Pebobs aitne* spec. nov., *P. elara* spec. nov., *P. isonoe* spec. nov., *P. kale* spec. nov. Two new combinations are introduced: *Pebobs sanctivincenti* (Walsingham, 1891) comb. n. and *P. tetragramma* (Meyrick, 1915) comb. n., and five new synonyms are proposed: *Cosmopterix bendidia* Hodges, 1962, a junior synonym of *C. astrapias* Walsingham, 1909, *C. venefica* Meyrick, 1915, *C. attenuatella* (Walker, 1864), *C. dicacula* Hodges, 1962 of *C. callichalca* Meyrick, 1922, *C. gracilens* Hodges, 1962 of *C. inopis* Hodges, 1962, and *C. abdita* Hodges, 1962 of *C. teligera* Meyrick, 1915 of *Batrachedra violenta* Meyrick, 1916, previously considered a *Cosmopterix* is transferred to the genus *Coccidiphila* Danilevski, 1950 (comb. n.). Lectotypes are designated in accordance with ICZN (article 74.7.3) for the following species: *Cosmopteryx chalybaeella* Walsingham, 1889, *C. clemensella* Stainton, 1860, *C. delicatella* Walsingham, 1889, *C. irrubricata* Walsingham, 1909, *C. nitens* Walsingham, 1889, *C. similis* Walsingham, 1897 and *C. sanctivincenti* (Walsingham, 1891). Diagnoses, descriptions, and type information are provided for each species. Watercolours of the adults, line drawings of the wing venation, the male and female genitalia and leaf mines and a key to the species are included, as well as distribution maps.

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## Introduction

The genera *Cosmopterix* Hübner, [1825] and *Pebobs* Hodges, 1978 (Cosmopterigidae: Gelechioidea) comprise small, sometimes very small and often beautifully coloured moths with a striking forewing pattern. Most species are easily recognisable by the broad yellow to orange fascia on the forewing, which is bordered by tubercular golden or silver metallic coloured fasciae or spots. The genus *Cosmopterix* occurs on all continents except the polar regions, but the main distribution is in tropical and subtropical areas. To date the occurrence of the genus *Pebobs* had been restricted to the Nearctic region (Sinev, 2002). In this paper the occurrence of *Pebobs* in the Neotropical region is established. In contrast with the Palearctic and Nearctic regions, the Neotropical region has only received attention from a few authors in the past.

In the New World the *Cosmopterix* fauna of the Nearctic region is rather well explored compared with that of the Neotropical region. In the Nearctic region Clemens (1860), Stainton (1860), Chambers (1875, 1878), Walsingham (1882, 1889), Beutenmüller (1889), Busck (1906), Braun (1919) and Meyrick (1919) described a total of 15 species, later followed by the revisions by Hodges (1962, 1978). Particularly Hodges' publications, who described 14 new species for the region, provide also extensive details of all the previously described species. In contrast, the *Cosmopterix* species in the Neotropical region have only received little attention. Walsingham (1891, 1897, 1909) described species from Central America and the Caribbean. Later Meyrick (1915, 1922, 1932) dealt with species from several countries, mainly in the northern part of South America, but also from islands in the Caribbean. All this material had been collected in the last decade of the 19th and the first decades in the 20th century. Becker (1984) listed the species described from the Neotropical area from data in the literature. He later transferred the two species of *Capanica* Meyrick, 1917 to *Cosmopterix* (Becker, 1999), but Sinev (2002) in his world catalogue of Cosmopterigidae again moved them to *Capanica*. After quite some time of inactivity in collecting *Cosmopterix*-material in this region, Danish and Dutch scientists organized several expeditions and Lepidoptera collecting trips to Argentina, Chile and other countries in South America in the last decades of the 20th century. Landry (2001) also added several endemic species to the list as a result of his visits to the Galapagos Islands. Nishida (pers. comm.) also recently collected and reared material during his study on gall-making Lepidoptera in Costa Rica. Nevertheless, a large part of the Neotropical material treated in this publication has been collected by Vitor Becker, especially from Brazil, but also from other countries in Central America and the Caribbean.

The genus *Pebobs* was described as monotypic by Hodges (1978). Forewing length and pattern are similar to *Cosmopterix*. Differences between the genera lie in the male and female genitalia. In the present work the number of *Pebobs* species is raised to seven through new generic combinations and recognition of new species.

The primary goal of this study is to make a revision of the genera *Cosmopterix* and *Pebobs* of the Neotropical fauna. As the Neotropical region borders in the north on the Nearctic region, at least several species can be expected to occur in both regions. For this reason all Nearctic species are also included in the checklist.

## Material and methods

All original descriptions were checked and the types of the Neotropical fauna were examined, except for a few recently described species from the Galapagos Islands. From the latter material the extensive original descriptions and the material from the type-series in the collection of the author were considered sufficient. Due to the revisions of the Nearctic *Cosmopterigidae* (Hodges, 1962, 1978), in which the species of both genera were thoroughly described and the male and female genitalia well depicted, it was deemed necessary to examine less than half of the primary types.

Descriptions of adults are based on both male and female specimens. Sexual dimorphism could only be found in the coloration of the anal tuft and is mentioned in the description of the abdomen. The level of intra-specific variation differs among the species. If there is any, it has been mentioned in the description of external features.

Unfortunately the available material from the Neotropical area was limited for many of the species. Although the wing pattern is usually species-specific, also groups of species with similar external features exist. Therefore, usually males have been selected as holotypes. In a few cases, when males were not available and confusion with other species could be excluded, a female has been selected as the holotype. Genitalia were dissected as described by Robinson (1976) and Brown (1997). To highlight the sclerotized parts of the male genitalia, they were stained using orange G and additionally eosin; female genitalia were stained with orange G as well, and chlorazol black was used to stain unsclerotized parts. Preparations were embedded in Euparal.

The male genitalia of both genera are often rather complex and not easy to spread in the ventral position. For this reason line drawings of the male genitalia are given in lateral as well as in ventral view. It is recommended to start the identification already before embedding the genitalia in Euparal. It is also possible to store the dissected genitalia temporarily in a vial with glycerine or a solution of 70% ethanol-glycerine 1:1.

## Notes on illustrations

The species of *Cosmopterix* and *Pebobs* have a shining and colourful appearance with metallic coloured tubercular scale spots. Good illustrations are indispensable for the identification on external characters. Unfortunately, much of the material available, especially from the Neotropical Region, is old, often badly set or worn. For this reason the adults have been depicted in watercolours and not photographed. The illustrations were made from the actual specimens, but in some cases more than one specimen was used to obtain a better picture. The watercolours of the species have been depicted 20× the original size and were reduced in print to 65% of the original watercolour size.

The male genitalia are depicted as line drawings in lateral and ventral view to ease identification. The female genitalia are also depicted as line drawings in ventral position. The sterigma is separately shown, enlarged. Line drawings of male and female genitalia have been reduced to 70% of the original drawings. The drawings were prepared by projecting the genitalia slides through a compound microscope on the drawing paper, using a slide projector as light source. Scale bars on the genitalia drawings have a length of 0.1 mm. The enlarged detail drawings of female sterigmas have differ-

ent scales for each species, not indicated in the figures. Genitalia slides are mentioned in the text as gen. slide, followed by the abbreviation of the institutional name or the maker and by their registration number.

Specific epithets are explained in the description under 'etymology'.

### Maps

The maps were prepared with DMAP 7.2c (Morton, 2004). The symbols on the maps represent the material that has been examined for this study including the few holotypes of the Nearctic fauna which were examined by Hodges (1978) and not by the author. The distribution in the USA, as stated by Hodges (1978), has been repeated here in the paragraph Distribution. Data from internet sites, providing the distribution of *Cosmopterix* for certain states in the USA, are not included in these maps, since I was unable to verify these records.

### Abbreviations

This study is based on material from museum and private collections. The abbreviations of the museums and institutions follow Evenhuis & Samuelson (2004). The remainder is added here.

ANSP	Academy of Natural Sciences, Philadelphia, USA
BMNH (BM)	Natural History Museum, London, UK, formerly British Museum (Natural History Museum)
CNC	Canadian National Collection of Insects, Ottawa, Canada
CUIC	Cornell University Insect Collection, Ithaca, USA
GB	Personal collection of George Balogh, Portage, USA
HNHM	Hungarian National History Museum, Budapest, Hungary
INBC	Instituto Nacional de Biodiversidad (INBio), Santo Domingo de Heredia, Costa Rica
JCK	personal collection of J.C. Koster, Losser, The Netherlands (collection in RMNH)
MEM	Mississippi Entomological Museum, Starkville, USA
MGAB	Muzeul de Istoria Naturala 'Grigore Antipa', Bucharest, Romania
MHNG	Muséum d'Histoire Naturelle, Geneva, Switzerland
MNHN	Muséum National d'Histoire Naturelle, Paris, France
MNMS	Museo Nacional de Ciencias Naturales, Madrid, Spain
MSUC	Michigan State University, East Lansing, USA
NMW	Naturhistorisches Museum Wien [Vienna], Austria
RMNH	Netherlands Centre for Biodiversity Naturalis, Leiden, zoological collections Leiden, The Netherlands
UCR	Universidad de Costa Rica, San José, Costa Rica
VOB	personal collection of Vitor Becker, Camacan, Brazil
VDW	personal collection of Hugo van der Wolf, Nuenen, The Netherlands
USNM	Smithsonian Institution, National Museum of Natural History, Washington D.C., USA

ZMA	Netherlands Centre for Biodiversity Naturalis, zoological collections Amsterdam (former Zoological Museum Amsterdam) the Netherlands
ZMHB	Museum für Naturkunde der Humboldt-Universität, Berlin, Germany
ZMUC	Zoological Museum, University of Copenhagen, Denmark

**Checklist of *Cosmopterix* and *Pebobs* of the New World  
with synonyms and type localities**

- Cosmopterix* Hübner, [1825]: 424  
*Cosmopteryx* Zeller, 1839: 210; unjustified  
 emendation  
*Lienigia* Spuler, 1910: 389
- abnormalis* Walsingham, 1897. – Haiti  
*adrastea* spec. nov. – Cuba  
*albicaudis* Meyrick, 1932. – US Virgin  
 Islands  
*amalthea* spec. nov. – Cuba  
*ananke* spec. nov. – Brazil  
*argentifera* spec. nov. – Jamaica  
*astrapias* Walsingham, 1909. – Mexico  
*nbendidia* Hodges, 1962 syn. n.  
*attenuatella* (Walker, 1864), – Jamaica  
*flavofasciata* Wollaston, 1879  
*mimetis* Meyrick, 1897  
*antichorda* Meyrick, 1909  
*venefica* Meyrick, 1915 syn. n.  
*apiculata* Meyrick, 1922  
*antillia* Forbes, 1931  
*superba* Gozmány, 1960  
*aurotegulae* spec. nov. – Mexico  
*bacata* Hodges, 1962. – USA  
*beckeri* spec. nov. – Brazil.  
*callichalca* Meyrick, 1922. – Brazil  
*dicacula* Hodges, 1962 syn. n.  
*callisto* spec. nov. – Peru  
*carpo* spec. nov. – Puerto Rico  
*chaldene* spec. nov. – Brazil  
*chalupae* spec. nov. – Argentina  
*chalybaeella* Walsingham, 1889. – USA  
*chisosensis* Hodges, 1978. – USA  
*citrinopa* Meyrick, 1915. – Peru  
*clandestinella* Busck, 1906. – USA  
*clemensella* Stainton, 1860. – USA  
*hermodora* Meyrick, 1919  
*damnosa* Hodges, 1962. – USA
- dapifera* Hodges, 1962. – USA  
*delicatella* Walsingham, 1889. – USA  
*diaphora* Walsingham, 1909. – Mexico  
*ebriola* Hodges, 1962. – USA  
*erasmia* Meyrick, 1915. – Guyana  
*erinome* spec. nov. – USA  
*etmylaurae* spec. nov. – Costa Rica  
*euanthe* spec. nov. – Brazil  
*eukelade* spec. nov. – Peru  
*euporie* spec. nov. – Brazil  
*facunda* Hodges, 1978. – USA  
*feraldella* Walsingham, 1882. – USA  
*floridanella* Beutenmüller, 1889. – USA  
*nigrapunctella* Busck, 1900  
*galapagosensis* Landry, 2001. – Ecuador  
*ganymedes* spec. nov. – Argentina  
*gemmiferella* Clemens, 1860. – USA  
*gielisorum* spec. nov. – Ecuador  
*gomezpompai* spec. nov. – Costa Rica  
*harpalyke* spec. nov. – Brazil  
*helike* spec. nov. – Brazil  
*hermippe* spec. nov. – Brazil  
*himalia* spec. nov. – Brazil  
*inaugurata* Meyrick, 1922. – Brazil  
*inopis* Hodges, 1962. – USA  
*gracilens* Hodges, 1962 syn. n.  
*interfracta* Meyrick, 1922. – Brazil  
*io* spec. nov. – Mexico  
*iocaste* spec. nov. – Brazil  
*irrubricata* Walsingham, 1909. – Mexico  
*isotoma* Meyrick, 1915. – Guyana  
*karsholti* spec. nov. – Peru  
*langmaididi* spec. nov. – Belize  
*lespedezae* Walsingham, 1882. – USA  
*lummyae* spec. nov. – Brazil  
*lysithea* spec. nov. – Brazil  
*madeleinae* Landry, 2001. – Ecuador  
*magophila* Meyrick, 1919. – USA



- metis* spec. nov. – Brazil  
*minutella* Beutenmüller, 1889. – USA  
*mneme* spec. nov. – Brazil  
*molybdina* Hodges, 1962. – USA  
*montisella* Chambers, 1875. – USA  
     *unicolorella* Walsingham, 1889  
*navarroi* spec. nov. – Argentina  
*nieukerkeni* spec. nov. – Argentina  
*nishidai* spec. nov. – Costa Rica  
*nitens* Walsingham, 1889. – USA  
*nyctiphanes* Meyrick, 1915. – Ecuador  
*ochleria* Walsingham, 1909. – Mexico  
*opulenta* Braun, 1919. – USA  
*orthosie* spec. nov. – Brazil  
*pentachorda* Meyrick, 1915. – Peru  
*pimmaarteni* spec. nov. – Brazil  
*praxidike* spec. nov. – Mexico  
*pulchrimella* Chambers, 1875. – USA  
     *parietariae* Hering, 1931  
*pyrozela* Meyrick, 1922. – Brazil  
*quadrilineella* Chambers, 1878. – USA  
*saltensis* spec. nov. – Argentina  
*schouteni* spec. nov. – Argentina  
*scirpicola* Hodges, 1962. – USA  
*similis* Walsingham, 1897. – US Virgin  
     Islands  
*sinelinea* Hodges, 1978. – USA
- taygete* spec. nov. – Brazil  
*teligera* Meyrick, 1915. – Colombia  
     *abditata* Hodges, 1962 syn. n.  
*tenax* Meyrick, 1915. – Colombia  
*thebe* spec. nov. – Peru  
*thelxinoe* spec. nov. – USA  
*themisto* spec. nov. – Brazil  
*thrasyzela* Meyrick, 1915. – Guyana  
*thyone* spec. nov. – Brazil  
*trifasciella* spec. nov. – Ecuador  
*vanderwolffi* spec. nov. – Puerto Rico  
*xanthura* Walsingham, 1909. – Mexico  
*yvani* Landry, 2001. – Ecuador

*Pebobs* Hodges, 1978: 38

- aitne* spec. nov. – Belize  
*elara* spec. nov. – Cuba  
*ipomoeae* (Busck, 1900). – USA  
*isonoe* spec. nov. – Peru  
*kale* spec. nov. – Trinidad and Tobago  
*sanctivincenti* (Walsingham, 1891)  
     comb. n. – Saint Vincent and the  
     Grenadines  
*tetragramma* (Meyrick, 1915) comb. n.  
     – Guyana  
     spec. – Puerto Rico

#### Species formerly listed in *Cosmopterix*

- Capanica astrophanes* Meyrick, 1917: 63. — Placed in *Cosmopterix* by Becker (1999). Valid species in *Capanica* Meyrick, 1917; see Sinev (2002).  
*Capanica lamprolitha* Meyrick, 1917: 63. — Placed in *Cosmopterix* by Becker (1999). Valid species in *Capanica* Meyrick, 1917; see Sinev (2002).  
*Batrachedra violenta* Meyrick, 1916: 31. — Placed in the genus *Cosmopterix* by Clarke (1965). However, the taxon belongs to *Coccidiphila* Danilevski 1950: *Coccidiphila violenta* (Meyrick, 1916) comb. n.

#### Key to the species of *Cosmopterix* and *Pebobs*

The key is primarily based on the external characters of the forewing, the head, the thorax and the antennae. When the external features do not provide reliable differences, characters of the male and female genitalia have been used.

Although the variability of most of the species is small, as far as known, with some species it can be so extensive that these appear several times in the key as '(partim.)'. Only the available material has been used for the key. This means that for several species only one or a few specimens were available. It is likely that for several of these species the variability is greater than mentioned in the descriptions or in the key.

Particularly the fauna of the Neotropical Region has been studied incompletely. The number of treated species from this region is probably just the tip of the iceberg and many new species await discovery. It is therefore absolutely necessary to check the identification made by the external characters through dissection of the male or female genitalia.

1. Forewing with a broad transverse fascia beyond the middle; fascia yellow, partly yellow or of similar colour to the ground colour of the forewing, in the latter case the transverse fascia is indicated by tubercular fasciae and/or spots ..... 2
- Forewing with metallic shining longitudinal lines, indication of the transverse fascia by an incomplete tubercular fascia in middle (fig. 22) ..... *beckeri*
- 2 (1). Transverse fascia yellow to orange or partly yellow to orange, sometimes occupying most of the distal part of the forewing ..... 17
- Transverse 'fascia' of similar colour to the ground colour of the forewing, although traces of yellow scaling can be present, the ground colour dominates ..... 3
- 3 (2). Forewing with transverse 'fascia' bordered on both sides by tubercular fasciae ..... 4
- Forewing with transverse 'fascia' bordered on the inside by a tubercular fascia and on the outside by two tubercular spots ..... 8
- 4 (3). Basal area of forewing with a complete fascia ..... 5
- Basal area of forewing with an interrupted fascia or with narrow white lines ..... 6
- 5 (4). Forewing shining dark brown, apical line as three silver metallic streaks with bluish reflection in the middle of the apical area and a narrow white streak at apex (fig. 103) ..... *trifasciella*
- Forewing shining bronze brown, apical line as a broad silver to pale golden metallic streak from the middle of the apical area and ending just before apex (fig. 79) ..... *nitens* (partim.)
- 6 (4). Basal area of forewing with three short and narrow white lines ..... 7
- Basal area of forewing with an interrupted fascia, antenna with a broad white subapical section (fig. 27) ..... *chalupae*
- 7 (6). Apex of antenna dark brown ..... 8
- Apex of antenna white, tegulae lined white inwardly (fig. 51) . *gomezpompai*
- 8 (7). Tegulae dark brown without white inward lining (fig. 87) ..... *pulchrimella* (partim.)
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- 9 (3). Basal area of forewing with a complete or interrupted fascia ..... 10
- Basal area of forewing with two or three short streaks or with narrow white lines ..... 12
- 10 (9). Fascia in basal area of forewing interrupted, transverse 'fascia' with traces of yellow scales ..... 11
- Fascia in basal area of forewing complete, no traces of yellow scales in transverse 'fascia' (fig. 12) ..... *abnormalis*

- 11 (10). Head and thorax with white median lines, fascia in basal area of forewing not reaching dorsum, yellow scales of transverse 'fascia' only near dorsum (fig. 13) ..... *adrastea*
- Head and thorax with white medial lines, fascia in basal area of forewing reaching dorsum, yellow scales of transverse 'fascia' near costa and dorsum (fig. 80) ..... *nyctiphanes*
- 12 (9). Base of forewing paler than rest of the wing ..... 13
- Base of forewing of similar colour to rest of the wing ..... 14
- 13 (12). Forewing with three short streaks in the basal area of equal length and in line, thorax without white median line (fig. 70) ..... *metis*
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- 14 (12). Basal area of forewing with spots or short streaks ..... 15
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- 16 (14). Lines in the basal area of forewing bluish white, head without median white line, antenna with a broad white apical section (fig. 66) ..... *lumnyae*
- Lines in the basal area of forewing white, head with median white line, apical section of antenna mainly dark brown, very large species (fig. 74) ..... *montisella* (partim.)
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- 49 (48). Tip of antenna dark brown ..... 50
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- 51 (50). Valva boot-shaped. Male genitalia: right brachium of uncus hook-shaped, apex rounded, anellus lobe slender, apex pointed, aedeagus arrow-shaped, broader than in *attenuatella*, and straight (fig. 183). Female genitalia: unknown ..... *taygete*
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- 52 (49). Valva semicircular: for genitalia see couplet 27 ..... *teligera* (partim.)
- Valva broadly boot-shaped. Male genitalia: right brachium of uncus with apical part bent upwards, gradually tapering apically to a long and narrow apex, tip a tiny hook, valva broadly boot-shaped, anellus lobe very wide in apical part, apex blunt (fig. 187). Female genitalia: posterior edge of sternite

	VII strongly concave with a convex section in middle, sterigma oval, anterior part narrowed, ductus bursae about two-thirds length of corpus bursae (fig. 260) .....	<i>thelxinoe</i> (partim.)
53 (41).	Tegulae without white inward lining .....	54
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54 (53).	Head with white median line, forewing with medial and subdorsal lines very short (fig. 99) .....	<i>thelxinoe</i> (partim.)
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55 (53).	Apex of antenna dark brown .....	56
-	Apex of antenna white .....	57
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-	Ground colour of forewing dark brown (fig. 104). Male genitalia: right brachium of uncus upwardly bent, apical part with a dorsal bulge, tip pointed, valva boot-shaped, anellus lobe rather narrow, bent in middle, aedeagus with basal part about one-half the length of bulbous part, laterally lobes square (fig. 192). Female genitalia: posterior edge of sternite VII concave with a shallow convex section in middle sterigma large, oval in posterior part, anterior part strongly narrowing, ductus bursae about as long as corpus bursae, corpus bursae oval (fig. 263) .....	<i>vanderwolfi</i> (partim.)
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-	Forewing with apical line starting beyond transverse fascia and bluish in basal part (fig. 16) .....	<i>ananke</i>
59 (48).	Apex of antenna dark brown .....	60
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61 (60).	Head, thorax and base of forewing dark bronze brown, remaining ground colour of wing dark brown, head without white median line, forewing with medial and subcostal line very short (fig. 55) .....	<i>himalia</i>
-	Head, thorax and forewing dark brown, head with white median line, forewing with medial and subdorsal lines almost as long as the subcostal line (fig. 63) .....	<i>karsholti</i>
62 (59).	Antenna with at most eight terminal segments white, forewing with transverse fascia not mixed with greyish scales .....	63

- Antenna with terminal fifteen segments white, forewing very narrow, yellow transverse fascia mixed with greyish scales (fig. 53) ..... *helike*
- 63 (62). Forewing with outer dorsal spot two or three times as large as outer costal spot ..... 64
- Forewing with outer dorsal spot more than five times as large as outer costal spot (fig. 57) ..... *inopis*
- 64 (63). Forewing with transverse fascia without apical protrusion ..... 65
- Transverse fascia of forewing with apical protrusion (fig. 65). Male genitalia: right brachium of uncus short and spatulate, ventrally hollowed, valva boot-shaped, anellus lobe stout, broad beyond middle, almost straight, tip as a small ventral hook (fig. 159). Female genitalia: posterior edge of sternite VII concave with a very large convex section in middle, sterigma elongate, tapering at both ends, ductus bursae about two-thirds length of corpus bursae, corpus bursae elongate (fig. 238) ..... *lespedezae*
- 65 (64). Outer dorsal spot square, positioned well before the outer costal spot (fig. 58). Male genitalia: right brachium widened in middle and with small apical hook, valva broad, more or less square, anellus lobe very broad with a gradually tapering apical part (fig. 154a-b). Female genitalia: Posterior edge of sternite VII concave with a small and shallow convex section in middle, sterigma strongly elongated with a long narrow projection basally, ductus bursae about two-thirds of length of corpus bursae (fig. 235) ..... *interfracta*
- Forewing with outer dorsal spot rounded, positioned closer to the outer costal spot (fig. 96), for genitalia see couplet 27 ..... *teligera* (partim.)
- 66 (29). Transverse fascia of forewing without apical protrusion ..... 67
- Transverse fascia of forewing with distinct apical protrusion or transverse fascia prolonged in the apical area ..... 73
- 67 (66). Inner dorsal spot on the forewing further from base than the inner costal spot ..... 68
- Inner dorsal spot on the forewing opposite the inner costal spot or nearly so (fig. 52) ..... *harpalyke* (partim.)
- 68 (67). Thorax with white median line, tegulae inwardly lined white ..... 69
- Thorax and tegulae without white lining, forewing with the first costal line sharply bent downwards at an angle of 45° (fig. 17) ..... *argentifera*
- 69 (68). Tip of antenna dark brown ..... 70
- Tip of antenna white ..... 71
- 70 (69). Apical two segments of antenna dark brown, ground colour of forewing greyish brown (fig. 93) ..... *similis*
- Apical five segments of antenna dark brown, ground colour of forewing dark brown (fig. 106) ..... *yvani*
- 71 (69). Medial and subdorsal lines in basal area of forewing very short ..... 72
- Medial and subdorsal lines in basal area of forewing about as long subcostal line (fig. 64) ..... *langmaidi*
- 72 (71). Valva elongate, distally slightly bent. Male genitalia: right brachium of uncus large, widening distally, apex short and pointed, anellus lobe broad, bent and apex rounded. (fig. 157). Female genitalia: unknown ..... *isotoma*



- Valva boot-shaped. Male genitalia: right brachium of uncus concave inwardly beyond middle, tip broadened and blunt, anellus lobe rather narrow, parallel-sided, tip blunt (fig. 129). Female genitalia unknown ..... *chalybaeella*
- 73 (66). Transverse fascia of forewing with a distinct apical protrusion ..... 74
- Transverse fascia of forewing prolonged in the apical area ..... 99
- 74 (73). Forewing with inner dorsal spot opposite inner costal spot or nearly so .... 75
- Forewing with inner dorsal spot further from base than inner costal spot .... 81
- 75 (74). Apex of antenna dark brown ..... 76
- Apex of antenna white ..... 77
- 76 (75). Male genitalia: right brachium of uncus with strongly widened central section, apex narrow and pointed, slightly bent downwards, left branchium short and egg-shaped (fig. 138). Female genitalia: length of apophyses anteriores one-quarter longer than length of sterigma (fig. 218) ..... *ebriola*
- Male genitalia: right brachium of uncus short and stout, longitudinally triangular, apex short and rather blunt, left branchium elongate (fig. 144). Female genitalia: length of apophyses anteriores one-third shorter than length of sterigma (fig. 226) ..... *feraldella*
- Male genitalia: right brachium of uncus with strongly widened semi-circular central section, apex narrow and pointed, slightly bent downwards, left branchium short and oval (fig. 180). Female genitalia: length of apophyses anteriores as long as sterigma (fig. 255) ..... *scirpicola* (partim.)
- 77 (75). Head and thorax medially, and tegulae inwardly, lined white ..... 78
- Head without median white line, tegulae without white inward lining, forewing with apical protrusion very long, almost to apex (fig. 78) .... *nishidai*
- 78 (77). Ground colour of forewing dark brown ..... 79
- Ground colour of forewing brown, medial and subdorsal lines short, about one-third length of subcostal line (fig. 60) ..... *iocaste*
- 79 (78). Antenna with white subapical ring(s) much narrower than white apical section, forewing with medial and subdorsal lines in basal area about half the length of the subcostal line and opposite ..... 80
- Antenna with white subapical ring as broad as the white apical section, forewing with medial and subdorsal lines in basal area short, less than half the length of the subcostal line, and not opposite (fig. 67) ..... *lysithea*
- 80 (79). Valva small and almost semi-circular. Male genitalia: right brachium of uncus bent at right angle, apex sharp, anellus lobe strongly swollen in distal half, apex blunt (fig. 131). Female genitalia: shape of posterior edge of sternite VII sterigma unknown, sterigma oval, posteriorly flattened, anteriorly with long protrusion, ductus bursae about two-thirds of length of corpus bursae, in middle with sclerotization, corpus bursae elongate (fig. 212) ..... *citrinopa*
- Valva trapezoidal. Male genitalia: right brachium of uncus rather short, apical part egg-shaped, tip short and broad, flattened, anellus lobe short and club-shaped, hardly bent (fig. 150). Female genitalia: posterior edge of sternite VII strongly concave with a small convex section in middle, sterigma pear-shaped, anterior part strongly narrowed, ductus bursae about two-thirds length of corpus bursae, corpus bursae oval with two tiny signa (fig. 231) ..... *harpalyke* (partim.)

- 81 (74). Forewing with inner costal and inner dorsal spot at edge of the transverse fascia ..... 82  
 - Forewing with inner costal and/or inner dorsal spot not at the edge of the transverse fascia, but inside the yellow section of the transverse fascia ..... 97
- 82 (81). Forewing with transverse fascia completely yellow ..... 83  
 - Forewing with transverse fascia only yellow in costal half, dorsal half of similar colour to ground colour of forewing, apical protrusion to apex of wing (fig. 50) ..... *gielisorum*
- 83 (82). Forewing with outer dorsal spot opposite outer costal spot or nearly so .... 84  
 - Forewing with outer dorsal spot closer to base than outer costal spot ..... 93
- 84 (83). Forewing with inner dorsal spot inwardly edged by a patch of blackish brown scales ..... 85  
 - Forewing with inner dorsal spot without inward edging of blackish brown scales ..... 86
- 85 (84). Outer dorsal spot on forewing with a distinct white distal streak into cilia (fig. 23). Male genitalia: Right brachium of uncus with broad and flat tip and rectangularly bent downwards, valva semi-circular, anellus lobe broad, distally pointed (fig. 125). Female genitalia: Posterior edge of sternite VII slightly concave with tiny convex section in middle, ductus bursae about half the length of corpus bursae, corpus bursae pear-shaped (fig. 208) ..... *callichalca* (partim.)  
 - Forewing with white distal streak from outer dorsal spot indistinct or absent (fig. 46). Male genitalia: right brachium of uncus narrow with apical half large and oval, tip shifted to the right, rounded and bent downwards, valva rather narrow and semicircular, anellus lobe long, strongly bent in middle, tip blunt (fig. 145). Female genitalia: posterior edge of sternite VII convex with flattened middle section, sterigma elongate, ductus bursae about as long as corpus bursae, corpus bursae egg-shaped (fig. 227)..... *floridanella* (partim.)
- 86 (84). Forewing with white costal line, if present, from one-third to transverse fascia ..... 87  
 - Forewing with white costal line from base to transverse fascia and basally fused with the subcostal line, ground colour of forewing greyish brown (fig. 39)..... *erinome*
- 87 (86). Head with white median line ..... 88  
 - Head without white median line (fig. 90) ..... *saltensis*
- 88 (87). Tip of antenna dark brown ..... 89  
 - Tip of antenna white ..... 90
- 89 (88). Medial line in basal area of forewing from base almost to the transverse fascia, a broad white streak from outer costal spot into cilia and a similar streak from outer dorsal spot (fig. 83). Male genitalia: Right brachium of uncus with apical half bent 90° to the left, forming a large hook, valva spatulate, anellus lobe small and narrow, parallel-sided, gradually bent in middle, tip rounded (fig. 173). Female genitalia: unknown ..... *orthosie*  
 - Medial line in basal area of forewing much shorter, broad white streak from outer dorsal spot absent (fig. 35). Male genitalia: Right brachium of uncus with broad and flat tip and rectangularly bent downwards, valva semi-circular, anellus lobe broad, distally pointed (fig. 136). Female genitalia unknown ..... *delicatella*

- 90 (88). Ground colour of forewing brown to dark brown ..... 91  
 - Ground colour of forewing greyish ochreous, very large species (fig. 44). Male genitalia unknown. Female genitalia: posterior edge of sternite VII with a very deep indentation and almost square, sterigma oval, ductus bursae about one-third length of corpus bursa, corpus bursae very elongate (fig. 225) .... *facunda*
- 91 (90). Forewing with medial and subdorsal lines less than half the length of the subcostal line ..... 92  
 - Forewing with medial and subdorsal lines about as long as the subcostal line (fig. 41) ..... *euanthe*
- 92 (91). Forewing with costal line absent, white streak from outer costal spot very wide (fig. 72). Male genitalia unknown. Female genitalia: posterior edge of sternite VII concave, ductus bursae two-thirds length of corpus bursae, ductus seminalis from upper part of corpus bursae, corpus bursae strongly elongate (fig. 242) ..... *mneme*  
 - Forewing with costal line present, white streak from costal spot rather narrow (fig. 85). Male genitalia: right brachium of uncus slightly bent, apical part with bulge on the left, tip blunt, valva long, pear-shaped, anellus lobe gradually widening with thickest part beyond middle, tip pointed (fig. 175). Female genitalia: posterior edge of sternite VII convex, ductus bursae slightly shorter than length of corpus bursae, ductus seminalis from lower part of ductus bursae, corpus bursae oval, narrowed towards ductus bursae (fig. 249) .. *pimmaarteni*
- 93 (83). Thorax medially and tegulae inwardly lined white ..... 94  
 - Thorax and tegulae without white lining (fig. 54). Male genitalia unknown. Female genitalia: posterior edge of sternite VII concave, sterigma large, elongate, and anterior half covered by sternite VII, anteriorly slightly tapering, posterior third conical, ductus bursae slightly shorter than corpus bursae, corpus bursae oval (fig. 232) ..... *hermippe*
- 94 (93). Head with white median line ..... 95  
 - Head without white median line (fig. 98) ..... *thebe*
- 95 (94). Forewing with medial line very short ..... 96  
 - Forewing with medial line from base to transverse fascia, lines in basal area thick, transverse fascia also with an inward protrusion (fig. 86) ..... *praxidike*
- 96 (95). Forewing brown (fig. 69). Male genitalia: right brachium of uncus with lateral protrusion in middle on the left side, apical part somewhat twisted, tapering abruptly towards apex, tip pointed, valva boot-shaped with rounded caudal margin, anellus lobe in apical part swollen, tip blunt, aedeagus slender bottle-shaped, narrowing distally to about one-half of width, basal part not widening distally, lateral lobes triangular (fig. 162). Female genitalia unknown ..... *magophila*  
 - Forewing dark brown (fig. 76). Male genitalia: right brachium of uncus bent in middle and concave inwardly beyond middle, tip with two small lateral hooks, valva boot-shaped, anellus lobe rather narrow, apical part only slightly wider, tip blunt, aedeagus large, bulbous part wide at base and strongly narrowing distally to about one-third of width, basal part very wide distally, about two-thirds length of bulbous part, lateral lobes rectangular (fig. 168). Female genitalia unknown ..... *nieuwerkerkeni*

- 97 (81). Inner costal spot at edge of the transverse fascia, inner dorsal spot not at edge of the transverse fascia, but inside the transverse fascia ..... 98  
 - Inner costal and inner dorsal spot not at edge of the transverse fascia, but both inside transverse fascia (fig. 23) ..... *callichalca* (partim.)
- 98 (97). For genitalia see couplet 85 ..... *callichalca* (partim.)  
 - For genitalia see couplet 85 ..... *floridanella* (partim.)
- 99 (73). Forewing with prolongation of the transverse fascia only covering basal part of the apical area ..... 100  
 - Forewing with prolongation of the transverse fascia covering the whole apical area (fig. 25) ..... *carpo*
- 100 (99). Forewing with prolongation of the transverse fascia without narrow protrusion towards apex ..... 101  
 - Forewing with prolongation of the transverse fascia with narrow protrusion towards apex ..... 108
- 101 (100). Forewing with inner costal and inner dorsal spot at edge of the transverse fascia ..... 101  
 - Forewing with inner costal spot at edge of the transverse fascia, inner dorsal spot not at edge of the transverse fascia, but inside ..... 104
- 102 (101). Transverse fascia of forewing with a narrow inward protrusion between the inner costal and the inner dorsal spot (fig. 34) ..... *dapifera*  
 - Transverse fascia of forewing without such a protrusion ..... 103
- 103 (102). Forewing with a broad yellow streak into cilia, distal to the white costal streak (fig. 29, 82). For genitalia see couplet 104 .....  
 ..... *chisosensis/opulenta* (partim.)  
 - Forewing without yellow streak distal to the white costal streak (fig. 14) .....  
 ..... *albicaudis* (partim.)
- 104 (101). Forewing with a broad yellow streak into cilia, distal to the white costal streak (fig. 29, 36, 82) ..... *chisosensis/diaphora/opulenta*  
 Male genitalia: right brachium of uncus short and simple, apical part club-shaped, valva short, semicircular, aedeagus with slender bulbous part, only slightly tapering distally, basal part about two-thirds length of bulbous part (fig. 130). Female genitalia: posterior edge of sternite VII concave with narrow convex section in middle, sterigma cylindrical, tapering in basal half, ductus bursae less than half length of corpus bursae, corpus bursae elongate in anterior half, posterior half strongly narrowed, one large signum as an interrupted ridge (fig. 211) ..... *chisosensis* (partim.)  
 Male genitalia: right brachium of uncus slender, distally strongly upwardly bent at three-quarters and widened, valva short and rounded, aedeagus with bulbous part bottle-shaped, only slightly tapering distally, basal part about half of length of bulbous part (fig. 137). Female genitalia: posterior edge of sternite VII concave with broad and flattened convex section in middle, sterigma elongate with long medial sclerotized band, ductus bursae about one-third length of corpus bursae, corpus bursae elongated with two signa, one of them reduced (fig. 217) ..... *diaphora*  
 Male genitalia: right brachium of uncus long and rather narrow, upwardly bent in middle, and bent downwards towards apex, apex widened, tip flat,

valva more or less square, aedeagus with bulbous part bottle-shaped, narrowing distally to less than one-quarter width of bulbous part, basal part short, about one-third length of bulbous part (fig. 172a-b). Female genitalia: posterior edge of sternite VII concave, sterigma almost cylindrical in distal half, strongly tapering in basal half, ductus bursae about one-third length of corpus bursae, corpus bursae very elongate with oval distal section, one large triangular signum (fig. 247) ..... *opulenta* (partim.)

- Forewing without yellow streak distal to the white costal streak ..... 105
- 105 (104). Head with white median line, tegulae inwardly lined white ..... 106
- Head without white median line, tegulae without white inward lining (fig. 43) ..... *euporie*
- 106 (105). Forewing with medial and subdorsal lines connected to the transverse fascia, length of the subdorsal line one-third or less the length of the medial ..... 107
- Forewing with medial and subdorsal line not connected to the transverse fascia, subdorsal more than half the length of the medial (fig. 84) ..... *pentachorda*
- 107 (106). Ground colour of forewing dark brown, forewing length less than 4.0 mm (fig. 71) ..... *minutella*
- Ground colour of forewing bronze brown, forewing length more than 4.0 mm (fig. 89) ..... *quadrilineella*
- 108 (100). Males ..... 109
- Females ..... 117
- 109 (108). Right brachium of uncus heavily sclerotized and distal half peculiarly shaped, valva generally short with a narrow basal part and a rounded, triangular or square distal part ..... genus *Cosmopterix* 110
- Right brachium of uncus, weakly sclerotized, simple and narrow, valva long and narrow ..... genus *Pebobs* 111
- 110 (109). Right brachium of uncus parallel-sided, apex rounded and somewhat enlarged, aedeagus with bulbous part only slightly tapering distally (fig. 117) ..... *albicaudis*
- Right brachium of uncus narrow, thickened subapically, apex a flat disk, aedeagus with bulbous part bottle-shaped at base and strongly narrowing distally (fig. 193) ..... *xanthura*
- 111 (109). Valva with apical third narrowing to a sharply pointed apex (fig. 196) ..... *elara*
- Valva not narrowing to a sharply pointed apex ..... 112
- 112 (111). Valva with broad and more or less triangular apical part ..... 113
- Valva spatulate or gradually widening ..... 114
- 113 (112). Anellus lobes strongly bent distally, tip rounded, both lobes joined from base to one-third (fig. 200) ..... *sanctivincenti*
- Anellus lobes slightly narrowing distally, apex downwardly bent, tip pointed, both lobes joined at base or just beyond (fig. 195) ..... *aitne*
- 114 (112). Valva straight, anellus lobe narrower than valva ..... 115
- Valva in apical part slightly bent upwards, anellus lobe broad, wider than valva, both lobes joined from base to one-half (fig. 197) ..... *ipomoeae*
- 115 (114). Valva spatulate ..... 116

- Valva gradually widening, anellus lobe with both lobes joined from base to one-half (fig. 201) ..... **tetragramma**
- 116 (115). Anellus lobe widening in distal half, reaching beyond one-third length of aedeagus, both lobes joined from base to one-fifth (fig. 198) ..... **isonoe**
- Anellus lobes parallel-sided in distal half, reaching one-fifth of length beyond aedeagus, both lobes joined from base to one-third (fig. 199) ..... **kale**
- 117 (108). Posterior margin of segment VII concave, convex or with a median projection, sometimes partly covering the anterior part of the sterigma, margin covered with very long scales ..... genus **Cosmopterix** 118
- Posterior margin of segment VII convex, membrane between segment VII and VIII forming a large pouch which often completely covers the sterigma, inner side of the pouch densely covered with large scales ..... genus **Pebobs** 119
- 118 (117). Posterior edge of sternite VII convex with a concave section in the middle, sterigma in posterior half oval-shaped, anterior half narrowed (fig. 203) ..... **albicaudis**
- Posterior edge of sternite VII strongly convex, sterigma cylindrical (fig. 264) ..... **xanthura**
- 119 (117). Posterior margin of segment VII not interrupted, sterigma completely covered ..... 120
- Posterior edge of sternite VII interrupted by a large V-shaped indentation, by that almost completely revealing the elongate sterigma (fig. 266) ... **ipomoeae**
- 120 (119). Posterior edge of sternite VII round or flattened ..... 121
- Posterior edge of sternite VII reverse V-shaped, sterigma bowl-shaped (fig. 269) ..... **sanctivincenti**
- 121 (120). Height of sterigma not or hardly exceeding its width ..... 122
- Height of sterigma at least twice as long its width ..... 124
- 122 (121). Anterior edge of membrane between segment VII and VIII V-shaped or sinuate, signum about as large as sterigma ..... 123
- Anterior edge of membrane between segment VII and VIII semicircular, sterigma square bowl-shaped, signum much smaller than sterigma (fig. 270) ..... **tetragramma**
- 123 (122). Anterior edge of membrane between segment VII and VIII V-shaped, sterigma bowl-shaped, tapering anteriorly and with a broad ventral scleritee (fig. 265) ..... **elara**
- Anterior edge of membrane between segment VII and VIII semicircular, sterigma short and bowl-shaped, slightly wider anteriorly (fig. 271) ..... spec.
- 124 (121). Sterigma bowl-shaped, tapering anteriorly, signum about half the width of sterigma (fig. 267) ..... **isonoe**
- Sterigma bowl-shaped with long scleritees laterally, strongly narrowed in middle and widened anteriorly, signum as wide as sterigma (fig. 268) .... **kale**

## Systematic part

### Family Cosmopterigidae *Cosmopterix* Hübner, [1825]

*Cosmopterix* Hübner, [1825]: 424.

Type-species: *Tinea zieglerella* Hübner, [1810], by subsequent designation by the International Commission on Zoological Nomenclature, 1969: 150 (ICZN, 1969).

*Cosmopterix* Zeller, 1839: 210; unjustified emendation.

*Lienigia* Spuler, 1910: 389.

Type-species: *Cosmopterix lienigiella* Zeller, in Lienig & Zeller, 1846, by monotypy.

Diagnosis.— *Cosmopterix* species cannot be separated from *Pebobs* by the external characters. In the male genitalia the heavily sclerotized (weakly sclerotized in *Pebobs*) and often peculiar shaped right brachium of the uncus and the bottle-shaped aedeagus (tube shaped in *Pebobs*) are characteristic. In the female genitalia the connection of the sterigma on or beyond the posterior margin of segment VII is characteristic.

Description.— Adult. Very small to small moths. Forewing length 2.9-6.5 mm. Head smooth-scaled, rather long and narrow caused by the large and bent scales on the vertex; frons distinctly lighter than vertex, from vertex to neck tufts often a median and/or two lateral white lines; antenna three-quarters to four-fifths of the length of forewing, often slightly serrate distally, and generally with a white, often partly interrupted, anterior line and several white sections in the apical part; labial palpus cylindrical, porrect, apical segment strongly angled upwards and often reaching well above the head. Thorax with or without a median white line, tegulae often lined white inwardly. Forewing narrowly lanceolate with long and very narrowly protruding apex and usually with a very characteristic yellow or orange fascia beyond the middle, this fascia bordered by tubercular metallic fasciae or spots; basal area with a metallic fascia or spots or with three to six longitudinal lines of different length, cilia concolorous around apex, paler towards dorsum. Hindwing almost linear, less than half the width of forewing and acutely pointed, from pale yellow to dark grey, without markings, cilia concolorous without ciliary lines. The forewing can generally be divided into three parts: The basal area from base to middle of wing, followed by the broad transverse fascia and beyond this the apical area. The basal area generally with a series of longitudinal lines, often very narrow or a single and oblique, sometimes interrupted, fascia. The lines are mentioned from costa to dorsum as the costal, the subcostal, the medial, the subdorsal and the dorsal line. The transverse fascia is strikingly coloured from pale yellow to orange and in combination with the narrow wings it makes the species of *Cosmopterix* and *Pebobs* easy recognisable. The transverse fascia is always more or less edged on both sides by fasciae or spots. These fascia or spots consist of very strikingly silver or golden metallic coloured tubercular scales. Some species partly or completely lack the yellowish colour of the transverse fascia. However, the presence of the 'fascia' can be observed by the lining tubercular fasciae or spots. The transverse fascia can be edged by a combination of inner and outer fasciae and/or by an inner and outer (sub)costal and (sub)dorsal spots. Sometimes the (sub)costal and (sub)dorsal spots are situated inside the transverse fascia. The apical area is generally concolorous with the basal area, but occasionally the colouration differs. In the centre or on the dorsal side of the apical area

is a longitudinal apical line, running from the transverse fascia to apex of forewing. This line is often interrupted or only present as one or more dots or streaks. Markings of the costal and dorsal cilia of the forewing are as follows: a white streak from outer costal spot in almost all of the species, a white streak or spot connected to the apical line is very common, and occasionally there is a white streak from outer dorsal spot. For identification of the species by the external features, mainly the markings of the head, thorax and forewing are of diagnostic importance (figs 1-3). Wing venation with 12 veins in forewing and 7 veins in hindwing (fig. 4). Forewing with Sc and R1-R4 to costa; R5 directing towards the narrow tip; M1-CuA2 to termen; CuP very weak and not reaching termen; 1A+2A with basal fork, to dorsum. Hindwing Sc and Rs to costa; M1-CuA2 to termen; veins often not fully developed due to the narrow shape of the hindwing.

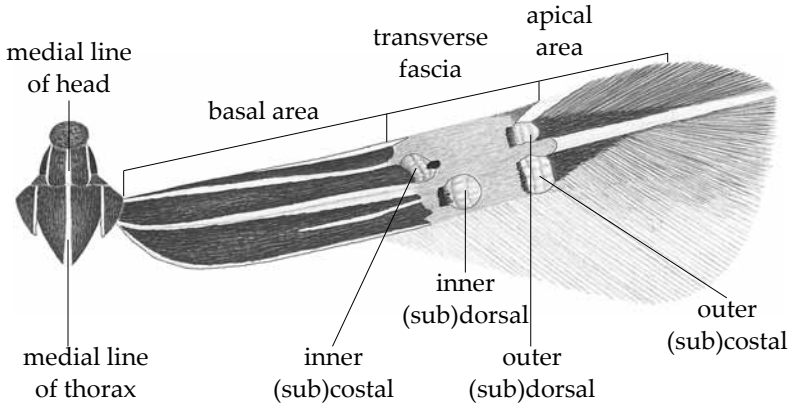
*Male genitalia.* Asymmetrical. Uncus split into a short and weakly sclerotized left brachium and a long right brachium with an often heavily sclerotized and peculiar shaped distal half. The right brachium is of diagnostic importance. Gnathos absent. Tegumen short and wide with a sclerotized rim at anterior margin. Valva generally short with a narrow basal part and a rounded, triangular or square and densely haired distal part, but sometimes stretched and very long. Anellus lobe long, not fused with aedeagus, from narrow to wide and often ventrally bent in middle. Aedeagus large, fused with anellus, and with a distal and a basal part, distal part often bulbous or bottle-shaped, basal part slender, widening distally, and anteriorly with a lateral lobe of different shape on each side. The pleural lobes on segment VIII are short and rounded and normally only cover the basal part of the valvae, but when the valvae are long and pointed, the pleural lobes can also be elongate to cover a larger part or the complete valvae (figs 5-6).

*Female genitalia.* Apophyses posteriores one and a half to two times as long as apophyses anteriores. Ostium at distal end of a rounded, oval or elongate-shaped sclerotized formation that is probably formed of the median part of the sternum 8 and here called as sterigma, its anterior part connected and fixed in a small fold of the membrane between segment VII and VIII. Ductus bursae narrow, from one-half to more than the length of the corpus bursae, and often with a small internal sclerite just before entrance of the corpus bursae. Ductus seminalis emerges from the anterior half of the ductus bursae to just before the entrance of the corpus bursae, but it can also emerge directly from the posterior part of the corpus bursae. Corpus bursae oval, pear-shaped or elongate. In general two signa from large to very small and of different shape, rarely only one signum present or signa entirely absent. Posterior margin of segment VII concave, convex or with a median projection, sometimes partly covering the anterior part of the sterigma, and with very long scales covering the sterigma (fig. 7).

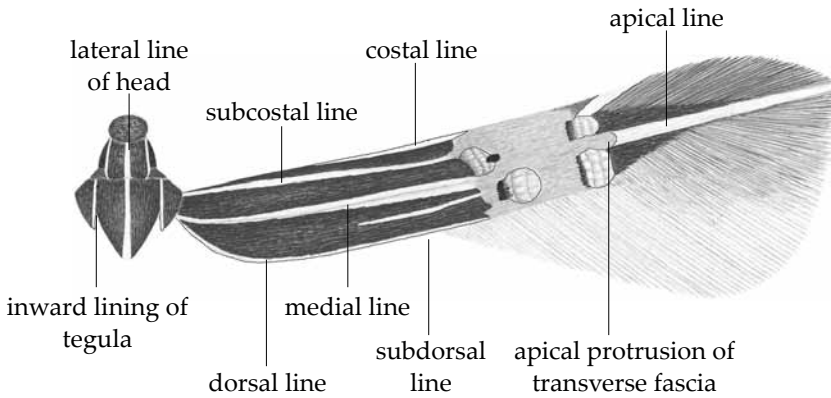
Biology.— The larvae are leaf miners on a large diversity of usually herbaceous plants. They have been found oligophagous or even monophagous on the following plant families: Asteraceae, Cannabaceae, Convolvulaceae, Cyperaceae, Poaceae, Fabaceae, Urticaceae. The mines are blotch mines and in several species the larvae more or less frequently change mines. Larvae of other species stay in a single mine during their complete development and leave the mine only prior to pupation or pupate inside the mine. In several species the larva constructs a silken tunnel inside the mine in which it hides when not feeding or when disturbed. In colder climates species usually have



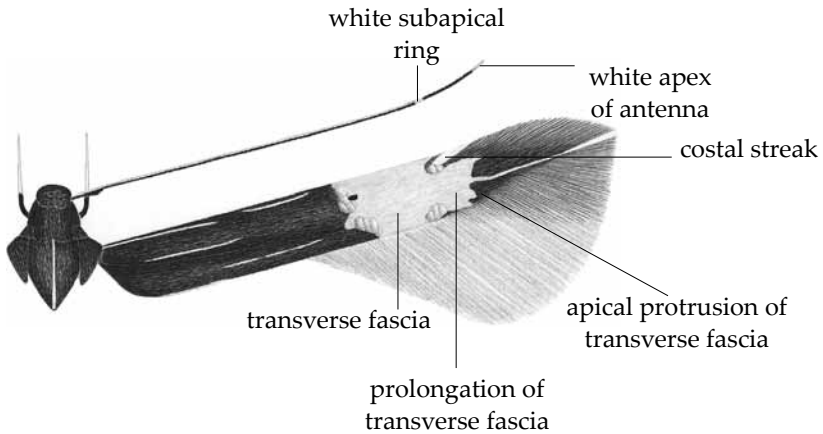
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Figs 1-3. *Cosmopterix*: Descriptive terminology for head, thorax and forewing.

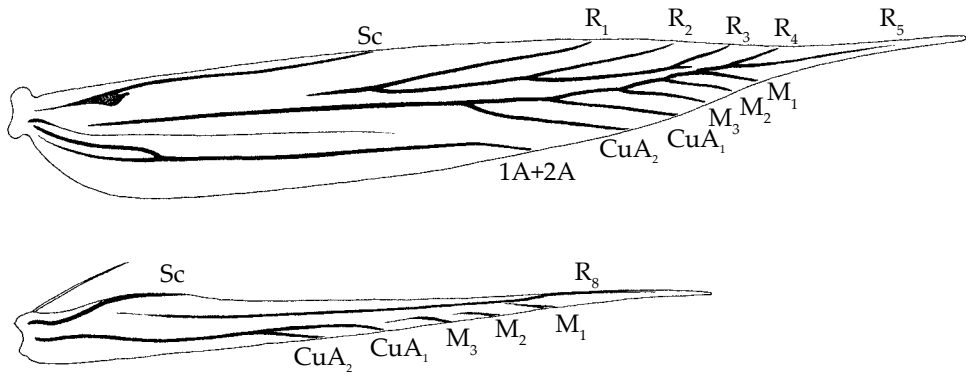


Fig. 4. Wingvenation of *Cosmopterix zieglerella* (Hübner).

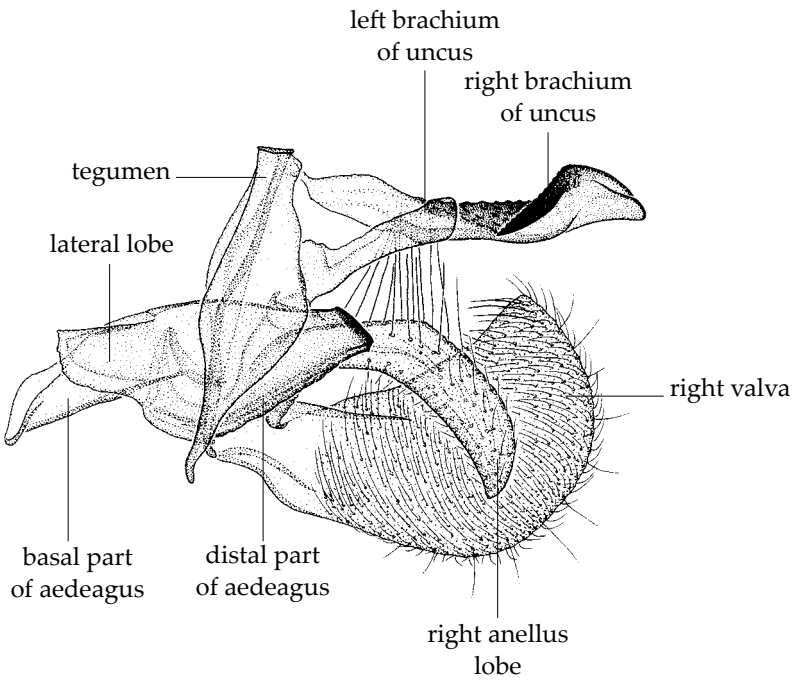


Fig. 5. Male genitalia of *Cosmopterix callichalca* Meyrick in lateral view.

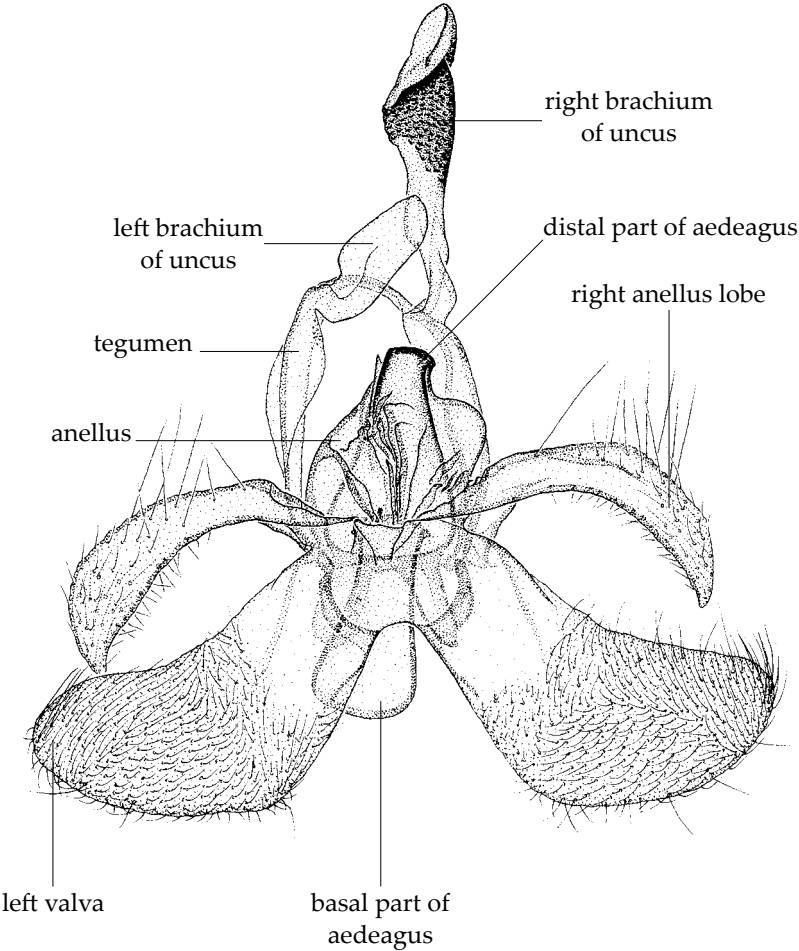


Fig. 6. Male genitalia of *Cosmopterix callichalca* Meyrick in ventral view.

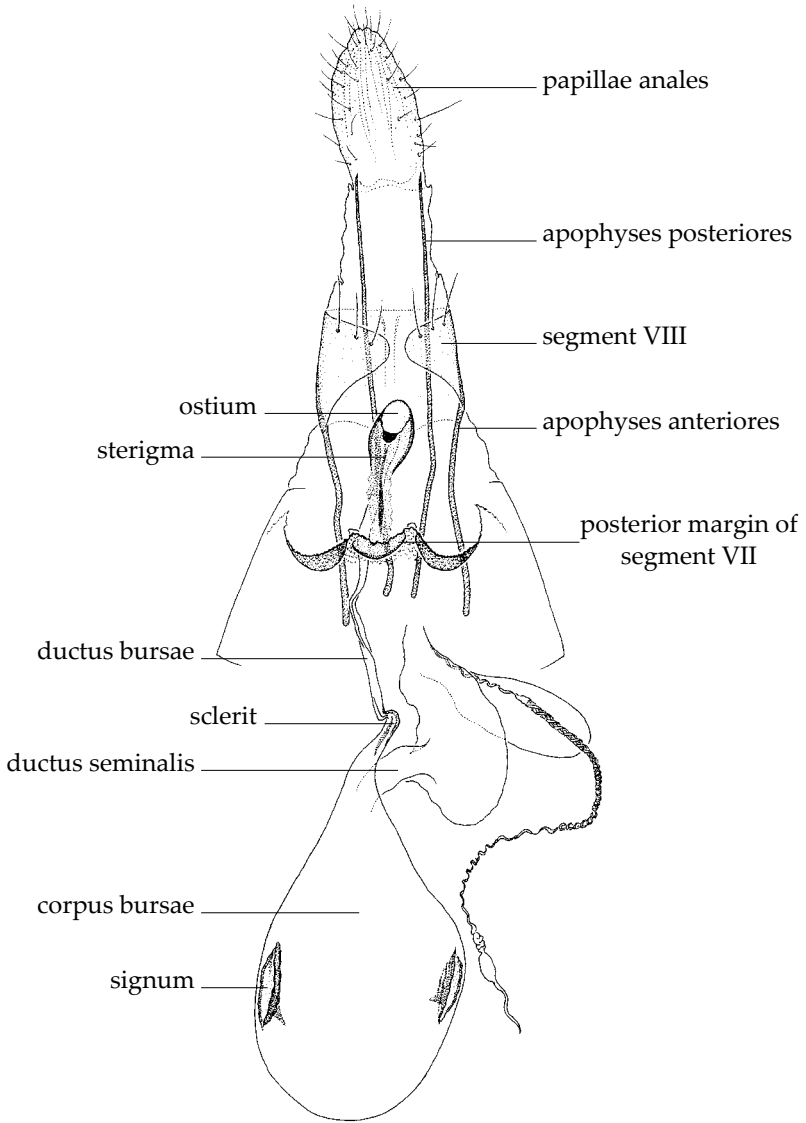


Fig. 7. Female genitalia of *Cosmopterix albicaudis* Meyrick.

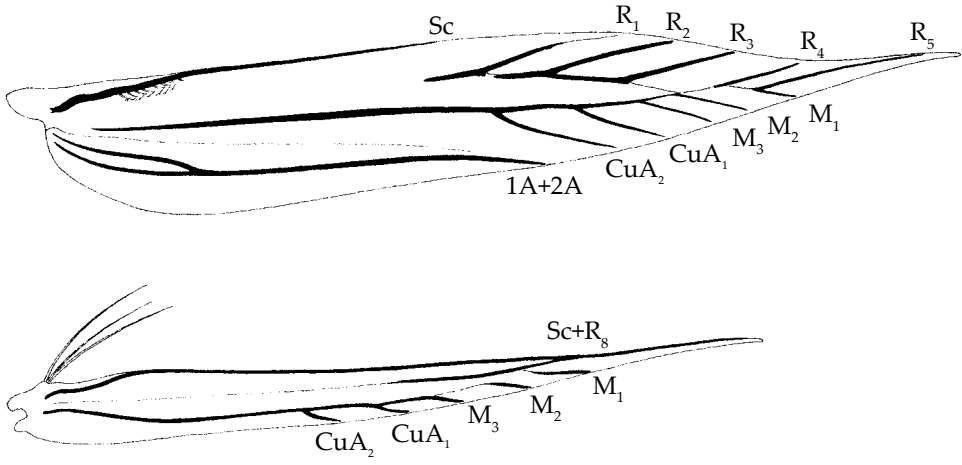


Fig. 8. Wingvenation of *Pebobs ipomoeae* (Busck).

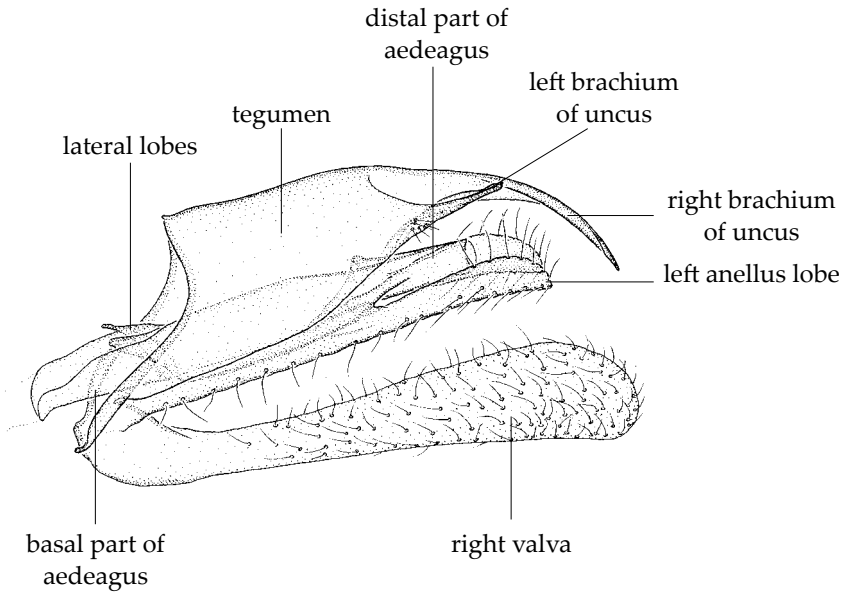


Fig. 9. Male genitalia of *Pebobs tetragramma* (Meyrick) in lateral view.

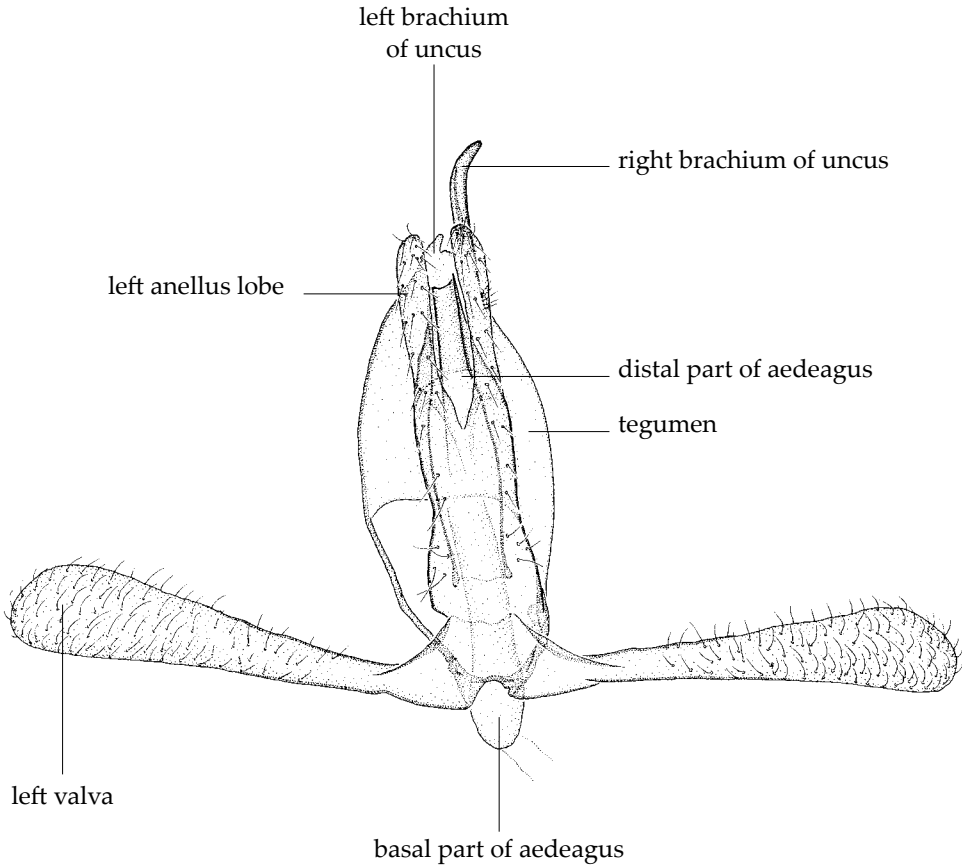


Fig. 10. Male genitalia of *Pebobs tetragramma* (Meyrick) in ventral view.

one generation where hibernation takes place in the larval stage in a cocoon in or outside the mine. Pupation takes place in spring. In warmer climates the species have more than one, sometimes overlapping, generations.

Remarks.— For *Cosmopterix gomezpompai* a twirling behaviour has been observed by the adult. In this case the moth runs on the upper side of a leaf and simultaneously makes very fast circling movements. As soon as it comes across something unusual on the surface, like a spot, the circling slows down and is concentrated on that spot. It appears that it is feeding mostly on the dark brown spots (most likely a part of a bird dropping) on the leaf. Probably the moth is looking for nutrition. This twirling has been videotaped by Nishida and others (Nishida, pers. comm.). The twirling behaviour, without the possible feeding, has also been observed with *C. pulchrimella* in Greece (Lauri Kaila, pers. comm.). This behaviour is described for *C. victor* (Davis & Sinev, 2008) and also for a species of the family Gelechiidae (Kawahara & Adamski, 2006).

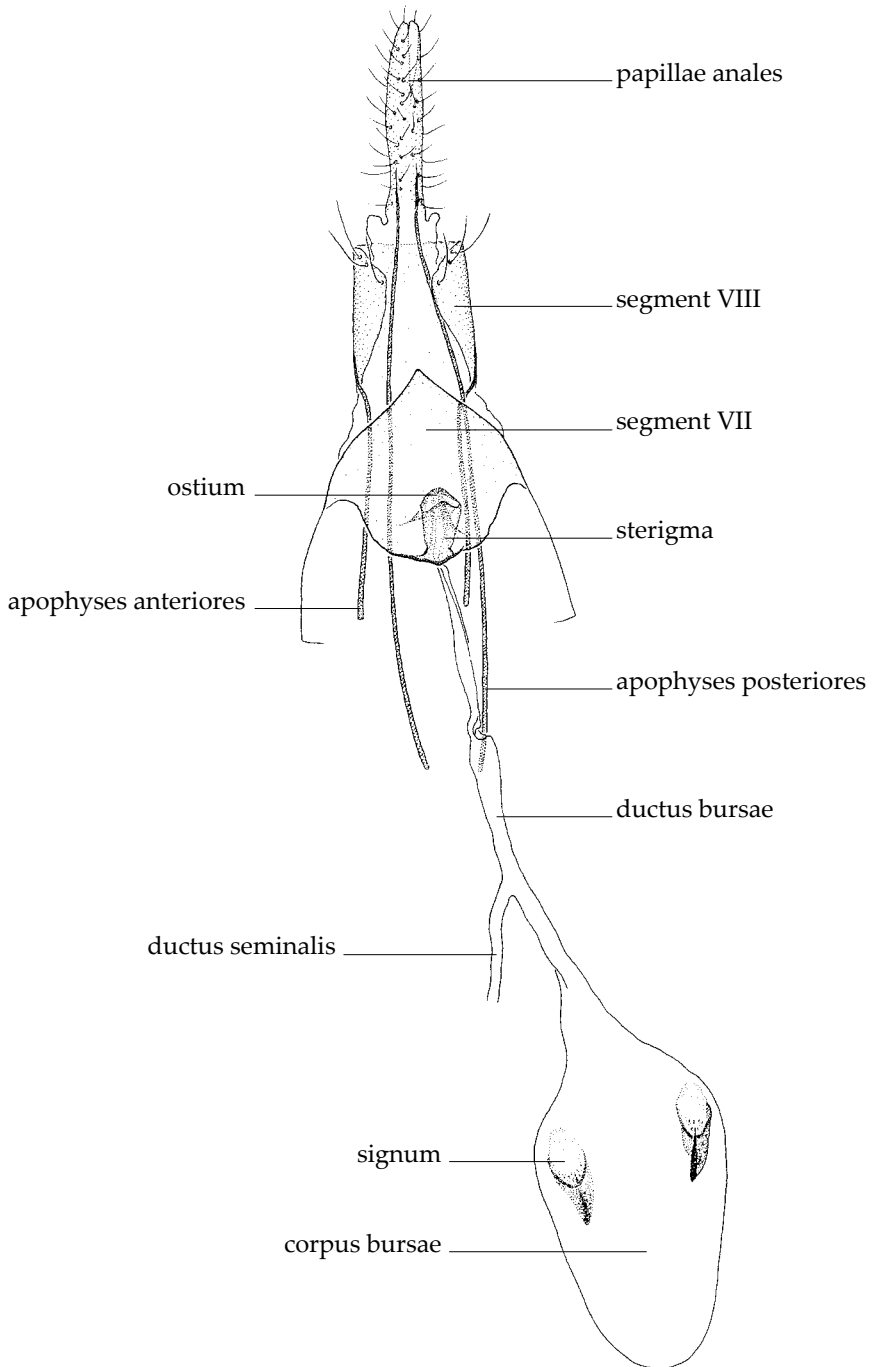


Fig. 11. Female genitalia of *Pebobs sanctivincenti* (Walsingham).

*Cosmopterix abnormalis* Walsingham, 1897  
(figs 12, 115, 202, 283)

*Cosmopterix abnormalis* Walsingham, 1897: 106. Holotype ♂ (without abdomen): [Haiti]: P[ort]. au Prince, 24.v.[18]94; 386; 1846 Wlsm. 1895; *Cosmopteryx abnormalis* Wlsm., type ♂ (NMW) [examined].

Material examined.— 11 ♂, 6 ♀. Cayman islands: 2 ♂, Grand Cayman, North coast of, North Side, 3.viii.1938, 17.iv-26.viii.1938, coll. C.B. Lewis, G.H. Thompson; gen. slide BM 29936, 29943 (BMNH). Jamaica: 1 ♂, Moneague, 9.i.1905, coll. Walsingham; gen. slide BM 29554. 6 ♂, 2 ♀, same data; gen. slide BM 29909. 1 ♀, same data, 29.i.1905; gen. slide BM 29555. 1 ♀, same data, 4.ii.1905. 1 ♂, Runaway Bay, 20.iii.1905, coll. Walsingham. 1 ♀, same data, 10.iii-7.iv.1905. 1 ♀ (without abdomen), same data, 21.iv.1905. 1 ♂, Constant Spring, 26.xii.1904, coll. Walsingham.

Diagnosis.— The complete fascia in the basal area of the forewing in combination with the complete lack of yellow scales where the transverse fascia should be, are characteristic.

Description.— Male, female. Forewing length 2.9-3.1 mm. Head: frons shining greyish white with greenish and reddish reflections, vertex and neck tufts shining dark bronze brown, laterally and medially lined white, collar shining dark bronze brown; labial palpus first segment very short, white, second segment three-quarters the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined dark brown laterally; scape dorsally dark brown with a white anterior line, ventrally white, antenna shining dark brown with an interrupted white line from base to two-thirds with an uninterrupted section at base, followed towards apex by four to six dark brown segments, two white, two brown, two white, ten brown, six white and one brown segment at apex. Thorax and tegulae shining dark brown with reddish gloss, thorax with a white median line. Legs: shining dark greyish brown, foreleg with a white line on tibia and tarsal segments one, two and four, femora of midleg and hindleg shining pale golden brown, femur of the midleg with purplish reflection, tibiae of the midleg and the hindleg with white oblique basal and medial lines and white apical rings, tarsal segments one, two and four of the midleg with white apical rings or dorsal streaks, tarsal segments one to four of the hindleg with white or ochreous apical rings and segment five entirely white or ochreous, spurs dark brownish grey, inner sides lighter. Forewing shining dark brown with reddish gloss, in the basal area at one-fifth an irregular inwardly oblique silver or pale golden metallic fascia, not reaching dorsum and narrowed in the middle, a narrow white dorsal line from base to one-quarter, a broad tubercular silver or pale golden metallic fascia before one-half, perpendicular at dorsum, on dorsum at three-fifths a tubercular silver or pale golden spot to three-quarters of the width of the wing, a similar but smaller spot on costa at three-quarters, outwardly edged by a narrow white costal streak, the apical line reduced to two or three silver or pale golden spots and a broad white spot in the cilia at apex, cilia dark brown around apex, paler on dorsum towards base. Hindwing shining dark greyish brown, cilia greyish brown. Underside: forewing shining dark brown with the white costal streak and apical line distinctly visible, hindwing greyish brown, a short whitish streak on dorsum at base. Abdomen dorsally shining dark brown with reddish gloss, segments four to seven banded dark grey posteriorly, laterally shining golden, ventrally dark greyish brown with strong golden reflection, anal tuft ochreous-white. Abdomen



in female dorsally shining bronze brown, segments four to six banded bronze grey posteriorly, ventrally shining bronze, segments broadly banded silvery posteriorly, anal tuft brownish grey (fig. 12).

*Male genitalia.* Right brachium of uncus very narrow, middle section swollen, apex with a small hook, left brachium very short and thin. Valvae boot-shaped, lower margin concave. Anellus lobes slightly bent, narrowed near base, widest part beyond middle, distally tapering to a pointed apex. Aedeagus with bulbous part slender, distally hardly narrowed, basal part very short, both lateral lobes short and broad (fig. 115).

*Female genitalia.* Posterior edge of sternite VII with small excavation. Sterigma more than three times as long as wide, ostium bursae crescentic with a narrow oval sclerotization in middle. Ductus bursae one and a half time as long as corpus bursae. Corpus bursae oval with two very large crescent-shaped signa with long posterior protrusions (fig. 202).

Biology.— Unknown. The adults were collected between December and May, and again in August.

Distribution.— Cayman Islands; Haiti; Jamaica (fig. 283).

Remarks.— The holotype in the NMW is without abdomen. In the collection of the BMNH there is a series of 15 specimens under the manuscript name *C. asteria* proposed by Walsingham. No external differences could be found between the specimens of this series and the holotype specimen, therefore they are considered as conspecific with *C. abnormalis*.

*Cosmopterix adrastea* spec. nov.  
(figs 13, 116, 283)

Type material.— Holotype ♂, Cuba: Pinar Rio, Sierra Rosario, 400 m, 5-15.vi.1990, V.O. Becker, Col. Becker, 71450; gen. slide JCK 5087. Paratype: ♂: same data as holotype (VOB).

Diagnosis.— Resembles *C. metis*, but is characterized by the white median line on the head and thorax, the fascia in the basal area and by the base of the forewing which is concolorous with the rest of the wing.

Description.— Male. Forewing length 3.6-3.8 mm. Head: frons shining greyish white with greenish and reddish reflections, vertex and neck tufts shining dark bronze brown with greenish and reddish reflections, laterally and medially lined white, collar shining dark bronze brown with greenish and reddish reflections; labial palpus first segment very short, white, second segment three-quarters of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined brown laterally; scape dorsally dark brown with a white anterior line, ventrally white; antenna shining dark brown, an interrupted white line from base to beyond one-half, followed towards apex by approximately 18 dark brown segments, three to four white and about fifteen dark brown segments at apex. Thorax and tegulae shining dark brown with reddish gloss, thorax with a white median line. Legs: shining dark brown, femora shining greyish brown, foreleg with a white line on tibia and tarsal segments one, two, four and five, tibiae of midleg and hindleg with a silver metallic longitudinal line from base to one-third, tibia of midleg with a white medial spot and apical ring, tibia of hindleg as midleg but with an additional broad white subapical ring, tarsal segment

one of midleg with a thin white longitudinal line and white dorsal spots on segments one, two, four and five, hindleg with a white dorsal spot on tarsal segments one to three, segment four with apical half and segment five entirely white, spurs dark brown with a tiny white spot. Forewing shining dark brown, the basal area slightly paler, at one-fifth a very irregular inwardly oblique pale golden metallic fascia, not reaching costa and dorsum, at costal side with a white spot, this fascia can have a distal extension on the dorsal side, a broad tubercular silver metallic fascia at or just beyond the middle, slightly inwardly oblique to perpendicular at dorsum and with strong purplish reflection, on dorsum at three-fifths, a tubercular silver metallic spot with purplish reflection, dorsal half of wing between the fascia and the dorsal spot pale yellow, sometimes not reaching the dorsal spot, this pale yellow patch varies in size, a tubercular silver metallic subcostal spot at three-quarters, outwardly edged by a narrow white costal streak, a short silver metallic apical line with strong bluish and purplish reflections in the middle of the apical area and a shining white spot in the cilia at apex, cilia dark brown, paler on dorsum towards base. Hindwing shining greyish brown, cilia greyish brown. Underside: forewing shining greyish brown with orange gloss and with the white costal streak and apical line distinctly visible, hindwing greyish brown, a short whitish streak on dorsum at base. Abdomen dorsally yellowish brown with reddish reflection, ventrally shining dark brown with reddish reflection, segments very broadly banded shining white posteriorly, especially mid-ventrally, anal tuft brownish grey (fig. 13).

*Female.* Unknown.

*Male genitalia.* Right brachium of uncus rather short, strongly widening apically and twisted, apex blunt, left brachium very wide, tapering apically. Valvae semicircular with concave upper and lower margins. Anellus lobes slightly bent, almost parallel-sided, distally tapering to a blunt apex. Aedeagus with conical bulbous part, basal part about two-thirds of length of bulbous part, both lateral lobes long and elongate, about half the length of basal part (fig. 116).

*Biology.*— Unknown. Adults were collected in June.

*Distribution.*— Cuba (fig. 283).

*Etymology.*— Named after Adrastea, a moon of Jupiter. To be treated as a noun in apposition.

*Cosmopterix albicaudis* Meyrick, 1932  
(figs 14, 117, 203, 284)

*Cosmopterix albicaudis* Meyrick, 1932: 314. Holotype ♂: US Virgin Islands: St. Thomas, Gudmann, 8.iii.1894; gen. slide JCK 4690 (NMW) [examined].

*Material examined.*— 4♂, 5♀. Jamaica: 1♂, Moneague, 21.i.1905, coll. Walsingham; gen. slide BM 29557. 1♂, Moneague, 30.i.1905. 2♂, Moneague, 13.ii.1905. 1♀, Moneague, 14.i.1905, coll. Walsingham; gen. slide BM 29568. 1♀, Moneague, 20.i.1905; gen. slide BM 29556. 1♀, Moneague, 4.ii.1905. 1♂, Runaway Bay, 3.ii.1905, coll. Walsingham. 1♂, Runaway Bay, 29.iii.1905. 1♀, Runaway Bay, 21. iv.1905, coll. Walsingham. Trinidad and Tobago: 1♀, Trinidad, St. George, St. Augustine, 17.vi 15. viii.1976; J.S. Noyes; gen. slide BM 29946 (BMNH).

*Diagnosis.*— The species belong with *C. xanthura* and those of the genus *Pebobs* to a complex of species of which a positive identification on the external characters is not

possible with certainty. Identification only possible by the examination of the genitalia. Differs from the species of the genus *Pebobs* in the male genitalia by the heavily sclerotized right brachium of the uncus, the triangular shaped valvae and the bulbous aedeagus, and in the female by the sterigma which is not covered by the posterior margin of sternite VII. Differs from *C. xanthura* in the male genitalia by the parallel-sided right brachium of the uncus and the wide distal part of the aedeagus, in the female genitalia it differs from this species by the concave middle section of the convex posterior margin of sternite VII and by the oval-shaped posterior half of the sterigma.

Description.— Male, female. Forewing length 3.2-3.5 mm. Head: frons shining greyish white with greenish and reddish reflections, vertex and neck tufts shining greyish brown with reddish gloss, laterally and medially lined white, the white median line can be present, partly present or even completely absent; collar shining greyish brown; labial palpus first segment very short, white, second segment three-quarters of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined brown laterally, extreme apex white; scape dorsally shining dark brown with a white anterior line, ventrally shining white, antenna shining dark brown with a white line from base to almost one-half, becoming interrupted towards apex, this annulated section somewhat variable in length, followed towards apex by five white segments, one dark brown, one white, one dark brown, one white, ten dark brown and eight white segments at apex. Thorax and tegulae shining greyish brown with reddish gloss, thorax with a white median line. Legs: shining dark greyish brown, femora shining ochreous-white, foreleg with a white line on tibia and tarsal segments, femora of midleg and hindleg shining ochreous-white, tibia of midleg with white oblique basal and medial lines and white apical ring, tarsal segment one, two and three with white apical rings, tarsal segments four and five white, tibia of hindleg with a very oblique white line from base to beyond one-half and with white apical ring, tarsal segments with white apical rings, tarsal segments four and five entirely white, spurs white dorsally, brown ventrally. Forewing shining greyish brown, four narrow white lines in the basal area, a subcostal from base to one-quarter, gradually bending from costa, a medial from one-sixth to one-third and just above fold, a sometimes oblique, subdorsal from one-quarter almost reaching the transverse fascia, a short and thick line on dorsum at base, followed by a short and narrower dorsal line to one-quarter, a bright yellow transverse fascia from the middle with a broad prolongation towards apex, followed by a narrow apical protrusion in the specimens from Jamaica, bordered at the inner edge by two subcostal and dorsal tubercular pale golden metallic spots, the dorsal further from base, the subcostal spot with an outward patch of blackish scales, beyond the middle of transverse fascia a small tubercular pale golden metallic costal spot, outwardly edged by a white costal streak, a similar but larger dorsal spot opposite the costal, a shining white apical line from The transverse fascia towards apex, cilia greyish brown at apex, ochreous-grey towards dorsum. Hindwing shining pale grey, cilia ochreous-grey. Underside: forewing shining brownish grey, the transverse fascia and the white apical line indistinctly visible, hindwing shining grey. Abdomen dorsally yellowish with golden and reddish gloss, ventrally from entirely shining creamy white to shining dark grey with segments banded shining white posteriorly and with a broad shining yellowish white longitudinal streak, anal tuft dorsally ochreous, ventrally creamy white (fig. 14).

*Male genitalia.* Right brachium of uncus parallel-sided with a rounded and somewhat enlarged apex, left brachium narrow. Valvae triangular with rounded cucullus, lower margin slightly concave. Anellus lobes slightly bent, wider at base, distally tapering to a rather pointed apex. Aedeagus with bulbous part only slightly tapering, basal part about half the length of bulbous part, both lateral lobes small (fig. 117).

*Female genitalia.* Posterior edge of sternite VII convex with a concave section in middle. Sterigma with a narrow sclerotized band in middle, posterior half oval-shaped, anterior half elongate, ostium bursae oval with a semi-circular sclerotization. Ductus bursae short, less than half the length of corpus bursa and with a sclerotization where it enters the latter. Corpus bursae pear-shaped, two oval signa with little central thorns (fig. 203).

Biology.— Unknown. The moths were collected between the second half of January and the second half of April.

Distribution.— Jamaica; Trinidad and Tobago; US Virgin Islands (St Thomas) (fig. 284).

Remarks.— Eight specimens from Jamaica in the collection of the BMNH, under the name *C. fugax* are conspecific with *C. albicaudis*. *C. fugax* is a manuscript name proposed by Walsingham.

*Cosmopterix amalthea* spec. nov.  
(figs 15, 118a-b, 284)

Type material.— Holotype ♂: Cuba: Holquin, Mayari, 400 m, 12.vii.1990, V.O. Becker, Col. Becker, 72503. gen. slide JCK 5088 (VOB).

Diagnosis.— Differs externally from *C. io* and *C. lummyae* by the two very short silver streaks in the basal area. The very aberrant male genitalia with the very long right brachium of uncus, valvae and anellus lobes are characteristic. Examination of the genitalia is recommended.

Description.— Male. Forewing length 3.5 mm. Head: frons shining greyish white with greenish and reddish reflections, vertex and neck tufts shining bronze brown with greenish and reddish reflections, laterally and medially lined white, collar shining bronze brown with greenish and reddish reflections; labial palpus, first segment very short, white, second segment three-quarters of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, brown lined laterally; scape dorsally dark brown with a white anterior line, ventrally white; antenna missing. Thorax and tegulae shining dark brown with reddish gloss, thorax with a white median line in posterior half. Legs: shining dark brown, femora shining greyish brown, foreleg with a white line on tibia and tarsal segments one, two, four and five, tibiae of midleg and hindleg with a silver metallic longitudinal line with strong bluish reflection from base to one-third, tibia of midleg with an oblique white medial streak and white apical ring, tibia of hindleg as midleg but with an additional broad white subapical ring, tarsal segments of midleg with white apical rings on segments one, two, four and five, segments one and two also with a thin white longitudinal line laterally on outside, tarsal segments of hindleg with white apical rings on segments one, two and four, segment five entirely white, spurs dark brown, paler towards apex.

Forewing shining dark brown with reddish gloss, at one-fifth two very short silver streaks, a medial just above fold, a subdorsal below fold and further from base than the medial, a broad tubercular silver metallic fascia at one-half, perpendicular on dorsum and with purplish reflection, on dorsum at three-fifths, a tubercular silver metallic spot with purplish reflection, between the fascia and the dorsal spot a few yellow scales above dorsum, a tubercular silver metallic subcostal spot at three-quarters, outwardly edged by a narrow white costal streak, apical line as a short silver metallic streak with strong bluish reflection in middle of the apical area and a shining white spot in the cilia at apex, cilia dark brown, paler on dorsum towards base. Hindwing shining greyish brown, cilia greyish brown. Underside: forewing shining greyish brown with reddish gloss and with the white costal streak and apical line distinctly visible, hindwing greyish brown, a short whitish streak on dorsum at base. Abdomen too greased to describe (fig. 15).

*Female.* Unknown.

*Male genitalia.* Right brachium of uncus very long, parallel-sided, slightly upwards bent and with a sharp apex, left brachium rather long and narrow, less than half the length of the right one. Valvae very long and narrow, widest at base, S-shaped bent, cucullus with a sharp hook. Anellus lobes very long, almost straight, narrowest part before middle, apical half spatulate. Aedeagus with bulbous part bottle-shaped, strongly tapering distally, basal part only slightly shorter than bulbous part, both lateral lobes large, elongate and almost half the length of basal part (fig. 118a-b).

*Biology.*— Unknown. The single specimen was collected in July.

*Distribution.*— Cuba (fig. 284).

*Remarks.*— The specimen is rather worn. The white median lines on head and thorax are only visible as traces of white scales. Although externally resembling the species *C. io* and *C. lummyae*, the male genitalia are completely different.

*Cosmopterix ananke* spec. nov.  
(figs 16, 119, 293)

*Type material.*— Holotype ♂: Brazil: Distrito Federal, Planaltina, 1000 m, 10.v.1984, 15°35'S 47°42'W, V.O. Becker col.; Col. Becker 56392; gen. slide JCK 5499 (VOB).

*Diagnosis.*— Resembles *C. thelxinoe*, but differs externally by the incomplete white median line of the thorax and the strong bluish gloss of the apical line. Differs from *C. thelxinoe* in the male genitalia by the more or less square valvae. Examination of the genitalia is recommended.

*Description.*— Male. Forewing length 4.1 mm. Head: frons shining pale ochreous-grey with greenish and reddish reflections, vertex and neck tufts shining dark bronze brown with greenish and reddish gloss, laterally and medially lined white, collar shining dark bronze brown with greenish and reddish gloss; labial palpus first segment very short, white, second segment three-quarters of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined brown laterally; scape dorsally dark brown with a white anterior line, ventrally white; antenna shining dark brown, with an interrupted white line from base to beyond one-half, followed towards apex by six dark brown segments, four white, two

dark brown, two white, ten dark brown and seven white segments at apex. Thorax and tegulae shining dark bronze brown with reddish gloss, thorax medially with a short white posterior line, tegulae narrowly lined white inwardly. Legs: shining dark brown with reddish gloss, femora of midleg and hindleg shining ochreous-grey with golden reflection, foreleg with a white line on tibia and tarsal segments one, two, base of segment three and segment five, tibia of midleg with white oblique basal and medial lines and a white apical ring, midleg with tarsal segment one with white longitudinal line on outside from base to dorsum at apex, segment two with a white dorsal line in apical half, segments five dorsally white, tibia of hindleg as midleg, tarsal segments one and two with indistinct ochreous dorsal spots, segment three with white dorsal spot, segment four dorsally white and segment five entirely white, spurs dark brown with purplish gloss and with a longitudinal white streak. Forewing shining dark bronze brown with reddish gloss, three white lines in the basal area, a subcostal from base to one-quarter, bending from costa distally, a very short medial above fold, ending beyond apex of subcostal, a subdorsal, shorter than the medial and starting slightly further from base than the latter, a yellow transverse fascia beyond the middle with a very short apical protrusion, narrowed towards dorsum, bordered at the inner edge by a tubercular pale golden metallic fascia with greenish and purplish reflections, subcostally on the outside with a blackish spot, bordered at outer edge by two tubercular pale golden metallic costal and dorsal spots with greenish reflection, the dorsal spot about twice as large as the costal and more towards base, both spots irregularly lined dark brown on the inside, the costal spot outwardly edged by a narrow white costal streak, a shining blue apical line from the distal half of the apical area, shining white in the cilia, cilia dark brown, paler towards dorsum. Hindwing shining dark greyish brown with reddish gloss, cilia brown. Underside: forewing shining dark brown with greenish reflection, the white spot at apex distinctly visible, hindwing shining dark greyish-brown. Abdomen dorsally brown, laterally shining pale grey with greenish reflection, ventrally dark greyish brown, segments broadly banded shining yellowish white posteriorly, in middle completely yellowish white, anal tuft pale brownish grey (fig. 16).

*Female.* Unknown.

*Male genitalia.* Right brachium of uncus with apical part upwardly bent, in middle at the left side a semicircular bulge, gradually tapering apically, tip hooked, left brachium broad at base, narrowing distally, tip pointed, about one-third of the length of right one. Valvae large, more or less square, caudal margin V-shaped, upper margin strongly and lower margin slightly convex. Anellus lobes very wide in apical part, slightly bent, rather abruptly narrowing to a pointed apex. Aedeagus bottle-shaped, narrowing distally to one-third of bulbous part, basal part about two-thirds of the length of bulbous part, lateral lobes large, rounded, about one-half the length of basal part (fig. 119).

Biology.— Unknown. The single specimen was collected in May.

Distribution.— Brazil: Distrito Federal (fig. 293).

Etymology.— Named after Ananke, a moon of Jupiter. To be treated as a noun in apposition.

Remarks.— Only very few traces of the median line on the worn vertex are visible, The width of it cannot be established with certainty.

*Cosmopterix argentifera* spec. nov.  
(figs 17, 120, 285)

Type material.— Holotype ♂: Jamaica: Moneague, Jamaica, 12.i.1905, Wlsm. 76549; gen. slide BM 29913; Walsingham Collection 1910-427 (BMNH).

Diagnosis.— The two successive costal lines in the basal area of the forewing, of which the one from base bends away from the costa distally at 45°, are characteristic.

Description.— Male. Forewing length 4.4 mm. Head: frons shining ochreous-grey, vertex and neck tufts shining dark brown with a median and two lateral white lines, collar shining dark brown; labial palpus first segment very short, white, second segment three-quarters of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined dark brown laterally; scape dorsally dark brown with a white anterior line, ventrally white, antenna shining dark brown, a white line from base to one-half, followed by a short annulate section of approximately five segments, followed towards apex by respectively four white, two dark brown, two white, six dark brown, two white, six dark brown and six white segments at apex. Thorax and tegulae shining dark brown, thorax medially with a short white posterior line. Legs: shining dark brown, foreleg with a white line on tibia and tarsal segments, tibiae of midleg and hindleg with white oblique basal and medial lines and white apical rings, tarsal segments one and two with a very oblique white line, tarsal segment four with white apical ring, tarsal segment five entirely white, femur of hindleg ochreous-brown, tarsal segment one with a white basal ring, extending on outside as a white line, apical half dorsally white, segments two and four with apical half dorsally white, segment five entirely white. Forewing shining dark brown with reddish gloss, five narrow white lines in the basal area, a first costal from base to one third, beyond one-half sharply bending from costa at an angle of 45°, a second costal from the bending point of the first, but not touching it, to the transverse fascia, a medial from near base to just before the transverse fascia, a subdorsal from one-fifth to slightly beyond the medial, a dorsal from base to about the middle of subdorsal, a pale yellow transverse fascia from the middle, narrowing towards dorsum on both sides, bordered at the inner edge by a tubercular very pale golden metallic subcostal and a dorsal spot, the subcostal spot nearer to base, slightly smaller than the dorsal and with a patch of blackish scales on outside, bordered at the outer edge by a similarly coloured costal and dorsal spot, the costal spot small with a patch of blackish scales on inside and outwardly edged by a white costal streak, the dorsal spot more than twice as large as the costal and ending where the costal spot starts, a narrow white apical line from transverse fascia to apex, cilia dark brown, from outer dorsal spot towards dorsum much paler. Hindwing shining brownish grey, cilia pale brown. Underside: forewing shining greyish brown, the white costal streak and apical line visible, hindwing shining greyish brown. Abdomen dorsally bronze brown, ventrally ochreous, segments banded shining white posteriorly, medially entirely white, anal tuft yellowish white (fig. 17).

*Female.* Unknown.

*Male genitalia.* Right brachium of uncus club-shaped, left brachium narrow. Valvae pear-shaped. Anellus lobes slightly bent, narrowed near base, widest part beyond middle, distally tapering to a rounded apex. Aedeagus with bulbous part very long,

distally strongly narrowed and bent, apex very narrow and pointed, basal part very short, both laterally lobes large and semicircular (fig. 120).

Biology.— Unknown. The single specimen was collected in January.

Distribution.— Jamaica (fig. 285).

Etymology.— The name *argentifera* is a manuscript name proposed by Walsingham. An adjective, meaning silver-bearing.

Remarks.— In the type-series with the manuscript name *C. argentifera* in the BMNH (3 specimens) was also one ♂ (without abdomen) with the label: W.I., St. Domingo, S Frnesco Mts., ix.1905, which belongs to *C. magophila* and 1 ♀: Jamaica, Runaway Bay, 18.iii.1905, coll. Walsingham which is described here as *Pebobs elara* spec. nov.

*Cosmopterix astrapias* Walsingham, 1909  
(figs 18, 121, 204, 309)

*Cosmopterix astrapias* Walsingham, 1909: 5. Holotype ♀: Mexico: Tabasco, Teapa, iii.[18??] H.H. Smith; gen. slide BM 29910 (BMNH) [examined].

*Cosmopterix bendidia* Hodges, 1962: 22. Holotype ♂: United States: Arizona, Santa Cruz Co., Santa Rita Mts., Madera Canyon, 18.viii.1959, R.W. Hodges (CU) [examined] Syn. n.

Material examined.— 13♂, 7♀. Argentina: 2♀, Salta, Quebrada del Toro, 3 km N Puente del Toro, 33 km W Salta, 1700 m, 10.i.1996, Net. Ent. Exp. N-Arg. Sta. 40; gen. slide JCK 4471. 2♂, Tucumán, 11 km S Tacanas, 28 km WSW Trancas, 800 m, 15.xi.1995, transitional forest 1st level, Neth. Ent. Exp. N-Arg. Sta. 13. 3♂, same locality, 16-17.xii.1995, Sta. 28; gen. slide JCK 4470 (RMNH). Costa Rica: 1♂, Limón, Siq-uirres, 26.vii.1981, V.O. Becker col.; Col Becker 45398; gen. slide JCK 5496 (VOB). 1♂, San José, San Pedro, U.C.R. Campus, Reserva Ecológica Leonel Oviedo, 1150 m, 9.iii.2000, col. Kenji Nishida. 1♀, same locality, 2.x.2000, col./rear: Kenji Nishida; gen. slide JCK 5489 (INBC). Jamaica: 1♀, Moneague, 5.i.1905, coll. Walsingham. 1♀, Moneague, 12.i.1905; gen. slide BM 28558. 1♂, Moneague, 22.i.1905, coll. Walsingham; gen. slide BM 29300. 1♂, Moneague, 23.i.1905, gen. slide BM 31229. 1♂, Moneague, 24.i.1905. 1♂, Moneague, 30.i.1905. 1♀, Moneague, 4.ii.1905. 1♂, Moneague, 13.ii.1905. 1♀, Runaway Bay, 21.iv.1905, coll. Walsingham (BMNH). Puerto Rico: 2♂, Carite, 500 m, 17.viii.1987, V.O. Becker; col. Becker 67686; gen. slide JCK 5457. 2♂, Cayey, 450 m, 2.viii.1987, V.O. Becker; Col. Becker, 67298, gen. slide JCK 5127.

Diagnosis.— The short oblique white line above the dorsal line near the base of the forewing is characteristic.

Description.— Male, female. Forewing length 3.5-3.8 mm. Head: frons shining greyish white with greenish reflection, vertex and neck tufts shining bronze brown, laterally lined white, collar shining bronze brown; labial palpus first segment very short, white, second segment four-fifths of the length of third, dark brown with white longitudinal lines laterally and ventrally in apical part, third segment white, lined brown laterally, extreme apex white; scape dorsally shining dark brown with a white anterior line, ventrally shining white, antenna shining dark brown with a white line from base to one-third, changing into an interrupted line to two-thirds, followed towards apex by six dark brown, one white, one blackish white, four white, ten dark brown and seven white segments at apex, the white subapical ring of four segments can be narrowed by a few (partly) brown scales (or widened to six segments and sometimes even followed by a narrow white ring of two segments), the white apex can be reduced by up to three white segments. Thorax and tegulae shining bronze brown, thorax often



with a posterior white spot. Legs: shining dark greyish brown, foreleg with a white line on tibia and first three tarsal segments, fifth segment white, femora of midleg and hindleg shining pale ochreous-grey, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segments one and two with white longitudinal lines, segment five white, tibia of hindleg as midleg, tarsal segment three with a white longitudinal line, segments four and five white, spurs white dorsally, brown ventrally. Forewing shining dark brown with reddish gloss, six narrow white lines in the basal area, a first subcostal, from base to one-quarter and bending from costa in distal half, an indistinct short second subcostal between the first subcostal and the transverse fascia, a medial just above fold, from beyond base to one-third, a subdorsal from one-sixth to end of the medial, a short rather thick, oblique line above dorsum near base and a very short dorsal from one-seventh to one-fifth, there is variation in the length and thickness of the white lines in the basal area of the forewing, the length of the first subcostal line varies from one-quarter to one third of wing length, the medial varies from short in the middle of the area to starting just beyond base almost to the transverse fascia, this line is sometimes interrupted in the middle, the dorsal line varies from a complete line to just a few white scales, a bright orange-yellow transverse fascia beyond the middle with a short apical protrusion, bordered at the inner edge by a tubercular pale golden metallic fascia with reddish gloss, not reaching costa, bordered at the outer edge by two tubercular pale golden metallic costal and dorsal spots, the dorsal spot about three times as large as the costal, a small subcostal patch of blackish scales on outside of the pale golden metallic fascia, both pale golden metallic spots lined dark brown on the inside, the width of the transverse fascia and the shape of the bordering tubercular fascia and spots are variable, a shining white apical line, starting well beyond the apical protrusion, cilia dark brown. Hindwing shining dark greyish brown, cilia dark brown. Underside: forewing shining dark greyish brown, hindwing dark greyish brown, a broad greyish white streak on dorsum from base to one-half. Abdomen dorsally shining dark bronze brown with some greenish and reddish reflections, segments four to seven banded greyish white posteriorly, ventrally shining white or shining dark greyish brown, segments banded shining greyish white posteriorly and with a broad shining yellowish white longitudinal streak, anal tuft brownish grey, mixed whitish to dark brown (fig. 18).

*Male genitalia.* Right brachium of uncus rather narrow, apical part slender and gradually tapering distally, tip with a small hook, sometimes shorter, thicker and more abruptly tapering, left brachium short and narrowing distally, about one-third of length of right one or less. Valvae triangular, caudal margin rounded. Anellus lobes long and slightly bent, distal half one and a half to twice as wide as basal part, apex blunt. Aedeagus with bulbous part almost cylindrical, only slightly narrowing distally, basal part very short, more than half the length of bulbous part, lateral lobes short, semicircular or square (fig. 121).

*Female genitalia.* Posterior edge of sternite VII concave with a convex projection in middle. Sterigma oval or tapered anteriorly, ostium bursae semicircular, ventral edge somewhat sinuate, ventrally with a V-shaped sclerotization and sometimes a short medial ridge. Ductus bursae about two-thirds of length of corpus bursae. Corpus bursae oval to elongate, two often small, crescent-shaped signa, signa sometimes surrounded by a very weakly sclerotized oval plate (fig. 204).

Biology.— Larvae are leaf miners on *Ipomoea* spp. (Convolvulaceae) in the USA (Hodges, 1978), on *Ipomoea neei* (Spreng.) O'Donell in Costa Rica. The moths have been collected throughout the year. Probably the species has several overlapping generations in tropical areas and is double brooded in the northern part of its range.

Distribution.— USA: from Massachusetts and northwest Arkansas south to southern Florida, southern Texas and southern Arizona (Hodges, 1978 as *C. bendidia*); Argentina: Salta, Tucumán; Costa Rica; Jamaica; Mexico: Tabasco; Puerto Rico (fig. 309).

Remarks.— *C. astrapias* has a large range of distribution. So far it has been found from the southern USA and Central America to Argentina. The specimens of different locations show small differences in the external characters, but also in the male and female genitalia. Here these variations are considered provisionally as geographical varieties. The external features and the genitalia of *C. bendidia* do not differ from *C. astrapias*, therefore *C. bendidia* is hereby synonymised.

*Cosmopterix attenuatella* (Walker, 1864)  
(figs 19, 122, 205, 310)

*Gelechia attenuatella* Walker, 1864: 1019. Lectotype ♂ (designation unknown): Jamaica: gen. slide BM 3724 (BMNH) [examined].

*Cosmopterix flavofasciata* Wollaston, 1879: 438. Lectotype (designated by Walsingham, 1907): St. Helena: gen. slide BM 3723, (synonymised by Ghesquière, 1940) (BMNH) [examined].

*Cosmopterix mimetis* Meyrick, 1897: 339. Lectotype (whereabouts unknown): Australia: New South Wales (synonymised by Meyrick, 1930) [not examined].

*Cosmopterix venefica* Meyrick, 1915: 205. Lectotype ♂ (designated by Clarke, 1965): Peru: Lima, 500', viii.[19]14, Parish; gen. slide JFGC 6150 (BMNH) [examined]. Syn. n.

*Cosmopterix apiculata* Meyrick, 1922: 568. Lectotype ♂ (designated by Clarke, 1965): Brazil: Parintins, x.[19]19, Parish; gen. slide BM 9418 (synonymised by Landry, 2001) (BMNH) [examined].

*Cosmopterix antillia* Forbes, 1931: 356. Holotype (sex not stated): Puerto Rico: Coamo Springs, 10.iv (synonymised by Hodges, 1962) (CUIC) [not examined].

*Cosmopterix superba* auctt. [misidentification].

*Cosmopterix lespedezae* auctt. [misidentification].

Material examined.— 76 ♂ and ♀ specimens from the United States; Bermuda; Cayman Islands; British Virgin Islands; U.S. Virgin Islands; Dominica; Jamaica; Puerto Rico; Trinidad and Tobago; Costa Rica; Brazil; Ecuador; Peru, Argentina.

Diagnosis.— Very similar to *C. damnosa*, *C. taygete* and *C. vanderwolfi*, but differs in the ratio between the length and the width of the forewing. In *C. attenuatella* this is in the proportion of 10 to 1 instead of 8 to 1 in *C. damnosa*, *C. taygete* and *C. vanderwolfi*. The hooked valvae in combination with the arrow-shaped aedeagus in the male and the very long ductus bursae in the female are characteristic. Examination of the genitalia is recommended.

Description.— Male, female. Forewing length 3.5-5.8 mm. Head: frons shining greyish white, vertex and neck tufts shining brown, laterally and medially lined white, collar shining brown; labial palpus first segment very short, white, second segment four-fifths of the length of third, shining white on inside, dark brown with white longitudinal line on outside, third segment white, lined brown laterally; scape dorsally shining brown with a white anterior line, ventrally shining white, antenna shining dark brown with an interrupted white line from base to two-thirds, beyond one-half two white rings of one

segment each alternating with one brown segment, two white rings of two segments each at three-quarters separated by two brown segments, a subapical white ring of three segments and four brown segments at apex. Thorax and tegulae shining brown, thorax with a white median line, tegulae lined white inwardly. Legs: greyish brown, femora of midleg and hindleg paler, foreleg with a white line on tibia and tarsal segments, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segments with very broad shining white apical rings, segment five entirely white, tibia of hindleg as midleg, tarsal segment one with ochreous-white basal and apical rings, tarsal segments two to four with ochreous-white apical rings, tarsal segment five entirely ochreous-white, spurs white, ventrally with a dark grey streak. Forewing shining dark brown, four narrow white lines in the basal area, a subcostal from base to one-fifth and bending from costa distally, a medial above fold from one-fifth to one-third, a subdorsal, equal in length or slightly longer than the medial and slightly further from base, a dorsal from base to one-third, the white lines in the basal area can vary slightly in length and thickness, especially in the medial and subdorsal lines, a bright dark yellow to orange transverse fascia beyond the middle, narrowing towards dorsum and with a narrow apical protrusion, bordered at inner edge by a slightly inwardly oblique, tubercular pale golden metallic fascia, not reaching costa, subdorsally on outside with a patch of blackish scales, bordered at outer edge by two tubercular pale golden metallic costal and dorsal spots, the dorsal spot about twice as large as the costal, the costal spot outwardly edged by a white costal streak, both spots irregularly lined dark brown on the inside, a shining white apical line, usually narrowed or interrupted in middle, rarely complete, cilia dark brown, paler towards dorsum. Hindwing shining greyish brown, cilia greyish brown. Underside: forewing shining greyish brown, the white costal streak and apical line distinctly visible, hindwing shining greyish brown. Abdomen dorsally brown, segments spotted orange-brown, laterally grey, ventrally shining dark grey with segments banded white posteriorly, anal tuft ochreous, brown with a whitish patch ventrally in female v.

*Male genitalia.* Right brachium of uncus hook-shaped, apex flattened and pointed, length about three times as long as the left one. Valvae with upper margin at an angle of almost 90°, lower margin slightly concave, caudal margin convex. Anellus lobes slender, bent in middle and apically tapering to a sharp point. Aedeagus arrow-shaped, very narrow, bulbous part slightly bent upwards, basal part very short and widening distally (fig. 122).

*Female genitalia.* Posterior edge of sternite VII almost straight. Sterigma flagon-shaped, ostium bursae elongate. Ductus bursae very narrow, more than twice as long as corpus bursae, entering corpus bursae on anterior side. Corpus bursae elongate, signa absent (fig. 205).

*Biology.*— Larvae are leaf miner on *Scirpus* L. and *Cyperus rotundus* L. (Cyperaceae). Probably bivoltine in the south of the temperate zone and with more overlapping generations in the tropics. The leaf mine starts near the tip, then moving downwards. The mine occupies the whole leaf with black frass inside; its older part becomes brown and shrivelled, whilst the freshly eaten portion is pale yellow. Pupation occurs in the mine in a whitish elongate cocoon (Fletcher, 1933). In the tropics adults can be found throughout the year (Hodges, 1978).

*Distribution.*— Widely distributed in the tropics and subtropics of both the Old and New World (Hodges, 1978) (fig. 310).

Remarks.— In the BMNH a series of 12 specimens from Lima, Peru have been described by Meyrick as *C. venefica*. The external features and the genitalia do not differ from *C. attenuatella*, therefore *C. venefica* is hereby synonymised.

*Cosmopterix aurotegalae* spec. nov.  
(figs 20, 206, 285)

Type material.— Holotype ♀: Mexico: Veracruz, Nogales, Spring of Rio Blanco, 1300 m, 25.vi.2006, TF, leg. W. Mey; gen. slide JCK 6263 (ZMHB).

Diagnosis.— Resembles *C. gomezpompai* and the dark form of *C. pulchrimella*, but can be distinguished from these species by the characteristic pale golden metallic tegulae.

Description.— Female. Forewing length 3.9 mm. Head: frons shining pale golden metallic with greenish and purplish reflections, vertex shining dark brown with golden gloss, neck tufts shining dark brown with greenish and purplish reflections, laterally lined white, collar shining dark brown with greenish and reddish reflections; labial palpus first segment very short, brownish grey, second segment four-fifths of the length of third, shining dark brown with indistinct whitish longitudinal lines on both sides, third segment dark brown with a white dorsal line; scape dorsally shining dark brown with a white anterior line, ventrally white, antenna shining dark brown, at two-thirds a white ring of approximately five segments, some of these white segments partially brown. Thorax shining dark brown with greenish and reddish reflections, tegulae shining pale golden metallic. Legs: shining dark brown with golden gloss, foreleg with a white line on tibia and tarsal segments one and five, segment two dorsally white in apical half, tibia of midleg with an indistinct white very oblique basal line, an oblique white medial line and a white apical ring, tarsal segments one and two with white apical rings, segment five entirely white, tibia of hindleg as midleg, but with an additional broad pale golden subapical ring and without a white apical ring, tarsal segments four and five entirely white, spurs dark brown, apically whitish. Forewing shining dark brown with golden gloss, three very small silvery white streaks with strong bluish gloss in the basal area, the spots in a slightly outwardly oblique row, the subcostal nearest to base and slightly longer than the medial and subdorsal, the medial below end of subcostal, the subdorsal slightly further from base than the medial, a broad, slightly inwardly oblique, tubercular pale golden metallic fascia at the middle, a similar fascia, but outwardly oblique, at three-quarters, outer fascia outwardly edged by a white costal streak, apical line as a silvery white spot in the middle of the apical area and a broad white spot in cilia at apex, cilia dark brown, paler towards dorsum. Hindwing shining dark brown, cilia brown. Underside: forewing shining dark greyish brown with greenish gloss, white costal streak and apical line distinctly visible, hindwing shining dark greyish brown. Abdomen dorsally shining dark brown with reddish gloss, ventrally segments broadly banded shining white posteriorly and with a broad white ventral streak, segment seven dark brown, anal tuft dark brown (fig. 20).

*Male.* Unknown.

*Female genitalia.* Posterior edge of sternite VII concave with a large square hump in middle. Sterigma elongate, slightly tapering anteriorly, ostium bursae circular and with

lateral flaps, ventrally with a semicircular sclerotization. Ductus bursae slightly longer than half the length of corpus bursae and with a sclerotized section before it enters the latter. Corpus bursae oval with two crescent-shaped signa (fig. 206).

Biology.— Unknown. The single specimen was collected in June.

Distribution.— Mexico: Veracruz (fig. 285).

Etymology.— The name of the species is derived from the golden colour of the tegulae. A noun (plural) in apposition.

*Cosmopterix bacata* Hodges, 1962  
(figs 21, 123, 207, 272)

*Cosmopterix bacata* Hodges, 1962: 45. Holotype ♂ (without abdomen): United States: Alabama, Leroy, 11.vi.1917 (CUIC) [examined].

Material examined.— 13♂, 1♀. United States: 1♂, Alabama, Baldwin Co., Bon Secour NWR, 30°14'31"N 87°49'49"W, 14.v.1994, R.L. Brown, D.M. Pollock; gen. slide JCK 6113. 1♂, same data (RMNH). 2♂, same locality, 14.vi.1994, D.M. Pollock; gen. slide JCK 6114. 1♂, Alabama, Baldwin Co., Plash Is., end Hwy 6, 16-19.vi.1984, R.L. & B.B. Brown; gen. slide JCK 6113. 2♂, Louisiana, Calcasieu Par., 6 mi ESE Buhler, 30°18'44"N 93°15'39"W, 20-21.v.1993, R.L. Brown, D.M. Pollock; gen. slide JCK 6167. 1♂, 1♀, same locality, 14.vi.1993; gen. slide JCK 6130. 1♂, Louisiana, Calcasieu Par., S.H. Jones St. Pk., 30°17'48"N 93°16'20"W, 19.v.1993, R.L. Brown, D. Pollock; gen. slide JCK 6131. 2♂, same locality, 19-23.v.1993. 1♂, Mississippi, Jackson Co., Shepard State Park, 18-25.vii.1995, R. Kergosien (MEM).

Diagnosis.— Resembles *C. montisella*, but differs by the smaller wingspan and by large the white apical section of the antenna, the tegulae without white inward lining, the subcostal line on the forewing which starts well away from the base and by the dorsally dark brown abdomen.

Description.— Male, female. Forewing length 3.9-5.0 mm. Head: frons shining bronze with greenish and reddish reflections, vertex and neck tufts shining dark brown with reddish gloss, laterally and medially lined white, collar shining dark brown; labial palpus first segment very short, shining ochreous, second segment about three-quarters of the length of third, dorsally shining pale grey, ventrally and apically dark brown, third segment white, lined dark brown laterally; scape dorsally shining dark brown with a white anterior line, shining white ventrally, antenna shining dark brown, a short white line at base, often partly interrupted in distal half and with a white section of 14-17 segments at apex. Thorax and tegulae shining dark brown with reddish gloss, thorax with a white median line. Legs: shining dark brown with reddish gloss, femora of midleg and hindleg shining golden brown, foreleg with a white line on tibia and tarsal segments one, two and five, tibia of midleg with a white oblique basal line, a very indistinct pale brown oblique medial line and a white apical ring, tarsal segments one and two with white apical rings, segment five entirely white, tibia of hindleg as midleg, but the oblique medial line white and distinct, tarsal segment one with a white apical ring, other segments missing, spurs ochreous-white dorsally, dark grey ventrally. Forewing shining dark brown with reddish gloss, four white lines in the basal area, a subcostal from one-tenth to one-quarter, gradually bending from costa, a very short medial, ending just beyond the subcostal, a subdorsal, about three times as long as the medial but ending well beyond it, a short and narrow dorsal from beyond base to

one-fifth, a broad dark yellow transverse fascia beyond the middle, narrowing towards dorsum, inwardly edged by a broad tubercular silver to pale golden metallic fascia, outwardly edged by two tubercular silver to pale golden metallic costal and dorsal spots, the dorsal spot about three times as large as the costal and much closer to base, both spots narrowly edged dark brown inwardly, the costal outwardly edged by a white costal streak, a silvery white apical line from the middle of the apical area, often broadly interrupted; cilia dark brown around apex, paler on dorsum towards base. Hindwing shining dark greyish brown, cilia pale brown. Underside: forewing shining dark greyish brown, the white costal streak and the white apical spot of the apical line distinctly visible, hindwing shining dark greyish brown. Abdomen dorsally shining dark brown, ventrally shining grey, segments banded shining white posteriorly, anal tuft ochreous-grey (fig. 21).

*Male genitalia.* Right brachium of uncus long, widest part in middle, narrowing apically and somewhat twisted, apex with a little disc, left brachium broad, tip rounded, less than half the length of right one. Valvae triangular, caudal margin rounded, upper margin concave, lower margin slightly concave. Anellus lobes wide, only slightly bent in middle, tip rounded. Aedeagus slender bottle-shaped, narrowing distally to less than one-half the width of bulbous part, basal part short, half the length of bulbous part, lateral lobes triangular, more than one-half the length of basal part (fig. 123).

*Female genitalia.* Posterior edge of sternite VII concave with a convex section in middle. Sterigma cylindrical, tapering anteriorly, ostium bursae circular with a semicircular ventral sclerotization. Ductus bursae a little more than half the length of corpus bursae and with a sclerite just before entrance of corpus bursae. Corpus bursae oval, two small signa as an irregular plate with a ridge (fig. 207).

Biology.— Unknown. Adults were collected between late April and mid-July (Hodges, 1978).

Distribution.— USA: from northern Florida to southwest Alabama south to central Florida (Hodges, 1978), Louisiana (fig. 272).

Remarks.— The genitalia slide of the male holotype has not been found in CUIIC. It apparently does not exist (Hodges, pers. comm.). The picture of the genitalia in the original description is based on the genitalia of the single paratype: gen. slide RWH 406 (AMNH).

*Cosmopterix beckeri* spec. nov.

(figs 22, 124, 293)

Type material.— Holotype ♂: Brazil: Santa Catarina, Brusque, 6.ix.1970, V.O. Becker col.; Col. Becker 12241; gen. slide JCK 5554 (VOB).

Diagnosis.— The broad pale golden lining of the head, thorax and tegulae in combination with the long pale golden metallic lines and the absence of the transverse fascia are characteristic.

Description.— Male. Forewing length 4.4 mm. Head: frons shining brownish grey with greenish and reddish reflections, vertex and neck tufts shining dark brown with reddish gloss, laterally lined white, medially broadly lined pale golden metallic with strong greenish reflection, collar shining dark brown with greenish and reddish gloss; labial palpus first segment very short, shining ochreous, second segment four-fifths of

the length of third, shining dark brown with greenish and reddish reflections, third segment dark brown with an indistinct and interrupted white line on outside; scape dorsally dark brown, ventrally pale brown, antenna shining dark brownish grey with reddish gloss. Thorax and tegulae shining dark brown with reddish gloss, thorax with a broad pale golden metallic median line, tegulae broadly lined pale golden metallic inwardly, pale golden lines on thorax and tegulae with strong greenish reflection. Legs: shining dark brown with reddish gloss, tibia of foreleg with a pale golden longitudinal line with greenish reflection and a white dorsal spot, tarsal segments lined white on segments one, two and three in basal half, segment five entirely pale brown, tibia of midleg with oblique pale golden metallic basal and medial lines and a whitish apical ring, tarsal segments one and two with white dorsal lines, femur of hindleg shining golden, tibia of hindleg with a very oblique pale golden line from base to one-half, a pale golden medial and subapical ring and a white apical ring, the pale golden markings with strong greenish reflection, tarsal segments one to three with ochreous-white apical rings, segment five entirely white, spurs shining dark brown ventrally. Forewing shining dark brown with reddish gloss, four broad pale golden metallic lines with strong greenish and reddish reflections in the basal area, a short subcostal from one-fifth to one-quarter, a second subcostal from base and ending just before the end of the first subcostal, a subdorsal from one-fifth almost to the fascia in the middle, a dorsal from beyond base to one-quarter, an inwardly oblique and irregular fascia with strong greenish and reddish reflections, in the middle, not reaching dorsum and with a long protrusion to tornus, a pale golden metallic apical line starting subcostally at three-quarters almost to apex, a few very narrow bluish streaks below and beyond the distal end of the apical line, all pale golden metallic markings with strong bluish green and reddish reflections, cilia dark brown, paler towards dorsum. Hindwing shining greyish brown with greenish and reddish gloss, cilia brown. Underside: forewing shining dark greyish brown, hindwing shining dark greyish brown. Abdomen dorsally shining dark brown with reddish gloss, ventrally shining dark brown with segments broadly banded shining golden posteriorly, anal tuft brownish grey (fig. 22).

*Female.* Unknown.

*Male genitalia.* Right brachium of uncus gradually widening distally, apex strongly widened and bent to the left, tip rounded, left short and narrowing distally, less than one-half the length of right one, tip rounded. Valvae boot-shaped, caudal margin rounded, upper and lower margin straight. Anellus lobes long and stout, 90° bent, widest part in middle and distally strongly tapering, tip blunt. Aedeagus bottle-shaped, narrowing distally less than one-half the width of bulbous part, basal long and wide distally, two-thirds the length of bulbous part, lateral lobes square, about one-half the length of basal part (fig. 124).

Biology.— Unknown. The single specimen was collected in September.

Distribution.— Brazil: Santa Catarina (fig. 293).

Etymology.— The species is dedicated to its collector Dr Vitor Becker, Camacan, Brazil, who also provided a large part of the material of the Neotropical species involved in this study.

Remarks.— The aberrant appearance of this species in the genus *Cosmopterix* is not unique. It resembles externally *C. trilopha* Meyrick, 1922 from Uganda and an undescribed species from Okinawa Is. (Japan) (Kuroko, pers. comm.).

*Cosmopterix callichalca* Meyrick, 1922  
(figs 23, 125, 208, 311)

*Cosmopterix callichalca* Meyrick, 1922: 568. Lectotype ♂ (selected by J.F.G. Clarke, 1965): Brazil: Parintins, x.[19]19, Parish; genitalia slide JFCG 6161 (BMNH) [examined].

*Cosmopterix dicacula* Hodges, 1962: 34. Holotype ♂: United States: Florida, Gainesville, 7.vii.1927, J. Speed Rogers; genitalia slide RWH 101 (CUIC) [examined]. Syn. n.

Material examined.— 33 ♂, 10 ♀. Argentina: 1 ♂, Salta, Quebrada del Toro, 3 km N Puente del Toro, 33 km W Salta, 1700 m, 10. I.1996, Neth. Ent. Exp. N-Arg. Sta. 40; gen. slide. JCK 4477 (RMNH). Brazil: 1 ♂, Distrito Federal, Planaltina, 1000 m, 15°35'S 47°42'W, 3.iv.1984, V.O. Becker col.; Col. Becker 56339; gen. slide JCK 5130. 1 ♀, same locality, 15.iii.1985; Col. Becker 57356; gen. slide JCK 5436. 1 ♂, Goias, Alto Paraíso, 1300 m, 30.v.1994, V.O. Becker & K.S. Sattler Col.; Col. Becker 92831; gen. slide JCK 5508. 1 ♂, Minas Gerais, Nova Lima, 850 m, 30.xii.1988, V.O. Becker, col.; Col. Becker 60478; gen. slide JCK 5507. 1 ♂, Minas Gerais, Serra do Cipô 1400 m, 17-19.iv.1991, V.O. Becker Col; Col. Becker 78119; gen. slide JCK 5453 (VOB). United States: 1 ♂, Alabama, Baldwin Co., Plash Is., end of Hwy 6, 16-19.vi.1984, R.L. & B.B. Brown; gen. slide JCK 6139 (MEM). 1 ♀, Florida, Lake Placid, Archbold Bio. Sta., 1-8.vi.1964, R.W. Hodges; gen. slide USNM 3773 (USNM). 2 ♂, Louisiana, Bossier Parish, Berksdale A.F.B., 32°29'29"N 93°35'07"W, 8.viii.1996, R.L. Brown, D. Pollock; gen. slide JCK 6125. 10 ♂, Louisiana, Calcasieu Par., 6 mi ESE Buhler, 30°18'44"N 93°15'39"W, 15-16.ix.1993, R.L. Brown, D. Pollock; gen. slides JCK 6123, 6138 (MEM). 1 ♂, Michigan, Allegan Co, Saugatuck SP dunes, 3.vii.1994, G.J. Balogh. 1 ♀: Michigan, Mason Co, Nordhouse Dunes, coll. 19.viii.2000; ex larva 5-7.v.2001, G.J. Balogh. 9 ♂, Michigan, Oceana Co, Little Pt Sable dunes, 12.vi.1999, G.J. Balogh; gen. slides JCK 5973, 5974, 5977. 2 ♂, 5 ♀, same locality, coll: 21. viii.1999, iss: 18.v-22.vi.2000; gen. slide JCK 5978 (GB). 1 ♂, Mississippi, Lowndes Co., T17N-R16E, Sec. 34, Black Belt Prairie, 20.v.1992, R.L. Brown; gen. slide JCK 6137. 1 ♂, Mississippi, Oktibbeha Co., 3 mi. S Starkville, 28.iv.1986, J.R. MacDonald. 1 ♂, same locality, 6 mi SW Starkville, 19.iv.1986; gen. slide JCK 6160. 1 ♀, same locality, T18N-R14E, Sec. 23, 25.viii.1987, R.L. & B.B. Brown; gen. slide JCK 6124 (MEM). 1 ♀: Texas: Jeff Davis Co, Fort Davis, 20.ix.2004, G.J. Balogh; gen. slide JCK 6105 (GB).

Diagnosis.— Very similar to *C. dapifera*, *C. delicatella* and *C. orthosie*, but the stout and wide right brachium of the uncus in combination with the broad annelus lobes in the male genitalia are characteristic. In the female genitalia it differs from *C. dapifera* by the distally narrowing sterigma.

Description.— Male, female. Forewing length 3.1-5.7 mm. Head: frons shining ochreous-white, vertex and neck tufts shining greyish brown with some reddish reflection, laterally and medially lined white, collar brown; labial palpus first segment very short, white, second segment three-quarters of the length of third, greyish brown with white longitudinal lines laterally and ventrally, third segment white, laterally lined dark brown; scape dark brown with a white anterior line, white ventrally, antenna from greyish brown in basal half, to shining dark grey in apical half, a white line from base to one-third, distal half interrupted, the apical section can be white, greyish white or dark grey, preceding by two, more or less distinct, white rings, especially in male specimens the white markings on the antennae are often greyish white and narrower than in female specimens. Thorax and tegulae greyish brown, thorax with a white median line, tegulae lined white inwardly. Legs: dark brown, femora of midleg and hindleg shining ochreous, foreleg with a white line on tibia and tarsal segments, tibiae of midleg and hindleg with white oblique basal and medial lines and white apical rings, tarsal segments of midleg and hindleg dorsally white, spurs brown on outside, white on inside. Forewing greyish brown, five white lines in the basal area, a short costal from



before one-half to the transverse fascia, a subcostal from base to two-fifths or one-third, bending from costa at distal third, but occasionally it reaches almost or completely the transverse fascia, the white medial line can be complete from base to the transverse fascia, but more often it starts from just beyond base or well away from it and does not reach fully the transverse fascia, a subdorsal from two-fifths to the transverse fascia, a narrow dorsal from base and reaches from one-quarter to one-third, but sometimes almost to the transverse fascia, a yellow transverse fascia beyond the middle with a small basal protrusion and a larger apical protrusion, the latter can vary from small to very large, almost occupying the whole apical area, the transverse fascia bordered at the inner side by two tubercular pale golden metallic subcostal and dorsal spots, the subcostal spot outwardly edged by a patch of blackish brown scales, the dorsal spot nearer apex, the position of the inner tubercular spots vary, both can be at the edge of the transverse fascia, but more often only the subcostal spot is at the edge and the dorsal is surrounded by the yellow scales of the transverse fascia, occasionally both inner spots are free and surrounded by yellow scales, when free the dorsal spot is inwardly edged by a small patch of blackish brown scales, bordered at the outer edge by a similarly coloured, but smaller, costal and dorsal spot, opposite each other, sometimes one spot or both spots are inwardly lined brown or blackish brown, both outer costal and dorsal spot outwardly edged by a white costal and dorsal streak respectively, a shining white apical line connected to the apical protrusion, cilia greyish brown, paler towards dorsum. Hindwing shining pale grey, cilia pale ochreous. Underside: forewing shining greyish brown, white costal streak indistinctly and white apical line distinctly visible, hindwing shining pale grey. Abdomen dorsally shining ochreous-yellow, segment seven white, ventrally shining white, anal tuft white (fig. 23).

*Male genitalia.* Right brachium of uncus stout, apex widened, left brachium about half the length and rather wide. Valvae with upper margin concave, lower margin straight, caudal margin slightly rounded. Anellus lobes rather broad, bent, a little narrowed near base, distally tapering to a blunt apex. Aedeagus with bulbous part wide, strongly narrowed distally, basal part about as long as bulbous part, both lateral lobes long and narrowing distally (fig. 125).

*Female genitalia.* Posterior edge of sternite VII slightly concave with a tiny convex section in middle. Sterigma oval, ostium bursae round with a crescent-shaped sclerotization and central rim ventrally. Ductus bursae about half the length of corpus bursae and with an inner sclerite where it enters the latter. Corpus bursae pear-shaped with two elongate signa with a central vertical rim (fig. 208).

*Larva.* Body yellow, head and prothoracic plate very pale brown, anal plate almost colourless, thoracic legs transparent.

*Pupa.* Shining dark brown.

*Biology.*— The host plant is *Schizachyrium scoparium* (Michx.) Nash. (Poaceae), based on live material from Michigan, received from G. Balogh (see material) and used for the description.

*Life history.* The larva mines a leaf. The mine starts as a narrow gallery near the midrib on the upper side of the leaf. The linear mine follows the midrib for quite a while, gradually widening until it occupies half the leaf from the midrib to the edge, before the top of the leaf the larva passes the midrib and starts feeding downwardly. So far the whole mine is filled with frass. The lower and final part of the mine is without frass and

walls are lined with silk. Pupation takes place in this part with the pupa in upwards position and the cremaster firmly attached to the silk lining. When emerging the adult leaves the mine through a semi-circular slit. Adults have been collected in June and July in Michigan, in southern states of the USA from April to May and in August-September, in Brazil in March to May and in December. Larvae from Michigan collected in August hibernated inside the mines and emerged in May-June the following year. This gives the indication that the species is univoltine in the north, but bivoltine in the southern USA. In Brazil the species is probably multivoltine.

Distribution.— Argentina: Salta; Brazil: Amazonas, Distrito Federal, Goias, Minas Gerais; USA: Alabama, Florida, Louisiana, Michigan, Mississippi, Texas (fig. 311).

Remarks.— In the original description two male specimens are mentioned, both specimens should be in the collection of BMNH. Also Clarke (1965) has examined these two specimens, but only the lectotype could be found in BMNH. *Cosmopterix callichalca* is externally very variable. Despite the examination of many male and female genitalia no differences could be found between the specimens from the type-locality in Brazil and specimens from other Brazilian localities, nor from specimens from Argentina or the USA. Also the male genitalia of the holotype of *Cosmopterix dicacula* Hodges, 1962 do not differ from *C. callichalca*; therefore *C. dicacula* is hereby synonymised.

*Cosmopterix callisto* spec. nov.  
(figs 24, 209, 293)

Type material.— Holotype ♀: Peru: Cuzco Mts., Garlepp 1905, Stgr. 73238; Walsingham Collection, 1910-427; gen. slide BM 29560 (BMNH).

Diagnosis.— Resembles *C. schouteni*, but differs by the white section of the antenna beyond the middle, the white lines in the basal area and by the complete transverse fascia.

Description.— Female. Forewing length 3.9 mm. Head: frons shining ochreous-white, vertex, neck tufts and collar shining dark brown with reddish gloss and some bluish and greenish reflections, lined white laterally; labial palpus first segment very short, ochreous-white, second segment three-quarters of the length of third, dark brown with white longitudinal lines laterally, third segment white, lined dark brown laterally; scape dorsally shining dark brown with a white anterior line, ventrally shining ochreous-white, antenna shining dark brown with a white anterior line from base to beyond one half, distal part interrupted, followed towards apex by one white segment, one dark brown, a white section of approximately eight segments, apical part dark brown and slightly serrate. Thorax and tegulae shining dark brown with reddish gloss and greenish reflection. Legs: shining dark brown, femora shining ochreous, femur of hindleg with golden gloss, tibiae of foreleg and midleg with white medial spots and narrow white apical rings, tarsal segments one to three and five of foreleg and midleg with longitudinal white lines, tibia of hindleg with bluish silver subbasal and medial streaks and a white apical ring, tarsal segments one to four dark brown with golden gloss, segment five entirely ochreous-white, spurs dark greyish brown, apically lighter. Forewing shining dark brown with reddish gloss, three narrow white lines in the basal area, a subcostal from base to one-eighth, bending from costa distally, a medial just above fold

from near base to one-third, a short dorsal, starting just before end of the medial, a shining dark yellow transverse fascia beyond the middle with a very long apical protrusion, bordered on the inner edge by a narrow, tubercular, silver metallic fascia with greenish reflection and with a blackish brown subcostal spot on outside, bordered on the outer edge by a longitudinal tubercular silver metallic costal spot with a white costal streak, on dorsum, slightly inward of the costal spot, an oval metallic silver dorsal spot, both spots broadly edged dark brown, a silver metallic apical line from the apical protrusion, changing to shining white in the cilia, cilia dark brown around apex, slightly paler towards dorsum. Hindwing shining dark brown with reddish gloss, cilia dark brown. Underside: forewing shining dark brown, hindwing shining dark brown. Abdomen dorsally dark brown with reddish gloss, ventrally shining greyish brown, segments banded broad yellowish white posteriorly, anal tuft shining dark brown (fig. 24).

*Male*. Unknown.

*Female genitalia*. Posterior edge of sternite VII convex, strongly flattened ventrally, and partly covering sterigma. Sterigma large, oval, abruptly tapering posteriorly, ostium bursae circular with a semicircular indentation ventrally, the edge of it broadly sclerotized. Ductus bursae more than half the length of corpus bursae and with a sclerotized section at four-fifths from ostium. Corpus bursae oval, two small triangular signa (fig. 209).

*Biology*.— Unknown.

*Distribution*.— Peru (fig. 293).

*Etymology*.— Named after Callisto, a moon of Jupiter. To be treated as a noun in apposition.

*Cosmopterix carpo* spec. nov.  
(figs 25, 126, 210, 286)

*Type material*.— Holotype ♂: Puerto Rico: Guanica, 170 m, 20.viii.1987, V.O. Becker; Col. Becker 67857; gen. slide JCK 5445 (VOB). Paratype ♂, ♀: 1 ♂, British Virgin Islands, Tortola, Mt. Sage, 460 m, 13-15.vii.1987, V.O. Becker & S.E. Miller; gen. slide JCK 5485. 1 ♀, same data as holotype; gen. slide JCK 5446 (VOB).

*Diagnosis*.— The prolongation of the transverse fascia to the tip of the forewing in combination with the costal line from base to the transverse fascia are characteristic.

*Description*.— Male, female. Forewing length 2.4 mm. Head: frons shining white with greenish and reddish reflections, vertex and neck tufts shining olive brown with reddish gloss, medially and lined white laterally, collar shining olive brown; labial palpus first segment very short, white, second segment three-quarters of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined brown laterally; scape dorsally shining dark brown with a white anterior line, ventrally shining white, antenna shining dark brown, a white line from base to three-fifths, followed by two white rings on two segments separated by two dark brown segments, followed towards apex by six dark brown segments, two white and five dark brown segments at apex. Thorax and tegulae shining olive brown with reddish gloss, thorax with a white median line. Legs: shining ochreous-grey, foreleg with a white line on tibia and tarsal segments one to three and five, segment four with a white apical

ring, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segments one and two with white apical spots, segment five entirely white, tibia of hindleg with a very oblique white line from base to two-thirds and a white apical ring, tarsal segments with indistinct whitish apical rings, spurs white dorsally, ochreous ventrally. Forewing shining olive brown with reddish gloss, four narrow white lines in the basal area, a costal from base to the transverse fascia, a short medial above fold, from one-quarter to one third, a subdorsal from one-third to one-half, a dorsal from base to one-third, the costal edged brown, other lines sometimes edged by a few brown scales, a pale yellow transverse fascia beyond the middle, prolonged towards apex, dividing the forewing in a olive brown basal area and a pale yellow apical area, bordered at inner edge by two tubercular pale golden metallic subcostal and subdorsal spots, both spots of similar size and with an outward patch of blackish scales, the subdorsal slightly further from base than the subcostal, in the middle of the pale yellow section a small tubercular pale golden costal and dorsal spot of similar size opposite, apical line absent, cilia ochreous around apex, yellowish white towards dorsum. Hindwing shining very pale grey, cilia yellowish white. Underside: forewing shining pale greyish brown in the basal half, pale yellow in the apical half, hindwing shining very pale grey. Abdomen dorsally shining pale yellow, ventrally shining ochreous, anal tuft shining white (fig. 25).

*Male genitalia.* Right brachium of uncus very long, broad, S-like bent to the right before middle and strongly sclerotized at this part, apical part weaker sclerotized and narrower than basal part, tip blunt, left brachium very narrow, tip rounded, about one-fifth of the length of right one. Valvae with a broad and rounded cucullus, caudal margin with a sharp edge, upper margin strongly and lower margin slightly concave. Anellus lobes very long and wide, slightly bent in middle, apical part gradually tapering, tip pointed. Aedeagus bottle-shaped, bulbous part rather abruptly narrowing in distal third to about one-third of width, basal part about two-thirds of length of bulbous part, lateral lobes broad but very short, less than one-quarter of length of basal part (fig. 126).

*Female genitalia.* Posterior edge of sternite VII strongly convex and partly covering sterigma. Sterigma very long, slightly bent, anterior part narrowed, ostium bursae round, dorsal wall with a large V-shaped indentation, ventrally with a semicircular sclerotization and long medial ridge. Ductus bursae about two-thirds of length of corpus bursae. Corpus bursae egg-shaped, signa as two large serrate teeth with weakly sclerotized plates posteriorly (fig. 210).

Biology.— Unknown. Adults were collected in July and August.

Distribution.— Puerto Rico; British Virgin Islands: Tortola (fig. 286).

Etymology.— Named after Carpo, a moon of Jupiter. To be treated as a noun in apposition.

*Cosmopterix chaldene* spec. nov.  
(figs 26, 127, 294)

Type material.— Holotype ♂: Brazil: Distrito Federal, Planaltina, 1000 m, 3.ix.1988, 15°35'S 47°42'W, V.O. Becker col.; Col. Becker 58826; gen. slide JCK 5722 (VOB).

Diagnosis.— Resembles *C. pulchrimella*, but can be distinguished from this species by the white inward lining of the tegulae. It differs in the male genitalia by semi-circular

valvae with a concave upper margin and by the broader and distally wider aedeagus.

Description.— Male. Forewing length 3.3 mm. Head: frons shining grey with greenish and reddish reflections, vertex shining bronze brown, neck tufts shining dark bronze brown with reddish reflection, laterally and medially lined white, collar shining dark bronze brown; labial palpus first segment very short, white, second segment four-fifths of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined dark brown laterally; scape dorsally shining dark brown with white anterior and dorsal lines, ventrally shining white, antenna shining dark brown with a short white line from base changing to an interrupted line to beyond one-half, remaining part of antenna missing. Thorax and tegulae shining bronze brown with reddish gloss, thorax with a white median line, tegulae narrowly lined white inwardly. Legs: shining greyish brown, femora of hindleg ochreous-grey, foreleg with a white line on tibia and tarsal segments, except segment four, midlegs missing, tibia of hindleg with white oblique basal and medial lines and a white apical ring, tarsal segments one and two with white apical rings, segment five dorsally white, spurs white, ventrally greyish brown. Forewing shining dark bronze brown with reddish gloss, three white lines of about equal length in the basal area, a subcostal from one-tenth to one fifth, bending from costa distally, a medial above fold, its centre under the distal end of the subcostal, a subdorsal slightly further from base than the medial, a few white scales on dorsum beyond base, a yellowish brown transverse fascia beyond the middle, only slightly paler than the ground colour of the forewing, bordered at the inner edge by a tubercular pale golden metallic fascia, slightly narrowing at costa and with a subcostal patch of blackish brown scales on outside, bordered at the outer edge by two tubercular pale golden metallic costal and dorsal spots, the dorsal spot a little larger and slightly more towards base, both spots very close to each other or connected in the middle, forming a fascia, a small white costal streak connected to the costal spot, the apical line as a pale golden spot in the middle on dorsum of the apical area and a white streak in the cilia at apex, cilia bronze brown at apex, paler towards dorsum. Hindwing shining greyish brown, cilia pale brown. Underside: forewing shining greyish brown, the white costal and apical streak distinctly visible, hindwing shining brownish grey. Abdomen dorsally yellowish brown, ventrally brownish grey, segments banded shining white posteriorly, anal tuft yellowish white (fig. 26).

*Female.* Unknown.

*Male genitalia.* Right branchium of uncus spatulate, gradually tapering apically, with a small hook at the tip, left branchium broad and rounded apically, length about one-quarter length of left one. Valvae semi-circular with a concave upper margin. Anellus lobes rather short, bent in middle, apically rounded. Aedeagus with tapering bulbous part, narrowing distally to about one-half of width, basal part one-half length of bulbous part, lateral lobes about half as long as basal part, more or less triangular (fig. 127).

*Biology.*— Unknown. The single specimen was collected in September.

*Distribution.*— Brazil: Distrito Federal (fig. 294).

*Etymology.*— Named after Chaldene, a moon of Jupiter. To be treated as a noun in apposition.

*Remarks.*— The male genitalia show teratological features. The left valva has been deformed.

*Cosmopterix chalupae* spec. nov.  
(figs 27, 128, 294)

Type material.— Holotype ♂: Argentina: Salta, P.N. El Rey, campsite, 100 km NE Metán, 890 m, 27-28. xi.1995, boggy terrain, transitional forest, Neth[erlands] Ent[omological] Exp[edition] N[orth]-Arg[entina] Sta. 19; gen. slide JCK 4474 (RMNH).

Diagnosis.— Resembles *C. trifasciella*, but differ by the single, broad white subapical area of the antenna, by the irregular and interrupted fascia in the basal area and by the pale yellow spots on abdominal segments two, three and four.

Description.— Male. Forewing length 4.0 mm. Head: frons shining pale ochreous, shining white towards clypeus, vertex and neck tufts shining pale bronze brown, lined white laterally, collar shining pale bronze brown; labial palpus, first segment very short, white, second segment three-quarters of the length of third, dorsally bronze brown, ventrally white, third segment white, lined dark brown laterally; scape dorsally bronze brown with a white anterior line, ventrally white, antenna shining dark brown with an interrupted white line from base to one-half, followed towards apex by, respectively, a short annulated section of approximately six segments, fourteen dark brown, nine white and sixteen dark brown segments at apex. Thorax shining pale bronze brown with a short indistinct white median line posteriorly, tegulae shining pale bronze brown. Legs: dark brown, femora of foreleg and midleg shining ochreous-white, femur of hindleg shining grey, foreleg with a white line on tibia and tarsal segments one to four, segment five entirely white, tibia of midleg with an indistinct whitish medial spot and a white apical ring, tarsal segments with white apical rings, tibia of hindleg with a white basal streak and white medial and apical rings, tarsal segments missing, spurs ochreous-grey, apically lighter. Forewing shining dark brown, in the basal area at one-fifth an irregular inwardly oblique silver metallic fascia, interrupted in the costal half and widening towards dorsum but not reaching it, at one-half a broad tubercular pale golden metallic fascia, perpendicular on dorsum, at three-quarters an outward oblique tubercular pale golden metallic fascia, narrowed towards costa, outwardly edged by a narrow white costal streak, apical line as a few silver metallic scales with bluish gloss in the middle of the apical area and a narrow white streak in the cilia at apex, cilia dark brown, paler on dorsum towards base. Hindwing shining dark brown, cilia brown. Underside: forewing shining greyish brown with the white streak at apex visible, hindwing at costa greyish brown, grey at dorsum. Abdomen dorsally shining dark brown, segments two, three and four with pale yellow spots, laterally shining grey, ventrally segments broadly banded shining pale yellowish grey posteriorly, anal tuft greyish brown, ventrally mixed yellowish white (fig. 27).

*Female.* Unknown.

*Male genitalia.* Right brachium of uncus stout with a crest in basal part, apical part large, oval, tip broad and flattened and bent to a small hook, left brachium large, very broad at base, gradually tapering distally with rounded tip, two-thirds of length of right one. Valvae large, more or less rectangular, basal part rather narrow, caudal margin rounded, upper and lower margins concave. Anellus lobes rather narrow, a little wider in distal half, strongly bent in middle, apex pointed. Aedeagus wide, bulbous part gradually narrowing distally to one-half of width, basal part about one-half length

of bulbous part, lateral lobes square, about half the length of basal part (fig. 128).

Biology.— Unknown. The single specimen was collected in November.

Distribution.— Argentina: Salta (fig. 294).

Etymology.— The species is dedicated to Dr Adriana Chalup Navarro from Tucumán, Argentina for her collaboration with the Netherlands Entomological Expedition to the north of Argentina in 1995-1996.

*Cosmopterix chalybaeella* Walsingham, 1889  
(figs 28, 129, 272)

*Cosmopterix chalybaeella* Walsingham, 1889: 289. Holotype ♂: United States: S[outh] W[est] Texas, Morrison 1884 (BMNH) [examined].

Material examined.— 2 ♂. United States: 1 ♂, same data as holotype; gen. slide BM 31214 (BMNH). 1 ♂, New Mexico, Eddy Co., Dark Canyon Rd, 7 mi W Hwy 62/180, 13.iv.2005, George J. Balogh; gen. slide JCK 6094 (GB).

Diagnosis.— Externally very similar to *C. isotoma*, but the subcostal line starts beyond base and the transverse fascia is much more narrowed in dorsal half. In the male genitalia it differs by the rather short and tapered sclerotized section of the right brachium of uncus and the small boot-shaped valvae. Examination of the genitalia is recommended.

Description.— Male. Forewing length 3.8 mm. Head: frons shining ochreous-white with greenish and reddish reflections, vertex bronze brown, neck tufts dark bronze brown with reddish gloss, laterally and medially lined white, collar dark bronze brown; labial palpus first segment very short, white, second segment three-quarters of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, dark brown lined laterally; scape dorsally shining dark brown with a white anterior line, ventrally shining white, antenna shining dark brown with a white line from base to beyond one-half, followed towards apex by six or seven dark brown segments, two white, two dark brown, two white, 10 dark brown and nine white segments at apex. Thorax and tegulae shining dark bronze brown with reddish gloss, thorax with a white median line, tegulae lined white inwardly. Legs: only forelegs present, both too worn to describe. Forewing dark bronze brown with reddish gloss, four white lines in the basal area, a narrow subcostal from beyond base to one-fifth, bending from costa in distal half, a very short and thick medial above fold, below the distal end of the subcostal, a subdorsal, similar to the medial but slightly longer, below fold and slightly further from base as the medial, a narrow dorsal from beyond base to the basal end of the subdorsal, a broad yellow transverse fascia beyond the middle, strongly narrowed in dorsal half and in dorsal half darkened by grey scales, bordered at the inner edge by two silver metallic, tubercular costal and dorsal spots, the costal spot outwardly edged by a patch of blackish brown scales, the dorsal spot much further from base and about twice as large as the costal, bordered at the outer edge by similarly coloured costal and dorsal spots, the outer dorsal spot three times as large as the outer costal and more towards base, both spots partly lined dark brown inwardly, the outer costal outwardly edged by a narrow white costal streak, a narrow white apical line from distal half of the apical area to apex, cilia dark brown around apex, paler towards dorsum. Hindwing

shining dark brownish grey. Underside: forewing shining greyish brown, hindwing shining greyish brown in costal half, shining grey in dorsal half. Abdomen dorsally ochreous-brown, ventrally paler, anal tuft yellowish white, abdomen greased, proper description not possible (fig. 28).

*Female.* Unknown.

*Male genitalia.* Right brachium of uncus with a ventral inwardly concave bulge beyond middle, tapering distally, tip broadened and blunt, left brachium short and narrow, tip rounded, one-quarter of length of right one. Valvae boot-shaped, upper and lower margin rounded, caudal margin almost straight. Anellus lobes rather narrow, parallel-sided, slightly bent in middle, tip blunt. Aedeagus large, bulbous part wide beyond middle and narrowing distally to about one-third of width, basal part wide distally, about two-thirds of length of bulbous part, lateral lobes more or less rectangular, about half the length of basal part (fig. 129).

Biology.— Unknown. The specimen from New Mexico was collected in April.

Distribution.— USA: Texas, New Mexico (fig. 272).

Remarks.— The specimen with the label 'type' in the collection of the BMNH has been heavily damaged. Head, abdomen and most legs are missing. The type-series consists of two specimens, instead of just the type as stated by Hodges (1978).

*Cosmopterix chisosensis* Hodges, 1978  
(figs 29, 130, 211, 312)

*Cosmopterix chisosensis* Hodges, 1978: 31. Holotype ♂: United States: Texas, Brewster Co., [Big Bend National Park], Chisos Mts., Green Gulch, 5500'; 6.vi.1973; R.W. Hodges; genitalia slide USNM 3890 (USNM) [not examined].

Material examined.— 6♂, 7♀. Argentina: 1♂, Salta, Camino de Cornisa, 1200 m, 12.xi.1995, rainforest along road between Salta and Jujuy, Neth. Ent. Exp. N-Arg. Sta. 9; gen. slide JCK 4469. 3♂, Tucumán, 7 km SSW Tapia, 21 km N S.M. de Tucumán, 700 m, 5.ii.1996, Neth. Ent. Exp. N-Arg. Sta. 62; gen. slide JCK 4460, 5804. 1♀, Tucumán, 11 km S Tacanas, 28 km WSW Trancas, 800 m, 16-17.xii.1995, transitional forest 1st level, Neth. Ent. Exp. N-Arg. Sta. 28. 1♀, Tucumán, Alto de San Augustin nr Javier, 15 km NW S.M. de Tucumán, 920 m, 15.i.1996, Neth. Ent. Exp. N-Arg. Sta. 43. 1♀, Tucumán, 1 km E Villa Nougues, 15 km WSW S.M. de Tucumán, 1130 m, 18.i.1996, Neth. Ent. Exp. N-Arg. Sta. 46; gen. slide JCK 4459. 4♀, Tucumán, 7 km SSW Tapia, 21 km N S.M. de Tucumán, 700 m, 5.ii.1996, Neth. Ent. Exp. N-Arg. Sta. 62 (RMNH). United States: 2♂, Arizona, Santa Cruz Co, Peña Blanca Lake Res., White Rock CG, 1300 m, dry riverbed, 26.v.1997, leg. H.W. v.d.Wolf; gen. slides JCK 4456, 5741 (VDW). 1♂, Mississippi, Jasper Co., Bienville Natl. Forest, 32°09'53"N 89°15'26"W, 30.v.2000, R.L. Brown; gen. slide JCK 6134 (MEM).

Diagnosis.— Externally not separable with certainty from *C. diaphora* and *C. opulenta*, examination of the genitalia is essential. From these species it differs in the male genitalia by the simple club-shaped right brachium of the uncus and the more slender aedeagus, in the female genitalia it differs by the concave posterior edge of sternite VII which bears a small convex section in middle and the large, single ridge-like signum.

Description.— Male, female. Forewing length 2.9-4.9 mm. Head: frons shining yellowish white, vertex light brown, neck tufts brown, medially and laterally lined white, collar brown; labial palpus first segment very short, white, second segment two-thirds of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined dark brown laterally; scape dorsally dark brown with white



anterior and dorsal lines, ventrally shining white, antenna shining dark brown with a white line from base to two-thirds, interrupted from one-third, followed towards apex by three white segments, one partially brown, two white, five brown and four white segments at apex. Thorax and tegulae brown, thorax with a white median line. Legs: femora shining greyish brown, tibia and tarsi shining brown, foreleg with a white line on tibia and tarsal segments, fifth segment entirely white, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segments one, two and four with white apical rings, segment five entirely white, tibia of hindleg as midleg, tarsal segment one with white basal and apical rings, other segments ochreous with indistinct white apical rings, spurs white with a longitudinal brown streak. Forewing dark brown, five narrow white lines in the basal area, a costal from one-quarter to the transverse fascia, a subcostal from base to two-fifths, bending from costa beyond half, a medial from base to the transverse fascia, a subdorsal from one-fifth to the transverse fascia, bending from dorsum distally, a dorsal from one-sixth to or nearly to the transverse fascia, a broad pale yellow transverse fascia beyond the middle almost to apex, inwardly with a small basal protrusion, bordered at the inner edge by two silver to pale golden metallic, tubercular subcostal and subdorsal spots, the subcostal spot with a patch of blackish scales on the outside, the subdorsal spot beyond inner edge of transverse fascia and further from base than the subcostal, inwardly edged dark brown, at two-thirds of the transverse fascia similarly coloured costal and subdorsal spot, both spots opposite, the costal spot smaller than the subdorsal and inwardly edged brown, a white costal streak connected to the outer costal spot followed by a broad pale yellow streak into costal cilia, a broad shining white apical line, cilia pale brown around apex, pale yellow mixed pale brown towards dorsum. Hindwing shining brownish grey, cilia pale brown. Underside: forewing shining greyish brown, apical half of forewing lighter and apical line visible, cilia pale yellow at costa; hindwing shining greyish brown at costa, pale grey at dorsum. Abdomen dorsally pale greyish brown with greenish and reddish gloss, ventrally shining white, anal tuft dorsally greyish white, ventrally shining white (fig. 29).

*Male genitalia.* Right brachium of uncus short and simple, apical part club-shaped, left brachium gradually tapering, tip pointed, less than half the length of right one. Valvae short, semicircular, lower margin concave. Anellus lobes bent and twisted, widened in apical half with a dorsal hump in middle, apex pointed. Aedeagus with slender bulbous part, only slightly tapering distally, basal part about two-thirds of length of bulbous part, lateral lobes triangular, about one-half length of basal part. Both specimens from Arizona, USA have narrower valvae and the dorsal hump on the anellus lobe is almost absent (fig. 130).

*Female genitalia.* Posterior edge of sternite VII concave with a narrow convex section in middle. Sterigma cylindrical, tapering anteriorly and bent to the right, ostium bursae circular with a semicircular ventral sclerotization. Ductus bursae less than half the length of corpus bursae. Corpus bursae elongate in anterior half, posterior half strongly narrowed, one large signum as an interrupted ridge (fig. 211).

Biology.— Unknown. Adults have been collected in May and June (USA) and from November to February (Argentina).

Distribution.— Argentina: Salta, Tucumán; USA: Texas, Arizona, Mississippi (fig. 312).

Remarks.— The two specimens of the type-series from Texas, USA have the subdorsal tubercular spot on the forewing at the inner edge of the transverse fascia (Hodges, 1978). The specimens from Arizona, USA and most of the Argentinean specimens however have this spot beyond this inner edge and therefore the spot is completely surrounded by the yellow scales of the transverse fascia. Although there are small differences in the wing pattern and in the male genitalia between the species from the USA and Argentina, all material is considered as belonging to one species. The three above mentioned species are very closely related. The male and female genitalia of *C. chisosensis*, *C. diaphora* and *C. opulenta* are very similar. Especially *C. chisosensis* is quite variable externally as well as in the male and female genitalia, but this conclusion could be made by the larger quantity of material available. More material, especially of *C. diaphora* and *C. opulenta* is needed to establish the validity of these three sibling species.

*Cosmopterix citrinopa* Meyrick, 1915  
(figs 30, 131, 212, 294)

*Cosmopterix citrinopa* Meyrick, 1915: 204. Lectotype ♀ (designated by J.F.G. Clarke, 1965): Peru: Lima, 500 ft, Parish viii.[19]14; gen. slide JFGC 6142 (BMNH) [examined].

Material examined.— Peru: 1 ♂, Iquitos, iii.[19]20, Parish; gen. slide BM 29283 (BMNH).

Diagnosis.— Externally not separable with certainty from *C. harpalyke*, certain identification only possible by examination of the genitalia. In the male genitalia the right-angled bent, sharply pointed, right brachium of the uncus in combination with the rather small and circular valvae and the large and swollen anellus lobes are characteristic. It differs in the female genitalia by the elongate corpus bursae and the two crescent-shaped signa.

Description.— Male, female. Forewing length 3-3.9 mm. Head: frons shining greyish white with greenish reflection, vertex and neck tufts shining dark olive brown, laterally and medially lined white, collar shining dark olive brown; labial palpus first segment very short, white, second segment three-quarters of the length of third, dark brown, inner side and ventrally greyish white and a white longitudinal line on outside, third segment white, lined dark brown laterally; scape dorsally shining dark brown with a white anterior line, ventrally shining white, antenna shining dark brown with a white line from base to one-half, interrupted from beyond base, followed by an annulated section to two-thirds, followed towards apex by three dark brown segments, two white, ten dark brown and seven white segments at apex. Thorax and tegulae shining dark olive brown, thorax with a white median line, tegulae lined white inwardly. Legs: shining dark brown, foreleg with a white line on tibia and tarsal segments one to three, segment five entirely white, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segments one to four with whitish apical rings, segment five entirely white, hindlegs missing, spurs white dorsally, brown ventrally. Forewing shining dark brown with reddish gloss, five narrow white lines in the basal area, a short costal from two-fifths to the transverse fascia, a subcostal from base to one-third and strongly bending from costa before one-half, a medial from one-fifth to two-fifths, a subdorsal, as long as the medial, but slightly further from base, a dorsal from base to

two-fifths, a pale orange-yellow transverse fascia beyond the middle, slightly narrowing towards dorsum and with a narrow apical protrusion, bordered at the inner edge by two tubercular pale golden metallic subcostal and subdorsal spots, the subcostal spot with a patch of blackish scales on the outside, and the subdorsal spot further from base than the subcostal, both spots almost conjoined, bordered at the outer edge by two tubercular pale golden metallic costal and dorsal spots, the dorsal spot twice as large as the costal and more towards base, both spots inwardly lined dark brown, outer costal spot outwardly edged by a white costal streak, a narrow shining white apical line from the apical protrusion to apex, cilia dark brown, paler towards dorsum. Hindwing shining brownish grey, cilia brown. Underside: forewing shining dark greyish brown, the transverse fascia and white costal streak indistinctly, a white streak at apex distinctly visible, hindwing shining brownish grey. Abdomen dorsally dark greyish brown with greenish and reddish reflections, segments six and seven banded lighter posteriorly, ventrally shining dark greyish brown, segments broad banded yellowish white posteriorly, anal tuft ochreous-white (fig. 30).

*Male genitalia.* Right brachium of uncus bend at right-angles, apex sharp, left brachium short and wide, about one-third of the length of the right one. Valvae rather small and almost semi-circular. Anellus lobes very narrow at base, strongly swollen in distal half, apex blunt. Aedeagus with bulbous rather wide, abruptly narrowed distally, basal part slightly shorter than bulbous part, both lateral lobes nearly half the length of basal part (fig. 131).

*Female genitalia.* Posterior edge of sternite VII not visible in slide. Sterigma oval, posteriorly flattened, anteriorly with long protrusion, ostium bursae oval with a square sclerotization in middle. Ductus bursae about two-thirds of length of corpus bursae, in middle with sclerotization. Corpus bursae elongate, signa crescent-shaped (fig. 212).

Biology.— Unknown. Adults have been caught in March and August.

Distribution.— Peru: Amazonas, Lima (fig. 294).

*Cosmopterix clandestinella* Busck, 1906  
(figs 31, 132, 213, 273)

*Cosmopterix clandestinella* Busck, 1906: 712. Holotype ♂ (without abdomen): United States: [Twining City], District of Columbia, r.f. Tanicum, er. 1899-1902; USNM Type No. 9777 (USNM) [not examined].

Material examined.— 4♂, 2♀. United States: 2♂, Maryland, Hyattsville, Aug. '06, [on] Panicum; Aug. Busck coll. 1♀, [no locality], on Tanicus (*sic*), viii.1919; coll. Walsingham; gen. slide BM 31219 (BMNH). 2♂, 1♀, Michigan, Mason Co., T 20 N R 18 W S35, coll. 18.viii.2001, George J. Balogh; ex leaf mines Panicum sp., iss. 7-31.v.2002; gen. slides JCK 6100, 6101 (GB).

Diagnosis.— Forewing pattern shows similarity with *C. gemmiferella*, but it differs by the dark brown ground colour, by the three short silver metallic streaks in the basal area which form a perpendicular line towards dorsum and by the lack of the white median lines on the head and thorax.

Description.— Male, female. Forewing length 3.2-3.7mm. Head: frons shining ochreous-white with greenish and purplish reflections, vertex and neck tufts shining pale bronze brown with greenish and reddish reflections, laterally lined white, collar shining pale bronze brown with greenish and reddish reflections; labial palpus first segment very

short, white, second segment three-quarters of the length of third, dorsally brown, ventrally white, third segment dorsally white, ventrally brown, extreme apex brown; scape dorsally bronze brown with a white anterior line, ventrally white, antenna shining brown with an interrupted white line from base to beyond one-half with a short uninterrupted section distally, followed towards apex by six brown segments, six white, eight brown, six white and one brownish segment at apex. Thorax and tegulae shining pale bronze brown with greenish and purplish gloss. Legs: shining dark greyish brown, tibia of midleg ochreous-grey, foreleg with a white line on tibia and tarsal segments, tibia of midleg with silver metallic oblique basal and medial streaks and a white apical ring, tarsal segments one, two and four with white apical rings, segment five missing, hindlegs missing, spurs dark greyish brown, ventrally white. Forewing shining dark brown with reddish gloss, at one-fifth three short silver metallic streaks of equal length with bluish reflection, a subcostal and a medial just above fold, and a slightly wider subdorsal just below fold, beyond one-half a shining dark yellow transverse fascia, narrowing towards dorsum, bordered on the inner edge by a slightly inwardly oblique tubercular silver metallic fascia with greenish and purplish reflections, bordered at the outer edge by similarly coloured costal and dorsal spots, the dorsal spot three times the size of the costal and more towards base, the fascia outwardly and the costal and dorsal spot broadly edged dark brown inwardly, the costal spot outwardly edged by a narrow white costal streak, apical line as a silver metallic spot with bluish reflection in the middle of the apical area and a broad white streak in the cilia at apex, cilia dark brown, paler on dorsum towards base. Hindwing shining dark greyish brown, cilia greyish brown. Underside: forewing shining brown with the white costal and apical streak distinctly visible, hindwing shining greyish brown. Abdomen dorsally shining brown with some greenish gloss, laterally and ventrally shining dark greyish brown with greenish reflection, segments broadly banded shining white posteriorly, anal tuft shining greyish-brown (fig. 31).

*Male genitalia.* Right brachium of uncus slender, basal half narrow, widening to a rectangular section in apical half, lateral edges bent upwards, gradually tapering distally, tip blunt, left brachium narrow, tip rounded, about one-third of the length of right one. Valvae narrow and spatulate, caudal margin rounded, upper margin strongly and lower margin slightly convex. Anellus lobes short, narrowing from base, at one-half strongly widening to a triangular apical part and slightly downwardly bent. Aedeagus with bulbous part bottle-shaped, narrowing distally to one-quarter of width, basal part about two-thirds of length of bulbous part, lateral lobes very short, about one-quarter of length of basal part (fig. 132).

*Female genitalia.* Posterior edge of sternite VII concave with a large hump in middle. Sterigma tube-shaped, slightly widening towards ostium bursae. Ductus bursae about as long as the length of corpus bursae. Corpus bursae elongate, tapering distally, two signa as very large weakly sclerotized circular plates with a crescent-shaped sclerite in the centre.

*Larva.* Body light green with short light hairs, at maturity with three brilliant wine-red longitudinal stripes, head and prothoracic plate yellow (Busck, 1906) (fig. 213).

Biology.— Host plant: *Dichanthelium clandestinum* (L.) Gould (Busck, 1906, as *Panicum clandestinum*) (Poaceae). The mine is an irregular longitudinal blotch mine with the frass ejected at one end. At maturity the larva cuts a circular piece out of the epidermis of its mine, which it bends lengthwise and uses for a cocoon exactly like the genus

*Cycloplasis* Clemens (formerly in Heliodinidae, unresolved taxonomy) (Busck, 1906). There are two generations, the adults have emerged from late May to early June and again in late July and August (Hodges, 1978). The specimens from Michigan are obviously from the second generation, the mines were collected in August and the adults emerged in May.

Distribution.— USA: from Massachusetts and southern Ohio south to Virginia and North Carolina (Hodges, 1978), Michigan (fig. 273).

*Cosmopterix clemensella* Stainton, 1860  
(figs 32, 133, 214, 274)

*Cosmopterix clemensella* Stainton, 1860: 434. Lectotype ♂ (here designated): United States: [Pennsylvania?], Clemens' Coll., Mus. Am. Ent. Soc., Philadelphia 1872, 36048; gen. slide BM 29950 (BMNH) [examined].

*Cosmopterix hermodora* Meyrick, 1919: 282. Lectotype 1 ♂ (designated by J.F.G. Clarke, 1965) (in capsule): Canada: Toronto, 5.vii.[19]16, Parish; gen. slide JFGC 9417 (synonymised by Hodges, 1962) (BMNH) [examined].

Material examined.— 4♂, 1♀, 4 specimens (sex not stated). United States: 1♂ (without abdomen), same data as lectotype (BMNH). 2♂, 1♀, Michigan, Cass Co., Westrate Farm, 31.vii.2004, leg. Vargo; gen. slide JCK 6110 (MSUC). 1♀, No data; gen. slide USNM 3918 (USNM). Canada: 4 specimens without abdomens, same data as lectotype *C. hermodora* (BMNH).

Diagnosis.— The forewing with the outer dorsal spot four times as large as the outer costal spot, the very short medial line in combination with the dorsally yellow-ochreous abdomen are characteristic.

Description.— Male, female. Forewing length 4.9 mm. Head: frons shining pale silvery grey with greenish and reddish reflections; vertex and neck tufts shining dark greyish brown with reddish gloss, laterally and medially lined white, collar shining dark greyish brown with reddish gloss; labial palpus first segment very short, ochreous-white, second segment three-quarters of the length of third, greyish brown with white longitudinal lines laterally and ventrally, third segment white, laterally with brown lines; scape dorsally dark greyish brown with a white anterior line, ventrally white, antenna shining dark brown with an interrupted white line from base to beyond one-half, a short section at base often uninterrupted, followed towards apex by approximately ten dark brown segments, nine white, ten dark brown and seven white segments at apex. Thorax and tegulae shining dark greyish brown with reddish gloss, thorax with a white medial line and tegulae lined white inwardly. Legs: shining dark brown with reddish gloss, femora of midleg and hindleg shining pale ochreous-grey, foreleg with a white line on tibia and tarsal segments one to three and five, tibiae of midleg and hindleg with white oblique basal and medial lines and white apical rings, midleg with tarsal segment one to three with white apical rings, segment five entirely white, hindleg with tarsal segments dorsally white and ochreous apical rings, segment five entirely white, spurs dark brown ventrally, dorsally white. Forewing shining dark greyish brown with reddish gloss, three silvery white lines in the basal area, a subcostal from base to one-quarter, slightly bending from costa distally, a very short but thick medial above fold, ending at the distal end of the subcostal, a subdorsal, twice as long as the medial but narrower, starting just before the distal end of the medial, a yellow

transverse fascia beyond the middle, narrowed towards dorsum and with a narrow and dorsally bent apical protrusion, bordered at the inner edge by a tubercular silver metallic fascia with greenish reflection, not reaching costa and with a blackish spot subcostally on outside, bordered at the outer edge by two tubercular silver metallic costal and dorsal spots with greenish reflection, the dorsal spot about four times as large as the costal and more towards base, both silver metallic spots irregularly lined dark greyish brown on the inside, a short white costal streak from the costal spot, a shining white apical line from the apical protrusion to apex, cilia dark greyish brown, paler towards dorsum. Hindwing shining pale brownish grey, cilia greyish brown. Underside: forewing shining greyish brown, hindwing shining greyish brown. Abdomen dorsally yellow-ochreous, laterally shining pale grey with greenish reflection, ventrally shining white, anal tuft yellowish white (fig. 32).

*Male genitalia.* Right brachium of uncus short and stout with a large triangular apical part, gradually tapering distally, apex lengthened, narrow and rounded, left brachium less than one half the length of right one, gradually tapering, apex rounded. Valvae with upper margin strongly concave, lower margin slightly concave, caudal margin straight. Anellus lobes large, slightly bent in middle and strongly widening in apical half, apex blunt. Aedeagus with bulbous part wide bottle-shaped, strongly narrowing distally to about one-third of width, basal part short, about one-third of length of bulbous part, lateral lobes large and rounded distally (fig. 133).

*Female genitalia.* Posterior edge of sternite VII concave with a convex section in middle, this convex middle section shallowly concave in middle. Sterigma very large, broad, tapering at both ends, strongest anteriorly, ostium bursae round with two small and round protrusions laterally and a crescent-shaped sclerotization ventrally. Ductus bursae about two-thirds of length of corpus bursae and with an inner sclerite where it enters the latter. Corpus bursae long and elongate, signa as two round plates with a central vertical rim (fig. 214).

*Biology.*— Host plant: *Carex* species (Cyperaceae). The larva is a leaf miner. The adult flies from mid-May to early August (Hodges, 1978).

*Distribution.*— Canada: Manitoba, Ontario; USA: from Maine to the mountains of southern North Carolina, but most commonly in New York and Ohio (Hodges, 1978) (fig. 274).

*Remarks.*— Stainton received from Clemens a series of six specimens of *Cosmopterix gemmiferella* recently described by him. However, two specimens belonged to another, undescribed, species. These two specimens were described by Stainton (1860) as *Cosmopterix clemensella*, named after its collector. Both specimens have no locality label. Hodges (1962) gives the type locality as: Pennsylvania?, the state where Clemens lived. Stainton did not designate a holotype, therefore the specimen with abdomen has been designated here as the lectotype. All material described as *Cosmopterix hermodora* is in a very bad state.

*Cosmopterix damnosa* Hodges, 1962  
(figs 33, 134, 215, 273)

*Cosmopterix damnosa* Hodges, 1962: 46. Holotype ♂: United States: Archbold Biological Station, Highlands Co., Florida, March 27 1959, R.W. Hodges; R.W. Hodges, Holotype, *Cosmopterix damnosa*; Holotype, Cornell U., No. 3800 (CUIC) [not examined].

Material examined.— 17♂, 9♀. United States: 1♂, 1♀, New Hampshire, Deerfield, 20.vi-6.vii.1996; gen. slide JCK 6280, ♂ (ZMHB). 1♂, Michigan, Kalamazoo Co, wet forest east of Sugarloaf LK, 17.vi.1994, George J. Balogh; gen. slide JCK 6095 (GB). 3♂, 1♀, Michigan, Clare Co., T18N-R05W, S 01, 5.vii.1985, leg. R.J. Priest; gen. slide JCK 6107. 1♂, same data, 22.vii.1985. 1♂, 1♀, Michigan, Menominee Co. nw/nw, T35N-R29W, S36, 28.vi.2005, leg. R.J. Priest; gen. slide JCK 6108 (MSUC). 1♀, Mississippi, Franklin Co., T17N-R16E, Sec. 34, 27.vii.1992, R.L. Brown; gen. slide JCK 6141. 1♀, Mississippi, Harrison Co., Long Beach, 26.iv.1998, R. Kergosien. 1♂, same data, 31.viii.1998; gen. slide JCK 6164. 1♂, Mississippi, Lowndes Co., T17N-R16E, Sec. 34, Black Belt Prairie, 20.v.1992; gen. slide JCK 6140. 2♀, same data, 10.vi.1992; gen. slides JCK 6161, 6170. 1♂, same data, 24.viii.1993; gen. slide JCK 6168. 1♂, Louisiana, Cameron Par., Cameron Prairie NWR, 29°56'42"N 93°05'17"W, 6-7.x.1992, R. Brown, J. MacGown; gen. slide JCK 6135. 1♂, Louisiana, Calcasieu Par., 6 mi ESE Buhler, 30°18'44"N 93°15'39"W, 20-21.v.1993, R.L. Brown, D. Pollock. 1♂, same data, 14.vi.1993, D.M. Pollock. 5♂, same data, 15-16.ix.1993, R.L. Brown, D. Pollock; gen. slide JCK 6119. 2♂, same data, 15-16.ix.1993; gen. slide JCK 2657. 3♂, Louisiana, Calcasieu Par., S.H. Jones St. Pk., 30°17'39"N 93°16'09"W, 19-23.v.1993, R.L. Brown, D. Pollock. 3♀, Alabama, Baldwin Co., Bon Secour NWR, 30°13'50"N 87°49'58"W, 15.v.1994, R.L. Brown, D. Pollock; gen. slide JCK 6120 (MEM).

Diagnosis.— The species resembles very much *C. attenuatella*, *C. taygete* and *C. vanderwolfi*, but differs from *C. attenuatella* by the paler yellow transverse fascia and the complete apical line. From these species it differs in the male genitalia by the short and stout, almost square, right brachium of the uncus and by the large and broad valvae, in the female genitalia it differs from *C. attenuatella* and *C. vanderwolfi* by the large convex section in middle of the concave posterior edge of sternite VII and by the basally and distally tapering sterigma. Examination of the genitalia is recommended.

Description.— Male, female. Forewing length 3.3-5.1 mm. Head: frons shining white with greenish and reddish reflections, vertex and neck tufts shining dark brown with reddish gloss, laterally and medially lined white, collar shining dark brown; labial palpus first segment very short, white, second segment four-fifths of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined dark brown laterally; scape dorsally shining dark brown with a white anterior line, ventrally shining white; antenna shining dark brown, with a short white line at base changing into an interrupted white line to one-half, followed towards apex by a short dark brown section, three white segments, two dark brown, two white, ten dark brown and five to eight white segments at apex, sometimes the apical two or three segments dark brown, the tip of the antenna varies from completely white to the last two segments pale brownish to dark brown, the subapical white section can be complete or is sometimes divided in two parts. Thorax and tegulae shining dark brown with reddish gloss, thorax with a white median line, tegulae lined white inwardly. Legs: dark brown, femora of midleg and hindleg with dorsal half ochreous, foreleg with a white line on tibia and tarsal segments one to three, segment five entirely white, tibia of midleg with a white oblique basal line, some traces of a similar medial line and a white apical ring, tarsal segments one and two with white apical rings, segment five entirely white, tibia of hindleg with white oblique basal and medial lines and a white apical ring, tarsal segment one with a white basal ring and a white dorsal streak in apical half, remaining segments dorsally whitish, spurs dorsally whitish, ventrally dark grey. Forewing shining dark brown with reddish gloss, four narrow white lines in the basal area, a costal from one-third to the transverse fascia, a subcostal from base to one-quarter and bending from costa distally, a medial above fold from one-fifth to just beyond

the end of the subcostal, a subdorsal, one and a half time as long as the medial and slightly further from base, a pale yellow transverse fascia beyond the middle, slightly narrowing towards dorsum and with a short and narrow apical protrusion in middle, this protrusion can be very short or even absent, bordered at the inner edge by a slightly inwardly oblique, tubercular pale golden metallic fascia, subdorsally on outside with a patch of blackish scales, bordered at the outer edge by two tubercular pale golden metallic costal and dorsal spots, the dorsal spot slightly larger than the costal and both spots opposite, the costal spot outwardly edged by a white costal streak, both spots irregularly lined dark brown inwardly, a shining white apical line from the apical protrusion, cilia dark brown, paler towards dorsum. Hindwing shining brownish grey, cilia greyish brown. Underside: forewing shining greyish brown, white apical line visible at apex, hindwing shining greyish brown. Abdomen dorsally from shining pale ochreous to pale brown with reddish reflection, segments banded greyish posteriorly, ventrally shining white, anal tuft white in male, ochreous-white in female (fig. 33).

*Male genitalia.* Right brachium of uncus short and stout, almost square, apex short and pointed, apically with a little hook, left brachium elongate. Valvae with upper margin strongly concave, lower and caudal margin slightly concave. Anellus lobes rather short, slightly bent in middle and widening in apical half, apex rounded. Aedeagus with bulbous part bottle-shaped, narrowing distally to about one-quarter of width, basal part short, less than one-third of length of bulbous part, lateral lobes short, about one-half length of basal part and more or less square (fig. 134).

*Female genitalia.* Posterior edge of sternite VII concave with a large convex section in middle. Sterigma long with a narrow projection in basal half, widening distally, apical half tapering. Ductus bursae about half the length of corpus bursae. Corpus bursae elongated, two small triangular signa with a sclerotized vertical ridge (fig. 215).

*Biology.*— Unknown. Adults have been collected from late March to mid April and in September, indicating two generations.

*Distribution.*— USA: Florida, Louisiana, Mississippi, Michigan, New Hampshire (fig. 273).

*Cosmopterix dapifera* Hodges, 1962  
(figs 34, 135, 216, 313)

*Cosmopterix dapifera* Hodges, 1962: 31. Holotype ♂: United States: Madera Canyon, 4880', Santa Rita Mnts., Ariz[ona], August 29 1959, R.W. Hodges; gen. slide RWH 542 (CUIC) [examined].

*Material examined.*— 11 ♂, 3 ♀. Brazil: 2 ♂, Bahia, Barra Grande, 2 m, 5-10.i.1999, V.O. Becker col.; Col. Becker 118168; gen. slide JCK 5455 (VOB). United States: 2 ♂, Alabama, Baldwin Co., Bon Secour NWR, 30°14'10"N 87°49'49"W, 8-9.viii.1994, R.L. Brown, D. Pollock; gen. slides JCK 6165, 6169. 4 ♂, Louisiana, Bossier Parish, Barksdale A.F.B., 32°29'29"N 93°35'07"W, 13.ix.1996, R.L. Brown; gen. slides JCK 2659, 6166 (MEM). 1 ♂, same locality, 21.v.1996 (RMNH). 1 ♀, Mississippi, Franklin Co. Porter Creek, T5N-R4E, Sec. 8 NW, 27.vii.1992, R.L. Brown; gen. slide JCK 6127 (MEM). 1 ♀, Mississippi, Jackson Co., Shepard State Park, 12-18.ix.1995, R. Kergosien; gen. slide JCK 6159. 1 ♂ (without abdomen), Mississippi, Lowndes Co., T17N-R16E, Sec. 34, Black Belt Prairie, 20.v.1992 (MEM). 1 ♀, Paratype, Arizona, Madera Canyon, Santa Rita Mnts., 24.vii.1959; gen. slide USNM 1350 (USNM). Cuba: 1 ♂, Holquin, Mayari, 400 m, vii.1990, V.O. Becker col.; Col. Becker 72502; gen. slide JCK 5483. 2 ♂, Holquin, Pin Mayari, 640 m, vii.1990, V.O. Becker col.; Col. Becker 71914; gen. slide JCK 5458.



**Diagnosis.**— Externally very similar with *C. callichalca*, *C. delicatella* and *C. orthosie*, but differs by the narrow inward protrusion of the transverse fascia. Differs in the male genitalia by the rather short and blunt right brachium of uncus, the triangular valvae and the almost straight annelus lobes. Differs in the female genitalia from *C. callichalca* by the cylindrical posterior half of the sterigma. For a certain identification examination of the genitalia is necessary.

**Description.**— Male, female. Forewing length 3.6-3.8 mm. Head: frons shining ochreous-white with greenish reflection, vertex and neck tufts greyish brown with greenish and reddish gloss, lined white medially and laterally, collar greyish brown; labial palpus first segment very short, white, second segment three-quarters of the length of third, greyish brown with white longitudinal lines laterally and ventrally, third segment white, lined brown laterally, extreme apex white; scape dorsally dark brown with a white anterior line, ventrally white, antenna dark brown with a very short white line at base, in middle a short, partly annulate, section, followed towards apex by four dark brown segments, two white, two dark brown, two white, ten dark brown, six white and one dark brown segment at apex. Thorax and tegulae greyish brown, thorax with a white median line and tegulae lined white inwardly and outwardly. Legs: greyish brown, femur of hindleg shining ochreous-white, foreleg with a white line on tibia and tarsal segments one to three and five, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segments as foreleg, tibia of hindleg with a very oblique white basal line, the medial line almost from base to the mid spur, from there very oblique to two-thirds, a yellowish white subapical streak and a white apical ring, tarsal segment one white at base and dorsally in apical half, remaining segments dorsally white, spurs white dorsally, greyish brown ventrally. Forewing shining greyish brown with some reddish gloss, four white lines in the basal area, a subcostal from base to one-third, very slightly bending from costa, a medial from base to beyond the subcostal, not reaching the transverse fascia, a subdorsal from one-quarter to near the transverse fascia, a dorsal from base to or beyond start of the subdorsal, a yellow transverse fascia beyond the middle with a narrow basal protrusion in the middle and with a broad prolongation towards apex, bordered at the inner edge by two tubercular pale golden metallic subcostal and subdorsal spots, the subcostal spot slightly more towards base and with a patch of blackish scales on outside, at two-thirds of the transverse fascia two tubercular pale golden costal and dorsal spots of equal size and opposite, both inwardly edged greyish brown, an indistinct whitish costal streak from the outer costal spot, a broad shining white apical line from the middle of the prolongation of the transverse fascia, cilia greyish brown at apex, ochreous-grey towards dorsum. Hindwing brownish grey, cilia ochreous-grey. Underside: forewing shining pale brownish grey, white apical line distinctly visible, hindwing pale grey. Abdomen dorsally shining ochreous-brown with reddish gloss, ventrally shining white, anal tuft white (fig. 34).

**Male genitalia.** Right brachium of uncus rather short, apically with a rounded bulge on the left side and a triangular one on the right side of the tip, tip flattened, left brachium short and narrow, tip rounded, about one-third of the length of right one. Valvae triangular, caudal margin straight, upper margin slightly concave and lower margin straight. Anellus lobes with narrowest part before middle, only slightly bent, apical part a little wider, tip pointed. Aedeagus slender bottle-shaped, narrowing distally to about one-third of bulbous part, basal part about one-quarter shorter than length of

bulbous part, lateral lobes triangular, about one-third of the length of basal part (fig. 135).

*Female genitalia.* Posterior edge of sternite VII almost straight with a shallow convex section in middle. Sterigma cylindrical, strongly narrowed in anterior half, ostium bursae round with a large crescent-shaped sclerotization and central rim ventrally. Ductus bursae about two-thirds of length of corpus bursae and with an inner sclerite where it enters the latter. Corpus bursae egg-shaped, signa funnel-shaped with a central vertical rim (fig. 216).

*Biology.*— Unknown. Adults were collected from July to September, and in January, indicating more than one generation.

*Distribution.*— USA: From Tennessee and northwest Arkansas south to central Florida and south-central Arizona (Hodges, 1978); Brazil: Bahia; Cuba (fig. 313).

*Cosmopterix delicatella* Walsingham, 1889  
(figs 35, 136, 274)

*Cosmopterix delicatella* Walsingham, 1889: 290. Holotype ♂: United states: North Carolina, Morrisson 1883; gen. slide BM 29949 (BMNH) [examined].

*Material examined.*— United States: 1 ♂, same data as holotype; gen. slide BM 7583 (BMNH).

*Diagnosis.*— Externally very similar to *C. callichalca*, *C. dapifera* and *C. orthosie*. It can be distinguished from *C. orthosie* by the medial line in the basal area which starts well beyond base and by the lack of the costal line and the white streak from the outer dorsal spot into the cilia. Differs in the male genitalia by broad and flat tip of the right brachium of the uncus and the semicircular valvae. For a certain identification examination of the genitalia is necessary.

*Description.*— Male. Forewing length 4.9 mm. Head: frons shining pale ochreous-grey with greenish and reddish reflections, vertex and neck tufts shining greyish ochreous-brown with reddish reflection, laterally and medially lined white, collar ochreous-brown; labial palpus first segment very short, white, second segment four-fifths of the length of third, greyish brown with white longitudinal lines laterally and ventrally, third segment white, lined dark brown laterally; scape brown with a white anterior line, white ventrally, antenna greyish brown with a white line from base to one-quarter, changing into an interrupted line to two-thirds, interruptions in middle often indistinct or partly absent, followed towards apex by respectively a more or less greyish brown part of approximately ten segments, one white, two dark brown, two white, ten greyish brown, four white and four greyish brown segments at apex. Thorax greyish brown with a white median line; tegulae greyish brown, lined white inwardly. Legs: foreleg brownish grey with a white line on tibia and tarsal segments one, two, basal half of three and five, midlegs absent, femur of hindleg ochreous-white, remaining parts ochreous grey, tibia of hindleg with oblique basal and medial white lines and a white apical ring, tarsal segments with a dorsal white line, interrupted in the basal half of segment one, spurs white, ventrally ochreous-grey. Forewing greyish brown, four rather broad white lines in the basal area, a subcostal from base to one-third, slightly bending from costa, a medial above fold, from one-sixth and ending just before the transverse fascia, a subdorsal below fold, from one-quarter and ending just beyond the medial

line, a dorsal from base to one-third, a broad yellow transverse fascia beyond the middle, slightly narrowing dorsally and with an irregular apical protrusion, bordered by four pale golden metallic, tubercular spots near or at costa and dorsum, on the inner edge by a subcostal spot, outwardly edged by a patch of blackish brown scales and by a subdorsal spot, similar in size but further from base than the subcostal, both outer spots of different size, the dorsal spot about twice as large as the costal and both spots almost opposite and greyish brown edged inwardly, a white costal streak from the outer costal spot and a shining white apical line from the apical protrusion to apex, cilia greyish brown, ochreous-grey towards dorsum. Hindwing shining brownish grey, cilia ochreous-grey. Underside: forewing shining greyish brown, the white apical line distinctly visible, hindwing shining greyish brown. Abdomen dorsally shining golden brown with some reddish gloss, ventrally shining grey mixed yellowish white, segments broadly banded yellowish white posteriorly, anal tuft yellowish white (fig. 35).

*Female.* Unknown.

*Male genitalia.* Right brachium of uncus gradually widening distally, tip broad and flat and rectangular downwardly bent, left brachium broad, about half the length of right one. Valvae semi-circular, upper margin slightly concave. Anellus lobes broad, distally pointed. Aedeagus slender bottle-shaped, bulbous part narrowing distally to half its width, basal part about half the length of bulbous part, lateral lobes large, semi-circular, about three-quarters of length of basal part (fig. 136).

*Biology.*— Unknown.

*Distribution.*— USA: North Carolina (fig. 274).

*Remarks.*— Hodges (1978) mentions the distribution as follows: from Massachusetts to Florida and west to Mississippi. No material has been found in this study to support this and the provisional conclusion is that the two specimens of the type-series in the BMNH are the only certain representatives of this species. The problem is that *C. delicatella* belongs to a group of species that cannot be separated from each other with certainty by the external characters. Therefore it is very well possible that the species is more widespread than stated here.

*Cosmopterix diaphora* Walsingham, 1909  
(figs 36, 137, 217, 313)

*Cosmopterix diaphora* Walsingham, 1909: 6. Holotype ♂ (without abdomen): Mexico: Guerrero, Amula, 6000', viii.[18??], H.H. Smith (BMNH) [examined].

*Material examined.*— 1♂, 2♀. Brazil: 1♀, Destrito Federal, Planaltina, 1000 m, 25.vi.1983, 15°35'S 47°42'W, V.O. Becker col.; Col. Becker 41128; gen. slide JCK 5129 (VOB). Mexico: 1♂, Paratype, same data as holotype; gen. slide JCK 5740 (USNM). 1♀, Veracruz-Llave, Tampico, El Ensino, 250 m, 4-13. viii.1988, V.O. Becker col.; Col. Becker 69055; gen. slide JCK 5497.

*Diagnosis.*— The species cannot be separated with certainty from *C. chisosensis* and *C. opulenta* on external characters. Differs only in the male and female genitalia. From these species it differs in the male genitalia by the distally strongly upwardly bent and widened right brachium of the uncus and the short and rounded valvae, in the female genitalia it differs by the concave posterior edge of sternite VII which bears a broad and flattened convex section in middle and by the two signa.

Description.— Male, female. Forewing length 3.8-4.0 mm. Head: frons shining ochreous-white with greenish and reddish reflections, vertex and neck tufts shining dark greyish brown with reddish gloss, lined white laterally and medially, collar shining dark greyish brown; labial palpus first segment very short, white, second segment three-quarters of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined brown laterally, extreme apex white; scape dorsally shining dark brown with a white anterior line, ventrally shining white; antenna shining dark brown with a white line from base to one-half, in apical half two white rings of two segments separated by two dark brown segments, followed towards apex by six dark brown and eight white segments at apex. Thorax and tegulae shining dark greyish brown with reddish gloss, thorax with a white median line. Legs: shining dark greyish brown, foreleg with a white line on tibia and tarsal segments, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segment one, two and four with whitish apical rings, segment five entirely white, tibia of hindleg with a very oblique white line from base to two-thirds and a white apical ring, tarsal segment one with white basal and apical rings, segments two to four with white apical rings and segment five entirely white, spurs white dorsally, brown ventrally. Forewing shining dark greyish brown with reddish gloss, five narrow white lines in the basal area, a short costal from one-third to the transverse fascia, a subcostal from base to one-third, distally slightly bending from costa, a medial above fold, from base to the transverse fascia, a subdorsal from one-third to near the transverse fascia, a dorsal from base to the start of the subdorsal, a bright yellow transverse fascia beyond the middle with a broad prolongation towards apex, bordered at the inner edge by a tubercular pale golden metallic subcostal spot with a patch of blackish scales on outside, and a similarly coloured but slightly larger subdorsal spot, further from base than the subcostal and not at the inner edge of the transverse fascia, inwardly edged by brownish and blackish scales, at two-thirds of the transverse fascia a small tubercular pale golden costal spot, opposite the costal spot, a similarly coloured but more than twice as large dorsal spot, a white costal streak from the outer costal spot to apex, a shining white apical line from the transverse fascia to apex, cilia dark brown at apex, ochreous-brown towards dorsum. Hindwing shining brownish grey, cilia ochreous-brown. Underside: forewing shining brownish grey, white apical line visible in the cilia, hindwing shining pale grey. Abdomen dorsally shining yellowish brown with reddish gloss, segment six banded whitish posteriorly, ventrally shining white, anal tuft ochreous (fig. 36).

*Male genitalia.* Right brachium of uncus slender, distally strongly bent upwards at three-quarters and widened, left brachium less than half the length of right one and very narrow. Valva short and rounded. Anellus lobes strongly bent in middle, widening apically, apex pointed. Aedeagus stout with slender bulbous part, only slightly tapering distally, basal part about half the length of bulbous part, lateral lobes triangular, short, about one-third of length of basal part (fig. 137).

*Female genitalia.* Posterior edge of sternite VII concave with a broad and flattened hump in middle. Sterigma elongate, ostium bursae round, with a long sclerotized band from ostium to anterior end of sterigma. Ductus bursae about one-third of length of corpus bursae and widening towards the latter. Corpus bursae elongate with two signa, one of them reduced (fig. 217).

Biology.— Unknown. Adults have been collected in April and August, which indicates two generations.

Distribution.— Brazil: Destrito Federal; Mexico: Guerrero, Veracruz-Llave (fig. 313).

Remarks.— The holotype has lost its abdomen. The corpus bursa in fig. 217 is narrowed in the anterior part. This is very likely not usual, because the second female specimen lacks this narrowed part. See also *C. chisosensis*.

*Cosmopterix ebriola* Hodges, 1962  
(figs 37, 138, 218, 314)

*Cosmopterix ebriola* Hodges, 1962: 50. Holotype ♀: United States: Archbold Biological Station, Highlands Co., Florida, 30.v.1959, R.W. Hodges (CUIC) [not examined].

Material examined.— 1♂, 3♀. Cayman Islands: 1♀, Grand Cayman, N. coast of, North Side, 9.vii.1938, 17.iv-26.viii.1938, coll. C.B. Lewis, G.H. Thompson; gen. slide BM 29937 (BMNH). United States: 1♂, South Carolina, Charleston Co., McClellanville, Wedge Plantation, 1.v.1981, leg. R.W. Hodges; gen. slide JCK 5797. 1♀, same locality, 24.iv.1981; gen. slide JCK 5743 (USNM). 1♀, Paratype (without abdomen), Florida, Lake Placid, Archbold Bio Sta, 4.iv.1959, R.W. Hodges.

Diagnosis.— Cannot be separated with certainty from *C. fernaldella* and *C. scirpicola* on external characters, but differs in the male and female genitalia. In the male genitalia of *C. ebriola* the strongly sclerotized part of the distal half of the right brachium elongate, and with a long and bill-like apex; the width of the bulbous part of the aedeagus is two-thirds of its length. In the female genitalia the sterigma is shorter than the apophyses anteriores. In the male genitalia of *C. fernaldella* the strongly sclerotized part of the distal half of the right brachium is even more elongate, but the apex is very short and rather blunt; the width of the bulbous part of the aedeagus is one-half of its length. In the female genitalia the sterigma is more than one-third longer than the apophyses anteriores. In the male genitalia of *C. scirpicola* the strongly sclerotized part of the distal half of the right brachium is semi-circular, and also with a long and bill-like apex; the width of the bulbous part of the aedeagus is two-thirds of its length. In the female genitalia the sterigma is about as long as the apophyses anteriores. The shape of the signa is also slightly variable in all the three species. It varies from almost circular to somewhat elongate and therefore it cannot be used as distinguishing character.

Description.— Male, female. Forewing length 4.5-4.9 mm. Head: frons shining pale ochreous with greenish and reddish reflections, vertex and neck tufts shining ochreous-brown with reddish reflection, medially and laterally lined white, collar ochreous-brown; labial palpus first segment very short, white, second segment three-quarters of the length of third, greyish brown with white longitudinal lines laterally and ventrally, third segment white, lined dark brown laterally; scape dark brown with a white anterior line, white ventrally; antenna shining dark brown, a white line from base to beyond one-half, followed towards apex by respectively a more or less vaguely annulated part of approx. ten segments, three whitish, three dark brown, two whitish and approximately 20 dark brown segments at apex. Thorax and tegulae ochreous-brown, thorax with a white median line, tegulae lined white inwardly. Legs: brownish grey, foreleg with a white line on tibia and tarsal segments, femora of midleg and hindleg shining ochreous-white, tibiae of midleg and hindleg with oblique basal and medial white lines

and white apical rings, tarsal segment one of midleg dorsally white, tarsal segments one to three and five of hindleg dorsally white, segment four apically white, spurs white, ventrally ochreous-grey. Forewing ochreous-brown, five white lines in the basal area, a costal from one-quarter to the transverse fascia, a subcostal from base to one-third, very gradually bending from costa in distal half, a straight medial above fold, from one-quarter to just before the transverse fascia, a subdorsal below fold, as long as the medial, but slightly further from base, a narrow dorsal from beyond base to one-third, a broad pale yellow transverse fascia from beyond the middle, slightly narrowed towards dorsum with short apical protrusion, bordered at the inner edge by a tubercular silver metallic subcostal spot, outwardly with a patch of blackish brown scales and a similarly coloured subdorsal spot, the subdorsal spot about half the size of the subcostal and slightly further from base, both spots inwardly lined dark brown, by the specimen from Cayman Islands the inner subcostal and subdorsal spots are united and form a fascia at the inner edge, bordered at the outer edge by two tubercular silver metallic costal and dorsal spots, the dorsal spot a little larger than the costal and slightly more towards base, both spots edged brown inwardly, a broad white costal streak from the outer costal spot and a similar white streak from the outer dorsal spot, a broad shining white apical line from the apical protrusion, cilia ochreous-brown, ochreous-grey towards dorsum. Hindwing shining brownish grey, cilia ochreous-grey. Underside: forewing shining greyish brown, the white apex line indistinctly visible, hindwing shining brownish grey. Abdomen ochreous with golden gloss, laterally shining pale grey with purplish reflection, ventrally shining yellowish white, anal tuft yellowish white (fig. 37).

*Male genitalia.* Right brachium of uncus short and stout with a strongly widened central section, gradually tapering distally, apex narrow and pointed, slightly downwardly bent, left brachium short and egg-shaped. Valvae with upper margin strongly concave, lower margin slightly concave, caudal margin almost straight. Anellus lobes large, slightly bent in middle and strongly widening in apical half, apex blunt. Aedeagus with bulbous part wide bottle-shaped, strongly narrowing distally to about one-quarter of width, basal part short, about one-third of length of bulbous part, lateral lobes short and more or less triangular (fig. 138).

*Female genitalia.* Posterior edge of sternite VII concave with a hump in middle. Sterigma long with a narrow projection in basal half, widening distally, apical half slightly tapering. Ductus bursae about two-thirds of length of corpus bursae. Corpus bursae elongate, two circular signa with a small sclerite in the centre (fig. 218).

Biology.— Unknown. Adults have been collected from March to May and in July.

Distribution.— USA: from northern Florida and southern Mississippi to central Florida (Hodges, 1978), South Carolina; Cayman Islands: Grand Cayman (fig. 314).

Remarks.— It is not possible to separate *C. ebriola*, *C. fernaldella* and *C. scirpicola* on the external characters alone. Furthermore, all three species show some variability in e.g. the features of antenna and forewing. Hodges (1978) gives differences in the hind tibia between the species, but this could not be confirmed.

*Cosmopterix erasmia* Meyrick, 1915  
(figs 38, 139, 219, 295)

*Cosmopterix erasmia* Meyrick, 1915: 206. Lectotype ♂ (designated by J.F.G. Clarke, 1965): Guyana: Bartica, ii.[19]13, Parish 2-13; gen. slide JFGC 6145 (BMNH) [examined].

Material examined.— 2♂, 2♀. Brazil: 1♂, Pará, vi.[19]19, Parish; gen. slide BM 29285. 1♀, Amazonas, Parintins, x.[19]19, Parish; gen. slide BM 29284 (BMNH). Guyana: 1♂, 1♀, same data as lectotype.

Diagnosis.— Resembles *C. teligera*, but differs by the dark grey tipped antenna. The large and long, distally narrowing right brachium of the uncus, the rather long and narrow valvae in combination with the relatively small aedeagus are characteristic in the male genitalia, in the female the shape of the sterigma and ostium in combination with the short ductus bursae are characteristic. Certain identification only possible by examination of the genitalia.

Description.— Male (fig. 38), female. Forewing length 2.8-3.3 mm. Head: frons shining greyish white with greenish and reddish reflections, vertex shining dark brown, laterally and medially lined white, collar shining dark brown; labial palpus first segment very short, ochreous, second segment four-fifths of the length of third, shining white on inside, dark brown with white longitudinal lines on outside and ventrally, third segment white, lined brown laterally, extreme apex white; scape dorsally shining dark brown with a white anterior line, ventrally shining white; antenna shining dark brown with a white interrupted line from base to three-fifths, near base a short uninterrupted section, followed towards apex by four white segments, two dark brown, two white, ten dark brown, five white and two dark grey segments at apex. Thorax and tegulae shining dark brown, thorax with a white median line, tegulae lined white inwardly. Legs: shining dark brown, foreleg with a white line on tibia and tarsal segments, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segments one, two and five with white longitudinal lines, tibia of hindleg with oblique silver metallic basal and medial lines, a pale golden subapical ring and a white apical ring, tarsal segment one with a silver metallic basal ring and greyish apical ring, segment two and three with grey apical rings, segments four and five entirely whitish, spurs white dorsally, brown ventrally. Forewing shining dark brown with reddish gloss, five narrow white lines in the basal area, a short costal from one-third to the transverse fascia, a subcostal from one-seventh to the start of the costal, a short medial from the middle of the subcostal, a subdorsal slightly further from base than the medial and equal in length to the subcostal, a dorsal from one-eighth to one-quarter, a bright orange-yellow transverse fascia beyond the middle, narrowing towards dorsum with an apical protrusion, bordered at the inner edge by a tubercular very pale golden metallic fascia with violet reflection, subcostally on outside with a small patch of blackish scales, bordered at the outer edge by two tubercular very pale golden metallic costal and dorsal spots with violet reflection, the dorsal spot about twice as large as the costal and more towards base, both spots inwardly lined dark brown, the costal outwardly edged by a white costal streak, apical line reduced to a silver metallic spot in the middle of the apical area and a shining white streak in the cilia at apex, cilia dark brown, paler towards dorsum. Hindwing shining greyish brown, cilia dark greyish brown. Under-side: forewing shining dark greyish brown, the white costal streak indistinctly and the white streak at apex distinctly visible, hindwing shining greyish brown. Abdomen dorsally dark brown with reddish gloss, laterally shining dark brown with golden reflection, ventrally shining ochreous-white, anal tuft pale ochreous with golden reflection.

*Male genitalia.* Right brachium large, narrow at base, strongly widened beyond middle, apex rounded, left brachium small and narrow, about one-fifth of length of right

one. Valvae rather long and narrow in an obtuse angle. Anellus lobes narrowed before middle, slightly bent, gradually narrowing distally, apex sharply pointed. Aedeagus bottle-shaped, basal part about two-thirds of bulbous part, both lateral lobes less than half the length of basal part (fig. 139).

*Female genitalia.* Posterior edge of sternite VII not visible in slide. Sterigma elongate, ostium bursae square with a semi-circular sclerotized band anteriorly. Ductus bursae short, less than half the length of corpus bursae and widening towards the latter. Corpus bursae oval, two crescent-shaped signa with little thorns (fig. 219).

Biology.— Unknown. Adults have been collected in February, April and October, indicating at least two generations.

Distribution.— Brazil: Amazonas, Para; Guyana (fig. 295).

*Cosmopterix erinome* spec. nov.  
(figs 39, 140a-b, 220, 275)

Type material.— Holotype ♂, United States: Alabama, Baldwin Co., Plash Is, end of Hwy 6, 16-19 jun. 1984, R.L. & B.B. Brown; MEM 35,722; gen. slide JCK 6122 (MEM). Paratypes: 10♂, 3♀: United States: 2♂, 1♀, Mississippi, Jackson Co., Gulf Isl. Nat. Seash., 19-20.iv.1985, R.L. Brown. 3♂, Mississippi, Jackson Co., Shepard Stat Park, 15-22.viii.1995, R. Kergosien. 1♂, same locality, 1-3.viii.1995; gen. slide JCK 6136. 1♂, Mississippi, Harrison Co., Long Beach, 12.vii.1995, R. Kergosien. 1♂, same locality, 22.vi.1997. 2♂, 1♀, same locality, 17, 20 and 26.iv.1998; gen. slide JCK 6121. 1♀, Alabama, Baldwin Co., Weeks Bay NER Res., 30°24'58"N 87°49'10"W, 14.iv.2001, R.L. Brown (MEM).

Diagnosis.— The greyish brown ground colour of the forewing in combination with the more or less fused costal and subcostal lines are characteristic.

Description.— Male (fig. 39), female. Forewing length 5.2-5.5 mm. Head: frons shining ochreous-white with greenish and reddish reflections, vertex and neck tufts shining greyish brown with reddish reflection, medially and laterally lined white, collar greyish brown; labial palpus first segment very short, white, second segment fourth-fifths of the length of third, white with a greyish brown line dorsally and laterally on outside, basal one-third white dorsally, third segment white, lined dark brown laterally; scape dark brown with a white anterior line, white ventrally; antenna shining dark greyish brown, a white line from base to beyond one-half, at two-thirds an indistinct whitish ring of one segment. Thorax and tegulae greyish brown with reddish reflection, thorax with a white median line, tegulae lined white inwardly. Legs: ochreous-grey, femora of midleg and hindleg shining ochreous-white with some greenish reflection, foreleg with a white line on tibia and tarsal segments one to three and five, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segments one and two with very indistinct ochreous-white apical rings, segment five dorsally ochreous-white, tibia of hindleg as midleg, tarsal segments dorsally ochreous-white, spurs dark grey on outside, whitish on inside. Forewing greyish brown with reddish gloss, four rather broad white lines in the basal area, a broad costal from one-sixth to the transverse fascia, widening distally, a subcostal from base to one-third, bending gradually from costa in distal half, often more or less fused with the costal line and hardly noticeable, a slightly oblique medial from one-fifth to the basal protrusion of the transverse fascia, a dorsal from base to the transverse fascia, a yellow to yellow-grey transverse fascia beyond the middle, narrowed towards dorsum and with a small basal protrusion and a narrow apical protrusion in the middle,



bordered at inner edge by two tubercular golden metallic subcostal and dorsal spots, the costal spot with a patch of blackish brown scales on the outside, the dorsal spot further from base than the subcostal, bordered at outer edge by a tubercular golden metallic costal and a dorsal spot, the dorsal spot about one-half to twice the size of the costal, both spots opposite and inwardly edged dark greyish brown, a narrow white costal streak from outer costal spot and a white apical line from the apical protrusion, cilia greyish brown around apex, pale ochreous grey towards dorsum. Hindwing shining pale grey, cilia pale ochreous-grey. Underside: forewing shining pale ochreous-grey, the white apical line indistinctly visible, hindwing shining pale grey, whitish at apex. Abdomen dorsally shining yellow-ochreous, laterally shining grey, ventrally shining yellowish white, anal tuft white in male, yellowish white in female.

*Male genitalia.* Right brachium of uncus slender with a triangularly hook-shaped apex, left brachium very narrow, about one-third of length of right one. Valvae large and strongly boot-shaped, upper margin strongly convex, lower margin straight, caudal margin slightly convex. Anellus lobes narrow, gradually bent with rounded apex. Aedeagus with slender bottle-shaped bulbous part, narrowing distally to about one-half of width, basal part less than half the length of bulbous part, both lateral lobes triangular, less than half the length of basal part (fig. 140a-b).

*Female genitalia.* Posterior edge of sternite VII concave with a small convex centre in middle. Sterigma short and conical, narrowing distally, tapering posteriorly, situated well above posterior edge of sternite VII, ostium bursae circular with a semicircular ventral sclerotization. Ductus bursae about half the length of corpus bursae and with a sclerotized section at three-quarters from ostium. Corpus bursae elongate, two oval signa with a medial ridge (fig. 220).

Biology.— Adults have been collected in April, June and August.

Distribution.— USA: Alabama, Mississippi (fig. 275).

Etymology.— Named after Erinome, a moon of Jupiter. To be treated as a noun in apposition.

*Cosmopterix etmylaurae* spec. nov.  
(figs 40, 141, 221, 286)

Type material.— Holotype ♂, Costa Rica: San José, San Pedro, U.C.R., Reserva Ecológica Leonel Oviedo, 1150 m, ii.2001, coll/rear: Kenji Nishida, Host plant: *Ipomoea* sp., Minador de hoja; gen. slide JCK 5239 (INBC). Paratypes: 2♂, 10♀: Costa Rica: 1♂, same data as holotype; gen. slide JCK 5240. 1♂, same locality, 23.ii.2001. 1♀, same locality, 11.i.2001; gen. slide JCK 5241. 1♀, same locality, 15.i.2001, coll. 16.xii.2000. 1♀, same locality, 23.ii.2001; gen. slide 5799. 1♀, same locality, 25.ii.2001. 2♀, same locality, 11.iii.2001. 2♀, same locality, 2.v.2001, K. Nishida, day catch; gen. slide JCK 5238. 1♀, same locality, 12.i.2003. 1♀, same locality, 11.ii.2004 (INBC).

Diagnosis.— Resembles somewhat *C. nishidai*, *C. gielisorum* and *C. eukelade*, but differs by the two tubercular fasciae bordering the transverse fascia and by the smaller wingspan. *C. etmylaurae* is characterized in the male genitalia by the very narrow right brachium of the uncus, the small L-shaped valvae and the very large aedeagus, in the female genitalia by the large pouch-like membrane on the posterior edge of sternite VII in combination with the very large sterigma.

Description.— Male, female. Forewing length 2.9-3.5 mm. Head: frons shining pale golden, vertex and neck tufts shining bronze brown with reddish gloss, lined white laterally, collar shining bronze brown; labial palpus first segment very short, white, second segment four-fifths of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined brown laterally, apex white; scape dorsally dark brown with a white anterior line, ventrally yellowish white, antenna shining dark brown with a very short white line at base changing into an interrupted line to three-quarters, followed towards apex by five white or partly white segments, approximately sixteen dark brown and one white segment at apex. Thorax and tegulae shining bronze brown with reddish gloss, thorax with a white median line. Legs: shining dark brown with reddish gloss, femora shining ochreous, foreleg with a white line on tibia and tarsal segments one to three and five, tibia of midleg with narrow white oblique basal and medial streaks and a white apical ring, tarsal segments one and two with white dorsal spots at apex, segment five dorsally white, tibia of hindleg with a basal silver spot, and broad silvery white medial and apical rings, tarsal segment four dorsally and segment five entirely white, spurs shining white dorsally, dark brown ventrally. Forewing shining bronze brown with reddish gloss, three narrow white lines in the basal area, a subcostal from base to one-quarter, a medial just above fold, starting beyond base and ending just beyond the subcostal, a short subdorsal from one-quarter to beyond the medial, some traces of white scales on dorsum at one-sixth, a dirty yellow transverse fascia beyond the middle, bordered on each side by broad pale golden metallic fasciae with pinkish gloss and with a narrow blackish patch subcostally on the outside of the inner fascia, the outer fascia narrowed in the middle or interrupted, both fasciae lined brown at the sides of the transverse fascia, a narrow white apical line from beyond the outer fascia, the narrow white apical line changing in the cilia into a broader yellow line to the tip of the wing, cilia bronze brown around apex, paler towards dorsum. Hindwing shining dark brownish grey with greenish and reddish reflections, cilia brown. Underside: forewing shining greyish brown, the yellow streak in the costal cilia at apex distinctly visible, hindwing shining greyish brown. Abdomen dorsally shining dark brownish grey with greenish and reddish reflections, ventrally shining dark brownish grey with greenish and reddish reflections and with a yellowish white medial streak, segments two to five banded shining yellowish white posteriorly, anal tuft ochreous-grey. In the female abdomen segment seven is entirely dark brown, ventrally banded pale yellow banded posteriorly (fig. 40).

*Male genitalia.* Right brachium of uncus very narrow, slightly thickened to two-thirds and sclerotized, narrowed apically, slightly bent and weakly sclerotized, tip flat, left brachium very long and wide, apically gradually tapering, tip pointed, about two-thirds of length of right one. Valvae small and narrow, L-shaped, all margins slightly concave. Anellus lobes very long, reaching well beyond valvae and aedeagus, very broad at base, narrow in middle and twisted, apical part gradually widening, apex rounded. Aedeagus very long, weakly S-shaped, bulbous part narrowed before middle, at two thirds a large bulgy protrusion at the right side, basal part rather narrow, less than one-half length of bulbous part, lateral lobes very small, oval (fig. 141).

*Female genitalia.* Posterior edge of sternite VII as a large pouch-like membrane, internal walls strongly covered with large scales, with a slightly concave posterior edge, and partly covering sterigma. Sterigma very large, oval, slightly narrowed posteriorly, ostium

bursae large, egg-shaped and with a semicircular sclerotization ventrally. Ductus bursae one-third longer than the length of corpus bursae and widening towards the latter. Corpus bursae egg-shaped, two pouch-shaped signa on round sclerotized plates.

Larva. Head pale brown, mouth parts dark brown, body transparent yellowish green with broad red dorsal and lateral lines (fig. 221).

Biology.— Host plant is *Ipomoea neei* (Spreng.) O'Donell (Convolvulaceae) (Nishida, pers. comm.).

*Life history.* The larva mines the leaves, the mine starts as an irregular gallery, later widening and branching. The larva constructs a silken gallery at the beginning of the mine from where most of the frass is rejected. Later some frass is heaped in the branches of the mine. The larva change mines and the second mines are irregular blotch mines, occupying a considerable part of the leaf. Pupation takes place inside the mine. Although *I. santillanii* O'Donell also occurred next to the food plant the mines were not found on this plant (Nishida, pers. comm.). Adults have been collected in May.

Distribution.— Costa Rica (fig. 286).

Etymology.— The species is dedicated to my wife Emy Laura Koster-Keuter.

Remarks.— The very peculiar male genitalia show some resemblance to those of the genus *Pebobs* concerning the very narrow right brachium, the very long anellus lobes and aedeagus. Also the small valvae show some similarity to that genus. In the female genitalia the similarity is less obvious, but it also has the large membrane between segment VII and VIII, although this only covers the anterior half of the sterigma.

*Cosmopterix euanthe* spec. nov.  
(figs 41, 142, 222, 295)

Type material.— Holotype ♂, Brazil: Distrito Federal, Planaltina, 1000 m, 20.ix.1984, 15°35'S 47°42'W, V.O. Becker col.; Col. Becker 57055; gen. slide JCK 5506 (VOB). Paratypes: 2♀, 1♂: Brazil: same locality as holotype, 3.ix.1988; Col. Becker 58828; gen. slide JCK 5450. 1♀, same locality as holotype, 6.xii.1984; Col. Becker 57135; gen. slide JCK 5502 (VOB).

Diagnosis.— It resembles the species of the *C. floridanella*-complex, certain identification only possible by examination of the genitalia. The short and broad right brachium of uncus with a semicircular extension in the male genitalia and the wide and round ostium in combination with the almost linear-shaped signa in the female genitalia are characteristic.

Description.— Male, female. Forewing length 3.1-3.6 mm. Head: frons shining pale ochreous-grey with greenish reflection, vertex and neck tufts shining bronze brown with reddish reflection, laterally and medially lined white, collar shining bronze brown; labial palpus first segment very short, white, second segment four-fifths of the length of third, shining dark brown with white longitudinal lines laterally and ventrally, third segment white, lined dark brown laterally; scape dark brown with white anterior and dorsal lines, antenna dark brown with a white line from base to two-thirds, white line sometimes interrupted in middle and distally, followed towards apex by two white segments, two dark brown, two white, ten dark brown and seven white segments at apex. Thorax and tegulae shining bronze brown with reddish gloss, thorax with a white median line, tegulae lined white inwardly. Legs: shining dark

greyish brown, femora pale ochreous-grey, foreleg with a white line on tibia and tarsal segments, in the male interrupted between the third and fourth segments, tibia of middle with white oblique basal and medial lines and a white apical ring, tarsal segments one and two with white apical rings, segment five entirely white, tibia of hindleg as middle, tarsal segment one with ochreous-white subbasal and apical rings, segments two to four with ochreous-white apical rings, segment five entirely ochreous-white, spurs white dorsally, dark brownish grey ventrally. Forewing shining bronze brown with reddish gloss, more greyish brown in apical area, five narrow white lines in the basal area, a costal from one-third to the transverse fascia, a subcostal from base to one-third, slightly bending from costa, a medial from one-sixth to the transverse fascia, a subdorsal from one-quarter almost to the transverse fascia and directed towards the end of the medial, a dorsal from beyond base to one-third, a pale yellow transverse fascia beyond the middle and with a short apical protrusion, in the male this apical protrusion is larger, bordered at the inner edge by two tubercular silver metallic subcostal and a subdorsal spots, the subdorsal spot slightly further from base than the subcostal and the subcostal spot outwardly with a small patch of blackish scales, bordered at the outer edge by two tubercular silver metallic costal and dorsal spots, the dorsal spot about three times as large as the costal, the costal spot slightly further from base and with some bronze brown inward lining, the transverse fascia narrowly edged greyish brown at costa, a white costal streak from the outer costal spot, a white apical line from the apical protrusion to apex, cilia greyish brown, paler towards dorsum. Hindwing shining pale grey, cilia greyish brown. Underside: forewing shining greyish brown, white costal streak distinctly visible, hindwing shining greyish brown. Abdomen dorsally ochreous-yellow, segments one and seven banded greyish brown laterally and posteriorly, ventrally greyish brown, segments broadly banded shining white posteriorly, in middle completely shining white, segment six entirely dark grey, anal tuft grey (fig. 41).

*Male genitalia.* Right brachium of uncus strongly widening distally with a semicircular extension on the left before apex, tip flattened and rounded, left brachium rather narrow, tip rounded, less than one-half length of right one. Valvae rather short, caudal margin rounded, upper and lower margin slightly. Anellus lobes narrow, widest part in middle, slightly bent, tip rounded. Aedeagus bottle-shaped, narrowing distally to about one-third of width of bulbous part, basal part large, widening distally, about three-quarters the length of bulbous part, lateral lobes triangular, about one-third of the length of basal part (fig. 142).

*Female genitalia.* Posterior edge of sternite VII convex with a small concave section in middle. Sterigma broad, oval, anterior part narrowed, ostium bursae wide and round, ventrally with a semicircular sclerotization. Ductus bursae two-thirds of length of corpus bursae. Corpus bursae oval, both signa almost linear-shaped with a tiny central thorn (fig. 222).

Biology.— Unknown. Adults have been collected in September and December.

Distribution.— Brazil: Distrito Federal (fig. 295).

Etymology.— Named after Euanthe, a moon of Jupiter. To be treated as a noun in apposition.

Remarks.— Valvae are somewhat asymmetrical in the male genitalia. The right valva is shorter with a pointed cucullus. This is possibly an aberration of this specimen as the valvae of all other known *Cosmopterix*-species are symmetrical.

*Cosmopterix eukelade* spec. nov.  
(figs 42, 223, 295)

Type material.— Holotype ♀, Peru: Cuzco Mts., Garlepp, 1905, Stgr. 73361; Walsingham Collection 1910-427; gen. slide BM 15927 (BMNH).

Diagnosis.— Shows external similarities with *C. gielisorum* and *C. nishidai*. It differs from these species by the dark brown apex of the antenna, by the presence of a tubercular fascia on inner side of the transverse fascia and by the very elongate outer costal spot.

Description.— Female. Forewing length 4.9 mm. Head: frons shining white with greenish and reddish reflections, vertex neck tufts and collar shining olive brown with greenish and reddish reflections; labial palpus first segment very short, white, second segment three-quarters of the length of third, greyish brown with white longitudinal lines laterally and ventrally, third segment white, lined brown laterally, extreme apex white; scape dark brown with a white anterior line, white ventrally, antenna shining dark brown with a white line from base to two-thirds, interrupted in middle, followed towards apex by eleven dark brown segments, nine dark brown with a white line and eighteen dark brown segments at apex. Thorax and tegulae shining olive brown with greenish and reddish gloss. Legs: shining dark brown with reddish gloss, femur of midleg shining ochreous, femur of hindleg shining golden, foreleg with a white line on tibia and tarsal segments one, two and five, tibia of midleg with a white narrow oblique basal line, a white oblique medial line and a white apical ring, tarsal segment one with a lateral white line on the outside, ending dorsally at apex, segment two with a white oblique streak in the distal half and segment five entirely white, tibia of hindleg as midleg, but the markings silvery and with an additional broad pale golden subapical ring and long hair pencils before and after the medial line, tarsal segment four dorsally white at apex and segment five dorsally entirely white, spurs ochreous-white dorsally, dark grey ventrally, tips white. Forewing shining olive brown in basal one-quarter, darker brown towards apex and with reddish gloss, four very narrow white lines in the basal area, a subcostal from base to one-quarter, bending from costa in distal third, a medial above fold, from base to two-fifths, a very short subdorsal from one-fifth, a short dorsal from beyond base to one-fifth, an orange-yellow transverse fascia beyond the middle with a long apical protrusion from the middle and as an apical line to apex, bordered at the inner edge by a tubercular very pale golden metallic fascia with greenish and reddish reflections, subcostally on outside with patch of blackish scales, bordered at the outer edge by two very pale golden tubercular costal and dorsal spots with purplish reflection, the costal spot as a streak of one-quarter wing length, the dorsal spot more or less square and more towards base than the costal, both spots lined brown on the inside, a white costal streak beyond the costal spot, cilia brown, slightly paler towards dorsum. Hindwing shining brown with strong reddish gloss, cilia brown. Underside: forewing shining dark brown, the pale yellow apex line distinctly visible in the cilia as a white streak, hindwing shining dark brown. Abdomen not examined, previously used for dissection (fig. 42).

*Male*. Unknown.

*Female genitalia*. Posterior edge of sternite VII concave with a convex projection in middle. Sterigma spherical, ostium bursae circular, dorsally with a rounded protrusion,

ventrally with a sclerotized ridge. Ductus bursae about half the length of corpus bursae. Corpus bursae with two very large, arrow-shaped, signa (fig. 223).

Biology.— Unknown.

Distribution.— Peru (fig. 295).

Etymology.— Named after Eukelade, a moon of Jupiter. To be treated as a noun in apposition.

*Cosmopterix euporie* spec. nov.  
(figs 43, 143, 224, 296)

Type material.— Holotype ♂, Brazil: Planaltina, Distrito Federal, 1000 m, 15.viii.1985, 15°35'S 47°42'W, V.O. Becker col.; Col. Becker 57743; gen. slide JCK 5447 (VOB). Paratype: 1 ♀: Brazil: same locality as holotype, 3.ix.1988; Col. Becker 58827; gen. slide JCK 5448 (VOB).

Diagnosis.— The short and wide head in combination with the short and broad white dorsal line at base together with the large inner and outer tubular dorsal spots on the forewing are characteristic.

Description.— Male, female. Forewing length 3.9 mm. Head: broader and shorter than usual in the genus *Cosmopterix*, frons shining ochreous-white with greenish reflection, vertex and neck tufts brown, narrowly lined white laterally, collar brown; labial palpus first segment very short, white, second segment three-quarters of the length of third, brown with white longitudinal lines laterally and ventrally, third segment white, lined brown laterally; scape dark brown with a white anterior line, white ventrally, antenna shining dark brown, a white line from base to two-thirds, followed towards apex by eight white segments, in the female this white subapical section is divided into several narrow white rings, one grey, two white, approximately five dark brown and six white segments at apex. Thorax and tegulae brown, thorax with white median line, which is reduced to a posterior white spot in the female. Legs: greyish brown, femora of midleg and hindleg shining pale ochreous-grey, foreleg with a white line on tibia and tarsal segments, interrupted in the apical half of third and the basal half of fourth segment, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segments one, two and four with white apical rings, tarsal segment five entirely white, tibia of hindleg with a white line from base to mid spurs, from there as a very oblique line to the dorsal side of the tibia, a broad creamy white oblique subapical streak and a white apical ring, tarsal segment one with white basal and apical rings, segments two to four with white dorsal spots apically, segment five white, spurs yellowish white, ventrally with a greyish brown streak. Forewing brown, five narrow white lines in the basal area, a short costal from one-third to the transverse fascia, a subcostal from base to one-third, bending rather abruptly from costa in distal half, a straight medial above fold from one-fifth to two-fifths, a subdorsal below fold, from one-quarter to the end of the medial, a short and broad dorsal at base, the costal and dorsal lines are less prominent in the female, a broad pale yellow transverse fascia beyond the middle, more pinkish yellow in the female, and with a narrowing prolongation towards apex, bordered at the inner edge by two pale greyish golden metallic tubercular costal and dorsal spots, the costal spot about half the size of the dorsal and outwardly edged by a small patch of blackish brown scales and inwardly by a white

streak connecting to the white costal line, the dorsal spot much further from base than the costal, bordered at the outer edge with a similar coloured costal and dorsal spot, both spots opposite, the dorsal spot more than five times as large as the costal, the costal spot brownish edged on the inside, a white costal streak from outer costal spot, a shining white apical line, not completely reaching the apex, cilia greyish brown around apex, ochreous-grey towards dorsum. Hindwing shining brownish grey, cilia ochreous-grey. Underside: forewing shining brown with a yellowish white costal line from two-thirds to four-fifths, the white apical line distinctly visible, hindwing shining grey, costal half darker. Abdomen dorsally yellowish brown with reddish gloss, ventrally grey, segments broad banded shining white posteriorly and with a yellowish white longitudinal line, anal tuft yellowish white (fig. 43).

*Male genitalia.* Right brachium of uncus narrowed before middle, widening in middle and gradually tapering distally, apex flattened, left brachium very narrow, tip pointed, less than one-half length of right one. Valvae more or less rectangular, caudal margin rounded, upper margin concave and lower margin slightly concave. Anellus lobes very narrow in basal part, slightly bent in middle, apical part about three times as broad as basal part, tip pointed. Aedeagus slender, only slightly narrowing distally, basal part short, about one-third of length of bulbous part, lateral lobes broad but short, about half the length of basal part (fig. 143).

*Female genitalia.* Posterior edge of sternite VII convex. Sterigma oval, anterior part narrowed, ostium bursae round, ventrally with a medial sclerotized ridge. Ductus bursae about as long as corpus bursae. Corpus bursae elongate, narrowed in anterior part, signa absent (fig. 224).

Biology.— Unknown. The adults were collected in August and September.

Distribution.— Brazil: Distrito Federal (fig. 296).

Etymology.— Named after Euporie, a moon of Jupiter. To be treated as a noun in apposition.

Remarks.— Male and female show some differences in the external characters. Due to the limited amount of material it is not possible to tell if it is normal intraspecific as variation or real sexual dimorphism. Another possibility is that there are two sibling species involved. Additional material is required to solve this problem.

*Cosmopterix facunda* Hodges, 1978  
(figs 44, 225, 275)

*Cosmopterix facunda* Hodges, 1978: 38. Holotype ♀, United States: Texas, Brownsville, 27.iii.[19]28; gen. slide UNSM 3941 (USNM) [examined].

Diagnosis.— Externally very similar to *C. floridanella* and *C. similis*, but differs from *C. floridanella* by the lack of the blackish brown inward lining of the inner subdorsal spot and by the much larger wingspan, from *C. similis* also by the larger wingspan, by the white apex of the antenna and by the presence of the apical protrusion of the transverse fascia. The very deep and almost square indentation of the posterior edge of sternite VII in combination with the very elongate corpus bursae is characteristic.

Description.— Female. Forewing length 5.7 mm. Head: frons shining pale ochreous, vertex and neck tufts shining ochreous-brown, medially and laterally lined

white, collar ochreous-brown; labial palpus first segment very short, white, second segment ochreous-grey with white longitudinal lines laterally and ventrally, remaining parts missing; scape dark brown, with white anterior and posterior lines, white ventrally, antenna shining dark brown, a white line from base to beyond one-half, followed towards apex by respectively a more or less annulated part of approximately 15 segments, four whitish, two dark brown, two white, nine dark brown and nine white segments at apex. Thorax and tegulae ochreous-brown, thorax with a white median line, tegulae lined white inwardly. Legs: foreleg ochreous-grey with a white line on tibia and tarsal segments one to three and five, segment four white in apical half, femora of midleg and hindleg ochreous-white, remaining parts greyish ochreous, tibiae of midleg and hindleg with oblique basal and medial white lines and white apical rings, tarsal segments one to three of midleg dorsally white in apical half, segment five entirely white, tarsal segments of hindleg as midleg but segment four also dorsally white, spurs white, ventrally greyish ochreous. Forewing ochreous-brown, five white lines in the basal area, a costal from one-third to the transverse fascia, a subcostal from base to one-third, bending from costa in distal half, a straight medial above fold, from one-quarter to just before the transverse fascia, a subdorsal below fold, slightly oblique, as long as the medial but just beyond it, a dorsal from beyond base to the transverse fascia, a broad pale yellow transverse fascia beyond the middle, narrowed towards dorsum, with a small apical protrusion, bordered at the inner edge by two tubercular silver metallic subcostal and subdorsal spots, the subcostal spot outwardly with a patch of blackish brown scales, the subdorsal spot smaller than the subcostal and further from base, bordered at the outer edge by two tubercular silver metallic costal and a dorsal spots, almost opposite each other and inwardly lined ochreous-brown, the dorsal spot about twice as large as the costal, a broad white costal streak from the outer costal spot, a shining white apical line from the apical protrusion, cilia pale ochreous, more greyish at apex. Hindwing shining pale ochreous-white, cilia pale ochreous. Underside: forewing shining pale ochreous-grey, darker at apex, the white apex line distinctly visible, hindwing shining pale ochreous-grey. Abdomen not examined (already dissected) (fig. 44).

*Male*. Unknown.

*Female genitalia*. Indentation of posterior edge of sternite VII very deep and almost square. Sterigma oval, anteriorly not reaching edge of sternite. Ductus bursae about two-thirds of length of corpus bursa. Corpus bursae very elongate, two crescent-shaped signa (fig. 225).

Biology.— Unknown. The single specimen was collected in March.

Distribution.— USA: Texas (fig. 275).

Remarks.— Left antenna of holotype almost completely missing, right antenna without apical part. Description of this section according to Hodges (1978).

*Cosmopterix fernaldella* Walsingham, 1882  
(figs 45, 144, 226, 276)

*Cosmopterix fernaldella* Walsingham, 1882: 197. Holotype ♂ (without abdomen), [United States] (BMNH) [examined].

Material examined.— 15♂, 17♀, 1specimen (sex not stated). Canada: 1♀, Quebec, Gatineau, Alymer, 18 rue Washington, 6.vii.1994, leg. B. Landry; gen. slide JCK 4043 (RMNH). 1♂, Ontario, Muskoka; gen.



slide BM 31217. 8 ♂, 4 ♀, same data (BMNH). 1 specimen (sex not stated), British Columbia, Brackendale, 7 km N Squamish, Dryden Creek, 10U DL9013, 50 m, 3.viii.1988, E.J. van Nieuwerkerken & S. Richter (RMNH). United States: 1 ♂, Michigan, Kalamazoo Co., Gull Lake Biol. Sta., 3.vii.1956, R.W. Hodges. 1 ♀, same locality, 6.vii.1956; gen. slide JCK 6111. 1 ♀, Michigan, Luce Co., L. Superior, 21.vii.2002, Vargo; gen. slide JCK 6112 (MSUC). 1 ♂, 1 ♀, Michigan, Ocqueoc L., 25-26.vii.1970, at black light, leg. R.W. & E.R. Hodges (USNM) 1 ♀, Michigan, Mackinac Co., T41N R4W, fen, 14.vii.2001, George J. Balogh. 1 ♂, same data; gen. slide JCK 6097. 1 ♀, Michigan, Kalamazoo Co., Portage, backyard, 6275 Liteolier, 16.vii.1997, George J. Balogh (GB). 1 ♂, Wisconsin, Ozaukee Co., 4 mi. SSE Newburg, T11N R21E, Sec. 29-30, 7.vii.1992, D. & M. Hildebrandt, leg. (MEM). 2 ♂, 7 ♀, Minnesota, Lake Ithasca, Ithasca State Park, 12.vii.1995, Mey; gen. slide JCK 6264, ♂ (ZMHB).

Diagnosis.— Cannot be separated with certainty from *C. ebriola* and *C. scirpicola* on external characters, but differs in the male and female genitalia. For the differences in the male and female genitalia see under *C. ebriola*.

Description.— Male, female. Forewing length 4.8-5.0 mm. Head: frons shining pale ochreous with greenish and reddish reflections, vertex and neck tufts shining golden brown, medially and laterally lined white, collar golden brown; labial palpus first segment very short, white, second segment three-quarters of the length of third, greyish brown with white longitudinal lines laterally and ventrally, third segment white, lined dark brown laterally; scape brown with a white anterior line, white ventrally, antenna shining dark brown, a short white line from base to one-fifth, at two-thirds two white rings consisting of one segment each, divided by three dark brown segments, followed towards apex by ten dark brown, one white and six dark brown segments at apex. Thorax and tegulae golden brown, thorax with a white median line, tegulae lined white inwardly. Legs: ochreous-grey, femur of hindleg shining ochreous-white with purplish reflection, foreleg with a white line on tibia and tarsal segments one to three and five, tibia of midleg with an oblique basal white line, a white medial spot and a white apical ring, tarsal segments one and two with white dorsal spot at apex, segment five entirely white, tibia of hindleg with oblique basal and medial white lines and a white apical ring, tarsal segments dorsally white, spurs brownish grey on the outside, white on the inside. Forewing golden brown, five rather indistinct ochreous-white lines in the basal area, a broad costal from one-quarter to the inward costal protrusion of the transverse fascia, a subcostal from base to one-quarter, bending gradually from costa in distal half, an almost straight medial above fold, from one-fifth to one-third, a short and somewhat oblique subdorsal ending just beyond the medial, a dorsal from beyond base to one-quarter, a greyish ochreous transverse fascia beyond the middle, narrowed towards dorsum and with a narrow apical protrusion, bordered at the inner edge by two greenish golden metallic tubercular subcostal and dorsal spots, the subcostal spot twice as large as the dorsal and outwardly edged by a patch of blackish brown scales, the dorsal spot slightly further from base, bordered at the outer edge by two similarly coloured costal and dorsal spots, the dorsal spot about twice as large as the costal and more towards base, both spots edged dark brown on the inside, a yellowish white costal streak from the outer costal spot and a narrow whitish apical line from the apical protrusion, cilia ochreous-brown, ochreous-grey towards dorsum. Hindwing shining grey, cilia ochreous-grey. Underside: forewing shining greyish brown, the whitish apical line indistinctly visible in the cilia, hindwing shining greyish brown. Abdomen dorsally shining pale golden brown, laterally shining grey, ventrally shining yellowish white, anal tuft yellowish white (fig. 45).

*Male genitalia.* Right brachium of uncus short and stout, longitudinally triangular, apex short and rather blunt, left brachium elongate. Valvae with upper margin strongly concave, lower margin slightly concave, caudal almost straight. Anellus lobes rather short, slightly bent in middle and strongly widening in apical half, apex rounded. Aedeagus with bulbous part bottle-shaped, narrowing distally to about one-third of width, basal part short, about one-third of length of bulbous part, lateral lobes short and more or less square (fig. 144).

*Female genitalia.* Posterior edge of sternite VII concave with a hump in middle. Sterigma long with a narrow projection in basal half, widening distally, apical half tapering. Ductus bursae about two-thirds of length of corpus bursae. Corpus bursae elongated, two circular signa each with a narrow sclerite in the centre (fig. 226).

Biology.— The larva is a leaf miner on *Carex*-species (Cyperaceae) (Hodges, 1978).

Distribution.— USA: from Maine and the Lower Peninsula of Michigan south to New Jersey and Pennsylvania (Hodges, 1978), Wisconsin and Minnesota; Canada: Quebec, Ontario, British Columbia (fig. 276).

*Cosmopterix floridanella* Beutenmüller, 1889  
(figs 46, 145, 227, 315)

*Cosmopterix floridanella* Beutenmueller, 1889: 10. Holotype ♀, [United States]: Central Florida, May, 1887, Coll. W.B. Hab (according to the original description); USNM Type No. 496 (USNM) [not examined].

*Cosmopterix nigrapunctella* Busck, 1900: 235. Holotype ♂, [United States]: Florida, Palm Beach, i.1900, Dyar; USNM Type No. 4944 (synonymised by Busck, 1902) (USNM) [not examined].

Material examined.— 47♂, 14♀. Cayman Islands: 3♂, Grand Cayman, West end of Georgetown, 3.viii.1938, coll. C.B. Lewis, G.H. Thompson; gen. slide BM 29940. Cuba: 1♂, Holquin, Pin Mayari, 640 m, vii.1960, V.O. Becker; Col. Becker 71924. 1♀, same data; gen. slide JCK 5482 (VOB). Jamaica: 1♂, Moneague, 6.i.1905, coll. Walsingham; gen. slide BM 29562. 7♂, 7♀, Moneague, 14.i.1905, 17.i.1905, 19.i.1905, 20.i.1905, 29.i.1905, 3.ii.1905, 10.ii.1905, 12.ii.1905; gen. slide BM 29561. 1♂, Constant Springs, 25.xii.1904, coll. Walsingham. 1♂, Costant Springs, 31.xii.1904. 1♂, Runaway Bay, 11.iii.1905, coll. Walsingham. 2♂, Runaway Bay, 25.iii.1905, 23.iv.1905. 1♀, Runaway Bay, 21.iv.1905; gen. slide BM 31228. United States: 1♂, Florida, Lake Placid, Archbold Bio. Sta., 3.iv.1959, R.W. Hodges. 1♀, same locality, 8-15.v.1964, R.W. Hodges; gen. slide JCK 5790 (USNM). 1♂, Louisiana, Bossier Parish, Barksdale A.F.B., 32°29'29"N 93°35'07"W, 21.v.1996, R.L. Brown, D. Pollock; gen. slide JCK 2660 (RMNH). 1♀, Alabama, Baldwin Co., Weeks Bay NER Reserve, 30°25'03"N 87°49'50"W, 1.viii.2000, R.L. Brown. 1♂, Mississippi, Bolivar Co., 33°36'29"N 91°07'34"W, 23.vi.1993, D.M. Pollock. 2♂, same locality, 17.viii.1993; gen. slide JCK 6115. 1♂, Mississippi, Lowndes Co., T17N-R16E, Sec. 34, Black Belt Prairie, 20.v.1992, D.M. Pollock. 1♂, same locality, 16.v.1993, R.L. Brown, D. Pollock. 1♂, 2♀, same locality, 10.vi.1993; gen. slide JCK 6133. 2♂, same locality, 26.vii.1993. 1♂, same locality, 24.viii.1993. 1♂, Mississippi, Jasper Co., Bienville Natl. Forest, 32°09'53"N 89°15'26"W, 3.v.2000, R.L. Brown. 2♂, Mississippi, Oktibbeha Co., 6 mi. SW Starkville, 4. iv.1986, R.L. & B.B. Brown; gen. slide JCK 6132. 3♂, same locality, 6.iv.1986. 1♂, same locality, 18.iv.1986. 2♂, *ibid.*, 25.iv.1986. 1♂, Mississippi, Oktibbeha Co., T18N-R14E, Sec. 23, 19.ix.1988, R.L. & B.B. Brown. 1♂, Mississippi, Oktibbeha Co., Black Belt Prairie, T19N-R15E, Sec. 6, 26.vii.1993, R.L. Brown, D. Pollock; gen. slide JCK 6116. 1♂, same locality, 20.x.1993. 1♂, Tennessee, Wilson, Co., Cedars of Lebanon S.F., 36°05'25"N 86°22'32"W, 11.v.2002, R.L. Brown, S.M. Lee. 1♂, Louisiana, Cameron Par., Cameron Prairie NWR, 29°56'42"N 93°05'17"W, 6-7.x.1992, R. Brown, J. MacGown. 1♂, Louisiana, Bosier Parish, Barksdale A.F.B., 32°29'29"N 93°35'07"W, 21.v.1996, R.L. Brown, D. Pollock. 1♂, same locality, 8. viii.1996. 1♂, same locality, 24.viii.1996. 2♂, same locality, 13.ix.1996; gen. slide JCK 6117 (MEM). US Virgin Islands: 1♀, St. Croix, 14.v.1894, Gudmann, gen. slide BM 15371 (paratype of *C. similis*) (BMNH).

**Diagnosis.**— *Cosmopterix floridanella* belongs with *C. facunda* and *C. similis* to a complex of externally similar species. For differences between these, see under *C. facunda*. The species is characterized in the male genitalia by the large oval tip of the right brachium of the uncus and the rather narrow semicircular valvae, in the female genitalia by the convex and flattened middle section of the posterior edge of sternite VII in combination with the elongate sterigma which slightly widens in the anterior half.

**Description.**— Male, female. Forewing length 3.1-3.9 mm. Head: frons shining white with greenish and purplish reflections, vertex and neck tufts shining greyish ochreous with reddish gloss, laterally and medially lined white, collar greyish ochreous; labial palpus first segment very short, white, second segment three-quarters of the length of third, pale ochreous with white longitudinal lines laterally and ventrally, third segment white, dark brown lined laterally; scape dark brown with a white anterior line, ventrally white, antenna dark brown with a white line from base to beyond one-half, followed towards apex by an annulated section of four segments, four white, two dark brown, two white, two dark brown, one white, three dark brown, two white, two dark brown and eight white segments at apex. Thorax and tegulae greyish ochreous, thorax with a white median line, tegulae lined white inwardly. Legs: dark brownish grey, femora of midleg and hindleg shining white, foreleg with a white line on tibia and tarsal segments, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segments ochreous-white except base of segment one dorsally and segment four, tibia of hindleg as midleg, tarsal segments ochreous-white, spurs white dorsally, brownish grey ventrally. Forewing greyish ochreous, five white lines in the basal area, a short and broad costal from one-quarter to the transverse fascia, a subcostal from base to one-quarter, slightly bending from costa, a medial above fold, from one-fifth to two-fifths, a subdorsal from one-quarter almost to the transverse fascia, a narrow dorsal from base to one-third, there is however some variation in the length of the white lines in the basal area, a broad pale yellow transverse fascia beyond the middle, narrowed towards dorsum and with an apical protrusion, bordered at the inner edge by two pale greyish golden metallic tubercular subcostal and subdorsal spots, the subcostal spot outwardly edged by a patch of blackish brown scales, the subdorsal spot further from base and inwardly edged dark brown, the inner subdorsal spot is sometimes beyond the edge of the transverse fascia and completely surrounded by yellow scales, bordered at the outer edge by two similarly coloured costal and dorsal spots, both spots opposite and edged ochreous-brown inwardly, the dorsal spot slightly larger than the costal, the outer costal spot edged by a narrow white costal streak, a shining white apical line from the apical protrusion to apex, cilia greyish ochreous around apex, paler towards dorsum. Hindwing shining pale grey, cilia pale greyish ochreous. Underside: forewing shining pale ochreous-grey, the white apical line indistinctly visible, hindwing shining pale grey. Abdomen dorsally shining yellow mixed brown, segments banded pale ochreous posteriorly, segment seven whitish, laterally pale ochreous, ventrally shining pale grey, segments banded shining white posteriorly, anal tuft white (fig. 46).

**Male genitalia.** Right brachium of uncus narrow at base, apical half large and oval, tip shifted to the right, rounded and downwardly bent, left brachium very broad with rounded tip, less than half the length of right one. Valvae rather narrow with semicircular caudal margin and concave upper and lower margins. Anellus lobes long, strongly bent in middle, apex gradually narrowing to a blunt tip. Aedeagus with bulbous part

bottle-shaped, narrowing distally to half the width, basal part two-thirds of length of bulbous part, lateral lobes triangular, more than half the length of basal part (fig. 145).

*Female genitalia.* Posterior edge of sternite VII convex with a flattened middle section. Sterigma elongate, slightly wider in anterior half and with a short anterior extension, ostium bursae circular with semicircular sclerotization ventrally. Ductus bursae about two-thirds of length of corpus bursae and with a sclerotized section where it enters the latter. Corpus bursae egg-shaped, two small crescent-shaped signa (fig. 227).

*Biology.*— Unknown. Adults have been collected from April to May (USA) and from December to May and in August (Jamaica, Cayman Islands, US Virgin Islands). At least bivoltine.

*Distribution.*— USA: Florida, Arkansas, Mississippi (Hodges, 1978), Tennessee, Louisiana, Alabama; Cayman Islands: Grand Cayman; Cuba; Jamaica; US Virgin Islands: St. Croix; (fig. 315).

*Cosmopterix galapagosensis* Landry, 2001  
(figs 47, 146, 228, 296)

*Cosmopterix galapagosensis* Landry, 2001: 524. Holotype ♂, Ecuador: Galápagos, Santa Cruz, Los Gemelos, 27.v.1992, M[ercury] V[apor] L[amp] (B. Landry), (CNC type no. 22682) (CNC) [not examined].

*Material examined.*— 1♂, 1♀. Ecuador: Paratype 1♂, Galapagos, Isabela, 2 km W. Puerto Villamil, 5.iii.1989, B. Landry; gen. slide JCK 5708. Paratype 1♀, Galapagos, Sta Cruz, littoral zone, Tortuga Bay, 29.i.1989, B. Landry; gen. slide JCK 5709 (CNC).

*Diagnosis.*— The yellowish posterior half of the thorax, the pale yellow dorsal half of the basal area with the silver metallic tubercular spot are characteristic.

*Description.*— Male, female. Forewing length 4.5–4.8 mm. Head: frons shining pale ochreous-grey with greenish and reddish reflections, vertex and neck tufts shining bronze brown with reddish gloss, laterally and medially lined white, collar shining bronze brown; labial palpus first segment very short, white, second segment four-fifths of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined dark brown laterally; scape dorsally dark brown with white anterior and dorsal lines, ventrally white, antenna shining dark brown, a white line at base, changing into an interrupted line to beyond one-half, followed towards apex by an annulated part of about ten segments, six dark brown, four white, two dark brown, two white, nine dark brown, four white and three dark brown segments at apex. Thorax and tegulae shining yellowish brown with reddish gloss, thorax posteriorly yellowish and with a white median line, tegulae very narrowly lined white inwardly. Legs: shining dark olive brown with reddish gloss, femora pale ochreous, foreleg with a white line on tibia and tarsal segments one to three and five, tibia of midleg with white narrow oblique basal and medial streaks and a white apical ring, tarsal segments one to three with ochreous-white apical rings, segment five entirely ochreous-white, tibia of hindleg as midleg, but with an additional subapical oblique white streak, tarsal segment one with ochreous subbasal and apical rings, remaining segments with ochreous apical rings, spurs shining white dorsally, ochreous-grey ventrally. Forewing shining

bronze brown with reddish gloss, the basal area, below fold, to transverse fascia pale yellow, two white lines in the basal area, a narrow subcostal to one-quarter, slightly bending from costa, a broad and short yellowish white dorsal at base, a silver metallic tubercular spot with pinkish reflection at one-quarter just below fold, a pale yellow transverse fascia beyond the middle, narrowing towards dorsum and slightly darkened in the middle, bordered at the inner edge by two pale golden metallic subcostal and subdorsal spots with reddish and purple reflections, neither spot reaching costa nor dorsum, thus forming an inward oblique fascia, bordered at the outer edge by a broad outwardly oblique fascia, narrowed in the middle, beyond the outer metallic fascia pale yellow streaks on the costal and dorsal sides, the dorsal streak much longer than the costal, a narrow and indistinct whitish apical line from the dorsal pale yellow streak to apex, cilia bronze brown around apex, ochreous-grey towards dorsum. Hindwing shining grey with greenish and reddish gloss, cilia ochreous-grey. Underside: forewing shining greyish brown, hindwing shining greyish-brown in costal half, pale grey in dorsal half. Abdomen dorsally shining pale yellow, segments banded shining greyish white posteriorly, ventrally shining yellowish white, anal tuft whitish dorsally, grey ventrally, in the female abdomen is segment seven brownish grey and the anal tuft yellowish white (fig. 47).

*Male genitalia.* Right brachium of uncus long and upwardly bent distally, tip large and hammer-shaped, dorsally rounded, ventrally pointed, left brachium rather long and very narrow. Valvae short, triangular, upper margin slightly concave, lower margin almost straight, caudal margin slightly rounded. Anellus lobes slender, gradually bent in middle, apex bluntly pointed. Aedeagus with bulbous part narrowly bottle-shaped, narrowing distally to about one-half of width and bent to the right, basal part about half the length of bulbous part, lateral lobes short and rounded (fig. 146).

*Female genitalia.* Posterior edge of sternite VII concave with a hump in middle. Sterigma moderate, narrowed in basal half and with a sclerotized rim in middle, ostium rounded with a semi-circular sclerotization ventrally. Ductus bursae about two-thirds of the length of corpus bursae and with a sclerotized section where it enters the latter. Corpus bursae oval, two circular signa with a small sclerite in the centre (fig. 228).

*Biology.*— Host plant. *Eleocharis mutata* (L.) Roem. & Schult. (Cyperaceae).

*Life history.* Larvae are leaf miners. Adults were collected from January to March and in May (Landry, 2001).

*Distribution.*— Ecuador: Galapagos Islands (fig. 296).

*Cosmopterix ganymedes* spec. nov.  
(figs 48, 147, 296)

*Type material.*— Holotype ♂, Argentina: Salta, 72: Rosario de la Argentina, Frontera, Los Banos, 6.iv.1979, Mision Cientifica Danesa; gen. slide JCK 5801 (ZMUC). Paratype: 1♂: Brazil: Goias, Teresina, 500 m, 29.v.1994, V.O. Becker & K.S. Sattler Col.; Col. Becker 92621; gen. slide JCK 5528 (VOB).

*Diagnosis.*— Resembles *C. pulchrimella*, but differs by the absence of the white median line on the thorax, the presence of the white inward lining of the tegulae and the broader transverse fascia. Characterized in the male genitalia by the long, tapering and apically hooked right brachium of uncus in combination with the pear-shaped valvae.

Description.— Male. Forewing length 3.7-4.1 mm. Head: frons shining silvery grey, vertex and neck tufts shining dark brown with reddish gloss, laterally and medially lined white, collar shining dark brown; labial palpus first segment very short, white, second segment four-fifths of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined dark brown laterally; scape dorsally shining dark brown with a white anterior line, ventrally shining white, antenna shining dark brown with a white interrupted line from base to beyond one half, basal and distal part of this line uninterrupted for approximately five segments, followed towards apex by eight dark brown segments, seven white, eight dark brown, three white, three dark brown and one white segment at apex. Thorax and tegulae shining dark brown with reddish gloss, thorax with a whitish posterior spot, tegulae lined white inwardly. Legs: shining dark brown, foreleg with a white line on tibia and tarsal segments one, two and five, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segments one, two and four with white apical rings, segment five entirely white, tibia of hindleg as midleg, tarsal segments one, two and three with white apical rings, segments four and five entirely white, spurs dark brown, inwardly white. Forewing shining dark brown with reddish gloss, three short silvery white streaks in the basal area, a subcostal from one-eighth to one-fifth and bending from costa distally, a very short medial, ending at end of the subcostal, a subdorsal, twice as long as the medial, and starting where the medial does or slightly beyond it, a bright yellow transverse fascia beyond the middle, narrowed towards dorsum, bordered by an inner and an outer tubercular golden metallic fascia, the inner fascia outwardly with two small spots of blackish scales subcostally and subdorsally, the outer fascia inwardly with three similar spots and sometimes narrowly divided in middle, a white costal streak from the outer fascia, inwardly edged brown, a narrow silvery white apical line in the distal half of the apical area, interrupted in middle and shining white in the cilia, cilia dark brown. Hindwing shining brown with reddish gloss, cilia brown. Underside: forewing shining dark greyish brown, the white costal streak and the white streak in the cilia distinctly visible, hindwing shining dark greyish brown. Abdomen dorsally shining brown, segments three to five more ochreous, ventrally shining dark grey, segments broadly banded silvery white posteriorly, anal tuft dark greyish brown (fig. 48).

*Female.* Unknown.

*Male genitalia.* Right brachium of uncus long, widest part in middle, gradually tapering distally, tip pointed with a small dorsal hook, left brachium short, tip rounded, less than one-thirds of the length of right one. Valvae more or less pear-shaped, caudal margin rounded, upper margin concave, lower margin slightly concave. Anellus lobes rather narrow in basal part, broad in apical part, abruptly narrowing, slightly bent in middle, tip blunt. Aedeagus bottle-shaped, narrowing distally to less than one-third the width of bulbous part, basal part about one-half the length of bulbous part, lateral lobes triangular, about one-half of the length of basal part (fig. 147).

*Biology.*— Unknown. Adults were collected in April and May.

*Distribution.*— Argentina: Salta; Brazil: Goiás (fig. 296).

*Etymology.*— Named after Ganymedes, a moon of Jupiter. To be treated as a noun in apposition.

*Cosmopterix gemmiferella* Clemens, 1860  
(figs 49, 148, 229, 277)

*Cosmopterix gemmiferella* Clemens, 1860: 10. Syntype (sex not stated), United States: [ Pennsylvania?], Clemens' Coll., Mus. Am. Ent. Soc., Philadelphia 1872 (ANSP) [not examined].

Material examined.— 9♂, 3♀, 3 specimens (sex not stated). Canada: 1♂, Ontario, Carleton Co., Pinney Forest, 12 km SW Ottawa, 17.vii.1990, B. Landry; gen. slide JCK 4042. 2♂, Ottawa, 12-19.vii.1990, leg. C. Gielis; gen. slide JCK 2656 (RMNH). United States: 2 specimens (sex not stated), same data as syntype (BMNH). 1♂, 1♀, Michigan, Isabella Co., T13N-R5W, Sec. 20, 8.vii.1976, R.J. Priest (MSUC). 1♀, Maryland, Plummer's, 1.vii.1903, A. Busck. 1♂, North Carolina, 1883, Morrisson (BMNH). 1♂, Tennessee, Wilson Co., Cedars of Lebanon C.F., Cedar Glades, 36°05'25"N 86°22'32"W, 8.vi.1997, R.L. Brown, J. MacGown (MEM). 1♂, Arkansas, Wash. Co., Devil's Den Sta Pk, 5.vi.1966, R.W. Hodges (USNM). 1♂, Mississippi, Winston Co., Tombigbee Nat. Forest, 33°11'50"N 89°03'20"W, 1.vi.1999, J.A. McGown (RMNH). 1♂, Mississippi, Holmes Co., Holmes Co. St. Pk., 8-9.vi.1994, R.L. Brown. 1♀, Arkansas, Wash. Co., Devil's Den Sta Pk, 20.vi.1966; gen. slide JCK 5791 (USNM). 1♂, Louisiana, Bossier Parish, Bodcau W.M.A., 32°43'05"N 93°31'43"W, 20.v.1996, R.L. Brown & D. Pollock (MEM). 1 specimen (sex not stated), Texas, Dallas, Frey coll. (BMNH).

Diagnosis.— Externally similar to *C. clandestinella*, but differs by the presence of white median lines on the head and the thorax, by the golden brown ground colour of the forewing and by the three silver streaks in the basal area which are positioned in an outwardly oblique row.

Description.— Male, female. Forewing length 4.5-5.1 mm. Head: frons shining pale golden with greenish and purplish reflections, vertex, neck tufts and collar shining golden brown with greenish and reddish reflections; labial palpus first segment very short, white, second segment three-quarters of the length of third, dorsally golden brown ventrally ochreous-white, third segment white, laterally lined dark brown; scape dorsally brown, ventrally white, antenna shining dark brown with a white interrupted line from base to one-half, followed towards apex by approximately eleven dark brown segments, four white, two partly dark brown, two white, ten dark brown and eight white segments at apex. Thorax and tegulae shining golden brown, thorax with a greenish white median line, tegulae sometimes lined white inwardly. Legs: shining dark greyish brown with greenish and reddish reflections, femora shining ochreous, foreleg with a white line on tibia and tarsal segments one, two and five, tibia of midleg with shining white oblique basal and medial streaks and a shining white apical ring, tarsal segments one and two dorsal two-thirds white, segment five entirely white, tibia of hindleg as midleg, tarsal segments one, two and four with white apical rings, segment five entirely white, spurs shining dark greyish brown, outer spurs inwardly white. Forewing shining golden brown, more prominent in apical area, four short silvery lines in the basal area, a subcostal at one-sixth, bending from costa distally, a very short medial above fold just beyond the subcostal, a subdorsal below fold, similar in length to the medial, starting at the end of the medial, a dorsal from beyond base to one-sixth, a broad yellow transverse fascia beyond the middle, the costal half about twice as wide as the dorsal half, the dorsal half sometimes irrorated by dark brown scales, bordered at the inner edge by a pale golden metallic tubercular fascia, not reaching costa, bordered at the outer edge by two pale golden metallic tubercular costal and dorsal spots, the dorsal spot about twice the size of the costal and far more towards base, the fascia

outwardly and both spots inwardly edged blackish brown, a broad white costal streak from the costal spot, the apical line reduced to a small silvery spot on dorsum in the middle of the apical area and a broad shining white streak in the cilia at apex; cilia brown, paler towards dorsum. Hindwing shining brownish grey with reddish gloss; cilia brown. Underside: forewing shining greyish brown, the white costal streak and the white streak at apex distinctly visible; hindwing shining greyish brown. Abdomen dorsally shining yellowish grey to golden brown, laterally shining grey with bluish and greenish reflections, ventrally shining dark grey, in middle shining white, segments banded shining white posteriorly, anal tuft shining greyish brown (fig. 49).

*Male genitalia.* Right brachium of uncus long and stout with a large semi-circular extension dorsally in middle, apical section long, slightly bent and gradually tapering distally, apex blunt, left branchium long and broad, tapering distally. Valvae short and rounded with upper margin straight, lower margin slightly concave, caudal margin almost rounded. Anellus lobes very large, parallel-sided, bent in middle, apex rounded. Aedeagus with gradually tapering bulbous part, narrowing distally to about one-half of width, basal part two-thirds of length of bulbous part, lateral lobes very short and square (fig. 148).

*Female genitalia.* Posterior edge of sternite VII concave with a hump in middle. Sterigma very long with a narrow projection in basal half with a 90° ventral turn towards the hump of sternite VII, apical half slightly tapering, ostium round, wide and with a narrow sclerotized edge ventrally. Ductus bursae a little more than half the length of corpus bursae. Corpus bursae oval, two tiny crescent-shaped signa (fig. 229).

Biology.— Host plant: *Dichanthelium dichotomum* (L.) Gould (Poaceae) (Braun, 1923, as *Panicum dichotomum*).

*Life history.* The larva mines a small basal leaf in the spring, eating out almost the entire substance of the leaf. Just before pupation, it enters one of the lower stem leaves, in which it makes a small inconspicuous mine, scarcely larger than the larva, but broadening at its anterior end towards the tip of the leaf, slightly inflated, and showing us a convexity on the upper surface of the leaf. Within this cavity, which is silk-lined, pupation takes place. Beyond the pupation chamber, the mines extends a short distance forwards, but is scarcely visible except at its end, where the epidermis is almost eaten through, permitting the emergence of the imago (Braun, 1923). Adults fly in June and July in the North, early April to June farther South (Hodges, 1978).

Distribution.— USA: from Maine, Illinois and northwest Arkansas south to central Florida and southern Louisiana (Hodges 1978); Canada: Ontario (fig. 277).

Remarks.— According to Frey & Boll (1876) the larvae mine on *Zizania miliacea* (Michx.) Doell & Aschers (Poaceae) in April and July. Further data of this host plant have not been found.

*Cosmopterix gielisorum* spec. nov.  
(figs 50, 149, 297)

Type material.— Holotype ♂, Ecuador: Loja, 10 km SE of Loja, PN Podocarpus, Cajanuma Ranger Stt, 2850 m, 4°6'58"S 79°10'19"W, 7.x.2002, sta 20, leg. C. & FK Gielis; gen. slide JCK 5531 (RMNH).

Diagnosis.— Shows external similarities with *C. nishidai* and *C. eukelade*. It differs from these species by the dorsal half of the transverse fascia which has the ground col-



our of the forewing and by the inner dorsal spot which is situated much further from base than the inner subcostal spot.

Description.— Male. Forewing length 4.8 mm. Head: frons shining ochreous-white with greenish and reddish reflections, vertex shining olive brown with greenish and reddish reflections, neck tufts and collar olive brown with reddish reflection; labial palpus first segment very short, white, second segment three-quarters of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, brown lined laterally; scape dark brown with a white anterior line, white ventrally, antenna shining dark brown with a white line from base to one-half, in middle interrupted, followed towards apex by fourteen dark brown segments, eleven white, eleven dark brown and five white segments at apex. Thorax and tegulae shining olive brown with greenish and reddish gloss, thorax with a white median line, tegulae lined white inwardly. Legs: shining olive brown, foreleg and midleg dark brown dorsally, femora of midleg and hindleg shining ochreous, foreleg with a white line on tibia and tarsal segments one, two and segment three in basal half, segment five entirely white, tibia of midleg with an oblique narrow white basal line, a white medial spot and a white apical ring, tarsal segment one with a lateral white line and a white apical ring, segment two with a white dorsal line in the distal half and segment five entirely white, tibia of hindleg as midleg, but with an additional ochreous subapical ring and blackish brown hair pencils before and after the medial line, tarsal segments one to three dark greyish brown, segment four dorsally white and segment five entirely white, spurs ochreous-white dorsally, dark grey ventrally. Forewing shining greyish brown with reddish gloss, costal half from base towards transverse fascia and below fold olive brown, four very narrow white lines with greenish reflection in the basal area, a subcostal from base to one-third, bending from costa in distal third, a medial above fold, almost from base to just before the end of the subcostal, an oblique and very short subdorsal from one-third, a short dorsal from beyond base to one-fifth, a yellow transverse fascia in the middle, greyish brown in dorsal half, with a long apical protrusion in the middle and extending as an apical line into the apical cilia, bordered at the inner edge by two tubercular very pale golden metallic subcostal and dorsal spots with greenish reflection, the subcostal spot much more towards base and with patch of blackish scales on outside, bordered at the outer edge by two similar coloured longitudinal costal and dorsal spots, both spots opposite, the outer costal spot lined brown inwardly, a long white costal streak beyond the outer costal spot, cilia olive brown, greyish brown towards dorsum. Hindwing shining brownish grey with some reddish gloss, cilia greyish brown. Under-side: forewing shining greyish brown, the white costal streak and the yellow apical line distinctly visible, hindwing shining greyish-brown. Abdomen too greased to describe (fig. 50).

*Female.* Unknown.

*Male genitalia.* Right brachium of uncus upwardly bent in middle, after the bow twisted and widening distally, tip flat and square, left brachium short and narrow, about one-third of the length of right one, tip rounded. Valvae triangular, caudal margin rounded, upper margin almost straight or very little concave, lower margin slightly concave. Anellus lobes narrow, bent in middle, tip rounded. Aedeagus bottle-shaped, narrowing distally to one-third the width of bulbous part, basal part short, five-eighths the length of bulbous part, lateral lobes triangular, about one-half of the length of basal part (fig. 149).

Biology.— Unknown. The single specimen was collected in October.

Distribution.— Ecuador (fig. 297).

Etymology.— The species is dedicated to Dr Cees Gielis and his wife Siska, Lexmond, The Netherlands, as collectors of this species. Furthermore I would like to honour Cees as one of my fellow participants of the Netherlands Entomological Expedition to the north of Argentina in 1995-1996 and for our collaboration during a long period.

*Cosmopterix gomezpompai* spec. nov.  
(figs 51, 230, 287)

Type material.— Holotype ♀, Costa Rica: Prov. San José, San Gerardo de Rivas, trail to Chirripó, Los Monos, 1750 m, 24.vi.2006, col./videos Kenji Nishida, dancing and feeding on a leaf, 9.00 AM; gen. slide JCK 6171 (INBC).

Diagnosis.— Resembles the dark form of *C. pulchrimella*, but can be distinguished from this species by the white inward lining of the tegulae.

Description.— Female. Forewing length 3.2 mm. Head: frons shining silvery grey with greenish and reddish reflections, vertex shining dark brown, neck tufts shining dark brown with reddish reflection, laterally and medially lined white, medial white line very narrow, collar shining dark brown; labial palpus first segment very short, greyish white, second segment four-fifths of the length of third, dark brown with greyish white longitudinal lines laterally, third segment white, lined dark brown laterally, tip white; scape dorsally shining dark brown with a white anterior line, ventrally shining white, antenna shining dark brown with a white line from base changing to an interrupted line to beyond one-half, followed towards apex by eight to ten dark brown segments, two white, two dark brown, two white, ten dark brown and seven white segments at apex. Thorax and tegulae shining dark brown with reddish gloss, thorax with a white median line, tegulae narrowly lined white inwardly. Legs: foreleg and midleg shining brownish grey, hindlegs shining dark brown, femora of hindleg with strong golden gloss, foreleg with a white line on tibia and tarsal segments one, two and basal half of three, tibia of midleg with a white oblique medial line and a white apical ring, tarsal segments one and two with a short white dorsal streak at apex, segment five entirely white, tibia of hindleg with white oblique basal and medial lines, a pale golden subapical spot and a white apical ring, tarsal segment three dorsally and segments four and five entirely white, spurs dark greyish brown. Forewing shining dark brown with reddish gloss, three white lines in the basal area, a subcostal from one-tenth to one fifth, bending from costa distally, a short medial above fold, its centre just below the tip of the subcostal, a subdorsal underneath the medial and slightly longer, a dark yellowish transverse fascia beyond the middle, strongly irrorated with dark brown scales so that only a patch of yellow scales remains in middle of apical half, bordered at the inner edge by a tubercular pale golden metallic fascia almost perpendicular at dorsum, bordered at the outer edge by an irregular inwardly oblique tubercular pale golden metallic fascia, a white costal streak connected to the outer fascia, the apical line as a short white streak in the middle on dorsum of the apical area and a white streak in the apical cilia, cilia dark brown at apex, paler towards dorsum. Hindwing shining dark greyish brown, cilia pale brown. Underside: forewing and hindwing shining brownish grey.

Abdomen dorsally shining dark brown, ventrally shining dark greyish brown, segments broadly banded shining white posteriorly, segment six entirely dark brown, anal tuft dark brown with golden gloss (fig. 51).

*Male*. Unknown.

*Female genitalia*. Posterior edge of sternite VII almost straight. Sterigma long and narrow, distally widened and rounded, ostium bursae circular, ventrally with a semi-circular sclerotization. Ductus bursae slightly longer than the length of corpus bursae. Corpus bursae oval with two triangular signa (fig. 230).

*Biology*.— Unknown. The single specimen was collected in June. Before collecting it was twirling and dancing on a leaf (Nishida, pers. obs.).

*Distribution*.— Costa Rica (fig. 287).

*Etymology*.— The species is dedicated to Dr Arturo Gómez-Pompa, University of California, Riverside, United States, who is a member of the International Advisory Board of the Instituto Nacional de Biodiversidad (INBio), Santo Domingo de Heredia, Costa Rica.

*Cosmopterix harpalyke* spec. nov.  
(figs 52, 150, 231, 297)

*Type material*.— Holotype ♂, Brazil: Distrito Federal, Planaltina, 1000 m, 5.xi.1988, 15°35'S 47°42'W, V.O. Becker col.; Col. Becker 59081; gen. slide JCK 5456 (VOB). Paratypes: 3♂, 2♀: Brazil: 3♂, same data as holotype. 2♀, same locality as holotype, 15.iii.1985; Col. Becker 57357; gen. slides JCK 5505, 5522 (VOB).

*Diagnosis*.— Externally not separable with certainty from *C. citrinopa*, examination of the genitalia is essential. In the male genitalia the egg-shaped apical part right brachium of the uncus in combination with the trapezoidal valvae and the short and club-shaped anellus lobes are characteristic. It differs in the female genitalia by the oval corpus bursa and the two tiny signa.

*Description*.— Male, female. Forewing length 3.5-4 mm. Head: frons shining white with greenish and reddish reflections, vertex and neck tufts brown with reddish gloss, medially and laterally lined white, collar brown; labial palpus first segment very short, white, second segment four-fifths of the length of third, brown with white longitudinal lines laterally and ventrally, third segment white, laterally with brown lines; scape dark brown with a white anterior line and a yellowish white dorsal line, white ventrally, antenna shining dark brown, a white line from base to beyond one-half, followed towards apex by an indistinct annulate section of approximately eight segments, three dark brown, three white, two dark brown, two white, ten dark brown and eight white segments at apex. Thorax and tegulae brown with reddish gloss, thorax with a white median line, tegulae lined white inwardly. Legs: dark greyish brown, femora of midleg and hindleg shining pale ochreous, foreleg with a white line on tibia and tarsal segments one to three and five, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segments one and two with white lateral lines from base on outside and connected to a dorsal white spot apically, segment three with a white line on the outside to beyond one half, segment five white dorsally, tibia of hindleg as midleg, tarsal segment one with white

basal and apical rings, segment two with a white apical ring, segments three to five white dorsally, spurs white, ventrally ochreous-grey. Forewing brown with reddish gloss, five white lines in the basal area, narrower in female, a broad costal from one-third to the transverse fascia, a subcostal from base to one-third, slightly bending from costa, a short and straight medial above fold from one-quarter to two-fifths, a little longer subdorsal below fold, slightly further from base than the medial, a dorsal from or beyond base to the middle of the subdorsal, a broad yellow transverse fascia beyond the middle with a small apical protrusion, in female smaller as in male, bordered at the inner edge by two pale golden metallic tubercular subcostal and subdorsal spots, the subcostal spot outwardly edged by a small patch of blackish brown scales, the subdorsal spot slightly further from base and a little larger, bordered at the outer edge by two similarly coloured costal and dorsal spots, the dorsal spot three times as large as the costal, a white costal streak from outer costal spot, a shining white apical line connected to the apical protrusion, narrower and interrupted in the female, cilia brown around apex, brownish ochreous towards dorsum. Hindwing shining dark brownish grey, cilia brownish ochreous. Underside: forewing shining greyish brown, the white costal streak and apical line distinctly visible, hindwing shining brownish grey. Abdomen dorsally brownish yellow, ventrally grey, in the middle shining white, segments banded shining white posteriorly, anal tuft yellowish white, the female abdomen is dorsally greyish brown, mixed orange, segments banded greyish brown posteriorly, ventrally shining white, segment six greyish brown, anal tuft dorsally grey, ventrally whitish (fig. 52).

*Male genitalia.* Right brachium of uncus rather short, apical part egg-shaped, tip short and broad, flattened, left brachium long, tapering distally, tip pointed, about two-thirds of the length of right one. Valvae trapezoidal, caudal margin sharply rounded, upper margin concave and lower margin slightly concave. Anellus lobes short and club-shaped, hardly bent. Aedeagus slender bottle-shaped, narrowing distally to about one-third of bulbous part, basal part less than one-half of the length of bulbous part, lateral lobes rounded, about one-half of the length of basal part (fig. 150).

*Female genitalia.* Posterior edge of sternite VII strongly concave with a small convex section in middle. Sterigma pear-shaped, anterior part strongly narrowed, ostium bursae round, ventrally with a semicircular sclerotization and a medial ridge. Ductus bursae about two-thirds of length of corpus bursae. Corpus bursae oval, two tiny signa as sclerotized indentions (fig. 231).

Biology.— Unknown. Adults have been collected in March and November.

Distribution.— Brazil: Distrito Federal (fig. 297).

Etymology.— Named after Harpalyke, a moon of Jupiter. To be treated as a noun in apposition.

Remarks.— Despite the small external differences between the male and the female specimens, they are here considered as conspecific.

*Cosmopterix helike* spec. nov.  
(figs 53, 151, 297)

Type material.— Holotype ♂, Brazil: Goiás, Alto Paraíso, 1300 m, 30.v.1994, V.O. Becker & K.S. Sattler Col.; Col. Becker 92830; gen. slide JCK 5527 (VOB).

**Diagnosis.**— The large white apical section of the antenna in combination with the narrow forewing and the greyish irroration of the yellow transverse fascia are characteristic.

**Description.**— Male. Forewing length 3.7 mm. Head: frons shining ochreous-grey with greenish and reddish and reflections, vertex and neck tufts shining dark bronze brown with greenish and reddish and gloss, laterally and medially lined white, collar shining dark brown with greenish and reddish and gloss; labial palpus first segment very short, white, second segment three-quarters of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined brown laterally; scape dorsally dark brown with a white anterior line, ventrally white, antenna shining dark brown, with a short white line at base changing into an interrupted line to two-thirds, followed towards apex by three dark brown segments, one white, three dark brown and fifteen white segments at apex. Thorax and tegulae shining dark brown with reddish gloss, thorax with a white median line, tegulae lined white inwardly. Legs: shining dark brown with reddish gloss, femora of midleg and hindleg shining ochreous-grey with golden gloss, foreleg with a white line on tibia and tarsal segments one to three and five, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segment one with a whitish lateral line on the outside and a white apical spot, segment two with a white apical spot and segment five entirely white, tibia of hindleg with a very oblique silvery white line at base, a less oblique silvery white medial streak and a white apical ring, tarsal segment one with a silvery white basal streak on dorsum and an ochreous-grey apical ring, segments two to four with ochreous-grey apical rings, segment five entirely white, spurs ochreous-white dorsally, dark brown ventrally. Forewing shining dark brown with reddish gloss, four narrow white lines the basal area, a subcostal from base to one-quarter, bending from costa in distal third, a short medial above fold, its centre under the tip of the subcostal, a subdorsal similar to the medial, but slightly further from base, a short and very narrow dorsal from beyond base to one-fifth, a yellow transverse fascia beyond the middle, mixed greyish, narrowed towards dorsum, bordered at the inner edge by a tubercular silver metallic fascia with greenish and reddish reflections, bordered at the outer edge by two tubercular silver metallic costal and dorsal spots, the dorsal spot more than three times as large as the costal and more towards base, a small subcostal patch of blackish brown scales subcostally on the outside of the fascia, the costal and dorsal spots irregularly lined dark brown on the inside, a white costal streak from the costal spot, the apical line reduced to a few white scales in the middle of the apical area, followed by a shining white spot in the cilia at apex, cilia dark brown, paler towards dorsum. Hindwing shining dark greyish brown with greenish and reddish gloss, cilia brown. Underside: forewing shining dark brown, the white costal streak and the white spot at apex distinctly visible, hindwing shining dark greyish brown. Abdomen dorsally shining dark brown with greenish and reddish reflections, laterally dark brown, ventrally shining ochreous with segments banded shining white posteriorly, anal tuft brown (fig. 53).

*Female.* Unknown.

*Male genitalia.* Right brachium of uncus broad but flattened at base, distal two-thirds broad and widening apically with a large semicircular extension near tip on the left, tip rounded, left brachium short, tip rounded, about one-third of the length of right one.

Valvae more or less triangular, caudal margin rounded, upper and lower margin almost straight. Anellus lobes rather narrow, apical part narrowing, slightly bent in middle and with an irregular dorsal hump, tip pointed. Aedeagus bottle-shaped, narrowing distally to less than one-third width of bulbous part, basal part about four-fifths the length of bulbous part, lateral lobes square, about one-third of the length of basal part (fig. 151).

Biology.— Unknown. The single specimen was collected in May.

Distribution.— Brazil: Goiás (fig. 297).

Etymology.— Named after Helike, a moon of Jupiter. To be treated as a noun in apposition.

*Cosmopterix hermippe* spec. nov.

(figs 54, 232, 298)

Type material.— Holotype ♀, Brazil: Distrito Federal, Planaltina, 1000 m, 15.iii.1985, 15°35'S 47°42'W, V.O. Becker col.; Col. Becker 57357; gen. slide JCK 5504 (VOB).

Diagnosis.— Resembles *C. thebe*, but can be distinguished by the absence of white markings on the head, thorax and tegulae. In the female genitalia it differs by the very long and slender sterigma of which the anterior half is covered by sternite VII.

Description.— Female. Forewing length 4.0 mm. Head: frons shining ochreous-grey with greenish and reddish reflections, vertex and neck tufts dark bronze brown with reddish gloss, collar dark bronze brown; labial palpus first segment very short, ochreous-grey, second segment three-quarters of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined dark brown laterally; scape dorsally shining dark brown with a white anterior line, ventrally shining white, antenna shining dark brown with a white line from base to beyond one-half, interrupted in middle, followed towards apex by five dark brown segments, six white, two dark brown, two white, ten dark brown and eight white segments at apex. Thorax and tegulae shining dark bronze brown with reddish gloss. Legs: dark brown with reddish gloss, femora of midleg and hindleg shining ochreous-grey, foreleg with a white line on tibia and tarsal segments one and two, segment four with white apical spot, segment five entirely white, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segments one, two and four with white apical rings, segment five entirely white, tibia of hindleg with a white oblique medial line and a white apical ring, tarsal segment one with a white basal spot and an ochreous apical ring, segments two and three with ochreous apical rings, segment four dorsally and segment five entirely ochreous-white, spurs white, ventrally greyish brown. Forewing dark bronze brown with reddish gloss, three white lines in the basal area, a subcostal from base to one-quarter, slightly bending from costa in distal half, a short medial above fold, ending just beyond the subcostal, a subdorsal below fold, about as long as the medial, but slightly further from base, some indistinct white edging on dorsum beyond base, and sometimes an indistinct and very narrow short costal just before the transverse fascia, but not connected with it, a broad yellow transverse fascia beyond the middle with a very small and narrow apical protrusion, bordered at inner edge by two pale golden metallic tubercular subcostal and subdorsal spots the

subcostal spot outwardly edged by a small patch of blackish brown scales, the subdorsal spot slightly further from base and a little larger than the costal, bordered at the outer edge by two similarly coloured costal and dorsal spots, the dorsal spot three times as large as the costal and more towards base, both spots inwardly partly lined dark brown, a white costal streak from outer costal spot, a narrow apical line from or just beyond the apical protrusion, slightly widening towards apex, cilia dark brown around apex, paler towards dorsum. Hindwing shining dark greyish brown. Under-side: forewing shining greyish brown, the white streak in the apical cilia distinctly visible, hindwing shining greyish brown. Abdomen dorsally greyish brown, mixed orange, segments banded greyish brown posteriorly, laterally greyish brown, ventrally shining dark grey, segments banded shining white posteriorly, anal tuft brownish grey (fig. 54).

*Male.* Unknown.

*Female genitalia.* Posterior edge of sternite VII concave. Sterigma large, elongate, and anterior half covered by sternite VII, anteriorly slightly tapering, posterior third conical, ostium bursae oval, ventrally with a semicircular sclerotization and a medial ridge. Ductus bursae slightly shorter than corpus bursae. Corpus bursae oval, two crescent-shaped signa (fig. 232).

*Biology.*— Unknown. The single specimen was collected in March.

*Distribution.*— Brazil: Distrito Federal (fig. 298).

*Etymology.*— Named after Hermippe, a moon of Jupiter. To be treated as a noun in apposition.

*Cosmopterix himalia* spec. nov.  
(figs 55, 233, 298)

*Type material.*— Holotype ♀, Brazil: Planaltina, Distrito Federal, 1000 m, 15.v.1985, 15°35'S 47°42'W, V.O. Becker col.; Col. Becker 57558; Comp.c/tipo BMNH 1988, V.O. Becker; gen. slide JCK 5438 (VOB).

*Diagnosis.*— Resembles *C. karsholti*, but differs by the paler brown head, thorax and base of the forewing, by the absence of the white median line on the head and by the shorter medial and subcostal lines in the basal area.

*Description.*— Female. Forewing length 3.6 mm. Head: frons shining greyish white, vertex and neck tufts shining dark bronze brown with greenish and reddish reflections, laterally and lined white, collar shining bronze brown; labial palpus, first segment very short, white, second segment four-fifths of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, dark brown lined laterally, extreme apex white; scape dorsally shining dark bronze brown with a white anterior line, ventrally shining white, antenna shining dark brown with an interrupted white line from base to two-thirds, followed towards apex by three dark brown segments, two white, ten dark brown, two white and five dark brown segments at apex. Thorax and tegulae shining bronze brown with reddish gloss, thorax with a white medial line, tegulae lined white inwardly. Legs: shining dark brown, femur of hindleg shining golden, foreleg with a white line on tibia and tarsal segments one to three and five, tibia of midleg leg with white oblique basal and medial

lines and a white apical ring, tarsal segment one and two with a lateral white line, segment five white dorsally, tibia of hindleg as midleg, but the oblique lines silver metallic with bluish reflection, tarsal segments four and five entirely white, spurs white dorsally, dark brown ventrally. Forewing shining dark bronze brown with reddish tinge near base, dark brown towards apex, four narrow white lines in the basal area, a subcostal from base to one-quarter, sharply bending from costa in distal third, a short medial just above fold, from one-fifth to one-third, a subdorsal, as long as the medial, from one-quarter, a dorsal from beyond base to one-quarter, a brownish yellow transverse fascia beyond the middle, narrowed towards dorsum on the outer edge, bordered at the inner edge by a broad tubercular pale golden metallic fascia with a small subcostal patch of blackish scales on the outside, bordered at the outer edge by two tubercular pale golden metallic costal and dorsal spots, the dorsal spot about twice as large as the costal and more towards base, both spots with a narrow dark brown inward lining, a white costal streak from the costal spot, apical line as a silvery white spot in middle of the apical area and a white streak in the apical cilia, cilia dark brown, paler towards dorsum. Hindwing shining dark brownish grey with greenish and reddish gloss, cilia dark brown. Underside: forewing shining dark greyish brown, the white costal streak distinctly visible, hindwing shining dark greyish brown. Abdomen dorsally ochreous brown, ventrally shining dark grey, segments shining white banded posteriorly, shining golden laterally, anal tuft pale grey with bluish gloss dorsally, ventrally yellowish white (fig. 55).

*Male.* Unknown.

*Female genitalia.* Posterior edge of sternite VII slightly convex. Sterigma elongate, slightly narrowed in middle and posterior part bent to the left, anterior part narrowing, ostium bursae round with a short medial ridge. Ductus bursae slightly longer than corpus bursae and with a weak sclerotized section before it enters the latter. Corpus bursae oval with two small triangular signa (fig. 233).

*Biology.*— Unknown. The single specimen was collected in May.

*Distribution.*— Brazil: Distrito Federal (fig. 298).

*Etymology.*— Named after Himalia, a moon of Jupiter. To be treated as a noun in apposition.

*Cosmopterix inaugurata* Meyrick, 1922  
(figs 56, 152, 298)

*Cosmopterix inaugurata* Meyrick, 1922: 568. Holotype ♂, Brazil: Para, vii.[19]19, Parish; gen. slide JFGC 6160 (BMNH) [examined].

Material examined.— Guyana: 1 ♂, Georgetown, iv.[19]13, P.; gen. slide BM 29567 (BMNH).

*Diagnosis.*— Resembles *C. attenuatella*, but differs by the very long and narrow protrusion of the transverse fascia and by the white apical section of the antenna. In the male genitalia the tapered right brachium of the uncus with the two small apical hooks and the broad, almost parallel-sided anellus lobes are characteristic.

*Description.*— Male. Forewing length 3.7–4.2 mm. Head: frons shining greyish white, vertex and neck tufts shining dark bronze brown, laterally and medially lined white, collar shining dark bronze brown; labial palpus first segment very short, white,



second segment four-fifths of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined brown laterally; scape dorsally shining dark brown with a white anterior line, ventrally shining white, antenna shining dark brown with a white line from base to three-fifths, interrupted distally, followed towards apex by two white segments, two dark brown, two white, ten dark brown and seven white segments at apex. Thorax shining dark brown, tegulae bronze brown, thorax with a white median line, tegulae lined white inwardly. Legs: shining dark brown, femora of midleg and hindleg shining golden grey, foreleg with a white line on tibia and tarsal segments, but interrupted on segment three, tibia of midleg with a white oblique basal streak and white medial and apical rings, tibia of hindleg as midleg but with an additional subapical white ring, tarsal segments of midleg with white apical rings on segments one, two and four, segment five entirely white, tarsal segments of hindleg with white apical rings on segments one to three, segments four and five entirely white, spurs white dorsally, brownish ventrally. Forewing shining dark brown with reddish gloss, five narrow white lines in the basal area, a short costal just before the transverse fascia, a subcostal from base to one-third, gradually bending from costa, a short medial above fold from one-quarter to just beyond the subcostal, a subdorsal about as long as the medial, but slightly further from base, a dorsal from base to one-quarter, a bright yellowish orange transverse fascia beyond the middle, narrowing towards dorsum and with a long and narrow apical protrusion, bordered at the inner edge by a slightly outward oblique tubercular pale golden metallic fascia with a small subcostal patch of blackish scales on the outside, bordered at the outer edge by two tubercular pale golden metallic costal and dorsal spots, the dorsal spot slightly larger than the costal and more towards base, both spots with a dark brown inward lining, the costal spot outwardly edged by a white costal streak, a narrow white apical line from the apical protrusion, cilia dark brown, paler towards dorsum. Hindwing shining dark brownish grey, cilia greyish brown. Underside: forewing shining dark greyish brown, the white apical line distinctly visible, hindwing shining dark greyish brown. Abdomen dorsally ochreous, laterally shining pale golden, ventrally shining white, anal tuft yellowish white (fig. 56).

*Female.* Unknown.

*Male genitalia.* Right brachium of uncus widened in middle, narrowed towards apex and with small apical hooks, left brachium broad, about one-quarter of length of right one. Valvae broad with concave upper margin and slightly concave lower margin, caudal margin semi-circular. Anellus lobes broad, almost parallel-sided, apex square. Aedeagus with bulbous part thick, anteriorly narrowed and slightly upwardly bent, basal part about three-quarters of bulbous part, both lateral lobes longer than half the length of basal part, tapered distally (fig. 152).

*Biology.*— Unknown. The specimens were collected in April and November.

*Distribution.*— Brazil: Para; Guyana (fig. 298).

*Cosmopterix inopis* Hodges, 1962  
(figs 57, 153, 234, 276)

*Cosmopterix inopis* Hodges, 1962: 41. Holotype ♂, United States: Arizona, Madera Canyon, 4880', Santa Rita Mnts., 23.ix.1959, R.W. Hodges; gen. slide CU 3799 (CUIC) [examined].

*Cosmopterix gracilens* Hodges, 1962: 30. Holotype ♂, United States: Arizona, Palmerlee; gen. slide USNM 1349 (USNM) [examined]. Syn. n.

Material examined.— 1♂, 1♀. United States: Paratype 1♂ (without abdomen), same locality as holotype, 2.ix.1959, R.W. Hodges. 1♀, Florida, Homestead, 10.iv.1959, D.O. Wolfenbarger; gen. slide USNM 3905 (USNM).

**Diagnosis.**— Although the outer dorsal spot on the forewing is generally larger in *C. inopis*, it cannot be distinguished with certainty by the external characters from *C. interfracta*, *C. lespezdezae* and *C. teligera*. Identification only possible by examination of the male and female genitalia. From these species it differs in the male genitalia by the right brachium of uncus with a little knob at apex and by the very large aedeagus with the distal part bent to the right, in the female genitalia it differs by the concave posterior edge of sternite VII with a flat section in middle and from *C. interfracta* and *C. lespezdezae* also by the cylindrical distal half of the sterigma.

**Description.**— Male, female. Forewing length 4.5 mm. Head: frons shining pale ochreous with greenish and reddish reflections, vertex and neck tufts shining dark brown with greenish and reddish gloss, laterally (very narrowly) and medially lined white, collar shining dark brown; labial palpus first segment very short, shining ochreous, second segment about three-quarters of the length of third, dark brown, laterally and ventrally lined white, third segment white, lined dark brown laterally; scape dorsally shining dark brown with a white anterior line, shining white ventrally, antenna shining dark brown, a white line from base to beyond one-half, often partly interrupted in distal half, followed towards apex by an annulate section of three segments, eleven dark brown, four white, two dark brown, two white, ten dark brown and eight white segments at apex. Thorax and tegulae shining dark brown with greenish and reddish gloss, thorax with a white median line, tegulae lined white inwardly. Legs: shining dark brown with reddish gloss, femur of foreleg shining grey, femora of midleg and hindleg shining goldish brown, foreleg with a white longitudinal line on tibia and tarsal segments one, two and basal half of segment three and segment five, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segment one with a white line on the outside and a white apical ring, segment two with a white apical ring, segment five dorsally white, tibia of hindleg as midleg, tarsal segment one with a white basal ring and a white dorsal line from one third, segments two to five dorsally white, spurs white dorsally, dark greyish brown ventrally. Forewing shining dark brown with reddish gloss, four white lines in the basal area, a subcostal from base to one-quarter, strongly bending from costa in apical third, a short medial, ending slightly beyond the subcostal, a subdorsal, a little shorter than the medial, and ending just beyond it, a narrow dorsal from beyond base to one-quarter, a broad dark yellow transverse fascia beyond the middle, narrowing towards dorsum and with a short apical protrusion, bordered at the inner edge by a broad tubercular golden metallic fascia, slightly widening towards dorsum, outwardly edged by two tubercular golden metallic costal and dorsal spots, the dorsal spot about five times as large as the costal and much closer to base, both fascia and spots with reddish and purplish reflections, both spots narrowly edged blackish brown on the inside, a broad white costal streak from the costal spot, a narrow white apical line from the apical protrusion, slightly widening in the cilia at apex; cilia dark brown around apex, paler on dorsum towards base. Hindwing

shining pale brownish grey, cilia pale brown. Underside: forewing shining greyish brown with distinct white costal streak and apical spot, hindwing shining grey. Abdomen not examined (already dissected) (fig. 57).

*Male genitalia.* Right brachium of uncus long and slender in basal half, apical half broad, gradually tapering and with a small knob at apex, left brachium long and narrow, tip rounded, about half the length of right one. Valvae asymmetrical in the holotype, the right valva rounded distally, but this is difficult to interpret because the distal part was folded by embedding, the left valva quadrate with a very broad base, much broader than the right valva, very likely deformed, the original shape still visible by a fold near the lower margin. Anellus lobes narrow in basal part, apical part twice as wide, slightly bent in middle, gradually tapering to a rounded apex with a pointed tip. Aedeagus with bulbous part bottle-shaped, narrowing distally to about one-third of width and bent to the right, basal part about half the length of bulbous part, lateral lobes probably short, but hardly noticeable in the slide (fig. 153).

*Female genitalia.* Posterior edge of sternite VII concave with a flat section in middle. Sterigma long, basal half tapering, distal half cylindrical, ostium round, wide and with a narrow sclerotized edge ventrally. Ductus bursae slightly more than half the length of corpus bursae. Corpus bursae oval, two tiny crescent-shaped signa (fig. 234).

Biology.— Unknown. Adults have been collected in April and September, probably bivoltine.

Distribution.— USA: Arizona, Florida (fig. 276).

Remarks.— *Cosmopterix gracilens* is here synonymised with *C. inopis* for the following reasons: The single known specimen of *Cosmopterix gracilens* is in a rather bad shape. It is an unspread specimen, both antennae, the right midleg and the tarsal segments of the hindlegs are missing. According to Hodges (1962, 1978) *C. gracilens* differs externally by the darker brown forewings with less reddish-orange reflections and the lack of the inward blackish lining of both outer tubercular spots. However the difference in ground colour is not noticeable and small traces of the inward blackish lining can also be found on the right forewing of *C. gracilens*. The difference in the male genitalia should be the shape of the valvae: in *Cosmopterix inopis* the valvae should be quadrate (Hodges, 1962, 1978) (genitalia holotype CU 3799). This is obvious in the left valva, but the right valva is rounded distally, although difficult to see due to folding caused by embedding. Asymmetrical valvae are not known in the genus *Cosmopterix*. The enlargement of the left valva in the male genitalia of the holotype of *C. inopis* is likely caused by deformity. In the male genitalia of *C. gracilens* the valvae should be broadly rounded distally. In the genitalia slide of the holotype (USNM 1349) the distal part of the left valve is missing, but the right valve is rounded, maybe slightly more rounded than in *C. inopis*. These minor differences are considered insufficient to consider *Cosmopterix gracilens* as a valid species. The only genitalia slide of the male genitalia available has been embedded ventrally, therefore it was not possible to depict the genitalia in the lateral position.

*Cosmopterix interfracta* Meyrick, 1922  
(figs 58, 154a-b, 235, 314)

*Cosmopterix interfracta* Meyrick, 1922: 567. Lectotype ♂ (designated by J.F.G. Clarke, 1965), Brazil: Obidos, ix.[19]19, Parish; gen. slide JFGC 6159 (BMNH) [examined].

Material examined.— 14♂, 1♀. Brazil: 1♂, Planaltina, 1000 m, 5.vi.1989, V.O. Becker col; Col. Becker 96753; gen. slide JCK 5556. 1♂, same locality, 5.vi.1976; Col. Becker 19662. 1♂, same locality, 12.xii.1982; Col. Becker 40802; gen. slide JCK 5493. 1♂, Rio de Janeiro, Marica, 5 m, 11.x.1985, V.O. Becker col.; Col. Becker 65409; gen. slide JCK 5503 (VOB). Cuba: 1♂ (without abdomen), Holquin, Pin Mayari, 750 m, vii.1990, V.O. Becker; Col. Becker 72237. Dominican Republic: 1♂, Santo Domingo, S Frnesco Mts, ix.1905; gen. slide BM 31215. Jamaica: 1♂, Constant Springs, 22.xii.1904, coll. Walsingham; gen. slide BM 31230. 1♂, Constant Springs, 1.i.1905. 1♂, Constant Springs, 2.i.1905. 1♀, Moneagua, 17.ii.1905, coll. Walsingham; gen. slide BM 31232. 1♂, Runaway Bay, 11.iii.1905, coll. Walsingham; gen. slide BM 31227 (BMNH). Puerto Rico: 2♂, Cayey, 450 m, 2.viii.1987, V.O. Becker; Col. Becker, 67298; gen. slide JCK 5089. 2♂, Maricao, 70 m, 12.viii.1987, V.O. Becker; Col. Becker 67582, gen. slide JCK 5466.

Diagnosis.— *Cosmopterix interfracta* cannot be distinguished with certainty by the external characters from *C. inopis*, *C. lespedezae* and *C. teligera*. Identification only possible by examination of the male and female genitalia. From these species it differs in the male genitalia by the right brachium of uncus which is widened in middle and with small apical hook and by the broad, more or less square, valvae, in the female genitalia it differs by the concave posterior edge of sternite VII with a small and shallow convex section in middle and by the strongly elongated sterigma, basally with a long narrow projection.

Description.— Male, female. Forewing length 3.1-3.9 mm. Head: frons shining ochreous-white; vertex shining bronze brown with reddish gloss, laterally and medially lined white, collar shining bronze brown; labial palpus first segment very short, white, second segment three-quarters of the length of third, shining dark brown with white longitudinal lines laterally and ventrally, third segment white, lined brown laterally; scape dorsally shining dark brown with a white anterior line, ventrally shining white, antenna shining dark brown, a white line from base to one-half, distal half interrupted, followed towards apex by respectively an annulate part to beyond one-half, seven to nine dark brown segments, four white, two dark brown, two white, ten dark brown and eight white segments at apex. Thorax and tegulae shining dark bronze brown with reddish gloss, thorax with a white median line, tegulae lined white inwardly. Legs: shining dark brown, foreleg with a white line on tibia and first two tarsal segments, segment four with a white apical spot, segment five entirely white, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segment one almost entirely white on outside, a white streak on the apical half of segment two, segment four white in the apical half, segment five entirely white, tibia of hindleg as midleg, but with a pale golden subapical ring, tarsal segments one to three with white apical rings, segment four with a white streak dorsally and segment five entirely white, spurs whitish dorsally, greyish brown ventrally. Forewing shining dark brown with reddish gloss, four narrow white lines in the basal area, a subcostal from base to one-third, bending from costa distally, a medial above fold from one-sixth to beyond the subcostal, a subdorsal as long as the medial, but further from base, a dorsal from beyond base to the middle of the subdorsal, a bright yellow-orange transverse fascia beyond the middle, strongly narrowed in dorsal half and with an apical protrusion, bordered at the inner edge by a tubercular pale golden metallic fascia with greenish and purplish reflections, the fascia tapering towards costa and with a subcostal patch of blackish scales on the outside, at outer edge bordered by two tubercular pale golden metallic costal and dorsal spots, the costal spot further from base and darker golden, the dorsal spot more than twice as large as the costal, both spots irregu-

larly lined dark brown on the inside, the costal spot outwardly edged by a white costal streak, a silvery white apical line from beyond the apical protrusion, white and slightly widening at apex, cilia dark brown, paler towards dorsum. Hindwing shining dark greyish brown, cilia dark greyish brown. Underside: forewing shining dark brown, the white costal streak and the white apical line in the cilia distinctly visible, hindwing shining greyish brown. Abdomen too greased to describe (fig. 58).

*Male genitalia.* Right brachium widened in middle, beyond middle narrowed and caudally bent and with small apical hook, left brachium broad, parallel-sided, about two-fifths of length of right one. Valvae broad, more or less square with concave upper margin and slightly rounded caudal margin. Anellus lobes very broad with a gradually tapering apical part, apex pointed. Aedeagus with bulbous part thick, anteriorly narrowed and slightly upwardly bent, basal part about two-thirds of bulbous part, both lateral lobes truncate, less than half the length of basal part (fig. 154a-b).

*Female genitalia.* Posterior edge of sternite VII concave with a small and shallow convex section in middle. Sterigma strongly elongate with a long narrow projection basally, widening distally, tapering before ostium. Ostium bursae rounded with a semi-circular sclerotization ventrally. Ductus bursae about two-thirds of length of corpus bursae with a sclerotized section where it enters the latter. Corpus bursae pear-shaped, two small funnel-shaped signa (fig. 235).

Biology.— Unknown. The adults were collected between June and October.

Distribution.— Brazil: Distrito Federal, Para, Rio De Janeiro; Cuba; Dominican Republic; Jamaica; Puerto Rico (fig. 314).

Remarks.— The lectotype of *Cosmopterix interfracta* Meyrick, 1922 was designated by Clarke (1965). The type-series of *Cosmopterix interfracta* comprised five specimens (males and females) according the description of Meyrick (1922). In the collection of the BMNH only four specimens are present. 1 ♂, Brazil, Obidos, ix.[19]19, Parish; 1 ♀ (without abdomen), same label data; 1 ♀, Brazil, R. Trobetas, ix.[19]19, Parish; 1 ♀, Peru, Yurimaguas, iii.[19]20, Parish. The original description refers to the three females and they all belong to *Pebobs isonoe*. However, the lectotype is not conspecific with the females and belongs to *Cosmopterix*.

*Cosmopterix io* spec. nov.  
(figs 59, 155, 316)

Type material.— Holotype ♂, Mexico: Tam[aulipas], Gomes Farias, 1000 m, 29-31.vii.1988, V.O. Becker, M.A. Solis; Col. Becker 69772; gen. slide JCK 5128 (VOB). Paratype: 1 ♂: Ecuador: Huigra, 500', vi.[19]14, Parish; gen. slide BM 29566 (BMNH).

Diagnosis.— Resembles *C. amalthea* and *C. lummyae*, but differs by the absence of the white median line on the head and the thorax. The long and broad hooked tipped right brachium of the uncus in combination with the almost square valvae are characteristic in the male genitalia.

Examination of the genitalia is recommended.

Description.— Male. Forewing length 3.3-3.9 mm. Head: frons shining pale golden metallic, vertex and neck tufts shining dark bronze brown with some reddish reflection, laterally lined white, collar shining dark bronze brown; labial palpus first segment very

short, ochreous-grey, second segment two-thirds of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined dark brown laterally, extreme apex white; scape dorsally dark brown with a white anterior line, ventrally white, antenna shining dark brown with a white interrupted line from base to one-half with a short uninterrupted section at base, a subapical white section of seven segments, followed by a dark brown section of about twelve segments, apical three segments white. Thorax and tegulae shining dark bronze brown with reddish gloss, tegulae broadly lined pale golden metallic inwardly. Legs: shining dark brown, tibiae foreleg and midleg ochreous-grey, tibia of hindleg shining brownish golden, foreleg with a white line on tibia and tarsal segments one and two, segment four with a white apical ring, segment five entirely white, tibia of midleg with silver metallic oblique basal and medial streaks with bluish gloss and a white apical ring, tarsal segment one with a white longitudinal line and apical ring, segment two and four with white apical rings, segment five entirely white, tibia of hindleg with a silver metallic basal streak and medial and subapical rings, all with bluish gloss, the apical ring white, tarsal segments one to three with white apical rings, segments four and five entirely white, spurs dark brown, distally lighter. Forewing shining dark brown with reddish gloss, at one-fifth three short silver metallic streaks with bluish reflection in a row, a subcostal, a medial just above fold and half the length of the subcostal and a subdorsal, about as long as the subcostal but slightly further from base, a narrow tubercular silver metallic medial fascia with greenish and purplish reflections in the middle, perpendicular at dorsum, at two-thirds a tubercular silver metallic dorsal spot with bluish reflection, on costa at three-quarters, a tubercular pale golden costal spot, smaller than the dorsal spot and edged by a narrow white costal streak, apical line as two silver metallic spots with bluish reflection in the middle of the apical area and a broad white spot in the cilia at apex, cilia dark brown, paler on dorsum towards base. Hindwing shining dark greyish brown, cilia dark brown. Underside: forewing shining dark greyish brown with the white costal streak and apical spot distinctly visible, hindwing greyish brown. Abdomen dorsally shining ochreous-brown with golden gloss, ventrally shining dark greyish brown, segments broadly banded shining white posteriorly, anal tuft shining greyish-brown (fig. 59).

*Female.* Unknown.

*Male genitalia.* Right brachium of uncus long, slightly tapering distally, apex rounded with a short and broad hook at the tip, left brachium long and spindle-shaped, less than half the length of right one. Valvae large and almost square, upper and lower margin slightly concave. Anellus lobes stout, bent in middle, distal half broad and triangular. Aedeagus with basal half of bulbous part almost circular and distal half narrowing to one-third of width, basal part about two-thirds of the length of bulbous part, lateral lobes square, half the length of basal part (fig. 155).

Biology.— Unknown. The adults were collected in June and July.

Distribution.— Ecuador; Mexico: Tamaulipas (fig. 316).

Etyymology.— Named after Io, a moon of Jupiter. To be treated as a noun in apposition.

Remarks.— The specimen from Ecuador, Huigra, genitalia slide BM 29566, differs externally from the holotype by the smaller wingspan and in the male genitalia by the more stretched valvae and by the longer aedeagus. It is possible that we have to deal

here with a geographical variety or with two sibling species. Due to the worn state of the specimen from Ecuador it will be considered provisionally as conspecific with *C. io*.

*Cosmopterix iocaste* spec. nov.  
(figs 60, 156, 299)

Type material.— Holotype ♂, Brazil: Distrito Federal, Planaltina, 1000 m, 22.ii.1985, 15°35'S 47°42'W, V.O. Becker col.; Col. Becker 57301; gen. slide JCK 5501 (VOB).

Diagnosis.— Resembles *C. lysithea*, but differs by the double subapical rings on the antenna, the brown ground colour of the forewing and the incomplete apical line. The species is characterized in the male genitalia by the triangular right brachium of the uncus in combination with the small pear-shaped valvae. Examination of the genitalia is necessary for a certain identification.

Description.— Male. Forewing length 3.5 mm. Head: frons shining pale brown with greenish and reddish and reflections, vertex and neck tufts brown with reddish gloss, medially and laterally lined white, collar brown; labial palpus first segment very short, pale brown, second segment three-quarters of the length of third, brown with white longitudinal lines laterally and ventrally, third segment white, lined brown laterally; scape dark brown with a white anterior line, white ventrally, antenna shining dark brown, a white line from base to two-thirds, in middle interrupted, followed towards apex by three dark brown segments, three white, two dark brown, two white, ten dark brown, eight white and one brown segment at apex. Thorax and tegulae brown with reddish gloss, thorax with a white median line, tegulae lined white inwardly. Legs: dark brown with reddish gloss, femur of midleg shining pale ochreous-grey, femur of hindleg shining pale ochreous, foreleg with a white line on tibia and tarsal segments, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segment one with a white lateral line from base on the outside and connected to an apical white dorsal spot, segment two and three dorsally white, segment five entirely white, tibia of hindleg as midleg, tarsal segment one with white basal and apical rings, segment two with a white apical ring, segments three and four white dorsally, segment five entirely white, spurs white, ventrally ochreous-grey. Forewing brown with golden gloss, three white lines in the basal area, a subcostal from base to one-quarter, slightly bending from costa, a short and straight medial above fold in the middle of the basal area, a slightly shorter subdorsal below fold, slightly further from base than the medial, sometimes a few white scales on the costa just before the transverse fascia and on dorsum beyond base, a yellow transverse fascia beyond the middle with a small apical protrusion, bordered at the inner edge by two pale golden metallic tubercular subcostal and dorsal spots, the subcostal spot edged by a small patch of blackish brown scales on the outside, the dorsal spot slightly further from base than the subcostal, bordered at the outer edge by two similarly coloured costal and dorsal spots, the dorsal spot twice as large as the costal, all spots with greenish and purplish reflections, a white costal streak from the outer costal spot, a shining white, bluish tinged, apical line from the distal half of the apical area to apex, cilia brown around apex, paler towards dorsum. Hindwing shining greyish brown, cilia brownish. Underside: forewing shining brown, the white apical line distinctly visible in the apical cilia, hindwing shining greyish

brown in costal half, grey in dorsal half. Abdomen dorsally brown, ventrally dark greyish brown, in the middle shining yellowish white, segments broadly banded shining yellowish white posteriorly, anal tuft yellowish white (fig. 60).

*Female.* Unknown.

*Male genitalia.* Right brachium of uncus with a triangular protrusion in middle at the left side, gradually tapering apically, tip rounded and bent downwardly, left brachium broad at base, abruptly narrowing distally, tip rounded, about one-third of the length of right one. Valvae small, pear-shaped, caudal margin rounded, upper margin concave and lower margin nearly straight. Anellus lobes narrow, widest part in middle and bent, gradually narrowing to a pointed apex. Aedeagus bottle-shaped, narrowing distally to one-third of bulbous part, basal part about one-half the length of bulbous part, lateral lobes elongate, about one-half of the length of basal part (fig. 156).

*Biology.*— Unknown. The single specimen was collected in February.

*Distribution.*— Brazil: Distrito Federal (fig. 299).

*Etymology.*— Named after Iocaste, a moon of Jupiter. To be treated as a noun in apposition.

*Cosmopterix irrubricata* Walsingham, 1909  
(figs 61, 236, 287)

*Cosmopterix irrubricata* Walsingham, 1909: 4. Holotype ♂ (without abdomen), [Mexico], Vera Cruz, Atovac, iv.[18??], H.H. Smith (BMNH).

Material examined.— 1 ♀, Jamaica: Runaway Bay, 18.iii.1905; gen. slide BM 29287 (BMNH).

*Diagnosis.*— Resembles externally *C. metis*, but the presence of a white medial line on the thorax and the three short silver metallic streaks in the basal area which are not in line are characteristic.

*Description.*— Male, female. Forewing length 3.5–3.7 mm. Head: frons shining greyish white with reddish reflection, vertex and neck tufts shining bronze brown with reddish reflection, laterally lined white, collar shining bronze brown; labial palpus first segment very short, greyish white, second segment three-quarters of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined brown laterally, extreme apex white; scape dorsally dark brown with a white anterior line, ventrally white, antenna shining dark brown with a white interrupted line from base to two-fifths, at base a short uninterrupted section, followed towards apex by a dark brown section, two white segments, two dark brown, two white and ten dark brown segments at apex. Thorax and tegulae shining bronze brown with reddish gloss, thorax with a white median line. Legs: shining dark brown, foreleg with a white line on tibia and tarsal segments one and two, segment four with a white apical ring, segment five entirely white, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segments one, two and four with white apical rings, segment five dorsally white, tibia of hindleg with a pale golden metallic basal streak and pale golden metallic medial and subapical rings, and a white apical ring, tarsal segments one to three with white apical rings, segment four and



five entirely white, spurs dark brown, apically lighter. Forewing with basal one-fifth shining bronze brown with reddish gloss, remaining part shining dark brown with reddish gloss, at one-fifth three short silver metallic streaks with bluish reflection, a subcostal, a medial just above fold and more towards base than the subcostal, a subdorsal, further from base and twice as long as the subcostal and the medial, a broad tubercular silver metallic fascia with violet reflection in the middle, perpendicular on dorsum, at three-fifths a tubercular silver metallic dorsal spot with violet reflection, a similarly coloured but much smaller costal spot at three-quarters, outwardly edged by a narrow white costal streak, between the fascia and the dorsal spot a yellow streak at dorsum, apical line as a short silver metallic streak with bluish reflection in the middle of the apical area and a broad white spot in cilia at apex, cilia dark brown, paler on dorsum towards base. Hindwing shining brownish grey, cilia brown. Under-side: forewing shining dark greyish brown with the white costal streak and apical spot distinctly visible, hindwing greyish brown. Abdomen dorsally shining pale ochreous-brown with reddish gloss, laterally darker, segments two to seven banded light grey posteriorly, ventrally dark greyish brown, segments broadly banded shining white posteriorly and with a shining white longitudinal medial streak, anal tuft greyish brown (fig. 61).

*Male genitalia.* Not available (male specimen without abdomen).

*Female genitalia.* Posterior edge of sternite VII with a deep V-shaped indentation, and with a small convex part in middle. Sterigma large, elongate, slightly narrowing distally and with a long anterior protrusion, ostium bursae round with a crescent-shaped sclerotization ventrally. Ductus bursae about two-thirds of length of corpus bursa. Corpus bursae elongate, signa as two circular plates with a narrow longitudinal sclerotization in middle (fig. 236).

*Biology.*— Unknown. Adults were collected in March and April.

*Distribution.*— Jamaica; Mexico: Veracruz-Llave (fig. 287).

*Cosmopterix isotoma* Meyrick, 1915  
(figs 62, 157, 299)

*Cosmopterix isotoma* Meyrick, 1915: 205. Lectotype ♂ (designated by J.F.G. Clarke, 1965), Guyana: Bartica, ii.[19]13, Parish; gen. slide JFGC 6147 (BMNH) [examined].

*Material examined.*— 1♂, 2♀. Brazil: 1♂, Destrito Fedral, Planaltina, 1000 m, 15.iv.1985, 15°35'S 47°42'W, V.O. Becker col.; Col. Becker 57458; gen. slide JCK 5472 (VOB). 1♀ (without abdomen), same data as lectotype. 1♀ (without abdomen), Para, vii.[19]19, Parish (BMNH).

*Diagnosis.*— Resembles *C. chalybaeella*, but differs by the inner dorsal spot which is not as far from base as in *C. chalybaeella* and by the almost opposite position of the outer costal and dorsal spot. It differs in the male genitalia by the large and pointed right brachium of the uncus and by the large, elongate and distally slightly bent, valvae. Examining of the genitalia is recommended.

*Description.*— Male, female. Forewing length 3.2-3.9 mm. Head: frons shining pale ochreous-grey with greenish and reddish reflections, vertex and neck tufts shining dark brown with greenish and reddish reflections, laterally lined white and with a trace of a white median line, collar shining dark brown; labial palpus first segment

very short, greyish white, second segment three-quarters of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined dark brown laterally, extreme apex white; scape dorsally shining dark brown with a white anterior line, ventrally shining white, antenna shining dark brown with a white interrupted line from base to about one-half, near base partly uninterrupted, followed towards apex by eight dark brown segments, two white, two dark brown, two white, ten dark brown and seven white segments at apex. Thorax and tegulae shining dark brown with reddish gloss, thorax with a white median line, tegulae lined white inwardly. Legs: shining dark brown, femora shining pale golden, foreleg with a white line on tibia and tarsal segments, tibia of midleg with white oblique basal and a medial lines and a white apical ring, tarsal segments one and two with white apical rings, segment five entirely white, tibia of hindleg as midleg, but with an additional pale golden subapical ring, tarsal segments one to three with ochreous-brown apical rings, tarsal segments four and five entirely white, spurs whitish dorsally, brown ventrally. Forewing shining dark brown, three narrow white lines in the basal area, a subcostal from base to one-quarter and gradually bending from costa, a very short medial ending with the subcostal, a subdorsal as short as the medial but slightly further from base, some traces of white scaling on dorsum beyond base, a bright dark yellow transverse fascia beyond the middle, narrowing towards dorsum and with a very short apical protrusion, bordered at the inner edge by two tubercular golden metallic subcostal and dorsal spots, the subcostal spot with a patch of blackish scales on the outside, the dorsal spot further from base than the subcostal, bordered at the outer edge by two tubercular golden metallic costal and dorsal spots, the dorsal spot more than twice as large as the costal, both spots inwardly lined dark brown, the outer costal spot outwardly edged by a whitish costal streak, a narrow shining silvery white apical line with bluish gloss from beyond the apical protrusion, interrupted in the middle and shining white in the apical cilia, cilia dark brown, greyish brown towards dorsum. Hindwing shining dark greyish brown, cilia dark greyish brown. Underside: forewing shining dark greyish brown with the white costal streak and apical line in the cilia at apex distinctly visible, hindwing shining dark greyish brown. Abdomen dorsally brown, ventrally dark greyish brown with a broad white longitudinal streak in the middle, segments banded shining white posteriorly, anal tuft ochreous-grey (fig. 62).

*Male genitalia.* Right brachium of uncus large, widening distally, rather abruptly narrowing apically, apex short and pointed, left brachium rather broad, about one-third of length of right one. Valvae elongate, distally slightly bent. Anellus lobes broad, bent and apex rounded. Aedeagus with bottle-shaped bulbous part, narrowing distally to one-third of width, basal part about two-thirds of length of bulbous part, both lateral lobes almost rectangular and half the length of basal part (fig. 157).

*Female genitalia.* Not available (female specimens without abdomens).

Biology.— Unknown. Adults were collected in February, April and July, indicating more than one generation.

Distribution.— Brazil: Distrito Federal, Para; Guyana (fig. 299).

Remarks.— The original description by Meyrick was based on the description of a male and a female from Bartica, Guyana; the male lectotype (gen. slide JFGC 6147), and a female specimen without abdomen. In the collection of the BMNH a total of seven

specimens were placed under *C. isotoma*. The other specimens are from Para, Brazil (1 ♀, without abdomen) and Yurimaguas, Peru (1 ♂, 3 ♀). The specimens from Peru however do not belong to *C. isotoma*, but to *C. thebe*. Both female specimens without abdomens, from Bartica (Guyana) and Para (Brazil) hardly differ externally from the lectotype of *C. isotoma*. The differences in the external characters are minor and difficult to interpret due to the rather bad state of the lectotype. Therefore these two female specimens will provisionally be considered as conspecific. Additional material in the future, especially females, may solve this problem.

*Cosmopterix karsholti* spec. nov.  
(figs 63, 158, 299)

Type material.— Holotype ♂, Peru: Dept. Apurimac, 46: Abancay, 2200 m, 16.iii.1987, O. Karsholt leg., Zool. Mus. Copenhagen; gen. slide JCK 5487 (ZMUC).

Diagnosis.— Resembles *C. himalia*, but differs by the dark brown head and thorax, by the white medial line on the head, and by the long and narrow medial and subcostal lines in the basal area.

Description.— Male. Forewing length 4.2 mm. Head: frons shining creamy white with greenish and reddish reflections, vertex and neck tufts shining dark brown with reddish gloss, medially and laterally lined white, median line hardly visible, collar shining dark brown; labial palpus first segment very short, white, second segment four-fifths of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined brown laterally; scape dorsally dark brown with a white anterior line, ventrally white, antenna shining dark brown with a white line from base to two-thirds, interrupted beyond one-half, followed towards apex by two white segments separated by one brown segment, three dark brown, two white, ten dark brown, four white and two or three dark brown segments at apex. Thorax and tegulae shining dark brown with reddish gloss, thorax with a white median line in posterior half, tegulae lined white inwardly. Legs: shining dark brown with reddish gloss, femora of midleg and hindleg shining pale ochreous, foreleg with a white line on tibia and tarsal segments one and two, segment three basally and segment five entirely white, tibia of midleg with white narrow oblique basal and medial lines and a white apical ring, tarsal segments one and two with white apical rings, segment five entirely white, tibia of hindleg as midleg, tarsal segment one with ochreous basal and apical rings, segments two and three with ochreous apical rings, segments four and five entirely ochreous-white, spurs shining white dorsally, dark brown ventrally. Forewing shining dark brown with reddish gloss, four narrow white lines in the basal area, a subcostal from base to one-quarter and bending from costa, a medial above fold, from one-eighth to one-third, a subdorsal similar to the medial, but slightly shorter distally, a dorsal from beyond base to one-fifth, an orange-brown transverse fascia beyond the middle, narrowed towards dorsum, bordered at the inner edge by a tubercular pale golden metallic fascia with a small subcostal patch of blackish scales on the outside, bordered at the outer edge by two tubercular pale golden metallic costal and dorsal spots, the dorsal spot more than twice as large as the costal and more towards base, both spots irregularly lined dark brown on the inside, a white costal streak from the costal spot, a shining

bluish white apical line, interrupted in middle, followed by a broad shining white spot in the apical cilia, cilia dark brown, paler towards dorsum. Hindwing shining greyish brown, cilia brown. Underside: forewing shining greyish brown, the white costal streak and apical spot distinctly visible, hindwing shining greyish-brown. Abdomen dorsally brown with slight greenish and reddish reflections, segments five and six banded paler posteriorly, ventrally shining dark grey with segments banded whitish posteriorly, anal tuft brown (fig. 63).

*Female.* Unknown.

*Male genitalia.* Right brachium of uncus with rounded dorsal extension in apical part, gradually tapering to a pointed tip, left brachium short and slender, tip rounded, about one-fourth of the length of right one. Valvae spatulate, upper and lower margin slightly convex. Anellus lobes very long and slender, slightly widened in middle, strongly bent, tip blunt. Aedeagus bottle-shaped, narrowing distally to one-fifth of bulbous part, basal part as long as length of bulbous part, lateral lobes short, rounded, about one-fifth of the length of basal part (fig. 158).

*Biology.*— Unknown. The single specimen was collected in March.

*Distribution.*— Peru (fig. 299).

*Etymology.*— The species is dedicated to Mr. Ole Karsholt, Copenhagen, Denmark, as collector of this species and in recognition of our long standing collaboration.

*Cosmopterix langmaidi* spec. nov.  
(figs 64, 237, 288)

*Type material.*— Holotype ♀, Belize: Cayo Distr., Chiquibul For. Res., Las Cuevas, 3-16.iv.1998, R. Puplesis & S. Hill; gen. slide BM 29944 (BMNH).

*Diagnosis.*— Resembles *C. yvoni*, but differs by the white apex of the antenna and by the longer medial and subcostal lines in the basal area. The strongly concave posterior edge of sternite VII in combination with the sterigma which is wider in the anterior half is characteristic in the female genitalia.

*Description.*— *Female.* Forewing length 3.5 mm. Head: frons shining ochreous-white with purplish reflection, vertex and neck tufts dark brown, medially and laterally lined white, collar dark brown; labial palpus first segment very short, white, second segment three-quarters of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined brown laterally; scape dark brown with a white anterior line, white ventrally, antenna shining brown, a white line from base to beyond one-half, followed towards apex by an annulated part of ten segments, two white, ten dark brown and approximately nine white segments at apex. Thorax and tegulae dark brown, thorax with a white median line, tegulae lined white inwardly. Legs: dark brown, femora of midleg and hindleg shining pale ochreous-grey, foreleg with a white line on tibia and tarsal segments, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segments one, two and four with white apical rings, segment five entirely white, tibia of hindleg as midleg, tarsal segment one with white basal and apical rings, segments two to four with white dorsal streaks, segment five entirely white, spurs white, ventrally with a greyish brown streak. Forewing dark brown, five narrow white lines in the basal area, a short costal from one-third to

the transverse fascia, a subcostal from base to one-third, bending inwardly in distal third, a medial above fold, starting beyond base and ending just before the transverse fascia, a subdorsal below fold, from one-fifth and ending just beyond the medial, a dorsal from beyond base to one-quarter, a broad yellow transverse fascia beyond the middle, narrowed towards dorsum with a short apical protrusion, bordered on the inner edge by two pale golden metallic tubercular subcostal and dorsal spots, the dorsal spot twice as large as the subcostal, the subcostal spot edged by a small patch of blackish brown scales on the outside and more towards base, bordered at the outer edge by two similarly coloured costal and dorsal spots, the dorsal spot more than twice as large as the costal spot and more towards base, the outer costal spot stretched and brownish edged on the inside, a white costal streak from outer costal spot, a shining white apical line from apical protrusion, cilia dark greyish brown around apex, ochreous-grey towards dorsum. Hindwing shining pale brownish grey, cilia ochreous-grey. Underside: forewing shining brown, the white apical line distinctly visible, hindwing shining pale grey. Abdomen dorsally dark brown, ventrally dark grey with a whitish longitudinal line, anal tuft yellowish white (fig. 64).

*Male*. Unknown.

*Female genitalia*. Posterior edge of sternite VII strongly concave. Sterigma long, elongate, anterior half wider than posterior half, ostium bursae circular with a ventral semicircular sclerotization and short medial ridge. Ductus bursae about one-half of length of corpus bursae. Corpus bursae oval, narrowed posteriorly, two small hooked signa (fig. 237).

Biology.— Unknown. The single specimen was collected in April.

Distribution.— Belize (fig. 288).

Etymology.— The species is dedicated to Dr John Langmaid, Southsea, England, in recognition of his linguistic corrections of the manuscript and our longstanding collaboration.

Remarks.— The description of the greased abdomen is provisional.

*Cosmopterix lespedezae* Walsingham, 1882  
(figs 65, 159, 238, 278)

*Cosmopterix lespedezae* Walsingham, 1882: 198. Holotype ♂, United States: [Texas], 1189; *Cosmopterix* on *Lepedeza*, Boll.; *Cosmopterix lespedezae* Wlsm. Type (USNM) [not examined].

Material examined.— 4♂, 1♀, 1 specimen (sex not stated). United States: 1♂, Texas, Forestburg, viii. [19]28; gen. slide BM 31233. 3♂ (2 without abdomen), same data (BMNH). 1♀, Mississippi, Winston Co., Nat. Forest, 33°10'20"N 93°16'09"W, 19-23.v.1993, R.L. Brown; gen. slide JCK 5800 (RMNH). 1 specimen (sex not stated), Arkansas, Logan Co., Cove Lake, 1020', 17N, R25W, 14-20.v.1989, J. MacGown & Q. Fang (MEM).

Diagnosis.— *Cosmopterix lespedezae* cannot be distinguished with certainty by external characters from *C. inopis*, *C. interfracta* and *C. teligera*. Identification is only possible by the male and female genitalia. From these species it differs in the male genitalia by the short and spatulate right brachium of uncus and by the boot-shaped valvae, in the female genitalia it differs by the concave posterior edge of sternite VII with a very large convex section in middle and by the elongate sterigma which tapers basally and distally.

Description.— Male, female. Forewing length 4.7 mm. Head: frons shining ochreous-grey with greenish and reddish reflections, vertex and neck tufts shining dark brown with reddish gloss, laterally and medially lined white, collar shining dark brown with reddish gloss; labial palpus first segment very short, white, second segment four-fifths of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined brown laterally; scape dorsally dark brown with a white anterior line, ventrally white, antenna shining dark brown with a white line from base to beyond one-half, followed towards apex by approximately seven dark brown segments, four white, two dark brown, two white, ten dark brown and eight white segments at apex. Thorax and tegulae shining dark brown with reddish gloss, thorax with a white median line, tegulae lined white inwardly. Legs: shining dark brown with reddish gloss, femora of midleg and hindleg shining ochreous-grey with golden gloss, foreleg with a white line on tibia and tarsal segments one to three and five, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segments missing, tibia of hindleg with a very oblique silvery white line at base, a less oblique silvery white medial streak and a white apical ring, tarsal segment one with a white basal ring and white dorsal streak in the apical half, segments two to four dorsally white, segment five entirely white, spurs white dorsally, dark brown ventrally. Forewing shining dark brown with reddish gloss, four white lines in the basal area, a subcostal from base to one-quarter bending from costa in distal half, a short medial above fold, its centre under of the distal end of the subcostal, a subdorsal slightly longer than the medial, and a little further from base, a narrow dorsal from beyond base to one-fifth, a yellow transverse fascia beyond the middle, narrowing towards dorsum and with a short and narrow apical protrusion, bordered at the inner edge by a tubercular pale golden metallic fascia with some greenish reflection, and with a small subcostal patch of blackish brown scales on the outside, bordered at outer edge by two tubercular pale golden metallic costal and dorsal spots, the dorsal spot three times as large as the costal and more towards base, the costal and dorsal spots irregularly lined dark brown on the inside, a white costal streak from the costal spot, a shining white apical line from just beyond apical protrusion, cilia dark brown, paler towards dorsum. Hindwing shining greyish brown with reddish gloss, cilia brown. Underside: forewing shining greyish brown, the white apical line distinctly visible in the apical cilia, hindwing shining greyish brown. Abdomen dorsally shining dark brown with reddish gloss, laterally shining grey with greenish reflection, ventrally dark grey, in the middle yellowish white, segments banded shining white posteriorly, anal tuft ochreous-white (fig. 65).

*Male genitalia.* Right brachium of uncus short, spatulate, hollow ventrally, left brachium more than half of length of right one, apically bent. Valvae boot-shaped, upper and lower margin rounded, caudal margin almost straight. Anellus lobes stout, broad beyond middle, almost straight, tip as a small ventral hook. Aedeagus with bulbous part bottle-shaped and narrowing distally to less than one-third of width, basal part, about one-half the length of bulbous part, lateral lobes short, about one-third of length of basal part, more or less triangular (fig. 159).

*Female genitalia.* Posterior edge of sternite VII concave with a very large convex section in middle. Sterigma elongate with a short narrow projection basally, widening distally, apical two-thirds slightly tapering. Ostium bursae oval with a semi-circular sclerotization ventrally. Ductus bursae about two-thirds of length of corpus bursae with a

sclerotized section where it enters the latter. Corpus bursae elongate, two small circular signa with medial ridge (fig. 238).

Biology.— Host plant: Various species of Fabaceae including *Lespedeza* Michx and *Desmodium* Desv. (Hodges, 1978).

*Life history.* Braun (1930) (as *C. magophila* sic!), gives the following description of the larval habits on *Desmodium* sp.: The mine begins in the midrib, spreading outward and upward between two lateral veins; in that part of the early mine adjacent to the lower of the lateral veins between which it lies, the parenchyma is left in narrow transverse bars, giving the mine a very characteristic aspect; as the mine increases, it extends beyond the confines of the two veins, with irregular projections and parenchyma all consumed. Pupa formed within the mine beneath the transverse bars, which are here lined with silk forming a tubular pupal chamber. Moths on the wing from early July to mid-September (Hodges, 1978). The specimen from Mississippi was collected at the end of May.

Distribution.— USA: South Carolina, Kentucky, Ohio, Arkansas, Texas (Hodges, 1978), Mississippi (fig. 278).

*Cosmopterix lummyae* spec. nov.  
(figs 66, 160, 239, 300)

Type material.— Holotype ♂, Brazil: Planaltina, Distrito Federal, 1000 m, 5.viii.1984, 15°35'S 47°42'W, V.O. Becker col.; Col. Becker 56595; gen. slide JCK 5091 (VOB). Paratypes: 2♂, 2♀: Brazil: 1♂, same locality as holotype, 26.vii.1984; Col. Becker 56546. 1♂, same locality as holotype, 15.iii.1985; Col. Becker 57358. 1♀, same locality as holotype, 10.vi.1983; Col. Becker 41084; gen. slide JCK 5124 (VOB). Colombia: 1♀, Cali, 500', v.[19]12, Parish; gen. slide BM 29565 (BMNH).

Diagnosis.— Resembles *C. amalthea* and *C. io*, but differs by the three bluish white lines in the basal area. Also somewhat similar to *C. montisella* var. *unicolorella*, but differs by the lack of the white median line on the head, the white apex of the antenna and by the smaller forewing length. In the male genitalia the large and somewhat twisted apex of the right brachium of the uncus in combination with the strongly elongate valvae and the very narrow annelus lobes are characteristic. Examination of the genitalia is recommended.

Description.— Male, female. Forewing length 3.3-4.2 mm. Head: frons shining greyish white with reddish reflection, vertex and neck tufts shining bronze brown with reddish reflection, laterally lined white, collar shining dark brown; labial palpus, first segment very short, greyish white, second segment three-quarters of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined brown laterally; scape dorsally dark brown with a white anterior line, ventrally creamy white, antenna shining dark brown, a white interrupted line from base to three-quarters with a short uninterrupted section at base, this line interrupted in middle of antenna by three brown segments, followed towards apex by respectively three brown, one white, eleven brown and eight white segments at apex, greyish towards tip. Thorax and tegulae shining dark brown with reddish gloss, thorax with a narrow white median line, tegulae lined white inwardly. Legs: shining dark brown, foreleg with a white line on tibia and tarsal segments one, two and five, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segment one lined white on the

outside, segments two and five each with a white apical spot, tibia of hindleg with a silver metallic basal streak and an oblique medial line, both with strong bluish reflection, and a white apical ring, tarsal segments one to three with indistinct white dorsal spots apically, segments four and five dorsally white, spurs dark brown, inner side whitish. Forewing shining dark brown with reddish gloss, three short silver streaks with bluish reflection in the basal area, a subcostal from base to one-quarter, interrupted in the middle and bending from costa distally, a short medial above fold, underneath the end of the subcostal, a subdorsal about as long as the medial and half its length further from base, a broad tubercular pale golden metallic fascia with greenish and purplish reflections in the middle, perpendicular on dorsum, at three-fifths a tubercular pale golden metallic dorsal spot, a similar but smaller costal spot at three-quarters, the costal spot edged by a narrow white costal streak, apical line as an interrupted silver metallic streak with bluish reflection and a broad white spot in the cilia at apex, cilia dark brown. Hindwing shining dark brown, cilia dark brown. Underside: forewing shining dark brown with white costal streak and apical line distinctly visible, hindwing dark brown. Abdomen dorsally shining brown, segments banded shining dark grey posteriorly, ventrally dark brown, segments broadly banded shining greyish white posteriorly, anal tuft dark greyish brown (fig. 66).

*Variation.* The female specimen from Cali, Colombia has a forewing length of 3.3 mm. It differs slightly in the female genitalia, genitalia slide BM 29565, by the convex section in the posterior edge of sternite VII, which is here more flattened. Also the protrusion on the right side of the sterigma is less pronounced and the signa are smaller.

*Male genitalia.* Right brachium of uncus with a large and somewhat twisted apex, left brachium about one-third of length of right one and rather wide. Valvae strongly elongate and bent before middle, upper and lower margin almost straight. Anellus lobes very narrow and only slightly bent, distally tapering to a rather pointed apex. Aedeagus with bulbous part only slightly tapering and very wide anteriorly, basal part more than half the length of bulbous part, both lateral lobes triangular and less than half the length of basal part (fig. 160).

*Female genitalia.* Posterior edge of sternite VII concave with a large convex section in middle. Sterigma asymmetrical, posterior part more or less square with a long and bent protrusion from the right side of sterigma bursae, ostium bursae square. Ductus bursae two-thirds of length of corpus bursae and with a large sclerotized section where it enters the latter. Corpus bursae oval, two arrow-shaped signa. The female specimen from Cali, Colombia differs slightly in the female genitalia (gen. slide BM 29565) by the convex section in the posterior edge of sternite VII, which is here more flattened. Also the protrusion on the right side of the sterigma is less pronounced and the signa are smaller (fig. 239).

*Biology.*— Unknown. Adults were collected in March and from May to August, probably bivoltine.

*Distribution.*— Brazil: Distrito Federal; Colombia (fig. 300).

*Etymology.*— The species is named after my sister-in-law Lummy Koster, who kindly translated the papers written in Spanish for me.

*Cosmopterix lysithea* spec. nov.  
(figs 67, 240, 301)

*Type material.*— Holotype ♀, Brazil: Planaltina, Distrito Federal, 1000 m, 15.iii.1985, 15°35'S 47°42'W, V.O. Becker col.; Col. Becker 57357; gen. slide JCK 5437 (VOB).



**Diagnosis.**— Resembles *C. iocaste*, but differs by the broad white subapical section of the antenna, and by the medial and subdorsal line in the basal area which are not opposite. The species is characterized in the female genitalia by the long and elongate sterigma in combination with the egg-shaped corpus bursae with two oval signa with irregular sclerotized ridges. Examination of the genitalia is necessary.

**Description.**— Female. Forewing length 3.7 mm. Head: frons shining pale ochreous-grey with greenish reflection, vertex and neck tufts shining brown with reddish gloss, medially and laterally lined white, collar shining dark brown; labial palpus first segment very short, greyish white, second segment three-quarters of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined dark brown laterally, extreme apex white; scape dorsally shining dark brown with a white anterior line, ventrally shining white, antenna shining dark brown with a short white line from base to one-fifth, changing into an interrupted line to beyond one-half, followed towards apex by approximately five dark brown segments, eight white, eight dark brown and eight white segments at apex. Thorax and tegulae shining dark brown with reddish gloss, thorax with a white median line, tegulae lined white inwardly. Legs: shining dark brown, femora of midleg and hindleg with pale golden reflection, foreleg with a white line on tibia and tarsal segments one to three and five, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segments one and two with white apical rings, segment five entirely white, tibia of hindleg as midleg, but with an additional pale golden subapical band, tarsal segments one to three with white apical rings, segments four and five dorsally white, spurs white dorsally, dark brown ventrally. Forewing shining dark brown with reddish gloss, four narrow white lines in the basal area, a subcostal from base and slightly running from costa to one-quarter, a very short medial to the end of the subcostal, a subdorsal, slightly longer than the medial, starting at end of the medial, a short dorsal from beyond base to the start of the medial, a bright yellow transverse fascia beyond the middle with an apical protrusion, bordered at the inner edge by two large tubercular golden metallic costal and dorsal spots almost forming a fascia, the costal spot with a patch of blackish scales on the outside, the dorsal spot slightly further from base than the costal, bordered at the outer edge by two tubercular golden metallic costal and dorsal spots, the dorsal spot three times as large as the costal, both spots inwardly lined dark brown, a white costal streak from the outer costal spot, a narrow shining white apical line from the apical protrusion, widening in the apical cilia, cilia dark brown. Hindwing shining dark greyish brown, cilia dark brown. Underside: forewing shining dark greyish brown, the white apical spot distinctly visible in the apical cilia, hindwing shining dark greyish brown. Abdomen dorsally shining pale yellow-ochreous, especially segments two to five, remaining parts greyish brown, ventrally shining yellowish white, anal tuft dorsally greyish brown, ventrally ochreous (fig. 67).

*Male.* Unknown.

*Female genitalia.* Posterior edge of sternite VII convex with a concave section in middle. Sterigma long and elongate, posterior part slightly narrowed, anterior part strongly narrowing, ostium bursae oval with a ventral semicircular sclerotization and long medial ridge, medial ridge with two bent side arms underneath ostium. Ductus bursae about as long as corpus bursae and with a rounded sclerotized section before it enters

the latter. Corpus bursae egg-shaped, two oval signa with irregular sclerotized ridges (fig. 240).

Biology.— Unknown. The single specimen was collected in March.

Distribution.— Brazil: Distrito Federal (fig. 301).

Etymology.— Named after Lysithea, a moon of Jupiter. To be treated as a noun in apposition.

*Cosmopterix madeleinae* Landry, 2001  
(figs 68, 161, 241, 300)

*Cosmopterix madeleinae* Landry, 2001: 518. Holotype ♂, Ecuador: Galápagos, Santa Cruz, Los Gemelos, 27.v.1992, M[ercury] V[apor] L[ight], B. Landry; CNC type no. 22681 (CNC) [not examined].

Material examined.— Paratypes 1♂, 1♀: Ecuador: 1♂, Galápagos, Pinta, 18.iii.1992, 400 m., leg. B. Landry; gen. slide JCK 5490. 1 ♀, Galápagos, San Cristóbal, pampa zone, 18.ii.1989, B. Landry; gen. slide BL 1263 (CNC).

Diagnosis.— The shining pale ochreous frons and vertex in combination with the yellow costal half of the basal area are characteristic.

Description.— Male, female. Forewing length 4.1 mm. Head: frons shining pale ochreous with greenish and reddish reflections, vertex pale ochreous-yellow, neck tufts shining bronze brown with reddish gloss, laterally and medially lined white, collar shining bronze brown; labial palpus first segment very short, white, second segment four-fifths of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined brown laterally; scape dorsally dark brown with white anterior and dorsal lines, ventrally yellowish white, antenna shining dark brown with a white line from base to two-fifths, changing into an interrupted line to beyond one-half, followed towards apex by an annulate part of ten segments, twelve dark brown, one white, one dark brown, two white, two dark brown, two white, ten dark brown, three white and three dark brown segments at apex. Thorax and tegulae shining yellowish brown with reddish gloss, thorax with a white median line, tegulae lined white inwardly. Legs: shining dark greyish brown with reddish gloss, femora yellowish white, foreleg with a white line on tibia and tarsal segments one, two, three (only basal half) and five, tibia of midleg with white narrow oblique basal and medial streaks and a white apical ring, tarsal segments ochreous, segments one and two each with a dark brown basal spot dorsally and segment four entirely ochreous-brown, tibia of hindleg as midleg, but with an additional subapical oblique white streak, tarsal segments ochreous, segment one greyish brown at base and with a very oblique greyish brown streak laterally on the outside, segments two and three each with a dark brown basal spot dorsally, spurs shining white. Forewing shining bronze brown, costal half of the basal area pale yellow except at costa and strongly narrowing just prior to the transverse fascia, four white lines in the basal area, a costal from two-fifths to the transverse fascia, a broad subcostal at the costal side of the pale yellow section from base nearly to the end of this section, a slightly oblique subdorsal from two-fifths to one-half, a narrow dorsal from base to one-quarter, a pale yellow transverse fascia beyond the middle, narrowing towards dorsum, bordered at the inner edge by a tubercular very pale golden metallic, out-

wardly oblique fascia with pinkish reflection, not reaching costa and with a very small patch of blackish scales on the outside above middle, bordered at the outer edge by a similarly coloured but narrower, slightly inwardly oblique, fascia, inwardly lined dark brown at costa and dorsum, both fasciae narrowed in the middle and with their widest parts on dorsum, beyond the outer fascia a narrow pale yellow spot on costa and a triangular pale yellow spot on dorsum, outer fascia outwardly edged by a whitish costal streak, a broad white apical line from the middle of the apical area, cilia bronze brown around apex, greyish brown towards dorsum. Hindwing shining pale ochreous-brown, cilia greyish brown. Underside: forewing shining greyish brown, the white apical line visible, hindwing shining greyish brown in costal half, greyish white in dorsal half. Abdomen dorsally shining pale yellow, segments banded shining white posteriorly, ventrally shining white, anal tuft shining white (fig. 68).

*Male genitalia.* Right brachium of uncus slender, apex as a broad and blunt hook, left brachium short and narrow, less than one-third of length of right one. Valvae boot-shaped. Anellus lobes narrow, semi-circular bent and with a blunt apex. Aedeagus slender, slightly bent and hardly tapering apically, basal part about one-third of length of bulbous part, both lateral lobes somewhat triangular, about two-thirds of the length of basal part (fig. 161).

*Female genitalia.* Posterior edge of sternite VII slightly concave. Sterigma egg-shaped, ostium bursae oval with a semicircular sclerotization. Ductus bursae long, longer than corpus bursae. Corpus bursae pear-shaped, signa absent (fig. 241).

*Biology.*— Unknown. Adults have been collected from the end of January to the end of May and in October (Landry, 2001). Probably more than one generation.

*Distribution.*— Ecuador: Galapagos Islands (fig. 300).

*Cosmopterix magophila* Meyrick, 1919  
(figs 69, 162, 316)

*Cosmopterix magophila* Meyrick, 1919: 282. Lectotype ♂ (designated by J.F.G. Clarke, 1965), United States: North Carolina, Southern Pine, [19]18, P.; gen. slide JFGC 1949 (BMNH) [examined].

*Material examined.*— 11 ♂. Dominican Republic: 1 ♂ (without abdomen), Santo Domingo, S Frnesco Mts., ix.1905; Aug. Busck (BMNH). United States: 8 ♂, same data as lectotype; gen. slide BM 31218 (BMNH). 1 ♂, Michigan, Allegan Co., T3N R1 4W S31, oak savanna, 5.ix.1999, G. Balogh; gen. slide JCK 6096. 1 ♂, Michigan, Kalamazoo Co., Portage, backyard, 6275 Liteolier, 2.viii.1997, George J. Balogh (GB).

*Diagnosis.*— The paler brown ground colour of the forewing in combination with the somewhat twisted and pointed apex of the right brachium of the uncus, the boot-shaped valvae and the rather wide distal part of the aedeagus in the male genitalia are characteristic. Examination of the genitalia is necessary.

*Description.*— Male. Forewing length 3.3-3.9 mm. Head: frons shining ochreous-grey with greenish and reddish reflections, vertex and neck tufts brown with reddish gloss, laterally and medially narrowly lined white, collar brown; labial palpus first segment very short, whitish, second segment four-fifths of the length of third, brown with white longitudinal lines laterally and ventrally, third segment white, lined dark brown laterally; scape dorsally shining dark brown with a white anterior line, ventrally shining white, antenna shining dark brown with a white line from base to beyond one-half,

middle section interrupted, followed towards apex by five dark brown segments, two white, two dark brown, two white, ten dark brown and eight white segments at apex. Thorax and tegulae shining brown with reddish gloss, thorax with a white median line, tegulae lined white inwardly. Legs: dark greyish brown with reddish gloss, femora of midleg and hindleg shining pale ochreous, foreleg with a white line on tibia and tarsal segments one and two, four and five, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segments as foreleg, tibia of hindleg as midleg but with an additional ochreous-white oblique subapical line, tarsal segment one with white basal and apical spots, segments two and three with white apical spots, segments four and five dorsally white, spurs white, ventrally greyish brown. Forewing brown with reddish gloss, five white lines in the basal area, a short costal from one-third to the transverse fascia, a subcostal from base to one-quarter, bending from costa in distal half, a short medial above fold, ending just beyond the subcostal, a subdorsal, about as long as the medial, but slightly further from base, a dorsal from base to one-quarter, a broad yellow transverse fascia beyond the middle, and with a very small apical protrusion, bordered at the inner edge by two silver metallic tubercular subcostal and subdorsal spots, the subcostal spot edged by a small patch of blackish brown scales on the outside, the subdorsal spot slightly further from base and a little larger than the costal, bordered at the outer edge by two similar coloured costal and dorsal spots, the dorsal spot three times as large as the costal and more towards base, both spots partly lined brown inwardly, a white costal streak from the outer costal spot, and a narrow white apical line from or just beyond the apical protrusion, slightly widening in the apical cilia, cilia brown around apex, paler towards dorsum. Hindwing shining dark brownish grey. Underside: forewing shining pale greyish brown, the white apical line distinctly visible in the apical cilia, hindwing shining brownish grey. Abdomen dorsally greyish brown with reddish gloss, laterally grey with greenish reflection, ventrally shining yellowish white, anal tuft greyish white (fig. 69).

*Female.* Unknown.

*Male genitalia.* Right brachium of uncus slightly bent with a lateral protrusion in middle on the left side, apical part somewhat twisted, tapering abruptly towards apex, tip pointed, left brachium broad, narrowed in apical quarter, tip rounded, less than half the length of right one. Valvae boot-shaped with rounded caudal margin, upper margin concave and lower margin slightly concave. Anellus lobes rather narrow in basal part, apical part twice as wide, bent in middle, tip blunt. Aedeagus slender bottle-shaped, narrowing distally to about one-half of width, basal part about two-thirds of length of bulbous part, lateral lobes triangular, about half the length of basal part (fig. 162).

*Biology.*— Unknown. Adults have been collected in May (Hodges, 1962) and in August and September.

*Distribution.*— USA: North Carolina, Arkansas (Hodges, 1978), Michigan; Dominican Republic (fig. 316).

*Remarks.*— The specimen from the Dominican Republic was one of the three specimens in the type-series in the BMNH with the manuscript name *Cosmopterix argentifera*.

*Cosmopterix metis* spec. nov.  
(figs 70, 163, 301)

*Type material.*— Holotype ♂, Brazil: Planaltina, Distrito Federal, 1000 m, 1.vii.1984, 15°35'S 47°42'W, V.O. Becker col.; Col. Becker 56546; gen. slide JCK 5126 (VOB).

Diagnosis.— Differs from the quite similar *C. irrubricata*, but *C. metis* is characterized by the lack of the white median line on the thorax and by the three short silver metallic streaks in the basal area which are of equal length and arranged one above the other between costa and dorsum.

Description.— Male. Forewing length 3.7 mm. Head: frons shining grey, in middle a shining white streak, vertex and neck tufts shining bronze brown with some reddish reflection, laterally lined white, collar shining bronze brown; labial palpus first segment very short, white, second segment three-quarters of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined brown laterally, extreme apex white; scape dorsally dark brown with a white anterior line, ventrally white, antenna shining dark brown with a white interrupted line from base to two-fifths with a short uninterrupted section at base, two indistinct subapical greyish rings of two segments each, separated by two dark brown segments at three-quarters, apical part of eighteen segments greyish brown. Thorax and tegulae shining bronze brown with reddish gloss. Legs: shining dark brown, femur of hindleg shining golden, foreleg with a white line on tibia and tarsal segments one and two, segment four with a white apical ring, segment five entirely white, tibia of midleg with silvery white oblique basal and medial lines and a white apical ring, tarsal segments one, two and four with white apical rings, segment five dorsally white, tibia of hindleg with a silvery metallic basal streak, silvery metallic medial and subapical rings, and a white apical ring, tarsal segments one to three with white apical rings and segment four and five entirely white, spurs dark brown, apically lighter. Forewing with basal one-sixth shining bronze brown with reddish gloss, remaining part shining dark brown with reddish gloss, at one-fifth three short silver metallic streaks with bluish reflection, a subcostal, a medial just above fold and slightly further from base than the subcostal and a subdorsal, slightly further from base than the medial, a tubercular silver metallic fascia with greenish and purplish reflections in the middle, perpendicular on dorsum and with a large square bronze brown spot on dorsum on the outside, at two-thirds a tubercular silver metallic dorsal spot with bluish reflection, at three-quarters a tubercular pale golden costal spot, smaller than the dorsal spot, edged by a narrow white costal streak, apical line as a short silver metallic streak with bluish reflection in the middle of the apical area and a broad white spot in the cilia at apex, cilia dark brown, paler on dorsum towards base. Hindwing shining dark greyish brown, cilia dark brown. Underside: forewing shining dark greyish brown with the white costal streak and apical spot distinctly visible, hindwing greyish brown. Abdomen dorsally shining pale ochreous-brown with reddish gloss, laterally with golden and greenish reflections, ventrally shining dark brown, segments broadly banded shining white posteriorly, anal tuft greyish-brown (fig. 70).

*Female.* Unknown.

*Male genitalia.* Right brachium of uncus strongly widening distally and with a round extension on the left side, apex as a short and broad hook, left brachium wide, narrowed at apex. Valvae long and rather narrow with rounded cucullus, upper margin a little convex, lower margin slightly concave. Anellus lobes strongly bent, narrowed before middle, distally short and wide, apex rounded. Aedeagus with bulbous part slender bottle-shaped, tapering distally to one-half of width, basal part about two-thirds of the length of bulbous part, both lateral lobes large, square and almost half the length of basal part (fig. 163).

Biology.— Unknown. The single specimen was collected in July.

Distribution.— Brazil: Distrito Federal (fig. 301).

Etymology.— Named after Metis, a moon of Jupiter. To be treated as a noun in apposition.

*Cosmopterix minutella* Beutenmüller, 1889  
(figs 71, 164, 280)

*Cosmopterix minutella* Beutenmueller, 1889: 10. Holotype ♂, United States: Central Florida, coll. W.B. Hab (USNM) [not examined].

Material examined.— United States: 1 ♂, Florida, Monroe Co., Big Pine Key, Watson's Hammock & vicinity, 20.v.1990, B. Landry; gen. slide JCK 4044 (RMNH).

Diagnosis.— The species shows similarity in the forewing pattern to *C. pentachorda* and *C. quadrilineella*, but can be distinguished by the smaller wingspan and the darker brown ground colour. In the male genitalia the spatulate valvae in combination with the large, but rather short, club-shaped anellus lobes are characteristic. Examination of the genitalia is necessary.

Description.— Male. Forewing length 3.8 mm. Head: frons shining creamy white, posteriorly pale greyish brown with reddish reflections, vertex and neck tufts dark greyish brown with greenish and reddish reflections, medially and laterally lined white, collar dark greyish brown; labial palpus first segment very short, white, second segment three-quarters of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined dark brown laterally; scape dorsally dark brown with a white anterior line, ventrally greyish white with white apical spot, antenna dark brown with a white interrupted line from base to beyond one-half, followed towards apex by an annulate section of about ten segments, two white, two dark brown, two white, two dark brown, two white, two dark brown and eight white segments at apex, the last ring of two white segments in the antenna before apex can be dark brown. Thorax and tegulae dark greyish brown, thorax with a white median line, tegulae lined white inwardly. Legs: dark brownish grey with reddish gloss, femur of midleg shining pale ochreous and femur of hindleg shining creamy white, foreleg with a white line on tibia and tarsal segments, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segments dorsally white, tibia of hindleg with long, very oblique basal and medial white lines, and white subapical and apical rings, tarsal segment as midleg, spurs white. Forewing dark greyish brown, five white lines in the basal area, a costal from one-quarter to the transverse fascia, a subcostal from base to one-third, bending from costa in distal half, a medial from base to the basal protrusion of the transverse fascia, a slightly oblique subdorsal from one-third to the transverse fascia, a dorsal from beyond base to one-quarter, a broad pale yellow transverse fascia from the middle with a short basal protrusion and an apical prolongation, bordered at the inner edge by two silver metallic subcostal and subdorsal spots, the subcostal spot with a patch of blackish scales on the outside, the subdorsal spot beyond inner edge of transverse fascia and further from base than the subcostal, edged dark brown on the inner side, two similarly coloured costal and dorsal spots at two-thirds of

the transverse fascia, both spots opposite, the dorsal spot slightly larger than the costal, a white costal streak connected to the outer costal spot, a broad shining white apical line from the prolongation of the transverse fascia to apex, cilia ochreous-grey around apex, paler towards dorsum. Hindwing shining greyish white, cilia pale ochreous. Underside: forewing basal half shining brownish grey, apical half pale greyish yellow; hindwing shining pale grey in costal half, whitish in dorsal half. Abdomen not examined (fig. 71).

*Female.* Unknown.

*Male genitalia.* Right brachium of uncus rather short, with a narrow basal half, strongly widening in apical half, anterior half of this widened section with a lateral protrusion, gradually tapering distally, tip blunt with apical part downwardly bent, left brachium broad, tip rounded, less than one-half the length of right one. Valvae spatulate, caudal margin rounded, upper margin strongly and lower margin slightly convex. Anellus lobes short, narrowing from base, at one-third strongly widening to a club-shaped and slightly downwardly bent apical part. Aedeagus with bulbous part bottle-shaped, abruptly narrowing distally to less than one-half of width, basal part about two-thirds of length of bulbous part, lateral lobes very small (fig. 164).

*Biology.*— Unknown. Adults fly from March to early May (Hodges, 1978).

*Distribution.*— USA: Florida (fig. 280).

*Remarks.*— The male genitalia are depicted with the aedeagus removed.

*Cosmopterix mneme* spec. nov.  
(figs 72, 242, 302)

*Type material.*— Holotype ♀, Brazil: Bahia, Barra Grande, 2 m, 5-10.i.1999, V.O. Becker col.; Col. Becker 118167; gen. slide JCK 5451 (VOB).

*Diagnosis.*— The absence of the costal line and the very wide costal streak on the forewing in combination with the concave posterior edge of sternite VII and the strongly elongated corpus bursae are characteristic. Examination of the genitalia is recommended.

*Description.*— *Female.* Forewing length 3.5 mm. Head: frons shining ochreous-white with greenish and reddish reflections, vertex and neck tufts dark brown with reddish gloss, medially and laterally lined white, collar dark brown; labial palpus first segment very short, white, second segment four-fifths of the length of third, brown with white longitudinal lines laterally and ventrally, third segment white, lined brown laterally; scape dark brown with a white anterior line, white ventrally, antenna shining dark brown with a white line from base to one-fifth, changing into an interrupted line to one-half, followed towards apex by a dark brown section of approximately eight segments, three white, two dark brown, two white, ten dark brown and eight white segments at apex. Thorax and tegulae dark brown with reddish gloss, thorax with a white median line, tegulae lined white inwardly. Legs: greyish brown, femora of midleg and hindleg shining pale grey, foreleg with a white line on tibia and tarsal segments, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segments one and two with white apical dorsal spots, segment five entirely white, tibia of hindleg as midleg, first tarsal segment with ochreous-white basal and apical rings, seg-

ments two to four with ochreous-white apical rings, segment five entirely ochreous-white, spurs white, ventrally with a dark grey streak. Forewing dark brown with reddish gloss, four white lines in the basal area, a subcostal from base to one-third, slightly bending from costa, a short and straight medial above fold from one-quarter to two-fifths, a subdorsal below fold, similar in length to the medial, but slightly further from base, a dorsal from beyond base to the middle of the subdorsal, a broad yellow transverse fascia beyond the middle with an apical protrusion, bordered at the inner edge by two golden metallic tubercular subcostal and subdorsal spots, the subcostal spot edged by a small patch of blackish brown scales on the outside, the subdorsal spot more towards apex than the subcostal, bordered at the outer edge by two similarly coloured costal and dorsal spots, the dorsal spot twice as large as the costal, both brownish edged on the inside, a broad white costal streak from the outer costal spot, a shining white apical line from just beyond the apical protrusion to apex, cilia dark brown around apex, brownish grey towards dorsum. Hindwing shining dark brownish grey, cilia brownish grey. Underside: forewing shining dark greyish brown, the white apical line distinctly visible, hindwing shining brownish grey. Abdomen dorsally shining brown with some reddish gloss, ventrally grey, segments banded shining yellowish white posteriorly, anal tuft greyish brown (fig. 72).

*Male*. Unknown.

*Female genitalia*. Posterior edge of sternite VII concave. Sterigma elongate, anterior part narrowed, ostium bursae round, ventrally with a semicircular sclerotization and medial ridge. Ductus bursae two-thirds of length of corpus bursae. Corpus bursae strongly elongate, two small horn-shaped signa (fig. 242).

Biology.— Unknown. The single specimen was collected in January.

Distribution.— Brazil: Bahia (fig. 302).

Etymology.— Named after Mneme, a moon of Jupiter. To be treated as a noun in apposition.

*Cosmopterix molybdina* Hodges, 1962  
(figs 73, 165, 243, 279)

*Cosmopterix molybdina* Hodges, 1962: 19. Holotype ♂, United States: Bar Harbor, Maine, 3.vii.1936, A.E. Brower; gen. slide CU 3815 (CUIC) [examined].

Material examined.— United States: 1 ♀, Maine, Bar Harbor, 15.vii.1938, A.E. Brower; gen. slide USNM 4239 (USNM).

Diagnosis.— The leaden-gold thorax and tegulae in combination with the broad pale golden markings on the forewing are characteristic.

Description.— Male, female. Forewing length 4.3 mm. Head: frons and vertex shining golden bronze, neck tufts shining dark brown, collar shining leaden-gold with greenish and purplish reflections; labial palpus, first segment very short, pale brown, second segment three-quarters of the length of third, shining pale grey ventrally and apically, dorsally greyish white, third segment shining grey with golden gloss; scape dorsally shining dark brown with reddish gloss, ventrally pale greyish brown, antenna dark brown with reddish gloss, at two thirds a white ring of ten segments (the first two



partly brown), followed towards apex by ten dark brown and seven white segments at apex. Thorax and tegulae shining leaden-gold with greenish reflection. Legs: dark brown with golden gloss, femur of hindleg shining brownish golden, forelegs and midlegs missing, tibia of hindleg with white medial and apical rings, spurs whitish dorsally, dark grey ventrally. Forewing shining dark brown with reddish golden gloss, a broad, very pale golden metallic fascia at one-fifth, widening towards dorsum, a pale yellow transverse fascia beyond the middle, narrowing towards dorsum, bordered at the inner edge by a tubercular silver to very pale golden metallic fascia, perpendicular at dorsum and narrowing towards costa, bordered on the outer edge by two large tubercular silver to very pale golden metallic costal and dorsal spots, both spots very close in middle but not touching, the dorsal spot about one and a half time as large as the costal and more towards base, the fascia with some irregular dark brown lining on the outside, both spots with similar lining on the inside, apical line as a short golden-white streak in the cilia at apex, cilia dark brown around apex, paler towards base, hindwing pale greyish brown with reddish gloss, cilia greyish brown. Underside: forewing shining greyish brown, the apical line in the cilia at apex indistinctly visible, hindwing shining greyish brown on costa, shining grey on dorsum. Abdomen not examined (already dissected) (fig. 73).

*Male genitalia.* Right brachium of uncus rather narrow, apical part slender and gradually tapering distally, tip with a small hook, left brachium narrow, about one-third of length of right one. Valvae spatulate. Anellus lobes long and very broad, only slightly bent, distal part more than twice as wide as basal part, apex blunt. Aedeagus with bulbous part bottle-shaped, slightly narrowing distally, basal part short, about half the length of bulbous part, lateral lobes about half the length of basal part (fig. 165).

*Female genitalia.* Posterior edge of sternite VII concave with a convex section in middle. Sterigma very long, posterior part narrowing distally, anterior part parallel-sided and narrow, ostium bursae round with a crescent-shaped sclerotization and a short rim ventrally. Ductus bursae missing. Corpus bursae long and elongate, signa as two irregular plates with a central vertical rim (fig. 243).

Biology.— Host plant. *Ipomoea* sp. (Convolvulaceae) (Hodges, 1978).

*Life history.* The larvae are leaf miners. Adults fly from mid-April to mid-July. Larvae found in Oregon in mid- to late June emerged in January (Hodges, 1978).

Distribution.— USA: Maine, Oregon, California (Hodges, 1978); Canada: British Columbia (fig. 279).

Remarks.— So far no evidence has been found that this species has been introduced into North America as suggested by Hodges (1978). Very recently several specimens were found in Burnaby (BC), Canada, by Mr. Dave Holden. The moths were resting on the foliage of Japanese knotweed (*Fallopia japonica* Houtt.), which is an alien weed introduced on the West Coast of Canada (J.-F. Landry, pers. comm.). The moths were identified from photo's. The only available slide of the male genitalia has been embedded ventrally, therefore it was not possible to depict the genitalia in the lateral position.

*Cosmopterix montisella* Chambers, 1875  
(figs 74, 166, 244, 278)

*Cosmopterix montisella* Chambers, 1875: 297. Holotype (sex not stated), United States: Colorado, Spanish Bar; *Cosmopterix montisella* Cham; Type 14967 (MCZ) [not examined].

*Cosmopterix unicolorella* Walsingham, 1889: 291. Holotype ♂, United States: California, Siskiyou Mts., 7-15.vi.1872, Wlsm; gen. slide BM 6518 (synonymised by Hodges, 1962) (BMNH) [examined].

Material examined.— 15♂, 2♀. United States: 1♂, Michigan, Kalamazoo Co., Gull Lake Biol. Sta., 27.viii.1969, Roland L. Fischer. 1♂, Michigan, Clinton Co., E. State Rd - 1 mi N of Lansing, 2.vii.2002, UV & white lights, G.L. Parsons. 1♂, 1♀, Michigan, Ingham Co., T04N-R01W S 28, SE/NW, 5.x.1997, R.J. Priest (MSUC). 1♂, Oregon, Umatilla Co, vic Kamela, 3.viii.1999, George J. Balogh (GB). 2♂, Utah, San Juan Co., 8 km W Monticello, Dalton Springs CG, 2400 m, 29-30.vii.1993, leg. H.W. van der Wolf; gen. slide JCK 4455. 1♂, Arizona, Coconino Co., Grand Canyon North Rim, Quaking Aspen Spring CG, 2300 m, 27.vii.1993, leg. H.W. van der Wolf (VDW). 1♀, Arizona, Santa Rita Mtns., Madera Canyon, 4880', 28.vii.1959, R.W. Hodges; gen. slide JCK 5744 (USNM). 1♂, same locality 5.viii.1959. 1♂, Arizona, Coconino Co., Fort Valley, 7.5 mi NW Flagstaff, 7350', 26.vi.1961, Ronald W. Hodges (USNM). 1♂, California, Shasta Co., Hatched Creek, 14-17.viii.1871, Walsingham. 1♂, California, Siskiyou Co., Mt Shasta, 2.viii-1.ix.1871, Walsingham. 2♂, California, Shasta Co., Bear Creek, 27-28.vii.1871, Walsingham (BMNH). 2♂, New Mexico, San Miguel Co, 9 mile N Pecos, 25.vii.2005, George J. Balogh. 1♂, New Mexico, Otero Co, Hwy 82 mile 11.5 W of Cloudcroft, 16.ix.2004, George J. Balogh (GB).

Diagnosis.— Resembles *C. bacata*, but differs by the larger wingspan, the white inward lined tegulae, the subcostal line on the forewing which starts at base and by the dorsally brownish yellow abdomen.

Description.— Male, female. Forewing length 5.1-6.5 mm. Head: frons shining pale ochreous with greenish and reddish reflections, vertex and neck tufts shining dark bronze brown with greenish and reddish gloss, laterally and medially edged white, collar shining dark bronze brown; labial palpus first segment very short, shining ochreous, second segment four-fifths of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined dark brown laterally; scape dorsally shining dark brown with a white anterior line, shining white ventrally, antenna shining dark brown, a short white line from base with an interrupted subdistal section of three to four segments, this white line varies in length, followed towards apex by three dark brown, one white, approximately ten dark brown, three white, four dark brown and two white segments at apex. Thorax and tegulae shining dark bronze brown with greenish and reddish gloss, thorax with a white median line, tegulae lined white inwardly. Legs: shining dark brown with reddish gloss, femur of foreleg shining grey, femora of midleg and hindleg shining pale golden, foreleg with a white line on tibia and tarsal segments one and two, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segments one and two with white apical rings, tibia of hindleg as midleg, tarsal segments one and two with whitish apical rings, spurs white dorsally, dark brown ventrally. Forewing shining dark bronze brown with reddish golden gloss, four white streaks in the basal area, a subcostal from base to one-quarter, strongly bending from costa and widening in distal third, a short medial, ending at or slightly beyond the subcostal, a subdorsal as long or slightly longer than the medial and slightly further from base than the medial, a narrow dorsal from beyond base to one-seventh, there is some variation in the length and shape of the white streaks, a broad orange-brown transverse fascia beyond the middle, at costa twice as wide as at dorsum, the dorsal part darkened or completely brown, bordered at the inner edge by a broad tubercular silver or pale golden metallic fascia, widening towards dorsum, bordered at the outer edge by two tubercular silver or pale golden metallic costal and dorsal spots the dorsal spot about twice as large as the costal and much closer to base,

both tubercular fascia and spots with greenish and purplish reflections, and the fascia sometimes with a tiny dark brown subcostal spot on the outside, costal and dorsal spots inwardly edged dark brown, a broad white costal streak from the costal spot, a pale golden to golden metallic apical line on dorsum of the apical area, often broadly interrupted in the middle and becoming a broad shining white streak in the apical cilia; cilia dark bronze brown around apex, ochreous-brown on dorsum towards base. Hindwing shining brownish-grey, cilia ochreous-brown. Underside: forewing shining greyish brown with the white costal streak, the white line in the apical cilia and an ochreous line on dorsum distinctly visible, hindwing shining greyish brown. Abdomen dorsally shining brownish yellow, laterally and ventrally shining dark grey, segments broadly banded shining white posteriorly, anal tuft ochreous-white dorsally, mixed brown ventrally (fig. 74).

*Male genitalia.* Right brachium of uncus long, slender and upwardly bent, apical part widened and hollowed ventrally, tapering gradually towards apex, tip rounded and slightly ventrally bent, left brachium long and narrow, tip rounded, less than half the length of right one. Valvae semicircular, caudal margin rounded, upper margin almost straight and lower margin slightly concave. Anellus lobes narrow in basal part, apical part twice as wide, bent in middle, gradually tapering to a pointed tip. Aedeagus with bulbous part bottle-shaped, narrowing distally to about one-third of width, basal part more than about one-third of length of bulbous part, lateral lobes, about half the length of basal part (fig. 166).

*Female genitalia.* Posterior edge of sternite VII concave with a large hump in middle. Sterigma almost cylindrical in distal half, strongly tapering in basal half, ostium round, wide and with a sclerotized edge ventrally. Ductus bursae slightly more than half the length of corpus bursae. Corpus bursae oval, two very large elongate signa (fig. 244).

*Biology.*— Unknown. Univoltine throughout much of the range from early June to mid-September. Bivoltine in southern Arizona in July and August and late September (Hodges, 1978).

*Distribution.*— USA: According to Hodges (1978) the species has been found from New York and Oregon south to New Mexico, Arizona and California. Single specimens have been collected in Arkansas and Iowa, now also established in Michigan (fig. 278).

*Remarks.*— The orange-brown transverse fascia can be completely dark bronze brown, like the rest of the forewing. This form was formerly described as *C. unicolourella* Walsingham, 1889.

*Cosmopterix navarroii* spec. nov.  
(figs 75, 167, 303)

*Type material.*— Holotype ♂, Argentina: Tucumán, 11 km S Tacanas, 28 km WSW Trancas, 800 m, 15.xi.1995, transitional forest 1st level, Neth[erlands] Ent[omological] Exp[edition] N[orth]-Arg[entina] Sta. 13: gen. slide JCK 4473 (RMNH).

*Diagnosis.*— Resembles *C. pulchrimella*, but differs by the single, broad white sub-apical area of the antenna and by the absence of the white median line on the head. In the male genitalia the short, triangular right brachium of the uncus with the small hooked tip, the valvae with the apical hook-like projection in combination with the

slender aedeagus are characteristic. Examination of the genitalia is recommended.

Description.— Male. Forewing length 3.9 mm. Head: frons shining silvery white, vertex shining pale brown, neck tufts dark brown, laterally lined white, collar shining dark brown; labial palpus first segment very short, white, second segment three-fifths of the length of third, shining white on inside, dark brown with white longitudinal line on outside, third segment white, lined dark brown laterally; scape dorsally shining dark brown with a white anterior and a pale brown posterior line, ventrally shining white, antenna shining dark brown, with a white line from base to one-half, followed towards apex by approximately eight dark brown segments, eight white and approximately ten dark brown segments at apex. Thorax shining dark brown with a short white median line at posterior end, tegulae shining dark brown, narrowly lined white inwardly. Legs: femora ochreous-grey, tibiae and tarsi shining dark brown, foreleg with a white line on tibia and tarsal segments one to three, segment five entirely white, tibia of midleg with a white oblique basal line and white medial and apical rings, tarsal segments one and two with white apical rings, segment five entirely white, tibia of hindleg as midleg, tarsal segment one with a white basal ring, segments three to five dorsally white, spurs brownish grey, tips ochreous. Forewing shining dark brown, three narrow white lines in the basal area, a subcostal from one-sixth to one-third, bending from costa and slightly longer than the other two, a medial just above fold, from the middle of the subcostal to just beyond it, a subdorsal as long as the medial, but further from base, a bright yellow transverse fascia beyond the middle, narrowed towards dorsum, edged brownish grey at costa, bordered at the inner edge by an outward oblique tubercular pale golden metallic fascia with a small blackish brown subcostal spot on the outside, bordered at the outer edge by a similarly coloured, but inwardly oblique, fascia, narrowed in middle and dark brown edged on the inside, the outer tubercular fascia on costa with a white costal streak, a shining white apical line from the distal half of the apical area, interrupted before the cilia, the shorter inner part downwardly bent, cilia dark brown around apex, paler towards dorsum. Hindwing shining brown, cilia brown. Underside: forewing shining dark greyish brown, the white costal streak and apical line visible, hindwing shining dark greyish brown. Abdomen shining greyish brown with orange brown spots dorsally, last three segments greyish white banded posteriorly, ventrally shining yellowish white, anal tuft shining brownish grey (fig. 75).

*Female.* Unknown.

*Male genitalia.* Right brachium of uncus with an extension on left side of apical part, apex pointed with a small hooked tip, left brachium short and broad with rounded tip, one-fifth of length of right one. Valvae with semicircular caudal margin and upper margin strongly concave with a convex section in middle, forming a hook-like projection with caudal margin, lower margin slightly concave. Anellus lobes rather narrow in basal half, wider in distal half, bent in middle, apex pointed. Aedeagus slender, slightly upwardly bent, bulbous part moderately narrowing distally, basal part short, a little more than one-third of length of bulbous part, lateral lobes triangular, about half the length of basal part (fig. 167).

*Biology.*— Unknown. The single specimen was collected in November.

*Distribution.*— Argentina: Tucumán (fig. 303).

*Etymology.*— The species is dedicated to Dr Fernando Navarro from Tucumán, Argentina, honouring his collaboration with the Netherlands Entomological Expedition to the north of Argentina in 1995-1996.

*Cosmopterix nieukerkeni* spec. nov.  
(figs 76, 168, 302)

Type material.— Holotype ♂, Argentina: Tucumán, San Javier, 16 km WNW Tucumán, 1010 m, 18.xii.1995, transitional forest, Neth[erlands] Ent[omological] Exp[edition] N[orth]-Arg[entina], Sta. 29; gen. slide JCK 4478 (RMNH). Paratypes: 3♂: Brazil: 1♂, Distrito Federal, Planaltina, 1000 m, 30.iii.1984, 15°35'S 47°42'W, V.O. Becker col.; Col. Becker 56280. 1♂, same locality, 15.x.1984; Col. Becker 56919. 1♂, same locality, 15.iv.1985; Col. Becker 57458; gen. slide JCK 5495 (VOB).

Diagnosis.— Resembles *C. magophila*, but differs by the dark brown colour of the head, thorax and forewing. In the male genitalia the shape of the right brachium of the uncus with the two small lateral hooks, the boot-shaped valvae in combination with the large and bulbous aedeagus are characteristic. Examination of the genitalia is recommended.

Description.— Male. Forewing length 3.3–3.8 mm. Head: frons shining silvery white, vertex and neck tufts shining dark brown with reddish gloss, laterally and medially lined white, collar shining dark brown; labial palpus first segment very short, white, second segment four-fifths of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined dark brown laterally; scape dorsally dark shining brown with a white anterior line, ventrally white, antenna shining dark brown, with a white line from base to three-quarters, followed towards apex by four white segments each separated by one brown segment, approximately five dark brown segments and two white segments at apex. Thorax and tegulae shining dark brown, thorax with a white median line and tegulae lined white inwardly. Legs: shining dark brown, foreleg with a white line on tibia and tarsal segments one, two and five, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segments one, two and four with white apical rings, segment five entirely white, tibia of hindleg as midleg, tarsal segment one with white basal and apical rings, segment two with a white apical ring, segments three to five entirely white, spurs white. Forewing shining dark brown with reddish gloss, three narrow white lines in the basal area, a subcostal from base to one-third and bending from costa, a very short medial just above fold, from one-quarter to one-third, a subdorsal, one and a half time as long as the medial, and slightly further from base, a bright yellow transverse fascia beyond the middle, narrowed towards dorsum and with an apical protrusion, bordered at the inner edge by two tubercular very pale golden metallic subcostal and subdorsal spots of equal size, both spots touching in the middle of the wing, the subcostal spot more towards base and outwardly with a patch of blackish scales, bordered at the outer edge by two similarly coloured but slightly smaller costal and subdorsal spots, the costal spot further from base than the subdorsal and inwardly edged by some dark brown scales and outwardly edged by a white costal streak, a shining white apical line from underneath the apical protrusion to the cilia, cilia dark brown, paler towards dorsum. Hindwing shining greyish brown, cilia brown. Underside: forewing shining greyish brown, the white costal streak and apical line distinctly visible, hindwing shining brownish grey. Abdomen not examined (fig. 76).

*Female.* Unknown.

*Male genitalia.* Right brachium of uncus bent in middle with a ventrally hollow bulge beyond middle, tapering gradually towards apex, tip with two small lateral

hooks, left brachium short and narrow, tip rounded, one-quarter of length of right one. Valvae boot-shaped, caudal margin rounded, upper margin concave and lower margin almost straight. Anellus lobes rather narrow, slightly bent, apical part only slightly wider, tip blunt. Aedeagus large, bulbous part wide at base and strongly narrowing distally to about one-third of width, basal part very wide distally, about two-thirds of length of bulbous part, lateral lobes rectangular, about half the length of basal part (fig. 168).

Biology.— Unknown. Adults were collected in October and December, as well as in March and April, likely bivoltine.

Distribution.— Argentina: Tucumán; Brazil: Distrito Federal (fig. 302).

Etymology.— The species is dedicated to Dr Erik van Nieukerken, Leiden, The Netherlands, in recognition of his longstanding help, advice and collaboration.

*Cosmopterix nishidai* spec. nov.  
(figs 77, 78, 169, 245, 288)

Type material.— Holotype ♂, Costa Rica: San José, San Pedro, U.C.R., Reserva Ecológica Leonel Oviedo, 1150 m, 15.xii.2000, col/rear: Kenji Nishida, Host Plant: *Ipomoea* sp., minador de hoja; gen. slide JCK 5237 (INBC). Paratypes: 2 ♂, 2 ♀: Costa Rica: 1 ♂, San José, San Pedro, U.C.R., Reserva Ecológica Leonel Oviedo, 1150 m, 25.v.2001, col.: Kenji Nishida, with net in shade. 1 ♂, same locality, 2.v.2001, day catch. 1 ♀, same locality, 9.iii.2001, col/rear: K. Nishida, H[ost] P[lant]: *Ipomoea* sp., leaf miner, Prepupa 13. ii.2001; gen. slide JCK 5488. 1 ♀, same locality, 14.iii.2001 (INBC).

Diagnosis.— Shows external similarities to *C. eukelade* and *C. gielisorum*. It differs from these species by the broader forewings and by the inner and outer tubercular spots which are opposite each other.

Description.— Male, female. Wingspan 9.5-9.8 mm. Head: frons shining ochreous with greenish and reddish reflections, vertex and neck tufts shining olive brown with reddish reflection, collar olive brown; labial palpus first segment very short, white, second segment four-fifths of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined dark brown laterally, extreme apex white; scape dark brown with a white anterior line, white ventrally, antenna shining dark brown with a white line from base to two-thirds, this line beyond one third with several interruptions, followed towards apex by eight dark brown segments, ten white or partly white, twelve dark brown and three white segments at apex. Thorax and tegulae shining olive brown with reddish and greenish gloss, thorax with white median line. Legs: shining olive brown, forelegs dark brown dorsally, femora of midleg and hindleg shining creamy white, foreleg with a white line on tibia and tarsal segments one and five, segment two and three with white dorsal spots, tibia of midleg with narrow white oblique basal and medial streaks and a white apical ring, tarsal segments dark brown with white apical spots on segments one to three, segment five entirely white, tibia of hindleg as midleg, but the hair pencils posteriorly to the medial streak and the apical ring large and distinctly blackish brown, tarsal segments one and two dark greyish brown, segment three dark greyish brown in basal half, ochreous-grey in apical half, segments four and five white dorsally, ochreous-grey ventrally, spurs ochreous-white dorsally, dark grey ventrally. Forewing shining greyish brown with reddish gloss, costal half from base to the transverse

fascia olive brown, five very narrow lines in the basal area, a yellowish costal from one-fifth to the transverse fascia, a subcostal from base almost to the transverse fascia and interrupted at two-thirds of its length, a medial above fold, almost from base to the interruption of the subcostal, a short and oblique subdorsal from one-quarter to two-fifths, the latter three lines silvery white with bluish and purplish reflections, a dirty yellow transverse fascia beyond the middle with a short basal protrusion and a very long apical protrusion, bordered at the inner edge by two tubercular pale pinkish golden metallic costal and dorsal spots, the costal spot one and a half times as large as the dorsal, slightly more towards base and with patch of blackish scales on outside, bordered at the outer edge by two similarly coloured costal and dorsal spots, the costal spot more than twice as large as the dorsal, both spots opposite and weakly lined brown inwardly, a yellowish costal streak beyond the outer costal spot, an indistinct dirty yellow apical line from below the tip of the apical protrusion, cilia olive brown, greyish brown towards dorsum. Hindwing shining dark greyish brown with greenish and reddish reflections, cilia greyish brown. Underside: forewing shining greyish brown, the yellowish apical line distinctly visible, hindwing shining greyish-brown, tip ochreous. Abdomen dorsally shining dark brown with greenish and reddish reflections, segments five and six banded paler posteriorly, laterally dark brown, ventrally shining ochreous with segments banded shining white posteriorly, anal tuft pale ochreous-grey dorsally, white ventrally brown. In the male the very long valvae and pleural lobes of segment VIII make up more than one quarter of the total length of the abdomen (figs 77-78).

*Male genitalia.* Right brachium of uncus thick, apical part large and oval, tip small and conical, left brachium short and narrow, tip pointed, about one-third of length of right one. Valvae very long, broad, strongly tapering at two-thirds in to a very narrow apical part with a small hooked tip. Anellus lobes slightly asymmetrical, left one almost straight, right one slightly bent at two-thirds, tips pointed. Aedeagus short, bulbous part narrowing distally to about one-half of width, basal part rather short, about one-third of length of bulbous part, lateral lobes rounded, almost as long as basal part (fig. 169).

*Female genitalia.* Posterior edge of sternite VII almost straight with a small concave indentation ventrally. Sterigma large, conical, anterior third narrowed, ostium bursae wide, circular with a ventral semicircular sclerotization. Ductus bursae about two-thirds of length of corpus bursae. Corpus bursae elongate, two pouch-shaped signa with a triangular granulate plate posteriorly (fig. 245).

*Biology.*— Host plant. *Ipomoea neei* (Spreng.) O'Donell (Convolvulaceae) (Nishida, pers. comm.).

*Life history.* The larva mines the leaves. The larva makes an irregular blotch mine that is often changed for a new one. Between the two leaf mines the larva creates a path of silk to travel between these mines. The frass is partly ejected from the mine and partly deposited inside. Although next to the food plant also *Ipomoea santillanii* O'Donell occurred, no leaf mines were found on that plant (Nishida, pers. comm.). Adults have been collected in May.

*Distribution.*— Costa Rica (fig. 288).

*Etymology.*— The species is dedicated to Mr. Kenji Nishida, San Jose, Costa Rica, who collected and reared the species.

*Cosmopterix nitens* Walsingham, 1889  
(figs 79, 170, 246, 281)

*Cosmopterix nitens* Walsingham: 1889: 289. Holotype ♂ (without abdomen), United States: Texas, 2.iii.1886; Walsingham Collection (BMNH) [examined].

Material examined.— 10♂, 7♀, United States: 3♂, Michigan, Midland Co., T14N, R01E, S21, 26.ix.1988, emgd.1989, R.J. Priest. 1♂, 4♀, same locality, 6.ix.1993, emgd. 3.iii.1994; gen. slide JCK 6106, 6109. 1♂, same locality, emgd. 5.iii.1994. 1♂, same locality, emgd. 6.iii.1994. 2♂, 1♀, same locality, 1.x.1999, emgd.10.iv.2000 (MSUC). 1♀, South Carolina, Charleston Co., McClellanville, Wedge Plantation, 28. iv.1981, leg. Ronald W. Hodges. 1♂, same locality, 12.v.1981; gen. slide JCK 5742 (USNM). 1♂, same data as holotype; gen. slide BM 7588. 1♀, S.W. Texas, Morrisson 1884; gen. slide BM 31220 (BMNH).

Diagnosis.— The silver to pale golden oblique fascia in the basal area and the incomplete apical line distinguishes this species from *C. sinelinea*.

Description.— Male, female. Forewing length 3.8-4.5 mm. Head: frons shining ochreous-white, vertex, neck tufts and collar shining pale bronze brown with greenish gloss; labial palpus, first segment very short, white, second segment three-quarters of the length of third, grey with white longitudinal lines laterally and ventrally, third segment white, lined dark greyish brown laterally; scape dark bronze brown with a white anterior line, ventrally white, antenna dark bronze brown, beyond two-thirds a white ring of two segments, followed towards apex by fourteen dark bronze brown and five white, mixed greyish brown, segments at apex. Thorax and tegulae shining pale bronze brown with greenish gloss. Legs: dark grey, foreleg with a white line on tibia and tarsal segments one, two and five, segment three white in basal half, tibia of midleg with an oblique white dorsal line in basal half and a white apical ring, tarsal segments one and two with white apical rings, tibia of hindleg with oblique white basal and medial lines and a white apical ring, tarsal segments one, two and four with white apical rings, segment five dorsally white, spurs white dorsally, dark grey ventrally. Forewing shining bronze brown with a strong golden gloss, darker bronze brown in female, an inwardly oblique broad silver to pale golden metallic fascia at one-quarter, widening towards dorsum, but not reaching it, a pale yellow transverse fascia beyond the middle, narrowing towards dorsum, bordered at the inner edge by a tubercular silver to pale golden metallic fascia, perpendicular at dorsum and not reaching costa, bordered at the outer edge by a broad, slightly outward oblique similarly coloured fascia, widest on dorsum, both fasciae with some pale reddish reflection, in the middle of the transverse fascia a broad blackish brown streak with strong reddish gloss, the inner fascia with some irregular blackish brown lining on the outside, the outer fascia lined blackish brown on the inside, outer fascia costally edged by a white costal streak, apical line as a broad silver to pale golden metallic streak from the middle of the apical area and ending just before apex, cilia bronze brown around apex, paler towards base, hindwing pale brownish grey, cilia greyish brown. Underside: forewing shining greyish brown, the apical line indistinctly visible, hindwing greyish brown. Abdomen shining brown, segments banded paler posteriorly, laterally shining grey with greenish reflection, ventrally yellowish white, anal tuft dorsally brown, ventrally yellowish white (fig. 79).

*Male genitalia*. Right brachium of uncus long, apical two-thirds spatulate and narrowing distally, strongly downwardly bent and with small apical hook, left brachium short



and tapering, tip rounded, about one-quarter of length of right one. Valvae triangular with almost straight upper margin and slightly concave lower margin, caudal margin slightly convex. Anellus lobes very narrow, apical part gradually tapering to a pointed tip. Aedeagus stout, bulbous part slightly upwardly bent, gradually narrowing distally to more than one-half width, basal part short, about one-third of length of bulbous part, both lateral lobes triangular and longer than half the length of basal part (fig. 170).

*Female genitalia.* Posterior edge of sternite VII almost straight. Sterigma large, elongate, widest part before ostium, slightly narrowing basally, ostium bursae round with a crescent-shaped sclerotization ventrally. Ductus bursae very short, about one-fifth of length of corpus bursa. Corpus bursae elongate, signa as two irregular plates with an arrow-like sclerotization in middle (fig. 246).

*Larva.* Head black, body yellowish orange to brownish with a red dorsal and single lateral broken lines (Priest, pers. comm.).

Biology.— Host plant: *Phragmites australis* (Cav.) Trin. et Steud. (Poaceae) (Priest, pers. comm.).

*Life history.* Mine as a gallery from 3 to 7 cm. The frass is piled at basal end of the mine and expelled from an opening at that end. The larva moves along the mine when disturbed. Hibernates in its cocoon inside the mine (Priest, pers. comm.). Adults fly from March and April until October (Hodges, 1978). Multivoltine at least in the south, but probably univoltine in Michigan.

Distribution.— USA: from coastal South Carolina to south-western Texas (Hodges, 1978), also established in Michigan (fig. 281).

Remarks.— The specimens from Michigan have dark brown forewings instead of bronze brown, the broad blackish brown streak in the middle of the transverse fascia extends towards costa and covers sometimes almost all of the yellow scales of the transverse fascia, and the apical line is interrupted in the middle.

*Cosmopterix nyctiphanes* Meyrick, 1915  
(figs 80, 171, 303)

*Cosmopterix nyctiphanes* Meyrick, 1915: 208. Lectotype ♂ (designated by J.F.G. Clarke, 1965), Ecuador: vi.[19]14, Parish; gen. slide JFGC 6140 (BMNH) [examined].

Diagnosis.— Resembles *C. amalthea*, but differs by the lack of the white median lines on the head and thorax and by the interrupted oblique pale golden metallic fascia in the basal area of the forewing. In the male genitalia the right brachium of the uncus with the middle shallow hump and the apical large hump is characteristic.

Description.— Male. Forewing length 3.6 mm. Head: frons shining greyish white with golden reflection, vertex and neck tufts shining dark bronze brown with golden reflection, laterally lined white, collar shining dark bronze brown; labial palpus first segment very short, white, second segment three-quarters of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined dark brown laterally; scape dorsally dark brown with a white anterior line, ventrally white, antenna shining dark grey, subapical part with two greyish white rings of one segment each separated by one dark grey segment, followed by approximately 14 dark grey segments at apex. Thorax and tegulae shining dark bronze brown with golden

reflection and reddish gloss. Legs: shining dark brown, foreleg with a white line on tibia and tarsal segments one and two, femora of midleg and hindleg shining golden brown, tibia of midleg with silver metallic oblique basal and medial lines with greenish reflection and a white apical ring, tarsal segments one, two and four with white apical rings, segment five entirely white, hindlegs missing, spurs shining dark brown, lined silver metallic. Forewing shining dark brown with reddish gloss, at one-fifth an irregular inwardly oblique pale golden metallic fascia with bluish gloss, fascia consisting of two short streaks of similar length with the costal of these two closest to base, and a dorsal streak which is twice as long as both other streaks, a broad, slightly outwardly bent, tubercular pale golden metallic fascia in the middle, a small pale golden metallic costal spot at three-quarters, edged by a short and broad white costal streak, a similarly coloured dorsal spot, more towards base and three times as large as the costal, some scattered yellow scales between pale golden fascia and the spots as a vestige of the yellow transverse fascia, apical line as a bluish silver spot in the middle of the apical area, preceded by two small streaks of silver scales and with a white spot in the apical cilia, cilia dark brown, paler on dorsum towards base. Hindwing shining dark greyish brown, cilia dark brown. Underside: forewing shining greyish brown with the white costal streak and apical spot distinctly visible, hindwing greyish brown. Abdomen not examined (already dissected) (fig. 80).

*Female.* Unknown.

*Male genitalia.* Right brachium of uncus with a shallow hump in middle and a large hump apically, apex pointed, left brachium very short and pointed, about one-fifth of length of right one. Valvae elongate, upper and lower margin concave, caudal margin semicircular. Anellus lobes broad, bent in middle at widest part, apex sharp. Aedeagus rather bulky, slightly tapering apically, basal part less than half the length of bulbous part, both lateral lobes somewhat triangular, about half the length of basal part (fig. 171).

*Biology.*— Unknown. The single known adult was collected in June.

*Distribution.*— Ecuador (fig. 303).

*Remarks.*— The only available genitalia slide of the male genitalia has been embedded laterally, therefore it was not possible to depict the genitalia in the ventral position.

*Cosmopterix ochleria* Walsingham, 1909  
(figs 81, 289)

*Cosmopterix ochleria* Walsingham, 1909: 5. Holotype ♀ (without abdomen), Mexico: Tabasco, Teapa, iii. [18??] H.H. Smith; Walsingham Collection (BMNH) [examined].

*Diagnosis.*— Resembles *C. teligera*, *C. clemensella*, *C. damnosa*, *C. inopis* and *C. lespezadeae*, but the lack of the white median line on the thorax, the distinct dorsal line from base and the greyish yellow transverse fascia on the forewing are characteristic.

*Description.*— Female. Forewing length 3.8 mm. Head: frons shining greyish white with greenish gloss, vertex and neck tufts greyish brown, laterally and medially very narrowly lined white, collar greyish brown; labial palpus first segment very short, white, second segment three-quarters of the length of third, shining dark grey with white longitudinal lines laterally and ventrally, third segment white, lined dark brown

laterally; scape dark brown with a white anterior line, antenna dark brown with white line from base to two-fifths, distal part interrupted, followed towards apex by a short annulate section, five dark brown segments, two white, two dark brown, two white, ten dark brown and eight white segments at apex. Thorax and tegulae greyish brown, tegulae lined white inwardly. Legs: dark brown, femora shining pale ochreous grey, foreleg with a white line on tibia and tarsal segments one, two and four, five entirely white, tibia of midleg with white basal and medial streaks and a white apical ring, tarsal segment one and two with white apical rings, segments four and five entirely white, tibia of hindleg as midleg but with an additional white subapical ring, tarsal segment one with white basal and apical rings, segment two with a white apical ring, segments four and five entirely white, spurs dark grey, whitish at apex. Forewing greyish brown, five white lines in the basal area, a costal from one-third to the transverse fascia, a subcostal from near base to one-quarter, slightly bending from costa, a very short medial, underneath the end of the subcostal, a subdorsal from one-fifth to the middle of the costal, a dorsal from base to the start of the subdorsal, a greyish yellow transverse fascia beyond the middle, its inner edge bordered by a tubercular pale golden metallic fascia, not reaching costa, and with a small and a larger blackish spot at the outside, bordered on the outer edge by two tubercular pale golden metallic costal and dorsal spots, both spots opposite, the dorsal spot about four times larger than the costal, both spots lined greyish brown inwardly, the costal spot edged by a narrow white costal streak, a white, sometimes interrupted, apical line from beyond the transverse fascia, cilia greyish brown around apex, paler towards dorsum, hindwing dark grey, cilia greyish brown. Underside: forewing greyish brown, the costal streak visible as a yellow spot and a white spot in apical cilia, hindwing greyish brown. Abdomen absent (fig. 81).

*Male*. Unknown.

*Female genitalia*. Not available.

Biology.— Unknown. The adult was collected in March.

Distribution.— Mexico: Tabasco (fig. 289).

Remarks.— Although the genitalia are not available *C. ochleria* does not match externally with any other species.

*Cosmopterix opulenta* Braun, 1919  
(figs 82, 172a-b, 247, 280)

*Cosmopterix opulenta* Braun, 1919: 260. Lectotype (gender not stated), United States: Rivera, Los Angeles County, California (ANSP) [not examined].

Material examined.— 4♂, 1♀. Costa Rica: 1♂, Cartago, Turrialba, 600m, i.1973, Col. Becker 37411; genitalia slide JCK 5529 (VOB). United States: 1♂, Oklahoma, Oklahoma City, 1.ix.1954, G.R. Davis; gen. slide USNM 2595 (USNM). 1♂, New Mexico, Dona Ana Co., Aguirre Spgs BLM, Cgd 17.ix.2004, George J. Balogh; gen. slide JCK 6093 (GB). 1♂, Arizona, Santa Cruz Co., Madera Canyon, 4880', Santa Rita Mts., 23.ix.1959, R.W. Hodges; gen. slide RWH 40 (CUIC). 1♀, Arizona, Santa Rita Mts., Madera Canyon, 4400', 12.x.1959, R.W. Hodges; gen. slide USNM 2596 (USNM).

Diagnosis.— *Cosmopterix opulenta* cannot be distinguished with certainty on external characters from *C. chisosensis* or *C. diaphora*. Examination of the genitalia is essential. From these species it differs in the male genitalia by the right brachium of the uncus

downwardly bent in the middle, with a flat and broadened apex and the more or less square valvae, in the female genitalia it differs by the concave posterior edge of sternite VII without convex section in middle and the large, single triangular signum.

Description.— Male, female. Forewing length 3.3-3.6 mm. Head: frons shining ochreous-grey with greenish and reddish reflections, vertex and neck tufts shining bronze brown with reddish reflection, laterally and medially lined white, collar shining bronze brown; labial palpus first segment very short, white, second segment four-fifths of the length of third, shining dark brown with white longitudinal lines laterally and ventrally, third segment white, lined dark brown laterally; scape dark brown with white anterior and dorsal lines, antenna dark brown with a white line from base to beyond one-half, followed towards apex by five dark brown segments, six white, two dark brown, two white, two dark brown, two white, six dark brown and eight white segments at apex. Thorax and tegulae shining bronze brown with reddish gloss, thorax with a white median line, tegulae lined white inwardly. Legs: shining dark greyish brown, femora pale ochreous-grey, foreleg with a white line on tibia and tarsal segments one to three and four in apical half, segment five entirely white, tibia of midleg with white oblique basal and medial streaks and a white apical ring, tarsal segments one to three and five with white apical rings, tibia of hindleg with a long and oblique white line on outside from base to four-fifths, followed by a white subapical ring, tarsal segment one with a white basal ring and dorsally white in the apical half, segments two to five dorsally white, spurs white dorsally, dark brownish grey ventrally. Forewing shining bronze brown with reddish gloss, five white lines in the basal area, a costal from one-quarter to the transverse fascia, a subcostal from base to one-quarter, slightly bending from costa, a medial from beyond base to two-fifths, a subdorsal from one-quarter almost to the transverse fascia, an indistinct dorsal from beyond base to one-quarter, a pale yellow transverse fascia beyond the middle and with an irregular basal protrusion in middle and with a broad, distally narrowed, prolongation towards apex, bordered at the inner edge by two subcostal and a subdorsal tubercular silver metallic spots, the subdorsal spot slightly further from base than the subcostal, the subcostal with a patch of blackish scales on the outside, at two-thirds of the transverse fascia are two tubercular silver metallic costal and dorsal spots, almost opposite, the dorsal spot about three times as large as the costal, the costal spot with some bronze brown inward lining, a white costal streak from the outer costal spot, a broad white apical line from the prolongation of transverse fascia to apex, cilia pale yellow from the white costal streak to the costal end of the transverse fascia, changing into bronze brown around apex, paler towards dorsum. Hindwing shining pale brownish grey, cilia greyish brown. Underside: forewing shining greyish brown, the yellow section in the costal cilia and the white apical line distinctly visible, hindwing shining brownish grey. Abdomen not examined (already dissected) (fig. 82).

*Male genitalia.* Right brachium of uncus long and rather narrow, upwardly bent in middle, and downwardly bent towards apex, apex widened, tip flat, left brachium about one-third of the length of right one, tip rounded. Valvae more or less square, caudal margin rounded, upper margin straight or very slightly concave, lower margin slightly concave. Anellus lobes short and rather narrow, slightly bent in middle, tip pointed. Aedeagus bottle-shaped, narrowing distally to less than one-quarter width of bulbous part, basal part short, about one-third length of bulbous part, lateral lobes tri-

angular, about one-half of length the basal part (fig. 172a-b).

*Female genitalia.* Posterior edge of sternite VII concave. Sterigma almost cylindrical in distal half, strongly tapering in basal half, ostium round, wide and with a small semi-circular sclerotization ventrally. Ductus bursae about one-third of length of corpus bursae. Corpus bursae very elongate with an oval distal section, one large triangular signum (fig. 247).

*Biology.*— Host plant. *Ambrosia psilostachya* DC. and *Artemisia douglasiana* Besser (Asteraceae) (Hodges, 1978).

*Life history.* The larvae are leaf miners. The way of living of the larva is stated by Braun (1919) as follows: the mines extend principally along the midrib, with irregular projections branching out on either side. The larva spins a cocoon on the densely pubescent under side of the leaf, constructed of silk, and the whitish pubescence of the leaf. Mines collected in October; imagines in April of the following year. Adults have been collected in April, June-July and September-October. Bivoltine.

*Distribution.*— USA: California, Oklahoma, Arizona (Hodges, 1978), New Mexico; Costa Rica (fig. 280).

*Remarks.*— See for more details *C. chisosensis*.

*Cosmopterix orthosie* spec. nov.  
(figs 83, 173, 303)

*Type material.*— Holotype ♂, Brazil: Minas Gerais, Sierra do Cipõ, 1400 m, 17-19.iv.1991, V.O. Becker col.; Col. Becker 78119; gen. slide JCK 5454 (VOB).

*Diagnosis.*— Externally very similar to *C. callichalca*, *C. dapifera* and *C. delicatella*. It differs in the male genitalia by the large hook-shaped right brachium of the uncus, the spatulate valvae and by the small and narrow, parallel-sided anellus lobes which are characteristic for *C. orthosie*. For certain identification examination of the genitalia is necessary.

*Description.*— Male. Forewing length 4.1 mm. Head: frons shining pale ochreous with greenish and reddish reflections, vertex and neck tufts brown with reddish gloss, laterally and medially lined white, collar brown; labial palpus first segment very short, white, second segment four-fifths of the length of third, brown with white longitudinal lines laterally and ventrally, third segment white, lined dark brown laterally; scape dark brown with a white anterior line, white ventrally, antenna shining dark brown with a very short white line from base, changing into an interrupted line to three-fifths, very indistinct distally, followed towards apex by two white segments, two dark brown, two white, ten dark brown, four white and four dark brown segments at apex. Thorax and tegulae brown with reddish gloss, thorax with a white median line, tegulae lined white inwardly. Legs: greyish brown, femur of hindleg shining pale grey, foreleg with a white line on tibia and tarsal segments one and two, segment three white in basal half, segment five entirely white, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segments one and two with white dorsal streaks at apex, segment five entirely white, tibia of hindleg as midleg, tarsal segment one with white basal and apical rings, segments two to four with white dorsal streaks, segment five entirely white, spurs white, ventrally with a dark grey streak. Forewing brown with reddish gloss, five white lines in the basal area, a costal from one-third to the transverse

fascia, a subcostal from base to one-third, slightly bending from costa, a straight medial above fold nearly from base almost to the transverse fascia, a subdorsal below fold, from one-third to the end of the medial, a dorsal from beyond base to the middle of the subdorsal, a broad yellow transverse fascia beyond the middle, narrowed towards dorsum and with an apical protrusion, bordered at the inner edge by two pale golden metallic tubercular subcostal and dorsal spots, the subcostal spot edged by a small patch of blackish brown scales on the outside, the dorsal spot slightly larger and further from base than the subcostal, bordered at outer edge by two similarly coloured costal and dorsal spots, both spots opposite, the dorsal spot twice as large as the costal, both brownish edged inwardly, a broad white costal streak from the outer costal spot and a similar streak from the outer dorsal spot into the cilia, a broad shining white apical line from the apical protrusion, cilia brown around apex, ochreous-grey towards dorsum. Hindwing shining dark brownish grey, cilia ochreous-grey. Underside: forewing shining greyish brown, the white apical line distinctly visible, hindwing shining pale grey, a short white streak at apex. Abdomen dorsally shining brown, ventrally lighter, segments banded shining yellowish white posteriorly, anal tuft whitish (fig. 83).

*Female.* Unknown.

*Male genitalia.* Right brachium of uncus rather short, apical half bent 90° to the left, forming a large hook, tip blunt, left brachium short, tip rounded, about one-third of the length of right one. Valvae spatulate, caudal margin slightly rounded, upper margin slightly concave and lower margin almost straight. Anellus lobes small and narrow, parallel-sided, gradually bent in middle, tip rounded. Aedeagus slender bottle-shaped, distally slightly upwards bent, narrowing distally to about one-third of width of bulbous part, basal part less than one-half of length of bulbous part, laterally lobes square, about half the length of basal part (fig. 173).

*Biology.*— Unknown. The single specimen was collected in April.

*Distribution.*— Brazil: Minas Gerais (fig. 303).

*Etymology.*— Named after Orthosie, a moon of Jupiter. To be treated as a noun in apposition.

*Remarks.*— The colouration of the abdomen could not be established with certainty due to greasing.

*Cosmopterix pentachorda* Meyrick, 1915  
(figs 84, 174, 248, 304)

*Cosmopteryx pentachorda* Meyrick, 1915: 203. Lectotype ♂ (designated by J.F.G. Clarke, 1965), Peru: Lima, 500', viii.[19]14, Parish, gen. slide JFGC 6148 (BMNH) [examined].

*Material examined.*— 2♂, 2♀. Ecuador: 1♂ (without abdomen): Huigra, 4500', vi.[19]14, Parish. 2♀, *ibid.*; gen. slide BM 29292 (BMNH). Peru: 1♂ (without abdomen), Chosica, 2800', vi.[19]14, Parish.

*Diagnosis.*— Resembles *C. minutella* and *C. quadrilineella*, but differs from *C. minutella* by the greyish brown forewings and the larger wingspan, from *C. quadrilineella* by the absence of the costal line in the basal area. In the male genitalia the rather narrow right brachium of the uncus and the large spatulate valvae are characteristic. Examination of the genitalia is necessary.

Description.— Male, female. Forewing length 3.8-4.2 mm. Head: frons shining ochreous-white with reddish reflection, vertex and neck tufts shining greyish brown with reddish gloss, laterally and medially lined white, lateral lines narrow, collar shining greyish brown; labial palpus first segment very short, white, second segment three-quarters of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined brown laterally, extreme apex white; scape dorsally shining dark brown with a white anterior line, ventrally shining white, antenna shining dark brown with a short white line from base changing to an interrupted section to two-fifths, followed towards apex by approximately six dark brown segments, seven more or less white, two dark brown, two white, six dark brown, three white and two dark brown segments at apex. Thorax and tegulae shining greyish brown with reddish gloss, thorax with a white median line, tegulae lined white inwardly. Legs: shining dark greyish brown, foreleg with a white line on tibia and tarsal segments, interrupted on segment three and base of segment four, femora of midleg and hindleg shining ochreous-white, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segments one, two and four with whitish apical rings, segment five entirely white, tibia of hindleg with a very oblique white line from base to two-thirds and a white apical ring, tarsi similar to midleg, spurs white dorsally, brown ventrally. Forewing shining greyish brown with reddish gloss, four narrow white lines in the basal area, a subcostal, nearly at costa, from base to just before one-half, slightly bending from costa, a medial from base and slightly longer than the costal, a slightly oblique subdorsal from one-sixth to near the transverse fascia, a dorsal from one-eighth to the end of medial, a bright yellow transverse fascia beyond the middle with a broad prolongation towards apex and with a very short apical protrusion, bordered at the inner edge by two tubercular pale golden metallic subcostal and subdorsal spots, the subcostal spot with a patch of blackish scales on the outside, the subdorsal spot somewhat larger and further from base than the subcostal and not at the inner edge of the transverse fascia, at two-thirds of the transverse fascia two tubercular pale golden costal and dorsal spots, both spots opposite, the costal spot edged greyish brown on the inside, the dorsal spot more than twice as large as the costal, from the outer costal spot a short white costal streak, a shining white apical line from the dorsal side of the apical protrusion, cilia brown at apex, ochreous-brown towards dorsum. Hindwing shining pale grey, cilia ochreous-brown. Underside: forewing shining brownish grey, the white apical line distinctly visible, hindwing shining pale grey. Abdomen dorsally dark brownish grey, segment six banded whitish posteriorly, ventrally shining ochreous, anal tuft yellowish white (fig. 84).

*Male genitalia.* Right brachium of uncus rather narrow, widening distally, tip rounded with a short hook, left brachium very short and narrow. Valvae large, spatulate, upper and lower margins slightly concave. Anellus lobes long, narrow and almost parallel-sided. Aedeagus long, bulbous part narrowing distally to half its width, basal half more than half the length of bulbous part, lateral lobes short, semicircular (fig. 174).

*Female genitalia.* Posterior edge of sternite VII concave with a small convex hump in middle. Sterigma oval, ostium bursae round. Ductus bursae about half the length of corpus bursae. Corpus bursae pear-shaped with one signum as a sclerotized ridge (fig. 248).

Biology.— Unknown. Adults have been collected in June and August.

Distribution.— Ecuador; Peru (fig. 304).

Remarks.— The only available male genitalia are those of the lectotype, which have not been embedded properly. It has partly turned from the lateral position into the ventral position during the embedding procedure. For this reason the left half of the genitalia are shown in the drawing instead of the right half as usual. The valva shows an elongate shape, but may actually be broader because there is a possibility that it has been more or less folded. According to the original description there should be six specimens. However only five specimens could be found in the collection of BMNH.

*Cosmopterix pimmaarteni* spec. nov.  
(figs 85, 175, 249, 304)

Type material.— Holotype ♂, Brazil: Planaltina, Distrito Federal, 1000 m, 27.v.1986, 15°35'S 47°42'W, V.O. Becker col.; Col. Becker 58244; Comp.c/tipo BMNH 1988, V.O. Becker; gen. slide JCK 5439 (VOB). Paratypes: 2 ♂, 2 ♀: Brazil: 1 ♂, Distrito Federal, Planaltina, 1000 m, 25.ix.1985, V.O. Becker Col.; Col. Becker 57968; gen. slide JCK 5473. 1 ♂ (without abdomen), Distrito Federal, Planaltina, 1000 m, 5.vi.1989, V.O. Becker Col.; Col. Becker 96753. 1 ♀, same locality, 12.xii.1982; Col. Becker 40802; gen. slide JCK 5494. 1 ♀, same locality, 3.ix.1988; Col. Becker 58827; gen. slide JCK 5449 (VOB).

Diagnosis.— The small and blunt right brachium of the uncus, the long and pear-shaped valvae and the strongly narrowed distal part of the aedeagus in the male genitalia are characteristic. Examination of the genitalia is necessary.

Description.— Male, female. Forewing length 3.7 mm. Head: frons shining greyish white, vertex and neck tufts shining dark bronze brown with reddish reflection, laterally and medially lined white, collar shining bronze brown; labial palpus first segment very short, white, second segment three-quarters of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined dark brown laterally, extreme apex white; scape dorsally shining dark bronze brown with a white anterior line, ventrally shining white, antenna shining dark brown with a white line from base to one-third, followed by an interrupted white line to one-half, followed towards apex by six dark brown segments, two white, two dark brown, two white, ten dark brown and seven white segments at apex. Thorax and tegulae shining bronze brown with reddish gloss, thorax with a white median line, tegulae lined white inwardly. Legs: shining dark greyish brown, femora ochreous-grey, foreleg with a white longitudinal line on tibia and tarsal segments one to three and five, tibia of midleg leg with white oblique basal and medial lines and a white apical ring, tarsal segments one to three and five with white apical rings, tibia of hindleg as midleg, tarsal segment one with white basal and apical rings, segments two and three with white apical rings, segments four and five dorsally white, spurs white dorsally, dark greyish brown ventrally. Forewing shining dark bronze brown with reddish gloss, five narrow white lines in the basal area, a costal from one-third to the transverse fascia, a subcostal from base to one-third, slightly bending from costa, a short medial just above fold, from one-fifth to just beyond the end of the subcostal, a subdorsal as long as the medial but slightly further from base, a dorsal from beyond base to one-quarter, a bright yellow transverse fascia beyond the middle, slightly narrowed towards dorsum on the inner edge and with an apical protrusion,



bordered at the inner edge by two tubercular golden metallic subcostal and a subdorsal spots the subdorsal spot slightly further from base as the subdorsal, the subcostal spot with a small patch of blackish scales on the outside, bordered on the outer edge by a tubercular golden metallic costal and dorsal spot, the dorsal spot about three times as large as the costal, both spots with some dark bronze brown inward lining, the transverse fascia narrowly edged grey at costa, a white costal streak from the outer costal spot, a white apical line from the apical protrusion to apex, cilia dark bronze brown, paler towards dorsum. Hindwing shining brownish grey, cilia bronze brown. Underside: forewing shining greyish brown, the white costal streak distinctly visible, hindwing shining greyish brown in the costal half, shining grey in the dorsal half. Abdomen dorsally bronze brown with reddish gloss, ventrally shining dark grey, in the middle yellowish white, segments banded shining white posteriorly, anal tuft white, pale grey basally (fig. 85).

*Male genitalia.* Right brachium of uncus slightly bent, apical part with a bulge on the left, tapering gradually to a blunt tip, left brachium rather narrow, tip pointed, about half the length of right one. Valvae long, pear-shaped, narrow at base, caudal margin rounded, upper and lower margins slightly concave. Anellus lobes rather narrow in basal part, gradually widening, thickest part beyond middle, weakly bent in middle and gradually tapering to a pointed tip. Aedeagus bottle-shaped, bulbous part wide at base and strongly narrowing distally to about one-quarter of width, basal part about two-thirds of length of bulbous part, lateral lobes short and triangular, about one-third of length of basal part (fig. 175).

*Female genitalia.* Posterior edge of sternite VII convex. Sterigma elongate, anterior part narrowed, ostium bursae round, ventrally with a semicircular sclerotization. Ductus bursae slightly shorter than length of corpus bursae. Corpus bursae oval, narrowed towards ductus bursae, two signa as sclerotized ridges on elongate weakly sclerotized plates (fig. 249).

*Biology.*— Unknown. Adults have been collected in May, June, April, September and December, indicating more than one generation.

*Distribution.*— Brazil: Distrito Federal (fig. 304).

*Etymology.*— The species is dedicated to my grandson Pim Maarten Koster.

*Cosmopterix praxidike* spec. nov.  
(figs 86, 176, 289)

*Type material.*— Holotype ♂, Mexico: Tamaulipas, El Ensino, 250 m, 4-13.viii.1988, V.O. Becker col.; Col. Becker 69057; gen. slide JCK 5459 (VOB). Paratypes 6♂: same data as holotype (VOB).

*Diagnosis.*— The inward and apical protrusion of the transverse fascia, in combination with the pattern of the white lines in the basal area and the broad apical line are characteristic.

*Description.*— Male. Forewing length 3.9-4.2 mm. Head: frons shining pale ochreous-grey with greenish and reddish reflections, vertex and neck tufts dark bronze brown, laterally and medially lined white, collar dark bronze brown; labial palpus first segment very short, white, second segment four-fifths of the length of third, dark

bronze brown with white longitudinal lines on outside and ventrally, inner side white, third segment white, lined brown laterally; scape dorsally dark brown with a white anterior line, ventrally shining white, antenna shining dark brown, a white line from base to approximately one half, followed by an interrupted section to two-thirds, followed towards apex by two dark brown segments, two white, two dark brown, two white, six dark brown and eight white segments at apex. Thorax and tegulae dark bronze brown, thorax with a white median line, tegulae lined white inwardly. Legs: dark brownish grey, femora of midleg and hindleg shining ochreous-white, lined greyish, foreleg with a white line on tibia and tarsal segments, segment five entirely white, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segments with white apical rings, segment five entirely white, tibia of hindleg as midleg, but with an additional white spot dorsally before the white apical ring, tarsal segment one with a white basal streak and a white dorsal streak from one-half, this white dorsal streak continues over the remaining segments, spurs white with a longitudinal dark grey streak ventrally. Forewing dark bronze brown, five white lines in the basal area, a broad costal from one-quarter to the transverse fascia, a subcostal from base to one-third, bending from costa in distal half, a medial almost from base to the transverse fascia, a subdorsal from one-third to the transverse fascia, a dorsal from base to one-third, a broad pale yellow transverse fascia beyond the middle with small basal and apical protrusions, bordered on the inner edge by two silver metallic tubercular subcostal and subdorsal spots of similar size, the subcostal spot with a patch of blackish scales on the outside, the subdorsal spot further from base than the subcostal, bordered on the outer edge by two similarly coloured costal and a dorsal spots, the dorsal spot more than twice as large as the costal and more towards base, a white costal streak from outer costal spot, a broad shining white apical line connected to the apical protrusion, cilia ochreous-grey, darker around apex. Hindwing shining brownish grey, cilia pale ochreous-grey. Underside: forewing shining dark greyish brown with an ochreous-white line on costa from one-third, the apical line distinctly visible; hindwing shining pale brownish grey and with an ochreous-white line at apex. Abdomen dorsally pale ochreous-yellow, ventrally shining white, anal tuft white (fig. 86).

*Female.* Unknown.

*Male genitalia.* Right brachium of uncus with rounded extension to the left in apical part, gradually tapering to a pointed tip, left brachium rather slender, tip rounded, about one-half of the length of right one. Valvae semicircular, caudal margin rounded, upper margin strongly concave and lower margin slightly concave. Anellus lobes slender, widest part in middle, strongly bent, tip rounded. Aedeagus bottle-shaped, narrowing distally to less than one-half width of bulbous part, basal part about two-thirds of the length of bulbous part, lateral lobes long, distally tapering, about two-thirds of the length of basal part (fig. 176).

Biology.— Unknown. Adults have been collected in August.

Distribution.— Mexico: Tamaulipas (fig. 289).

Etymology.— Named after Praxidike, a moon of Jupiter. To be treated as a noun in apposition.

*Cosmopterix pulchrimella* Chambers, 1875  
(figs 87, 177, 250, 317)

*Cosmopterix pulchrimella* Chambers, 1875: 231. Holotype (sex not stated), United States: Covington, Kentucky (MCZ) [not examined].

*Cosmopterix parietariae* Hering, 1931: 68. Lectotype ♂ (designated by Sinev, 1988), Croatia: Ragusa, Istria, Amsel, Z.; 26.10.[19]30 Nr. 3762, Mine an: Parietaria (synonymised by Sinev, 1988) (ZMHB).

Material examined.— 10♂, 7♀. United States: 1♂, Michigan, Keweenaw Co., 2.2 mi W Copper Harbor, rocky Lk Superior shore, 8.vii.2001, George J. Balogh. 1♂, same locality, 10.vii.2001. 1♀, Michigan, Keweenaw Co., Agate Harbor, 7.vii.2001, George J. Balogh. 1♀, Michigan, Keweenaw Co., wetland W of Lk Bailey, 8.vii.2001; gen. slide JCK 6104 (GB). 1♂, Michigan, Douglas Lake, July 14/31, C.W.S. 1♂, 2♀, Michigan, Berrien Co., Grand Mere St. Pk., 12.ix.2005, leg. J. Vargo (MSUC). 1♀, Illinois, Iroquois Co., near junction, 3300Nand 3000E, 29.v.2004, George J. Balogh (GB). 1♂, Arkansas, Johnson Co., 8 mi N Clarksville, T10N, R23W, Sec. 2, 6.vii.1997, R.L. Brown. 1♂, Mississippi, Hancock Co., Bay St. Louis, 28.ix.1978, R. Kergosien. 1♀, Mississippi, Harrison Co., Long Beach, 27.ix.1996, R. Kergosien (MEM). 1♂, 1♀, Mississippi, Bolivar Co., Dahomey N.W.R., 33 42 10 N 90 55 27 W, 13.v.1993, D.M. Pollock; gen. slides JCK 2665, 2658 (RMNH). 3♂, New Mexico, Eddy Co., Dark Cyn Rd 7 mi W Hwy 62/180, 13.iv.2005, George J. Balogh; gen. slide JCK 6103. 1♂, Arizona, Cochise Co., Cave Creek, vic Portal, 28-29.viii.2005, George J. Balogh (GB), and 107♂ and ♀ from Europe.

Diagnosis.— The species resembles a group of species which have the inner and outer tubercular fasciae bordering the transverse fascia, but differs from the similar looking species by the absence of the white inward lining of the tegulae. In the male genitalia it is characterized by the rather simple spatulate right brachium of the uncus, the more or less triangular valvae and the slender aedeagus, in the female genitalia the concave posterior edge of segment VII, in combination with the short and oval sterigma and the wide ductus bursae are characteristic.

Description.— Male, female. Forewing length 3.0-4.0 mm. Head: frons shining grey, shining white towards clypeus, vertex and neck tufts shining dark brown, laterally and medially lined white, collar shining dark brown; labial palpus first segment very short, white, second segment four-fifths of the length of third, shining white on inside, dark brown with a white longitudinal line on outside, third segment white, lined brown laterally; scape dorsally shining dark brown with a white anterior line, ventrally shining white, antenna shining dark brown with a white interrupted line from base to beyond one-half, near base often uninterrupted, followed towards apex by five dark brown segments, one white, one dark brown, one white, three dark brown, one white, approximately twelve dark brown, three white and five dark brown segments at apex. Thorax and tegulae shining dark brown, thorax with a white median line. Legs: shining dark brown, foreleg with a white line on tibia and tarsal segment one, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segments one and two with white apical rings, segment five entirely white, tibia of hindleg as midleg, tarsal segments four and five entirely white, spurs white dorsally, brown ventrally. Forewing shining dark brown, three short silver streaks in the basal area, sometimes with a pale golden gloss, a subcostal nearest to base and bending from costa distally, a shorter medial underneath the distal end of the subcostal, a subdorsal, as long as the subcostal but further from base, a bright orange transverse fascia beyond the middle, narrowing towards dorsum, in some of the specimens from the USA the fascia is partly

or completely darkened, bordered at the inner edge by broad tubercular pale golden metallic fascia, sometimes with a pinkish gloss, perpendicular at dorsum, edged blackish on the outside, bordered at the outer edge by a similarly coloured inwardly oblique fascia, edged blackish on the inside, at the costa of the outer fascia a broad white costal streak, the apical line as a silver metallic spot with bluish reflection in the middle of the apical area and a broad white spot in the cilia at apex, cilia dark brown. Hindwing shining brown, cilia brown. Underside: forewing shining dark greyish brown, the white costal streak and apical spot distinctly visible, hindwing shining dark greyish brown. Abdomen shining dark brown dorsally, ventrally segments banded white posteriorly, anal tuft brown (fig. 87).

*Male genitalia.* Right brachium of uncus spatulate, apex gradually tapering and blunt, length about four times as long as the left brachium. Valvae more or less triangular, upper and lower margin concave, caudal margin convex. Anellus lobes slightly bent, narrowed near base, widest part in the middle, apically tapering to a sharp point. Aedeagus slender, bulbous part straight, narrowing distally to about one-half its width, basal half about one-third of length of bulbous part, lateral lobes narrow, almost as long as basal part (fig. 177).

*Female genitalia.* Posterior edge of segment VII concave. Sterigma short and oval, ostium bursae round with a cup-shaped and a weakly sclerotized ridge ventrally. Ductus bursae wide and slightly widening anteriorly, slightly longer than corpus bursae. Corpus bursae elongate with two very small funnel-shaped signa (fig. 250).

*Larva.* Head and prothoracic plate black, anal plate greyish brown, thoracic legs pale brown, body greyish white.

*Biology.*— Host plant. *Parietaria officinalis* L., *P. pensylvanica* Muhl. and *Pilea pumila* (L.) Gray (Urticaceae) (Busck, 1906, Hering, 1931).

*Life history.* Mine in a leaf, starting as an irregular gallery usually at the midrib, soon leading to an irregular blotch. Inside the mine a silken spinning, this often causes contortion of the leaf. It constructs a silk-lined gallery, which serves as a shelter when the larva is not feeding. Frass partly inside the mine, but most of it is rejected through a hole at the beginning of the mine. The black pellets of frass on the underside of a leaf indicates the presence of a larva. New mines are made very often. Cocoon inside the mine. Bivoltine, in southern areas throughout the year.

*Distribution.*— Holarctic. Nearctic region: USA: From Massachusetts and southern Wyoming south to southern Florida and southern Arizona (Hodges, 1978), Michigan, New Mexico. Canada. Palearctic region: Mediterranean area, from Portugal to western Transcaucasus, north to Switzerland Hungary; Azores, Canary Islands and Madeira (Koster & Sinev, 2003). Recently found in southern England (Parsons, 2002) (fig. 317).

*Remarks.*— Although the common species *C. pulchrimella* has not been found so far in Central and South America, it cannot be excluded that the species occurs in these areas as well, especially south of the USA. Several tropical species have more or less the same external features as the common or dark form of *C. pulchrimella*, such as *C. aurotegulae*, *C. chaldene*, *C. ganymedes*, *C. gomezpompai*, *C. navarroi* and *C. pyrozela*. For these species identification by examination of the genitalia is recommended. It is assumed that *C. pulchrimella* has been introduced from the New World into the Palearctic.

*Cosmopterix pyrozela* Meyrick, 1922  
(figs 88, 251, 304)

*Cosmopterix pyrozela* Meyrick, 1922: 566. Holotype ♀, Brazil: Trombetas, iv.[19]19, Parish; gen. slide JFGC 6158 (BMNH) [examined].

Diagnosis.— The absence of white lining on the head, thorax and tegulae and the violet silver metallic spot in middle of the fold are characteristic.

Description.— Female. Forewing length 3.7 mm. Head: shining greyish ochreous with greenish gloss, vertex, neck tufts and collar greyish brown; labial palpus, first segment very short, white, second segment three-quarters of the length of third, dark grey with white longitudinal lines laterally and ventrally, third segment white, lined dark grey laterally, extreme apex white; scape dark brown with a white anterior line, ventrally white, antenna dark brown with a white interrupted line from base to one-half, at two-thirds a white ring of three segments followed by two dark brown and two white segments, remaining part towards apex of approximately 18 segments dark brown. Thorax and tegulae greyish brown. Legs: dark brown, foreleg with a white line on tibia and tarsal segments, tibia of midleg with oblique white basal and medial lines and a white apical ring, tarsal segments one, two and four apically white, segment five entirely white, hindlegs missing, spurs whitish dorsally, grey ventrally. Forewing shining dark brown, at one-quarter a violet silver metallic spot on the fold in the middle of the basal area, an orange-yellow transverse fascia beyond the middle, slightly outwardly oblique, bordered at the inner edge by a outwardly oblique pale golden metallic fascia with violet reflection and edged dark brown on the outside, bordered on the outer edge by a more outward oblique pale golden metallic fascia with violet reflection, edged dark brown on the inside, the outer fascia edged on costa by a white costal streak, the apical line as a silver violet streak in the middle of apical area and a white spot in the cilia at apex, cilia dark brown around apex, paler towards base, hindwing dark greyish brown, cilia greyish brown. Underside: forewing shining greyish brown with the yellowish white costal streak and white spot at apex visible, hindwing costal half greyish brown, dorsal half grey. Abdomen not examined (already dissected) (fig. 88).

*Male*. Unknown.

*Female genitalia*. Posterior edge of sternite VII not possible to examine. Sterigma elongate, tapering anteriorly, ostium bursae round with a semicircular sclerotization ventrally, dorsal edge with a V-shaped indentation. Ductus bursae about half the length of corpus bursae and with a sclerotized section where it enters the latter. Corpus elongate, narrowing towards ductus bursae, two crescent-shaped signa (fig. 251).

Biology.— Unknown. The holotype was collected in April.

Distribution.— Brazil: Amazonas (fig. 304).

*Cosmopterix quadrilineella* Chambers, 1878  
(figs 89, 178, 252, 281)

*Cosmopterix quadrilineella* Chambers, 1878: 95. Holotype (sex not stated), United states: Bosque Co., Texas (MCZ) [not examined].

Material examined.— 5♂, 1♀. United States: 1♀, Arkansas, Hope, 8.26; gen. slide BM 31222. 3♂, Texas, Forestburg, viii.[19]28; gen. slide BM 31221. 1♂, Texas, Brewster Co., 8000', v.[19]26. 1♂, California, Sonoma Co., Russian R., 19.v.1871, coll Walsingham (BMNH).

Diagnosis.— Forewing pattern shows similarity with *C. minutella* and *C. pentachorda*, but can be distinguished by the bronze brown ground colour of the forewing and the larger wingspan. From *C. pentachorda* by the presence of the costal line in the basal area. In the male genitalia the ventrally hollowed and upwardly bent right brachium of the uncus in combination with the short and semi-circular valvae are characteristic. Examination of the genitalia is necessary.

Description.— Male, female. Forewing length 4.2 mm. Head: frons shining ochreous-white with greenish and reddish reflections, vertex and neck tufts shining bronze brown with reddish reflection, laterally and medially lined white, collar shining bronze brown; labial palpus first segment very short, white, second segment three-quarters of the length of third, greyish brown with white longitudinal lines laterally and ventrally, third segment white, lined dark brown laterally; scape dorsally shining dark brown with white anterior and dorsal lines, ventrally shining white, antenna shining dark brown with a white line from base to before one-half, followed towards apex by an annulate section of about fourteen segments, two white, two dark brown, two white, two dark brown, two white, six dark brown and eight white segments at apex. Thorax and tegulae shining bronze brown with reddish gloss, thorax with a white median line, tegulae lined white inwardly. Legs: shining greyish brown, femora of midleg and hindleg pale ochreous, foreleg with a white line on tibia and tarsal segments, tibia of midleg with white oblique basal, medial and subapical streaks, tarsal segments lined white dorsally, tibia of hindleg with a white lateral line on outside to one-half, from there bending dorsally to two-thirds, and with a white apical ring, tarsal segments as midleg, spurs white, ventrally greyish. Forewing shining bronze brown with reddish gloss, five white lines in the basal area, a very short costal just before the transverse fascia, a subcostal from base almost to the transverse fascia, bending slightly from costa in distal third, a medial above fold from base to the transverse fascia, a subdorsal from two-fifths to the transverse fascia, a narrow dorsal from beyond base almost to the transverse fascia, a yellow transverse fascia beyond the middle with a wide apical protrusion, bordered at the inner edge by a tubercular pale golden metallic subcostal spot and with a patch of blackish brown scales on the outside, a similar, but twice as large, subdorsal spot at one-quarter of the transverse fascia, inwardly edged blackish brown, bordered at the outer edge by two tubercular pale golden metallic costal and dorsal spots, opposite each other, the dorsal spot twice as large as the costal, a broad white costal streak from the outer costal spot, a shining white apical line connected to the apical protrusion, cilia greyish brown at apex, pale ochreous towards dorsum. Hindwing shining greyish white, darker at costa and dorsum, cilia pale ochreous. Underside: forewing shining pale greyish brown, the white apical line distinctly visible, hindwing shining pale grey. Abdomen dorsally pale brownish yellow, ventrally shining white, anal tuft white (fig. 89).

*Male genitalia.* Right brachium of uncus with apical one-third rectangular, ventrally hollowed and upwardly bent, with a small hook at the tip, left brachium broad at base, gradually narrowing towards apex, almost one-half length of right one. Valvae short,

semi-circular with upper and lower margins slightly concave. Anellus lobes slightly bent, basal part strongly narrowing, apical part twice as wide as basal part, tapering distally to a blunt apex. Aedeagus with bottle-shaped bulbous part, narrowing distally to about one-half of width, basal part two-thirds of length of bulbous part, lateral lobes large, about half as long as basal part, more or less square (fig. 178).

*Female genitalia.* Posterior edge of sternite VII concave with a wide and shallow hump in middle. Sterigma slightly tapering in distal half, strongly tapering in basal half, ostium round, wide and with a sclerotized edge ventrally. Ductus bursae about two-thirds of length of corpus bursae and with a sclerotized section where it enters the latter. Corpus bursae gradually widening from ductus bursae into an egg-shape lower part. Two rather large oval signa with arrow-shaped sclerotizations (fig. 252).

*Biology.*— Early stages unknown. Adults fly from May to October (Hodges, 1978).

*Distribution.*— USA: Texas, Arizona (Hodges, 1978), Arkansas, California (fig. 281).

*Cosmopterix saltensis* spec. nov.  
(figs 90, 179, 253, 305)

*Type material.*— Holotype ♂, Argentina: Salta, Quebrada del Toro, 6 km NW Campo Quijano, 30 km W Salta, 1650 m, 11.i.1996, Neth[erlands] Ent[omological] Exp[edition] N[orth]-Arg[entina] Sta. 41; gen. slide JCK 4475 (RMNH). Paratype: 1 ♀: same locality., 28.i.1996, Neth. Ent. Exp. N-Arg. Sta. 56; gen. slide JCK 4476 (RMNH).

*Diagnosis.*— *Cosmopterix saltensis* differs from similar looking species by the antennae with broad white subapical section and the white apex and by the absence of the median white line on the head. In the male genitalia the gradually tapering of the right brachium of the uncus with a small disk at the tip in combination with the very broad anellus lobes and the distally strongly narrowed aedeagus are characteristic.

*Description.*— Male, female. Forewing length 4.2-4.5 mm. Head: frons shining pale grey with greenish reflection, vertex and neck tufts bronze brown, posteriorly olive brown, laterally lined white; labial palpus first segment very short, white, second segment three-quarters of the length of third, dark brown with white longitudinal lines laterally and ventrally in apical half, third segment white, lined dark brown laterally; scape dark brown with a white anterior line, white ventrally, antenna shining brown, a white line from base to two-fifths, followed towards apex by ten dark brown segments, one white, one dark brown, eight white, two dark brown, two white, ten dark brown and seven white segments at apex. Thorax and tegulae olive brown, thorax with white median line, tegulae lined white inwardly. Legs: shining dark brown, femora shining ochreous-white, edged shining pale grey on outside, foreleg with a white line on tibia and tarsal segments, tibia of midleg with white oblique basal, medial and apical lines, tarsal segments one and two with white apical rings, segment five entirely white, tibia of hindleg with a very oblique white line from base to beyond one-half and a white apical ring, tarsal segment one with a white basal ring and a white apical streak dorsally, segments two to four with white dorsal streaks, segment five white, spurs white, ventrally with a greyish brown streak. Forewing olive brown, five narrow white lines in the basal area, a costal from one-third to the transverse fascia, a subcostal from base to one-third, bending from costa in distal half, a medial above fold from

one-sixth and ending well before the transverse fascia, a subdorsal below fold from one-quarter and ending just beyond the medial, a dorsal from beyond base to one-quarter, a broad yellow transverse fascia beyond the middle, narrowed towards dorsum and with an apical protrusion, bordered at the inner edge by two pale golden metallic, tubercular subcostal and dorsal spots of similar size, the subcostal with a patch of blackish brown scales on the outside, the dorsal spot further from base, bordered at the outer edge by two similarly coloured costal and dorsal spots, both spots opposite, the costal spot edged brown on the inside and with a white costal streak, the dorsal spot about twice as large as the costal, a shining white apical line from the apical protrusion to apex, cilia ochreous-brown. Hindwing shining greyish brown, cilia ochreous-brown. Underside: forewing shining brown, the white costal streak and apical line distinctly visible, hindwing costal half shining brown, dorsal half shining grey. Abdomen dorsally shining brown, seventh segment banded yellowish white posteriorly, ventrally shining dark grey, segments banded shining greyish white posteriorly, anal tuft yellowish white, in female ventrally shining white, anal tuft white, further as male (fig. 90).

*Male genitalia.* Right brachium of uncus bent to the right with a bulge beyond middle, tapering gradually towards apex, tip as a small disk, left brachium narrow, tapering distally, less than half the length of right one. Valvae elongate, caudal margin rounded, upper and lower margins only slightly concave. Anellus lobes large, narrowed before middle, slightly bent, apical part very broad, tip pointed. Aedeagus with bulbous part strongly narrowing distally to less than one-third of width, basal part slightly shorter than bulbous part, lateral lobes triangular, less than half the length of basal part (fig. 179).

*Female genitalia.* Posterior edge of sternite VII concave. Sterigma elongate, wider in anterior half, ostium bursae circular with a ventral sclerotized ridge. Ductus bursae about two-fifths of length of corpus bursae. Corpus bursae elongate, narrowed posteriorly, two crescent-shaped signa (fig. 253).

Biology.— Unknown. Adults have been collected in January.

Distribution.— Argentina: Salta (fig. 305).

Etymology.— The species is named after the province Salta, the type locality in Argentina.

Remarks.— According to the male genitalia the species is related to *C. euporie*. It can be distinguished by the more slender right brachium of the uncus and the more bulky aedeagus.

*Cosmopterix schouteni* spec. nov.  
(figs 91, 254, 305)

Type material.— Holotype ♀, Argentina: Jujuy, P.N. Calilegua, Mesada las Colmenas, 1130 m, 5.1.1996, Neth[erlands] Ent[omological] Exp[edition] N[orth]-Arg[entina] Sta. 33; gen. slide JCK 4472 (RMNH).

Diagnosis.— Resembles *C. callisto*, but differs by the uniform brown antenna, the absence of white lines in the basal area and by the incomplete transverse fascia.

Description.— Female. Forewing length 4.2 mm. Head: frons shining silvery white, vertex and neck tufts shining dark brown with greenish reflection, laterally



narrowly lined white, collar shining dark brown; labial palpus first segment very short, white, second segment three-quarters of the length of third, dorsally dark brown, ventrally white, third segment white with a dark brown line ventrally; scape dorsally shining dark brown with a white anterior line, ventrally shining white, antenna shining dark brown, ventrally paler. Thorax and tegulae shining dark brown with greenish reflection. Legs: femora shining ochreous, apically shining grey, foreleg with a white line on tibia and tarsal segments one and two, tibia of midleg with a white apical ring, tarsal segments with indistinct white spots, tibia of hindleg dorsally with three tufts of raised blackish hairs with greenish gloss and a narrow bluish silver medial ring, tarsal segment four and five pale ochreous, spurs dark greyish brown, apically lighter. Forewing shining dark brown with greenish, reddish and purplish reflections, at one-half a narrow, tubercular, bluish silver metallic fascia, at four-fifths, a tubercular bluish silver outer costal spot, bordered on the outside by a pale ochreous-brown costal streak, on dorsum, inward of the costal spot, some bluish silver scales as remains of the outer dorsal spot, between fascia and costal spot a geniculate yellow streak from costa with the long arm reaching almost to apex, a golden metallic apical line from below the apex of the long arm of the yellow streak to the cilia, changing to shining white in the cilia, cilia dark brown around apex, slightly paler towards dorsum. Hindwing shining dark brown, cilia dark brown. Underside: forewing shining dark brown, hindwing shining dark brown. Abdomen dorsally dark brown, segments posteriorly banded shining dark brown with purplish gloss, ventrally shining pale yellow, anal tuft shining dark brown (fig. 91).

*Male.* Unknown.

*Female genitalia.* Posterior edge of sternite VII convex and partly covering sterigma. Sterigma large, conical, tapering posteriorly, ostium bursae circular with a semi-circular ventral sclerotization. Ductus bursae about two-thirds of length of corpus bursae and with a sclerotized section at three-quarters from ostium. Corpus bursae oval, two triangular signa surrounded by a weakly sclerotized patch (fig. 254).

*Biology.*— Unknown. The single specimen was collected in January.

*Distribution.*— Argentina: Jujuy (fig. 305).

*Etymology.*— The species is dedicated to Mr. Rob Schouten, Oegstgeest, The Netherlands, one of the participants of the Netherlands Entomological Expedition to the North of Argentina.

*Cosmopterix scirpicola* Hodges, 1962  
(figs 92, 180, 255, 282)

*Cosmopterix scirpicola* Hodges, 1962: 49. Holotype ♂, United States: Oklahoma City, Oklahoma, August 13 1956 (D.R. Davis); USNM Type No. 6680 (USNM) [not examined].

*Material examined.*— 4♂, 4♀. United States: 1♂, South Carolina, Charleston Co., McClellanville, Wedge Plantation, 30.iv.1981, at light, leg. Ronald W. Hodges; gen. slide JCK 5792. 1♀, South Carolina, Charleston Co., McClellanville, , Fairfield Plantation, 10.v.1981; gen. slide JCK 5793 (USNM). 1♂, Alabama, Baldwin Co., Bon Secour NWR, 30°14'10"N 87°49'49"W, 11.v.1994, R.L. Brown, D. Pollock. 1♀, same locality, 8-9.viii.1994; gen. slide JCK 6128. 1♂, same locality, T9S-R3E, Sec. 30 W, 13-14.x.1991; gen. slide JCK 6129. 1♂, Alabama, Baldwin Co., Weeks Bay NER Reserve, 30°24'58"N 87°49'10"W, 4.viii.2000, R.L. Brown. 1♀, Alabama, Baldwin Co., Gulf Shores St. Pk., 18.vi.1984, R.L. & B.B. Brown; gen. slide JCK 6118 (MEM).

Diagnosis.— Cannot be separated with certainty from *C. ebriola* and *C. fernaldella* on external characters, but differs by the male and female genitalia. For the differences in the male and female genitalia see under *C. ebriola*.

Description.— Male, female. Forewing length 4.8-4.9 mm. Head: frons shining ochreous-white with greenish and reddish reflections, vertex and neck tufts shining ochreous-brown with reddish gloss, medially and laterally lined white, collar ochreous-brown; labial palpus first segment very short, white, second segment four-fifths of the length of third, ochreous-grey, laterally and ventrally lined white, third segment white, lined dark brown laterally; scape dorsally dark brown with anterior and dorsal white lines, white ventrally, antenna dark brown, a short, often interrupted, white line from base, followed towards apex by a dark brown section to two-thirds, one or two ochreous-grey segments, two or three dark brown, one ochreous-grey, ten dark brown, one ochreous-grey and seven dark brown segments at apex. Thorax and tegulae ochreous-brown with reddish gloss, thorax with a white median line, tegulae lined white inwardly. Legs: foreleg dark brown with a white line on tibia and tarsal segments one to three and five, femora of midleg and hindleg shining pale ochreous, tibiae and tarsal segments ochreous-grey, tibia of midleg with white oblique basal and medial streaks and a white apical ring, tarsal segments one and two with whitish apical rings, segment five entirely white, tibia of hindleg as midleg, tarsal segment one with whitish basal and apical rings, segments two to four with whitish apical rings and segment five entirely white, spurs shining white dorsally, dark grey ventrally. Forewing ochreous-brown, apical area often dark brown, four white lines in the basal area, a subcostal from base to two-fifths, gradually bending from costa, a short and straight medial above fold, from about one-fifth to beyond the distal end of the subcostal, a subdorsal below fold, about as long as the medial but slightly further from base, a dorsal from beyond base to the start of the subdorsal, a rather narrow orange-yellow transverse fascia beyond the middle, slightly narrowing towards dorsum with a narrow apical protrusion, bordered at the inner edge by two pale golden metallic tubercular subcostal and subdorsal spots, the subcostal spot about one and a half time as large as the subdorsal, both spots may join in the middle of the wing and are inwardly lined dark brown, the subcostal spot with a patch of blackish scales on the outside, bordered at the outer edge by two pale golden metallic tubercular costal and dorsal spots, the dorsal spot about twice as large as the costal and more towards base, both spots edged dark brown on the inside, a whitish costal streak beyond the outer costal spot, a shining white apical line, edged dark brown, from the apical protrusion, cilia ochreous around apex, ochreous-grey towards dorsum. Hindwing shining grey, cilia ochreous-grey. Underside: forewing shining greyish brown, the apical line indistinctly visible, hindwing shining grey. Abdomen dorsally ochreous, mixed brownish grey, segments banded greyish posteriorly, ventrally ochreous-grey with a yellowish white longitudinal streak, segments broadly banded yellowish white posteriorly, anal tuft brownish grey in male, white in female (fig. 92).

*Male genitalia.* Right brachium of uncus short and stout with a strongly widened semi-circular central section, gradually tapering distally, apex narrow and pointed, slightly downwardly bent, left brachium short and oval. Valvae with upper margin strongly concave, lower margin slightly concave, caudal margin almost straight. Anellus lobes large, slightly bent in middle and strongly widening in apical half, apex

pointed. Aedeagus with bulbous part wide bottle-shaped, strongly narrowing distally to about one-quarter of width, basal part short, less than half the length of bulbous part, lateral lobes short, about one-third of length of basal part, and more or less triangular (fig. 180).

*Female genitalia.* Posterior edge of sternite VII concave with a shallow hump in middle. Sterigma long with a narrow projection in basal half, widening distally, apical half slightly tapering. Ostium bursae round with a semi-circular sclerotized band anteriorly. Ductus bursae about two-thirds of length of corpus bursae and with two small sclerites just before corpus bursae. Corpus bursae elongate, two circular signa with an arrow-shaped sclerite in the centre (fig. 255).

Biology.— Host plant. *Scirpus* sp. (Cyperaceae) (Hodges, 1978).

*Life history.* Larvae mine in the stems (Hodges, 1978). Adults on the wing in the north in June and July, in Florida from late March to early June, in Louisiana in May and June and in California in late August (Hodges, 1978), probably bivoltine.

Distribution.— USA: from Maryland and eastern Wyoming to Florida, southwest Louisiana and California (Hodges, 1978), Alabama (fig. 282).

Remarks.— *C. scirpicola* is probably externally the most variable of the sibling species *C. ebriola*, *scirpicola* and *fernaldella*.

*Cosmopterix similis* Walsingham, 1897  
(figs 93, 181a-b, 256, 290)

*Cosmopterix similis* Walsingham, 1897: 106. Holotype ♀, US Virgin Islands: St. Thomas, Danish W. Indies, 5.iv.1894, Güdman; gen. slide BM 29911 (BMNH) [examined].

Material examined.— 10♂. British Virgin Islands: 7♂, Guana, 0-80 m, 9-23.vii.1987, V.O. Becker & S.E. Miller; Col. Becker 66810; gen. slide JCK 5092, 5480 (VOB). US Virgin Islands: 2♂, St. Thomas, 8.iii. [18]94; gen. slide JCK 4691 (NMW). 1♂, St. Croix, 24.vi.1895, Pontoppidam, Hedeman 7118; gen. slide BM 15372 (BMNH).

Diagnosis.— For differences between the similar *C. facunda* and *C. floridanella*, see under *C. facunda*. The wide and distal gradually tapering right brachium of uncus with a sharp and hooked tip and the broad semicircular valvae in the male genitalia, and the concave posterior edge of sternite VII with the convex hump in middle and the cylindrical sterigma are characteristic.

Description.— Male, female. Forewing length 3.6-3.7 mm. Head: frons shining pale ochreous, vertex and neck tufts shining greyish brown, laterally and medially lined white, collar greyish brown; labial palpus first segment very short, white, second segment three-quarters of the length of third, greyish brown with white longitudinal lines laterally and ventrally, third segment white, lined dark brown laterally, lines join dorsally just before apex; scape brown with a white anterior line, white ventrally, antenna shining dark brown, a white line from base to two-thirds, followed towards apex by white segments, two dark brown, two white, six dark brown, three white and two dark brown segments at apex. Thorax greyish brown with white median line, tegulae greyish brown, lined white inwardly. Legs: brownish grey, foreleg with a white line on tibia and tarsal segments, except segment three which has the apical half dark brown, tibia of midleg with oblique basal and medial white lines and a white

apical ring, tarsal segments as foreleg, tibia of hindleg as midleg, tarsal segment one with white basal and apical dorsal streaks, segments two and three with a white apical dorsal streak, segments four and five dorsally white, spurs brownish grey on outside, white on inside. Forewing greyish brown, five white lines in the basal area, a costal from one-third to the transverse fascia, a subcostal from base to one-third, bending gradually from costa in distal half, an almost straight medial above fold, from one-quarter to beyond the subcostal, a subdorsal from one-quarter to just before the transverse fascia, a dorsal from beyond base to one-third, a broad yellow transverse fascia beyond the middle, narrowing towards dorsum with a small apical protrusion, bordered on the inner edge by two pale golden metallic, tubercular subcostal and dorsal spots, both of the same size, the subcostal spot edged by a patch of blackish brown scales on the outside, the dorsal spot further from base than the subcostal, bordered on the outer edge by two similarly coloured costal and dorsal spots, the costal spot very small, the dorsal spot about three times as large as the costal and more towards base, a broad white costal streak beyond the outer costal spot and a shining white apical line from the apical protrusion to apex, cilia ochreous-brown, ochreous-grey towards dorsum. Hindwing shining grey, cilia ochreous-grey. Under-side: forewing shining pale greyish brown, the white costal streak and the white apical line in the cilia at apex distinctly visible, hindwing shining greyish brown. Abdomen dorsally shining golden yellow, laterally and ventrally shining yellowish white, anal tuft yellowish white (fig. 93).

*Male genitalia.* Right brachium of uncus with a narrow basal half, strongly widening in apical half and gradually tapering distally, tip sharp with a small hook, left brachium broad with rounded tip, one-third of length of right one. Valvae with semicircular caudal margin and concave upper and lower margins. Anellus lobes narrow in basal half, broad in distal half, bent in middle, apex blunt. Aedeagus with bulbous part only slightly narrowing distally, basal part about two-thirds of length of bulbous part, lateral lobes square, about half the length of basal part (fig. 181a-b).

*Female genitalia.* Posterior edge of sternite VII concave with a convex hump in middle. Sterigma with posterior half cylindrical, anterior half tapering, ostium bursae circular with semicircular sclerotization and a long medial ridge. Ductus bursae half the length of corpus bursae and with a sclerotized section where it enters the corpus bursae. Corpus bursae oval, two small crescent-shaped signa (fig. 256).

Biology.— Unknown. Adults have been collected in March, April, June and July.

Distribution.— US Virgin Islands: St. Thomas, St. Croix; British Virgin Islands: Guana (fig. 290).

Remarks.— According to the original description the holotype should be a male, but in the collection of the BMNH it is a female specimen that bears the holotype-label. The reason for this could not be traced. Walsingham described the species after five specimens, four from St. Thomas and one from St. Croix. The single specimen from St. Croix turned out to be *C. floridanella*. Riedl (1974) mentioned a series of three specimens from the collection of the MGAB belonging to *C. similis*. Two specimens, with the label lectoparatype, were collected from St. Croix, 3.v.1894, gen. slides 716/R, 7817/R and a single specimen without abdomen was collected from St. Thomas, 7. iv.1894. This material has not been examined and the identification could not be confirmed.

*Cosmopterix sinelinea* Hodges, 1978  
(figs 94, 182, 257, 280)

*Cosmopterix sinelinea* Hodges, 1978: 24. Holotype ♂, United States: The Wedge, McClellanville, South Carolina; 26 Aug. 1971; R. W. Hodges; gen. slide USNM 3772 (USNM) [not examined].

Material examined.— 1♂, 1♀. United States: 1♂, same data as holotype; gen. slide JCK 5796. 1♀, same data as holotype; gen. slide JCK 5794 (USNM).

Diagnosis.— Resembles generally *C. nitens*, but differs by the pale golden dorsal half of the basal area and by the complete apical line.

Description.— Male, female. Forewing length 4.8 mm. Head: frons shining ochreous with greenish and reddish reflections, vertex, neck tufts and collar shining pale bronze brown with strong golden gloss and greenish reflection; labial palpus, first segment very short, white, second segment three-quarters of the length of third, grey with white longitudinal lines laterally and ventrally, third segment white, lined dark greyish brown laterally; scape dark bronze brown with a white anterior line, ventrally white, antenna dark bronze brown, beyond two-thirds a white ring of two segments, followed towards apex by fourteen dark bronze brown and five white segments at apex. Thorax and tegulae shining pale bronze brown with strong golden gloss and greenish reflection. Legs: dark grey, foreleg with a white line on tibia and tarsal segments one, two and five, segment three white in basal half, tibia of midleg with an oblique indistinct white dorsal line in the basal half and a white apical ring, tarsal segment one dorsally whitish, segment five entirely white, tibia of hindleg with white oblique basal and medial lines and a white apical ring, tarsal segment one dorsally whitish and with a white apical ring, segment two with a white apical ring, segment five entirely white, spurs white dorsally, dark grey ventrally. Forewing above fold and in the apical area shining bronze brown with a strong reddish golden gloss, below fold shining pale golden with greenish and reddish reflections, a pale yellow transverse fascia beyond the middle, narrowing towards dorsum, bordered at the inner edge by a pale golden metallic fascia, perpendicular at dorsum, bordered at the outer edge by a broad, slightly outward oblique similarly coloured fascia, widest on dorsum, both fasciae with some pale reddish reflection, in the middle of the transverse fascia a broad blackish brown streak with strong reddish gloss, the inner fascia with some irregular dark grey or blackish brown lining on the outside, the outer fascia lined blackish brown on the inside, the outer fascia costally edged by a short and narrow white costal streak, the apical line as a pale golden metallic streak on dorsum of the apical area and ending just before apex, cilia bronze brown around apex, paler towards base, hindwing brownish grey with greenish gloss, cilia greyish brown. Underside: forewing shining greyish brown, hindwing brownish grey. Abdomen shining brown, laterally shining grey with greenish reflection, ventrally yellowish white, anal tuft whitish, mixed grey (fig. 94).

*Male genitalia.* Right brachium of uncus long, apical two-thirds spatulate, gradually tapering distally, strongly downwardly bent and with small apical hook, left brachium short and tapering, tip rounded, about one-quarter of length of right one. Valvae triangular with almost straight upper margin and slightly concave lower margin,

caudal margin slightly convex. Anellus lobes very narrow, apical part gradually tapering to a pointed tip. Aedeagus stout, bulbous part slightly upwardly bent, gradually narrowing distally to one-half width, basal part short, about one-third of length of bulbous part, both lateral lobes triangular and longer than half the length of basal part (fig. 182).

*Female genitalia.* Posterior edge of sternite VII almost straight. Sterigma large, elongate, distal part tube-shaped, narrowing in basal part, ostium bursae round with a crescent-shaped sclerotization and a long rim ventrally. Ductus bursae very short, about one-fifth of length of corpus bursa. Corpus bursae elongate, signa as two circular plates with an arrow-like sclerotization in middle (fig. 257).

Biology.— Unknown. All adults were collected in August (Hodges, 1978).

Distribution.— USA: South Carolina (fig. 280).

Remarks.— In general the species resembles *C. nitens*, but it has a larger wingspan and can be distinguished by the characters of the forewing. Due to the limited amount of material no significant differences from *C. nitens* could be found in the male and female genitalia. *C. sinelinea* is only known from the type locality where in one night tens of thousands of specimens were attracted at light (Hodges, 1978). *C. nitens* also occurs at the same locality.

*Cosmopterix taygete* spec. nov.  
(figs 95, 183, 305)

Type material.— Holotype ♂, Brazil: Bahia, Barra Grande, 2 m, 5-10.i.1999, V.O. Becker col.; Col. Becker 118167; gen. slide JCK 5452 (VOB).

Diagnosis.— Similar to *C. attenuatella*, *C. damnosa* and *C. vanderwolffi*. Differs from *C. vanderwolffi* by the outer costal and dorsal spots, the protrusion of the transverse fascia and the complete apical line. The male genitalia resemble those of *C. attenuatella* but differ by the shorter and rounded apex of the right brachium of the uncus and by the boot-shaped valvae. Certain identification only possible by examination of the genitalia.

Description.— Male. Forewing length 3.5 mm. Head: frons shining ochreous-white, vertex dark brown with reddish gloss, laterally and medially lined white, collar dark brown; labial palpus first segment very short, white, second segment four-fifths of the length of third, brown with white longitudinal lines laterally and ventrally, third segment white, lined brown laterally; scape dark brown with a white anterior line, white ventrally, antenna shining dark brown, a white section of two segments at three-quarters, followed towards apex by ten dark brown, three white and four dark brown segments at apex. Thorax dark brown with reddish gloss and a white median line, tegulae dark brown, lined white inwardly. Legs: greyish brown, femora of midleg and hindleg paler, foreleg with a white line on tibia and tarsal segments, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segments one to four with very broad shining white apical rings, segment five entirely white, tibia of hindleg as midleg, first tarsal segment with ochreous-white basal and apical rings, tarsal segments two to four with ochreous-white apical rings, tarsal segment five ochreous-white, spurs white, ventrally with a dark grey streak. Forewing shining dark brown with reddish gloss, four narrow white lines in the basal area, a subcostal from base to one-third,

slightly bending from costa distally, a short medial above fold from one-fifth to just beyond the subcostal, a subdorsal about as long as the medial, but further from base, a dorsal from base to one-third, a bright yellowish orange transverse fascia beyond the middle and with an apical protrusion, bordered at the inner edge by a slightly inwardly oblique tubercular golden metallic fascia, not reaching costa, bordered at the outer edge by two tubercular golden metallic costal and dorsal spots, the dorsal spot twice as large as the costal, a small subcostal patch of blackish scales on the outside of pale golden metallic fascia, the costal and the dorsal spots with some dark brown inward lining, a white costal streak apical of the costal spot and a broad shining white apical line from the apical protrusion to apex, cilia dark brown, paler towards dorsum. Hindwing shining dark brownish grey, cilia brownish grey. Underside: forewing shining dark greyish brown, the broad white apical line distinctly visible, hindwing shining brownish grey with a short white streak at apex. Abdomen dorsally dark brown, ventrally paler, anal tuft whitish (fig. 95).

*Female.* Unknown.

*Male genitalia.* Right brachium hook-shaped, apex rounded, left branchium very narrow, about two and a half times as long as the right one. Valvae boot-shaped, upper margin rounded, lower and caudal margin straight. Anellus lobes slender, gradually bent in middle and apically pointed. Aedeagus very narrow, basal part very short and widening distally (fig. 183).

*Biology.*— Unknown. The single specimen was collected in January.

*Distribution.*— Brazil: Bahia (fig. 305).

*Etymology.*— Named after Taygete, a moon of Jupiter. To be treated as a noun in apposition.

*Remarks.*— The holotype specimen is greased. It is possible that the colour of the forewing is somewhat lighter than depicted. It is also possible that the antennae have a white, possibly interrupted, line from base. The species resembles *C. crassicervicella* Chrétien, 1896 from Europe. It differs externally from this species by the broad white apical line in the forewing and by the lack of the orange dorsal patches on the abdomen, in the male genitalia by the shorter and more rounded apical hook of the right brachium of the uncus and by the boot-shaped valvae.

*Cosmopterix teligera* Meyrick, 1915  
(figs 96, 184, 258, 318)

*Cosmopterix teligera* Meyrick, 1915: 207. Lectotype ♀ (designated by J.F.G. Clarke, 1965), Colombia: Cali, 500 ft, v.[19]14, Parish; gen. slide JFGC 6144 (BMNH) [examined].

*C. abdita* Hodges, 1962: 40. Holotype ♂, United States: Florida, Highlands Co., Lake Placid, Archbold Biological Station, 1.iv.1959, R.W. Hodges; gen. slide RWH 471(CUIC) [examined]. Syn. nov.

Material examined. 16 ♂, 10 ♀. Brazil: 1 ♂, Distrito Federal, Planaltina, 1000 m, 3.iv.1984, 15°35'S 47°42'W, V.O. Becker col.; Col. Becker 56340; gen. slide JCK 5470. 1 ♀, *ibid.*; gen. slide JCK 5471. 1 ♀, *ibid.*; gen. slide JCK 5500 (VOB). Colombia: 1 ♀ (without abdomen), *ibid.* lectotype (BMNH). Costa Rica: 1 ♂, Turrialba, 600 m, vii.1981, V.O. Becker, col.; Col. Becker 46437; gen. slide JCK 5469. Cuba: 1 ♂, Holquin, Pin Mayari, 750 m, vii.1990, V.O. Becker, col.; Col. Becker 72237. Jamaica: 1 ♀, Constant Springs, 2.i.1905, Walsingham; gen. slide BM 31225. 1 ♀, *ibid.*, 12.ii.1905. 1 ♀, Monaegue, 6.i.1905, Walsingham; gen. slide BM 312241. 1 ♀, *ibid.*, 29.i.1905, Walsingham; gen. slide BM 31223. 1 ♂, *ibid.*, 12.ii.1905, Walsingham; gen.

slide BM 31216 (BMNH). Mexico: 1 ♀, Tamaulipas, El Ensino, 250 m, 4-13.viii.1988, V.O. Becker col.; Col. Becker 69056; gen. slide JCK 5492 (VOB). United States: 1 ♂, North Carolina, Morrisson, 1883; gen. slide BM 7591 (BMNH). 1 ♂, 1 ♀, Alabama, Monroe Co., Haines Island Park, 31°43'23"N 87°28'10"W, 27.v.1995, R. Brown, J. MacGown. 1 ♂, Louisiana, Bossier Parish, Barksdale A.F.B., 32°29'19"N 93°35'20"W, 13.ix.1996, R.L. Brown. 1 ♂, Louisiana, Calcasieu Par., 6 mi ESE Buhler, 30°18'44"N 93°15'39"W, 20-21.v.1993, R.L. Brown, D. Pollock. 1 ♂, Mississippi, Grenada Co., T21N, R3E, Sec. 75W, 18.vi.1990, D.M. Pollock. 1 ♂, Mississippi, Lee Co., Tombigbee State Park, 5-6.vi.1996, R.L. Brown. 1 ♂, Mississippi, Lowndes Co., T17N, R16E, Sec. 34, Black Belt Prairie, 20.v.1992, R.L. Brown. 1 ♂, 1 ♀, *ibid.*, 10.vi.1994, D.M. Pollock. 1 ♂, Mississippi, Pike Co., Percy Quin State Park, 31°10'51"N 90°31'54"W, 1-3.vi.1998, R.L. Brown. 1 ♂, Mississippi, Winston Co., Tomgigbee National Forest, 33°16'05"N 89°06'01"W, 10.viii.1999, J.A. MacGown. 1 ♂, *ibid.*, 14.ix.1999; gen. slide JCK 6162. 1 ♀, Mississippi, Lee Co., Tombigbee State Park, 10-21.vii.1995, R. Kergosien; gen. slide JCK 6163 (MEM).

Diagnosis.— *Cosmopterix teligera* is a variable species and shows similarity with, for instance, *C. erasmia*, *C. interfracta*, and *C. thelxinoe*. In the male genitalia the large ventral bulge in middle of the right brachium of the uncus and the short hooked tip in combination with the large, semicircular valvae and the almost rectangular apex of the anellus lobes are characteristic. For differences between the remaining species examination of the genitalia is necessary.

Description.— Male, female. Forewing length 3.3-4.8 mm. Head: frons shining ochreous-white with greenish and reddish reflections, vertex shining dark bronze brown with reddish gloss, neck tufts dark brown with reddish gloss, laterally and medially lined white, collar shining dark brown with reddish gloss; labial palpus first segment very short, white, second segment four-fifths of the length of third, greyish brown with white longitudinal lines laterally and ventrally, third segment white, lined brown laterally; scape dorsally dark brown with a white anterior line, ventrally white, antenna shining dark brown, with a short white line at base changing into an interrupted line to beyond one-half, followed towards apex by six dark brown, two or three white, two dark brown, two white, ten dark brown and eight white segments at apex. Thorax and tegulae shining dark brown with reddish gloss, thorax with a white median line, tegulae lined white inwardly. Legs: shining dark brown with reddish gloss, femora of midleg and hindleg shining ochreous-grey, foreleg with a white line on tibia and tarsal segments one to three and five, tibia of midleg with white oblique basal and medial lines (medial lines sometimes absent) and a white apical ring, tarsal segment one with a whitish lateral line on the outside and bending dorsally at apex, segment two with a white apical spot and segment five dorsally white, sometimes segments three and/or four with a white apical spot, tibia of hindleg with a very oblique silvery white line at base, a less oblique silvery white medial streak, a subapical ochreous ring and a white apical ring, tarsal segment one and two dorsally white in the apical half, segments four and five dorsally white, spurs ochreous-white dorsally, dark brown ventrally. Forewing shining dark brown with reddish gloss, four narrow white lines the basal area, a subcostal from base to one-quarter, bending from costa in distal half, a short medial above fold in the centre under the apex of the subcostal, a subdorsal about twice as long as the medial, but slightly further from base, a short and very narrow dorsal from beyond base to one-quarter, the white lines in the basal area can differ in length, especially the subcostal which starts from base in the North American specimens and beyond base in the Neotropical ones, an orange-yellow fascia beyond the middle, narrowing towards



dorsum and with a narrow apical protrusion, bordered at the inner edge by a tubercular silver to pale golden metallic fascia with greenish reflection with a small subcostal patch of blackish brown scales on the outside, bordered at the outer edge by two tubercular silver or pale golden metallic costal and dorsal spots, the dorsal spot more than three times as large as the costal and more towards base, both spots irregularly lined dark brown on the inside, the transverse fascia, tubercular fascia and spots are variable in width, a narrow white costal streak from the costal spot, a white apical line from or just beyond the apical protrusion, sometimes interrupted in the middle, cilia dark brown, paler towards dorsum. Hindwing shining brownish grey with greenish and reddish gloss, cilia brown. Underside: forewing shining greyish brown, the white apical line often visible at apex, hindwing shining brownish grey. Abdomen dorsally brown, segments six and seven posteriorly banded grey, mixed whitish, ventrally shining yellowish white, anal tuft yellowish white, ochreous-grey in female (fig. 96).

*Male genitalia.* Right brachium of uncus with basal part narrow, apically with a large ventral bulge in middle, gradually tapering apically, tip as a short hook, left brachium short and slender, tip rounded, about one-third of the length of right one. Valvae large, semicircular, caudal margin rounded, upper margin strongly and lower margin slightly convex. Anellus lobes only slightly bent in middle, widened and almost rectangular at apex. Aedeagus bottle-shaped, narrowing distally to less than one-third of bulbous part, basal part about two-thirds of the length of bulbous part, lateral lobes large, narrowing distally, about one-half the length of basal part (fig. 184).

*Female genitalia.* Posterior edge of sternite VII strongly concave with a small convex section in middle. Sterigma elongate, anterior half narrowed, ostium bursae round, ventrally with a semicircular sclerotization and a medial ridge, widening anteriorly. Ductus bursae slightly longer than length of corpus bursae with a sclerotized section where it enters the latter. Corpus bursae oval, both signa as V-shaped sclerotized indentations (fig. 258).

Biology.— Unknown. The moths were collected from March to October in the USA (Hodges, 1978). In Jamaica in January and February. Probably overlapping generations in the tropics.

Distribution.— USA: Florida, south to Key Largo, and Louisiana to northwest Arkansas (Hodges, 1978); Brazil: Distrito Federal; Colombia; Costa Rica; Cuba; Jamaica; Mexico: Tamaulipas (fig. 318).

Remarks.— Both specimens of the type-series are females rather than a male and a female as the original description states. Both are missing the hindlegs.

*Cosmopterix tenax* Meyrick, 1915  
(figs 97, 185, 306)

*Cosmopterix tenax* Meyrick, 1915: 207. Holotype ♂, Colombia: La Crumbre, 6600', v.[19]14, Parish; gen. slide JFGC 6141 (BMNH) [examined].

Diagnosis.— The absence of the white medial line on the head in combination with the dark brown apex of the antennae and the absence of the dorsal line in the basal area are characteristic.

Description.— Male. Forewing length 4.5 mm. Head: frons ochreous-white, vertex and neck tufts dark brown, narrowly lined white laterally, collar dark brown; labial

palpus first segment very short, white, second segment three-quarters of the length of third, dark brown, inner side and ventrally greyish white and with white longitudinal lines laterally, third segment white, lined dark brown laterally; scape dorsally shining dark brown with a white anterior line, ventrally shining white, antenna dark brown with a white interrupted line from base to two-fifths, at three-quarters two white rings of one segment each separated by one dark brown segment, followed towards apex by ten dark brown, three white and five dark brown segments at apex. Thorax and tegulae dark brown, thorax with a white median line, tegulae lined white inwardly. Legs: dark brown, femora of midleg and hindleg shining golden grey, foreleg with a white line on tibia and tarsal segments one and two, and basal half of segment three, segment five entirely white, tibia of midleg with white oblique basal and medial streaks and a white apical ring, tarsal segments one and two with white oblique lines, segment five entirely white, tibia of hindleg as midleg but with an additional white subapical ring, and tarsal segments one and two with yellowish white apical rings, spurs white dorsally, greyish brown ventrally. Forewing shining dark brown, three white lines in the basal area, a subcostal from base to one-third, bending from costa in distal half, a short medial from one-fifth to the end of the subcostal, a subdorsal about as long as the medial, but slightly further from base, a yellow-orange transverse fascia beyond the middle, strongly narrowed towards dorsum, bordered on inner and outer edge by broad tubercular pale golden metallic fasciae, the inner almost perpendicular on dorsum and with a blackish spot on the outside, the outer inward oblique and lined dark brown on the inside, a white costal streak connected to outer fascia, a narrow and interrupted white apical line from the distal half of the apical area, ending broadly white in the cilia at apex, cilia dark brown around apex, paler towards dorsum, hindwing dark greyish brown, cilia greyish brown. Underside: forewing shining greyish brown, the white costal streak indistinctly and the white spot in the apical cilia distinctly visible. Abdomen not examined (already dissected) (fig. 97).

*Female.* Unknown.

*Male genitalia.* Right brachium of uncus narrow near base, apical third wide with a hooked tip, left brachium with rounded tip, less than half the length of right one. Valvae rather narrow with semicircular caudal margin and concave upper and lower margins. Anellus lobes rather narrow, slightly bent in middle, apex rounded. Aedeagus with bulbous part only slightly narrowing distally, basal part two-thirds of length of bulbous part, lateral lobes triangular, about half the length of basal part (fig. 185).

*Biology.*— Unknown. The single specimen was collected in May.

*Distribution.*— Colombia (fig. 306).

*Remarks.*— The only available genitalia slide of the male genitalia has been embedded laterally, therefore it was not possible to depict the genitalia in the ventral position.

*Cosmopterix thebe* spec. nov.

(figs 98, 186, 259, 306)

*Type material.*— Holotype ♂, Peru: Yurimaguas, iii.[19]20, Parish; gen. slide BM 29288 (BMNH). Paratypes: 3 ♀: Peru: 3 ♀, same data as holotype; gen. slide BM 29289 (BMNH).

*Diagnosis.*— Resembles *C. hermippe*, but differs from these species by the lack of

the median white line on the head and the darker brown ground colour of the forewing. In the female genitalia it differs by the oval sterigma.

Description.— Male, female. Forewing length 3.4-3.8. Head: frons shining greyish white, vertex shining dark brown, laterally lined white, collar shining dark brown; labial palpus first segment very short, greyish white, second segment four-fifths of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined dark brown laterally, extreme apex white; scape dorsally shining dark brown with a white anterior line, ventrally shining white, antenna shining dark brown, with a white line from base to three-fifths, distal part interrupted, followed towards apex by five white segments, one dark brown, two white, ten dark brown and eight white segments at apex. Thorax shining dark brown with a white median line, tegulae shining dark brown, lined white inwardly. Legs: shining dark brown, femora of midleg and hindleg shining ochreous-grey, foreleg with a white line on tibia and tarsal segments, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segments one, two, four and five with white longitudinal lines, tibia of hindleg as midleg, tarsal segment one with white basal and apical rings, tarsal segments two and three with white longitudinal lines, segments four and five entirely white, spurs white dorsally, brown ventrally. Forewing shining dark brown, five narrow white lines in the basal area, a costal from one-quarter to the transverse fascia, a subcostal from base to one-quarter and slightly bending from costa, a medial from one-fifth to just beyond the subcostal, a subdorsal starting slightly further from base than the medial to two-fifths, often interrupted in distal part, a dorsal from one-tenth to one-quarter, a bright yellow-orange transverse fascia beyond the middle, narrowing towards dorsum and with an apical protrusion, bordered at the inner edge by two tubercular golden metallic subcostal and dorsal spots the subcostal with a patch of blackish scales on the outside, and the dorsal spot further from base than the subcostal, bordered at the outer edge by two tubercular golden metallic costal and dorsal spots, the dorsal spot three times as large as the costal, both spots inwardly lined dark brown, a white costal streak outward of the outer costal spot, a narrow shining white apical line from the apical protrusion to apex, cilia dark brown. Hindwing shining dark greyish brown, cilia dark brown. Underside: forewing shining dark greyish brown with a yellowish white costal streak in the apical half, hindwing shining dark greyish brown. Abdomen dorsally dark greyish brown with greenish and reddish reflections, segments six and seven banded lighter posteriorly, ventrally shining yellowish white, anal tuft ochreous-white, in the female the anal tuft is dorsally dark brown, ventrally whitish (fig. 98).

*Male genitalia.* Right brachium of uncus long, elongate, widest part in middle and gradually tapering distally, apex a small hook, left brachium rather broad at base, apex pointed, less than one-third of length of right one. Valvae large and more or less square with rounded corners. Anellus lobes long and broad, bent and twisted in middle, apex pointed. Aedeagus with bottle-shaped bulbous part, tapering distally to one-third of width, basal part about half the length of bulbous part, both lateral lobes triangular and half the length of basal part (fig. 186).

*Female genitalia.* Posterior edge of sternite VII concave. Sterigma oval, slightly tapering anteriorly, ostium bursae circular with a semi-circular sclerotization ventrally. Ductus bursae short, about half the length of corpus bursae. Corpus bursae oval, two crescent-shaped signa (fig. 259).

Biology.— Unknown. Adults were collected in March.

Distribution.— Peru: Loreto (fig. 306).

Etymology.— Named after Thebe, a moon of Jupiter. To be treated as a noun in apposition.

*Cosmopterix thelxinoe* spec. nov.  
(figs 99, 187, 260, 319)

Type material.— Holotype ♂, [United States]: North Carolina, Morrison, 1883; Walsingham Collection, 1910-427; *Cosmopterix lespedezae* Wlsm.; gen. slide BM 31231 (BMNH). Paratypes: 2♂, 2♀: Brazil: 1♂, Distrito Federal, Planaltina, 1000 m, 15.iii.1985, 15°35'S 47°42'W, V.O. Becker col.; Col. Becker 57357; gen. slide JCK 5498. 1♂: same locality, 3.iv.1984; Col. Becker 56340; gen. slide JCK 5470. 1♀: same locality; gen. slides JCK 5471. 1♀, *ibid.*, 23.iv.1984; gen. slide JCK 5500 (VOB).

Diagnosis.— Resembles *C. ananke*, but differs externally by the complete white median line of the thorax and the pure white apical line. Differs from *C. ananke* in the male genitalia by the pointed apex of the right branchium of uncus, the boot-shaped valvae and the very wide anellus lobes. Examination of the genitalia is recommended.

Description.— Male, female. Forewing length 3.5 mm. Head: frons shining greyish white with greenish and reddish reflections, vertex and neck tufts dark brown with reddish gloss, laterally and medially lined white, collar dark brown; labial palpus first segment very short, white, second segment three-quarters of the length of third, brown with white longitudinal lines laterally and ventrally, third segment white, lined brown laterally; scape dorsally dark brown with a white anterior line, white ventrally, antenna shining dark brown, a white line from base to one-sixth, changing into an interrupted line to beyond one-half, followed towards apex by a white-lined section of approximately five segments, five dark brown, four white, two dark brown, two white, ten dark brown and seven white segments at apex. Thorax and tegulae dark brown with reddish gloss, thorax with a white median line, tegulae lined white inwardly. Legs: greyish brown with reddish gloss, femora of midleg and hindleg shining pale greyish ochreous, foreleg with a white line on tibia and tarsal segments one to three and five, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segments one, two and four with white apical rings, segment five entirely white, tibia of hindleg as midleg but with an additional broad greyish white subapical ring, tarsal segments one to three with white apical rings, segments four and five entirely white, spurs whitish, inner spurs greyish at base. Forewing dark brown with reddish gloss, four white lines in the basal area, a subcostal from base to one-quarter, slightly bending from costa distally, a short and straight medial above fold from one-fifth to one-third, a similar subdorsal below fold, slightly further from base than the medial, an indistinct dorsal from beyond base to one-fifth, a broad yellow transverse fascia beyond the middle with a small apical protrusion, bordered at the inner edge by two united pale golden metallic tubercular spots, forming a fascia not reaching the costa, edged by a small patch of blackish brown scales subcostally on the outside, bordered at the outer edge by two similarly coloured costal and dorsal spots, the dorsal spot three times as large as the costal and slightly more towards base, both spots inwardly lined dark brown, a white costal streak from the outer costal spot, a shining white apical line from beyond the api-

cal protrusion, cilia dark brown around apex, paler towards dorsum. Hindwing shining dark brownish grey, cilia brown. Underside: forewing shining greyish brown, the white costal streak indistinctly and the white apical line in the cilia at apex distinctly visible, hindwing shining brownish grey. Abdomen dorsally yellowish brown, segments banded greyish brown posteriorly, ventrally shining yellowish white, anal tuft yellowish white (fig. 99).

*Male genitalia.* Right brachium of uncus with apical part upwardly bent and slightly wider than basal part, gradually tapering apically to a long and narrow apex, tip a tiny hook, left brachium narrow, tip rounded, about one-third of the length of right one. Valvae broadly boot-shaped, caudal margin rounded, upper margin strongly and lower margin slightly convex. Anellus lobes very wide in apical part, hardly bent, gradually narrowing to a blunt apex. Aedeagus bottle-shaped, narrowing distally to less than one-third of bulbous part, basal part about one-half the length of bulbous part, lateral lobes large, triangular, almost as long as the length of basal part (fig. 187).

*Female genitalia.* Posterior edge of sternite VII strongly concave with a convex section in middle. Sterigma oval, anterior part narrowed, ostium bursae round, ventrally with a semicircular sclerotization and a medial ridge, widening anteriorly. Ductus bursae about two-thirds of length of corpus bursae and with a sclerotized section where it enters the latter. Corpus bursae oval, both signa as small sclerotized indentions (fig. 260).

Biology.— Unknown. Adults have been collected in March and April.

Distribution.— Brazil: Distrito Federal; USA: North Carolina (fig. 319).

Etymology.— Named after Thelxinoe, a moon of Jupiter. To be treated as a noun in apposition.

Remarks.— The female genitalia cannot be distinguished with certainty from *C. teligera*.

*Cosmopterix themisto* spec. nov.  
(figs 100, 188, 306)

Type material.— Holotype ♂, Brazil: S. Matto Grosso, 50 m, E. of Amolar, Rio Caracara, 26-28.viii.1978; B.V. Redout, B.M. 1978-423; gen. slide BM 29942 (BMNH).

Diagnosis.— Resembles *C. ganymedes*, but differs by the presence of a white median line on the thorax, the ochreous-brown ground colour of the forewing and the longer white lines in the basal area. In the male genitalia it differs by the rather small and tapering right brachium of the uncus and by the semicircular valvae.

Description.— Male. Forewing length 3.9 mm. Head: frons shining white, vertex and neck tufts shining ochreous-brown, laterally and medially lined white, collar ochreous-brown; labial palpus first segment very short, white, second segment four-fifths of the length of third, greyish brown with white longitudinal lines laterally and ventrally, third segment white, lined brown laterally, scape dorsally dark brown with a white anterior line, ochreous-white ventrally, antenna shining dark brown with a white interrupted line from base to beyond one-half with a short section uninterrupted at base, followed towards apex by a dark brown section of approximately fifteen segments, five white, one dark brown, three white and one dark brown segment at apex.

Thorax and tegulae ochreous-brown, thorax with white median line, tegulae lined white inwardly. Legs: ochreous-grey, foreleg with a white line on tibia and tarsal segments one to three and five, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segments ochreous, segments three and four more grey, tibia of hindleg as midleg, tarsal segments one to three with indistinct ochreous apical rings, segments four and five entirely ochreous, spurs ochreous on outside, paler on inside. Forewing ochreous-brown, four white lines in the basal area, a subcostal from one-eighth to one-quarter, bending slightly from costa distally, a slightly oblique medial above fold, from one-sixth to one-third, a subdorsal just beyond the start of the medial almost to the transverse fascia, a dorsal opposite to the subcostal, a broad yellow transverse fascia beyond the middle, slightly narrowed towards dorsum with a short apical protrusion, bordered at the inner edge by a pale golden metallic fascia, narrowed towards costa, not reaching it and with a subcostal patch of blackish brown scales on the outside, bordered at the outer edge by two pale golden metallic costal and dorsal spots, the dorsal spot twice as large as the costal and more towards base, a white costal streak beyond outer costal spot, a white apical line to apex from beyond the apical protrusion, cilia ochreous-brown, ochreous-grey towards dorsum. Hindwing shining pale ochreous-grey, cilia ochreous-grey. Underside: forewing shining pale greyish ochreous, the white costal streak and the apical line in the cilia at apex indistinctly visible, hindwing shining pale grey. Abdomen dorsally shining ochreous-grey, ventrally shining pale grey, segments broadly banded shining white posteriorly, anal tuft white (fig. 100).

*Female.* Unknown.

*Male genitalia.* Right brachium of uncus slightly bent, apical part with a bulge on the left, tapering gradually towards apex, tip rounded, left brachium rather narrow, tip rounded, less than half the length of right one. Valvae semicircular, caudal margin rounded, upper margin concave and lower margin slightly concave. Anellus lobes rather narrow in basal part, apical part twice as wide, bent in middle, tip blunt. Aedeagus bottle-shaped, bulbous part wide at base and narrowing distally to about one-half of width, basal part about one-half the length of bulbous part, lateral lobes triangular, about half the length of basal part (fig. 188).

*Biology.*— Unknown. The single specimen was collected in August.

*Distribution.*— Brazil: Mato Grosso do Sul (fig. 306).

*Etymology.*— Named after Themisto, a moon of Jupiter. To be treated as a noun in apposition.

*Remarks.*— The single specimen is rather worn, especially in the basal part of the forewings. The pattern of the white lines may show slight differences in fresh specimens.

*Cosmopterix thrasyzela* Meyrick, 1915  
(figs 101, 189, 261, 307)

*Cosmopterix thrasyzela* Meyrick, 1915: 206. Lectotype ♀ (designated by J.F.G. Clarke, 1965), Guyana: Bartica, ii.[19]13 Parish; gen. slide JFGC 6146 (BMNH) [examined].

*Material examined.*— 4♂, 1♀. Brazil: 4♂, Para, viii.[19]13, Parish; gen. slide BM 29297. 1♀, data as lectotype [a paralectotype, but not labelled as such]; gen. slide BM 29298 (BMNH).

**Diagnosis.**— Resembles *C. erasmia*, but differs by the white apex of the antenna, the bronze brown head and the absence of the apical protrusion of the transverse fascia. In the male genitalia the long and wide, laterally slightly S-shaped bent right brachium of the uncus, the more or less rectangular valvae in combination with the rather small size of the aedeagus are characteristic. Examination of the genitalia is recommended.

**Description.**— Male, female. Forewing length 2.7-3.1 mm. Head: frons shining greyish white, vertex and neck tufts shining dark bronze brown, laterally and medially lined white, collar shining dark bronze brown; labial palpus first segment very short, white, second segment four-fifths of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined dark brown laterally; scape dorsally shining brown with a white anterior line, ventrally shining white, antenna shining dark brown with a white line from base to three-fifths, sometimes interrupted distally, followed towards apex by approximately nine dark brown segments, two white, ten dark brown and seven white segments at apex. Thorax shining dark brown with white median line, tegulae shining dark brown, lined white inwardly. Legs: shining dark brown, femora of midleg and hindleg shining golden, foreleg with a white line on tibia and tarsal segments, tibia of midleg with a silvery white oblique basal streak and white medial and apical rings, tarsal segments with indistinct white apical rings, tarsal segment five entirely whitish, tibia of hindleg as midleg, spurs white dorsally, brownish ventrally. Forewing shining dark brown with reddish gloss, four short and narrow white lines in the basal area, a subcostal from one-eighth to one-quarter, a very short and narrow second subcostal just inward of the transverse fascia, a medial from one-fifth to one-third, a subdorsal also from one-fifth, but slightly longer than the medial, a bright yellowish orange transverse fascia beyond the middle, narrowing towards dorsum on the outer edge, bordered at the inner edge by a tubercular pale golden metallic fascia with a small subcostal patch of blackish scales on the outside, bordered at the outer edge by two tubercular pale golden metallic costal and dorsal spots, the dorsal spot about twice as large as the costal and more towards base, both spots with an irregular dark brown inward lining, a white costal streak from the costal spot, the apical line as a silvery white spot in the middle of the apical area and a white streak in apical cilia, cilia dark brown, paler towards dorsum. Hindwing shining dark brownish grey, cilia dark brown. Underside: forewing shining dark greyish brown, hindwing shining dark greyish brown. Abdomen dorsally ochreous brown with greenish and purplish reflections, ventrally shining dark grey with golden gloss, segments banded ochreous white posteriorly, anal tuft dark greyish brown (fig. 101).

**Male genitalia.** Right brachium of uncus long and wide, laterally slightly S-shaped bent, apex narrowing and blunt, left brachium short with rounded tip, about one-quarter of the length of right one. Valvae more or less rectangular and with concave upper and lower margins. Anellus lobes abruptly bent in middle, tapering distally, apex pointed. Aedeagus with bulbous part short and bottle-shaped, basal part about two-thirds of length of bulbous part, lateral lobes triangular, about half the length of basal part (fig. 189).

**Female genitalia.** Posterior edge of sternite VII concave with a large convex middle section. Sterigma strongly tapering anteriorly, ostium bursae circular with semicircular sclerotization. Ductus bursae about half the length of corpus bursae. Corpus bursae pear-shaped with two crescent-shaped signa (fig. 261).

Biology.— Unknown. Adults have been collected in February and August.

Distribution.— Brazil: Amazonas, Para; Guyana (fig. 307).

Remarks.— According to the description the original type series consists of five specimens, male and female, all from Bartica Guyana. According to Clarke (1965) these were all females. Only two specimens of the original type-series have been found together with four additional male specimens from Para Brazil.

*Cosmopterix thyone* spec. nov.  
(figs 102, 190, 307)

Type material.— Holotype ♂, Brazil: Minas Gerais, Nova Lima, 850 m, 8.x.1985, V.O. Becker col., Col. Becker 63344; gen. slide JCK 5468 (VOB).

Diagnosis.— Resembles *C. attenuatella* and *C. damnosa*, but differs by the bronze brown ground colour of the forewing and the absence of the apical protrusion of the transverse fascia. In the male genitalia the swollen right brachium of the uncus with the long, pointed and hooked apex in combination with the small boot-shaped valvae and the very blunt tipped anellus lobes are characteristic. Examination of the genitalia is recommended.

Description.— Male. Forewing length 3.6 mm. Head: frons shining silvery-white with greenish and reddish reflections, vertex and neck tufts bronze brown with reddish gloss, laterally and medially narrowly lined white, collar bronze brown; labial palpus first segment very short, white, second segment four-fifths of the length of third, brown with white longitudinal lines laterally and ventrally, third segment white, lined brown laterally; scape dorsally dark brown with a white anterior line, white ventrally, antenna shining dark brown with a white line from base to two-thirds, sometimes interrupted, followed towards apex by two white segments, two dark brown, two white, ten dark brown, four white and five dark brown segments at apex. Thorax and tegulae bronze brown with reddish gloss, thorax with a white median line, tegulae lined white inwardly. Legs: greyish brown with reddish gloss, femora of midleg and hindleg shining pale ochreous, foreleg with a white line on tibia and tarsal segments one to three and five, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segments one and two with white apical rings, segment five entirely white, tibia of hindleg as midleg but with an additional ochreous subapical ring, tarsal segments one and two with white apical rings, other tarsal segments missing, outer spurs whitish, inner spurs greyish brown, apically paler. Forewing bronze brown with reddish gloss, five white lines in the basal area, a costal from one-third to the transverse fascia, a subcostal from base to one-third, bending from costa distally, a short and straight medial above fold from one-quarter to the end of the subcostal, a subdorsal, twice as long as the medial, below fold and from about one-quarter to two-fifths, a narrow dorsal from one-eighth to start of the subdorsal, a broad yellow transverse fascia beyond the middle, bordered at the inner edge by a silver metallic fascia, almost perpendicular on dorsum, narrowing towards costa and not reaching it, subcostally on the outside with a short blackish brown streak, bordered at the outer edge by two silver metallic costal and dorsal spots, both spots inwardly lined brown, the dorsal spot twice as large as the costal and slightly more towards base, both fascia and spots have some greenish



reflection, a white costal streak from the costal spot, a narrow shining white, more or less interrupted, apical line from the distal half of the apical area, widening in the apical cilia, cilia bronze brown around apex, brownish grey towards dorsum. Hindwing shining dark brownish grey, cilia brownish grey. Underside: forewing shining pale greyish brown, the white apical line only visible in the apical cilia, hindwing greyish brown. Abdomen dorsally brown, segments four to six paler banded posteriorly, ventrally dark greyish brown with a broad white longitudinal streak in middle, segments broad shining white banded posteriorly, anal tuft ochreous-grey (fig. 102).

*Female.* Unknown.

*Male genitalia.* Right brachium of uncus with basal part narrow, extension in apical part large and oval, gradually tapering to a long pointed apex, tip bent to a small hook, left brachium slender, tip rounded, less than one-half the length of right one. Valvae small, boot-shaped, caudal margin rounded, upper margin strongly and lower margin slightly convex. Anellus lobes only slightly bent in middle, a little widened in apical part, tip very blunt. Aedeagus bottle-shaped, narrowing distally to about one-third of bulbous part, basal part about two-thirds of the length of bulbous part, lateral lobes large, almost square, about one-half the length of basal part (fig. 190).

*Biology.*— Unknown. The single specimen was collected in October.

*Distribution.*— Brazil: Minas Gerais (fig. 307).

*Etymology.*— Named after Thyone, a moon of Jupiter. To be treated as a noun in apposition.

*Cosmopterix trifasciella* spec. nov.  
(figs 103, 191, 262, 307)

*Type material.*— Holotype ♂, Ecuador: Huigra, 4500', vi.[19]14, Parish; gen. slide BM 29291 (BMNH). Paratypes: 1 ♂, 2 ♀: Ecuador: 1 ♂, same data as holotype; gen. slide BM 29908. 1 ♀: same data as holotype; gen. slide BM 29290. 1 ♀, without label data; gen. slide BM 29564 (BMNH).

*Diagnosis.*— Resembles *C. chalupae*, but differs by the lack of the broad white sub-apical section of the antenna and by the complete fascia in the basal area.

*Description.*— Male, female. Forewing length 2.9-3.3 mm. Head: frons shining greyish white with golden reflection, vertex and neck tufts shining dark bronze brown with golden reflection, laterally lined white, collar shining dark bronze brown; labial palpus first segment very short, white, second segment three-quarters of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined dark brown laterally; scape dorsally dark brown with a white anterior line, ventrally white, antenna shining dark brown, very vaguely annulate in middle. Thorax and tegulae shining dark bronze brown with golden reflection and reddish gloss. Legs: shining dark brown, femora of midleg and hindleg shining golden brown, foreleg with a white line on tibia and tarsal segments one and two, tibia of midleg with silver metallic oblique basal and medial lines with greenish reflection and a white apical ring, tarsal segments one, two and four with white apical rings, segment five entirely white, tibia of hindleg with silver metallic medial and subapical rings with greenish reflections and a white apical ring, tarsal segments one and two with silver metallic dorsal spots and apical rings, segments three and four with white apical rings and segment five entirely

white, spurs shining dark brown, lined silver metallic. Forewing shining dark brown with reddish gloss, at one-fifth an irregular inwardly oblique silver to very pale golden metallic fascia, not reaching dorsum, a broad tubercular silver to very pale golden metallic fascia before one-half, perpendicular at dorsum and slightly bending toward base at costa, at three-fifths a tubercular silver to very pale golden outwardly oblique fascia, at costa edged by a short and broad white costal streak, between these last two fasciae, some yellow scales at dorsum, all three fasciae with strong violet reflection, the apical line as three silver metallic streaks with bluish reflection in the middle of the apical area and a narrow white line in the apical cilia, cilia dark brown, paler on dorsum towards base. Hindwing shining dark greyish brown, cilia dark brown. Underside: forewing shining dark brown with the white costal streak indistinctly and the white apical line distinctly visible, hindwing dark greyish brown. Abdomen dorsally shining dark brown with reddish gloss, laterally with golden reflection, ventrally dark brown with strong golden reflection, segments broadly banded shining white posteriorly, anal tuft large, shining golden grey, dark grey in female (fig. 103).

*Male genitalia.* Right brachium of uncus with very broad twisted apical half, apex pointed, left brachium flat and broad, tip rounded, about half the length of right one. Valvae large and very long, basal half narrow, distal half trapezoidal. Anellus lobes long, rather narrow and hardly bent. Aedeagus with cylindrical bulbous part, slightly tapering apically, basal part two-thirds of length of bulbous part, both lateral lobes large, triangular, more than half the length of basal part (fig. 191).

*Female genitalia.* Posterior edge of sternite VII convex, middle section slightly flattened. Sterigma long and cylindrical, ostium bursae round with semicircular sclerotization. Ductus bursae as long as corpus bursae. Corpus bursae elongate with two small triangular signa (fig. 262).

Biology.— Unknown. Adults were collected in June.

Distribution.— Ecuador (fig. 307).

Etymology.— The name of the species, *trifasciella*, refers to the three silver to pale golden fasciae on the forewing. To be treated as a noun in apposition.

Remarks.— The four specimens of *C. trifasciella* were originally placed under the name *C. nyctiphanes* in the collection of the BMNH.

*Cosmopterix vanderwolffi* spec. nov.  
(figs 104, 192, 263, 291)

Type material.— Holotype ♂, Puerto Rico: Patillas, 590 m, viii.1987, V.O. Becker; Col. Becker 68183; gen. slide JCK 5440 (VOB). Paratype: 1♂, Puerto Rico, Carite, 500 m, 17.viii.1987, V.O. Becker; Col. Becker 67686; gen. slide JCK 5555. 1♀: same data as holotype; gen. slide JCK 5441. 1♀, same data as; Col. Becker 68182; gen. slide JCK 5557 (VOB).

Diagnosis.— Resembles *C. attenuatella*, *C. damnosa* and *C. taygete*, but differs by the conjoined outer costal and dorsal spots, the absence of the protrusion of the transverse fascia and the incomplete apical line. It differs from these species in the male genitalia by the short and bulged right brachium of the uncus in combination with the bottle-shaped aedeagus and the boot-shaped valvae, in the female genitalia it differs by the small convex section in middle of the concave posterior edge of sternite VII and by the distally oval sterigma. Examination of the genitalia is recommended.

Description.— Male, female. Forewing length 3.7 mm. Head: frons ochreous-white, vertex, neck tufts and collar dark brown with reddish gloss, laterally and medially lined white; labial palpus first segment very short, white, second segment three-quarters of length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined dark brown laterally; scape dorsally shining dark brown with white anterior line, ventrally shining white, antenna dark brown with a white line from base to three-fifths, often partly interrupted, followed towards apex by eight dark brown segments, two white, two dark brown, two white, ten dark brown, four to five white and two or three dark brown segments at apex. Thorax and tegulae dark brown with reddish gloss, thorax with a white median line, tegulae lined white inwardly. Legs: dark greyish brown, femora of midleg and hindleg shining ochreous grey, foreleg with a white line on tibia and tarsal segments one and two, segment three white in basal half, segment five entirely white, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segment one lined white on the outside and with a white apical ring, segments two and four with white apical spots and segment five entirely white, tibia of hindleg as midleg, tarsal segments one to four with white apical rings, segment five dorsally white, spurs white dorsally, greyish brown ventrally. Forewing shining dark brown with reddish gloss, four white lines in the basal area, a subcostal from base to one-quarter, slightly bending from costa, a short medial in the centre underneath the end of the subcostal, a subdorsal about as long as the medial, but slightly further from base, a yellow-orange transverse fascia beyond the middle, narrowed towards dorsum, bordered on the inner and outer edge by broad tubercular golden metallic fasciae, the inner fascia almost perpendicular on dorsum, not reaching costa and with a blackish spot subcostally on the outside, the outer fascia inwardly oblique and strongly narrowed at one-third from the costa, lined dark brown on the inside at costa and dorsum, a white costal streak beyond the outer fascia, a white apical line from the distal half of apical area to apex, cilia dark brown around apex, paler towards dorsum. Hindwing dark greyish brown, cilia dark brown. Underside: forewing shining greyish brown, the white costal streak indistinctly and the white apical line distinctly visible in the apical cilia. Abdomen dorsally dark greyish brown with reddish gloss, ventrally dark grey, in the middle shining ochreous-white, segments banded shining white posteriorly, anal tuft dorsally dark grey, ventrally ochreous-white (fig. 104).

*Male genitalia.* Right brachium of uncus upwardly bent, apical part with a dorsal bulge and tapering gradually to a pointed tip, left brachium rather narrow, tip rounded, about one-third of the length of right one. Valvae boot-shaped, caudal margin rounded, upper margin strongly and lower margin slightly concave. Anellus lobes rather narrow, bent in middle, tip blunt. Aedeagus bottle-shaped, bulbous part wide at base and strongly narrowing distally to about one-third of width, basal part about one-half the length of bulbous part, lateral lobes square, less than one-half the length of basal part (fig. 192).

*Female genitalia.* Posterior edge of sternite VII concave with a shallow convex section in middle. Sterigma large, oval in posterior part, anterior part strongly narrowing, ostium bursae round, ventrally with a semicircular sclerotization and long medial ridge. Ductus bursae about as long as corpus bursae and with a sclerotized section before it enters the latter. Corpus bursae oval, signa as two large oval plates with sclerotized anterior edges and medial ridges (fig. 263).

Biology.— Unknown. Adults have been collected in August.

Distribution.— Puerto Rico (fig. 291).

Etymology.— The species is dedicated to Mr. Hugo van der Wolf, Nueneen, The Netherlands, as one of the participants of the Netherlands Entomological Expedition to the north of Argentina in 1995-1996 and for his collaboration for a long period of time.

*Cosmopterix xanthura* Walsingham, 1909  
(figs 105, 193, 264, 290)

*Cosmopterix xanthura* Walsingham, 1909: 6. Holotype ♂, Mexico: Tabasco, Tapea, iii.[18??], H.H. Smith; gen. slide BM 29912 (BMNH) [examined].

Material examined.— 1♂, 1♀. Mexico: same data as holotype; gen. slides BM 29299, 29553 (BMNH).

Diagnosis.— The species belong with *Cosmopterix albicaudis* and those of the genus *Pebobs* to a complex of species of which a positive identification on the external characters is not possible with certainty. The identification is only possible by the examining of the genitalia. Differs from the species of the genus *Pebobs* in the genitalia by the heavily sclerotized right brachium of the uncus, the triangular shaped valvae and the bulbous aedeagus in the male, and in the female the sterigma is not covered by the posterior margin of sternite VII. Differs from *C. albicaudis* in the male genitalia by the narrow, subapically thickened, right brachium of the uncus and the narrow distal part of the aedeagus, in the female genitalia it differs from this species by the convex posterior margin of sternite VII without concave middle section and by the cylindrical sterigma.

Description.— Male, female. Forewing length 3.3–3.9 mm. Head: frons shining white with greenish reflection, vertex and neck tufts shining greyish brown with reddish gloss, laterally and medially lined white, collar shining greyish brown; labial palpus first segment very short, white, second segment four-fifths of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined brown laterally, extreme apex white; scape dorsally shining dark brown with white anterior line, ventrally shining white, antenna shining dark brown, with a white line from base to beyond one-half, followed towards apex by one white segment, three dark brown, ten more or less white, ten dark brown and seven white segments at apex. Thorax and tegulae shining greyish brown with reddish gloss, thorax with a white median line. Legs: shining dark greyish brown, femora of midleg and hindleg shining ochreous-white, foreleg with a white line on tibia and tarsal segments, interrupted at segment four, tibia of midleg with white narrow, oblique basal and medial lines and a white apical ring, tarsal segment one with a longitudinal white line, segments two and four with white apical rings, segment five entirely white, tibia of hindleg with white medial and apical rings, tarsal segment one with white basal and apical rings, tarsal segment two with white apical ring, tarsal segments three to five entirely white, spurs white dorsally, brown ventrally. Forewing shining greyish brown, three narrow white lines in the basal area, a subcostal from base to one-quarter, distally slightly bending from costa, a medial from one-seventh to one-third and just above fold, an oblique subdorsal from one-quarter almost to the transverse fascia, a dark yellow transverse fascia beyond the middle with a broad prolongation towards apex and a long and narrow

apical protrusion in middle, bordered at the inner edge by two tubercular pale golden metallic subcostal and dorsal spots, the subcostal spot with a patch of blackish scales on the outside and the dorsal spot further from base as the subcostal, beyond the middle of transverse fascia two tubercular pale golden costal and dorsal spots, the dorsal spot twice as large than the costal and more towards base, a greyish brown edged, white costal streak from the outer costal spot, a shining white apical line from the apical protrusion to apex, cilia greyish brown at apex, ochreous-brown towards dorsum. Hindwing shining brownish grey, cilia ochreous-brown. Underside: forewing shining greyish brown, the transverse fascia and the apical line indistinctly visible, hindwing shining brownish grey. Abdomen dorsally yellowish brown, segments whitish edged laterally, segment seven whitish edged posteriorly, ventrally shining dark grey, segments banded shining white posteriorly and with a broad shining yellowish white longitudinal streak, anal tuft yellowish white, dorsally yellowish brown in female (fig. 105).

*Male genitalia.* Right brachium of uncus long, narrow, upwardly bent and thickened subapically, apex a flat disk, left brachium short with rounded tip, about one-fifth of the length of right one. Valvae triangular and with concave upper and lower margins. Anellus lobes slightly bent in middle, tapering distally, apex pointed. Aedeagus with bulbous part short, bottle-shaped, long and narrow distally, basal part only slightly shorter than length of bulbous part, lateral lobes triangular, about one-third of length of basal part (fig. 193).

*Female genitalia.* Posterior edge of sternite VII strongly convex. Sterigma large, cylindrical and with a sclerotized medial ridge, ostium bursae circular. Ductus bursae slightly more than half the length of corpus bursae. Corpus bursae pear-shaped with two large arrow-shaped signa (fig. 264).

Biology.— Unknown. The adults were collected in March.

Distribution.— Mexico: Tabasco (fig. 290).

*Cosmopterix yvani* Landry, 2001  
(figs 106, 194, 308)

*Cosmopterix yvani* Landry, 2001: 515. Holotype ♂, Ecuador: Galápagos, Pinta, ca. 50 m elev., 20.iii.1992, M[ercury V[apor] L[amp] (B. Landry); CNC type no. 22680 (CNC) [not examined].

Material examined.— Paratype ♂: same data as holotype; gen. slide JCK 5491 (CNC).

Diagnosis.— Resembles *C. langmaidii*, but differs by the dark brown apex of the antenna and by the very broad dorsal streak in the basal area. In the male genitalia the large hammer-shaped right branchium of uncus in combination with the broad triangular valvae and the narrow anellus lobes are characteristic.

Description.— Male. Forewing length 3.8 mm. Head: frons shining ochreous-white with greenish and reddish reflections, vertex and neck tufts dark bronze brown with reddish gloss, laterally and medially lined white, collar bronze brown; labial palpus first segment very short, white, second segment four-fifths of the length of third, brown with white longitudinal lines laterally and ventrally, third segment white, lined brown laterally; scape dark brown with white anterior and dorsal lines, white ventrally, antenna shining dark brown with a white line from base to just before

one-half and changing into an interrupted line to three-fifths, followed towards apex by an annulated section of eight segments, seven dark brown, four white, two dark brown, two white, ten dark brown, three white and five dark brown segments at apex. Thorax dark bronze brown with reddish gloss and a white median line; tegulae bronze brown, inwardly lined white. Legs: ochreous-grey, femora of midleg and hindleg shining pale ochreous, foreleg with a white line on tibia and tarsal segments one to three and five, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segments one to three white except at base, segment five entirely white, tibia of hindleg with a very oblique white line from base to one-third, a second white lateral line nearly from base to spurs, from there towards dorsum as an oblique line to two-thirds, a short subapical white streak just before the white apical ring, first tarsal segment with a white basal and an ochreous-white apical ring, tarsal segments two to four with indistinct ochreous apical rings, tarsal segment five ochreous-white, spurs ochreous-white, ventrally with a dark grey streak. Forewing dark bronze brown with reddish gloss, five white lines in the basal area, a costal from one-quarter to the transverse fascia, a subcostal from base to two-fifths, slightly bending from costa, a short and straight medial above fold from one-quarter to near the transverse fascia, a slightly shorter subdorsal below fold, from one-third to just beyond the medial, a broad dorsal nearly from base to one-third and with some greenish and reddish reflections, a broad yellow transverse fascia beyond the middle, narrowed towards dorsum, bordered at the inner edge by two silver metallic, tubercular subcostal and subdorsal spots, the subdorsal spot further from base and slightly larger than the subcostal, bordered at the outer edge by two similarly coloured costal and dorsal spots, the dorsal spot twice as large as the costal and more towards base, the tubercular spots have purplish and greenish reflections, a narrow whitish costal streak apical from the outer costal spot and a shining white apical line inwardly not connected to the transverse fascia and ending in the cilia just before apex, cilia bronze brown around apex, brownish grey towards dorsum. Hindwing shining pale brownish grey, cilia brownish grey. Underside: forewing shining pale greyish brown, the white apical line indistinctly visible, hindwing greyish white, pale brownish grey at costa. Abdomen dorsally yellow, first segment yellowish white, laterally shining grey, ventrally shining white, in middle yellowish white, segments banded shining yellowish white posteriorly, anal tuft shining white (fig. 106).

*Female.* Unknown.

*Male genitalia.* Right branchium of uncus very stout, apical part bent to the left and with a large dorsal crest, apex tapering and pointed, left brachium short and narrow with rounded tip, about one-third of the length of right one. Valvae broad triangular and with concave upper and lower margins and caudal margin slightly rounded. Anellus lobes narrow and strongly bent just before middle, apex pointed. Aedeagus with bulbous part long and slightly upwardly bent, only slightly tapering distally, basal part about half the length of bulbous part, lateral lobes square, about one-half of length the basal part (fig. 194).

*Biology.*— Unknown. Adults have been collected from the last week of March to the last week of May.

*Distribution.*— Ecuador: Galapagos Islands (fig. 308).

## The genus *Pebobs* Hodges

*Pebobs* Hodges, 1978: 38.

Type-species: *Cosmopterix ipomoeae* Busck, 1900, by original designation.

Diagnosis.— *Pebobs* species cannot be separated from *Cosmopterix* by the external characters. In the male genitalia the long and slender, weakly sclerotized, right brachium of the uncus and the long and tube-shaped aedeagus are characteristic. In the female genitalia the connection of the sterigma on the bottom of a large pouch behind segment VII is characteristic.

Description.— *Adult*. Very small to small moths in the Cosmopterigidae. Forewing length of 2.9-4.3 mm. External features as in *Cosmopterix* (figs 1-3). Wing venation with 12 veins in forewing and 7 veins in hindwing (fig. 8). Forewing with Sc and R1-R5 to costa; R5 stalked with M1; M1-CuA2 to termen; CuP very weak and not reaching termen; 1A+2A with basal fork, to dorsum. Hindwing Sc along costa and joining Rs at three-quarters; M1-CuA2 to termen; veins often not fully developed due to the narrow shape of the hindwing.

*Male genitalia*. Asymmetrical. Uncus split into two brachia, left brachium one-fifth to one-half length of right brachium, both weakly sclerotized, right brachium often bent in distal part. Gnathos absent. Tegumen rather long and narrow with a sclerotized rim at anterior margin. Valva long and narrow, often widening distally, sparsely setose. Anellus lobe long, parallel to aedeagus and basely fused, sometimes bent distally. Aedeagus long, fused with anellus, distal part long and tube-shaped, basal part short to very short, lateral flaps very small or not noticeable. The pleural lobes on segment VIII short and rounded (figs 9-10).

*Female genitalia*. Apophyses posteriores more than two to two and a half times as long as apophyses anteriores. Ostium at posterior end of a short, square to long and elongate sclerotized sterigma, its anterior part connected and fixed to the membrane between segment VII and VIII. Ductus bursae narrow, from one-half to almost twice the length of the corpus bursae. Ductus seminalis merges from half of the ductus bursae to just before the entrance of the corpus bursae. Corpus bursae oval, egg-shaped or elongated. Two, often rather large, signa. Posterior margin of segment VII convex, membrane between segment VII and VIII forming a large pouch which completely covers the sterigma, in one case segment VII with a large V-shaped slit ventrally and sterigma exposed, inner side of the pouch densely covered with large scales (fig. 11).

Biology.— The biology has only been described for *P. ipomoeae*. The one known life-cycle does not differ from those of the known life-cycles of *Cosmopterix*-species.

Remarks.— Due to the large similarity of the forewing pattern of the species of this genus the external characters are not used in the key. To separate the species characters of the male and female genitalia are needed.

*Pebobs aitne* spec. nov.  
(figs 107, 195, 292)

Type material.— Holotype ♂, Belize: Cayo Distr., San Ignacio, Secondary forest, 17-18.iv.1998, R. Puplesis & S. Hill; gen. slide BM 29945 (BMNH).

Material examined.— 1 ♂: Costa Rica: Turrialba, 600 m, vii.1981, V.O. Becker, coll.; Col. Becker, 46437; gen. slide JCK 5435 (VOB).

Diagnosis.— The male genitalia of *P. aitne* resemble those of *P. sanctivincenti*, but can be distinguished from this species by the anellus lobes which are already separated at base and by the more abruptly bent tip.

Description.— Male. Forewing length 3.9 mm. Head: frons shining ochreous-white, vertex and neck tufts shining dark brown with greenish and reddish reflections, collar shining dark brown; labial palpus first segment very short, white, second segment three-quarters of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined brown laterally; scape dorsally shining brown with a white anterior line, ventrally shining ochreous-white, antenna shining dark brown with a white line from base to two-thirds, followed towards apex by an annulate section of four segments, two white, two dark brown, two white, ten dark brown and eight white segments at apex. Thorax and tegulae shining dark brown with greenish and reddish reflections. Legs: shining dark greyish brown, foreleg with a white line on tibia and tarsal segments one to three and five, segment four with a white apical ring, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segments one, two and four with white apical rings, segment five entirely white, tibia of hindleg as midleg, tarsal segment one with white basal and apical rings, segment two with a white apical ring, segments three to five with white dorsal line, spurs ochreous-white dorsally, ochreous-grey ventrally. Forewing shining dark brown with reddish gloss, four very narrow silver white lines in the basal area, a short subcostal from base to one-sixth, slightly bending from costa, a medial from one-sixth to one-third, a subdorsal from one-third to just before one-half, a short and very indistinct dorsal from base, a pale yellow transverse fascia beyond the middle with a prolongation towards apex and with a long and narrow apical protrusion in the middle, bordered at the inner edge by two tubercular pale golden metallic subcostal and subdorsal spots, the subcostal spot more towards base and with a small patch of blackish brown scales on the outside, bordered at the outer edge by two tubercular pale golden metallic costal and dorsal spots, both spots opposite, the costal spot inwardly lined dark brown, the dorsal spot twice as large as the costal, a white costal streak from the outer costal spot, a yellowish apical line from the apical protrusion to apex, cilia dark brown around apex, paler towards dorsum. Hindwing shining pale brownish grey, cilia greyish brown. Underside: forewing shining dark brown, the apical line indistinctly visible, hindwing pale brownish grey. Abdomen dorsally dark greyish brown, ventrally shining white, anal tuft ochreous-white (fig. 107).

*Female.* Unknown.

*Male genitalia.* Right brachium of uncus narrow, bent distally, tip pointed, left brachium broad at base, tapering distally and pointed. Valvae rather short, narrowed at base, widening to a club-shaped apex. Anellus lobes slightly narrowing distally, apex downwardly bent, tip pointed, reaching just beyond aedeagus, both lobes joined just before base. Aedeagus long, tubular, bulbous part tapering in basal third and apical two-thirds, basal part about one-sixth of length of bulbous part (fig. 195).

*Biology.*— Unknown. Adults have been collected in April and July, indicating more than one generation.

*Distribution.*— Belize; Costa Rica (fig. 292).



Etymology.— Named after Aitne, a moon of Jupiter. To be treated as a noun in apposition.

Remarks.— The holotype from Belize has the head, thorax and forewings dark brown, head and thorax without white lining. The paratype from Costa Rica has the head, thorax and forewings greyish brown, head and thorax with white median lines. Only one very small difference could be found in the male genitalia, namely in the valva. In the specimen from Belize the valvae are slightly wider just beyond base. For the time being both specimens are regarded as one species until more material, especially females, becomes available.

*Pebobs elara* spec. nov.  
(figs 108, 196, 265, 291)

Type material.— Holotype ♂, Cuba: Stiago, Turquino, 470 m, 27-29.vii.1990, V.O. Becker; Col. Becker 73347; gen. slide JCK 5484 (VOB). Paratypes: 2 ♀: Jamaica: 1 ♀, Runaway Bay, 18.iii.1905, coll. Walsingham; gen. slide BM 29559 (BMNH). 1 ♀, same data as as holotype; gen. slide JCK 5486 (VOB).

Diagnosis.— *Pebobs elara* differs from other species of *Pebobs* by the forewing which has the outer dorsal spot closer to base than the outer costal spot and has a short, distinct white line above dorsum near base. In the male genitalia the apically narrowed and pointed valvae and in the female genitalia the semicircular posterior edge of sternite VII in combination with large funnel-shaped signa are characteristic.

Description.— Male, female. Forewing length 3.4-3.8 mm. Head: frons shining ochreous-white, vertex and neck tufts shining brown, laterally and medially narrowly lined white, collar shining brown; labial palpus first segment very short, white, second segment three-quarters of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined brown laterally; scape dorsally shining brown with a white anterior line, ventrally shining white, antenna shining dark brown with a white line from base to two-thirds, followed towards apex by four partly white segments, two white, two dark brown, two white, ten dark brown and about seven white segments at apex. Thorax and tegulae shining brown, thorax with a white median line. Legs: femora shining pale ochreous, foreleg brownish grey with a white line on tibia and tarsal segment one, posterior half of two, anterior half of three and posterior half of four and five, tibia of midleg brown with white oblique basal and medial lines and a white apical ring, tarsal segments ochreous on the outside, greyish brown on the inside, segment one and two with inner apical spots, segment five entirely ochreous white, tibia of hindleg brown with a white very oblique line from base to beyond middle and a white apical ring, tarsal segments brownish grey, segment one with a white basal ring and an ochreous-white apical ring, segments two to five with ochreous white apical rings, spurs white dorsally, brown ventrally. Forewing shining brown, six narrow white lines in the basal area, a first subcostal, close to costa, from base to one-quarter, followed by a second subcostal between the end of the first subcostal and the transverse fascia, a medial just above fold from one-eighth to two-fifths, a short first subdorsal above dorsum near base, a slightly oblique second subdorsal from the middle of the medial almost to the transverse fascia, a dorsal from one-eighth to start of the subdorsal, a bright yellow transverse fascia beyond the middle, narrowed

towards dorsum at both edges with a broad irregular prolongation towards apex, bordered at the inner edge by two tubercular pale golden metallic subcostal and dorsal spots, the subcostal spot with a blackish patch on the outside and more towards base, the dorsal spot slightly larger, bordered at the outer edge by two tubercular pale golden metallic costal and dorsal spots, the costal spot brown lined inwardly, the dorsal spot twice as large as the costal and more towards base, a white costal streak from the outer costal spot, a shining white apical line, somewhat irregular in width, cilia brown around apex, lighter towards dorsum. Hindwing shining brownish grey, cilia pale brown. Underside: forewing shining brown with greenish reflection, apically lighter and with a thin ochreous apical line, widening towards apex, hindwing slightly more greyish brown. Abdomen dorsally shining dark greyish brown, basally and apically more ochreous, segment six with a narrow ochreous-white posterior band, laterally ochreous-white, ventrally ochreous-yellow, segments banded shining white posteriorly and a very broad shining white ventral streak from segment one to five, anal tuft yellowish white (fig. 108).

*Male genitalia.* Right brachium of uncus narrow, bent distally, apex slightly swollen, tip pointed, left brachium broad, apical third strongly narrowed and pointed. Valvae ventrally bent in apical half, broad at base, gradually narrowing to one-third, middle section with a swollen costa, apical third narrowing to a sharp apex. Anellus lobes narrowing distally, apical third inwardly bent and swollen, tip narrowed and pointed, reaching well beyond aedeagus, both lobes joined to just beyond base. Aedeagus tube-shaped, slightly tapering distally, apex slightly widened, basal part short, about one-fifth of length of bulbous part (fig. 196).

*Female genitalia.* Posterior edge of sternite VII semicircular, completely covering sterigma. Sterigma bowl-shaped, tapering anteriorly and with a broad ventral sclerite, ostium round. Ductus bursae widening after ductus seminalis, about as long as the length of corpus bursae. Corpus bursae oval, two large funnel-shaped signa with a narrow sclerotized ridge in middle (fig. 265).

*Biology.*— Unknown. Adults have been collected in March and July, probably bivoltine.

*Distribution.*— Cuba; Jamaica (fig. 291).

*Etymology.*— Named after Elara, a moon of Jupiter. To be treated as a noun in apposition.

*Remarks.*— See for more details *Cosmopterix argentifera*. The paratype from Jamaica was found in the type-series with the manuscript name *C. argentifera* in the BMNH.

*Pebobs ipomoeae* (Busck, 1900)  
(figs 109, 197, 266, 282)

*Cosmopterix ipomoeae* Busck, 1900: 235. Lectotype ♂ (designated by R.W. Hodges, 1962), United States: Florida, Palm Beach; gen. slide USNM 3946 (USNM) [examined].

*Tanygona ipomoeae* (comb. n. by Hodges, 1962).

*Material examined.*— 1♂, 2♀. United States: 1♂, Florida, Monroe Co., Key Largo Key, 22.xi.[19]65, Mrs. Spencer Kemp; gen. slide USNM 1217. 1♀, same locality, 12.i.[19]64; gen. slide USNM 1218. 1♀, Florida, Ft. Lauderdale, morning glory, 21.v.1945; gen. slide USNM 3945 (USNM).

Diagnosis.— In the male genitalia the very wide anellus lobes in combination with the spatulate and upwardly bent valvae and in the female genitalia the large V-shaped indentation of sternite VII in combination with the elongate sterigma are characteristic.

Description.— Male, female. Forewing length 3.4–3.7 mm. Head: frons shining ochreous-grey with greenish and reddish reflections, vertex shining ochreous-brown with greenish and reddish reflections, neck tufts and collar shining bronze brown with reddish gloss; labial palpus first segment very short, white, second segment four-fifths of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined brown laterally; scape dorsally shining dark brown with a white anterior line, ventrally white, antenna shining dark brown, with a white line from base to two-thirds, in distal half more or less interrupted, followed towards apex by two white segments, ten dark brown and seven white segments at apex. Thorax and tegulae shining bronze brown with reddish gloss, thorax, including metathorax, with a white median line. Legs: femora of midleg and hindleg shining ochreous, foreleg brownish grey with a white line on tibia and tarsal segments, tibia of midleg brownish grey with white oblique basal and medial lines and a white apical ring, tarsal segments one, two and four with white apical rings, segment five entirely white, tibia of hindleg ochreous-brown with a white, very oblique line from base to beyond middle and a white apical ring, tarsal segment one with white basal and ochreous apical rings, segments two and three with ochreous apical rings, segments four and five entirely ochreous, spurs ochreous-grey. Forewing shining bronze brown, five narrow white lines in the basal area, a first subcostal, close to costa, from base to one-third, distally very slightly bending from costa, followed by a short second subcostal between the end of first and the transverse fascia, a medial starting just beyond base to just beyond the first subcostal, a subdorsal, starting just before the end of the medial to the end of the second subcostal, a dorsal from beyond base to one-third, a pale yellow transverse fascia beyond the middle, narrowed towards dorsum on the inside with a costal and dorsal prolongation towards apex and with an apical protrusion in the middle to beyond one half of the apical area, bordered at the inner edge by two tubercular pale golden metallic subcostal and dorsal spots, the subcostal spot with a patch of blackish scales on the outside, the dorsal spot further from base than the costal, at three-quarters of transverse fascia two tubercular pale golden metallic costal and dorsal spots, the costal spot lined brown on the inside, the dorsal spot twice as large and slightly more towards base than the costal, a white costal streak from the outer costal spot, a white apical line from the apical protrusion to apex, not in the cilia, cilia bronze brown around apex, paler towards dorsum. Hindwing shining brownish grey, cilia pale brown. Underside: forewing shining greyish brown, distally paler, the apical line visible, hindwing as forewing, but paler in dorsal half. Abdomen not examined, already used for dissection (fig. 109).

*Male genitalia.* Right brachium of uncus gradually tapering distally, apex slightly swollen and slightly bent, tip rounded, left brachium short and narrowing distally. Valvae wide at base, narrowing to beyond one-half, from there widening to a spatulate, slightly upwardly bent, apical part. Anellus lobes broad, wider than valva, tip flattened, reaching well beyond aedeagus, both lobes joined at one-half from base. Aedeagus wide, basal part not possible to examine (fig. 197).

*Female genitalia.* Posterior edge of sternite VII convex with a large V-shaped indentation, almost completely revealing the sterigma. Sterigma elongate, slightly tapering anteriorly to two-thirds, anterior third again widened and partly covered by sternite VII, ostium bursae round. Ductus bursae a little more than half the length of corpus bursae. Corpus bursae elongate with two large funnel-shaped signa (fig. 266).

*Larva.* Length 7 mm, head yellow with dark eyespots and mouth parts, body white with one dorsal and two lateral narrow wine-red longitudinal lines.

Biology.— Host plant. *Ipomoea* sp. (Convolvulaceae).

*Life history.* The larvae mine the leaves. Mine as a clear, irregular blotch with short silk-lined galleries inside, in which the larva retreats when disturbed. Pupation outside the mine in an inconspicuous, matted, flat cocoon (Busck, 1900). Adults have been collected from October to February and in May (Hodges, 1978).

Distribution.— USA: Florida (fig. 282).

Remarks.— *Pebobs ipomoeae* has also been recorded from Puerto Rico, Las Marinas, 12.ix.1991, where adults have been reared from leaf mines, found on *Ipomoea tiliacea* (Willd.) Choisy (Medina et al., 1994). This record cannot be confirmed, since the genitalia weren't studied.

*Pebobs isonoe* spec. nov.  
(figs 110, 198, 267, 308)

Type material.— Holotype ♂, Peru: Puerto Maldonado, 11-15.viii.1973, B.V. Ridout; gen. slide BM 29941 (BMNH). Paratypes: 2 ♀, Brazil: 1 ♀, R. Trobetas, ix.[19]19, Parish; gen. slide BM 29286. 1 ♀ (without abdomen), Obidos, ix.[19]19, Parish. Peru: 1 ♀, Yurimaguas, iii.[19]20, Parish (BMNH).

*Diagnosis.*— In the male genitalia the short aedeagus which reaches just beyond one-half of the anellus lobes and in the female genitalia the strongly convex posterior edge of sternite VII in combination with the rectangular sterigma are characteristic.

*Description.*— Male, female. Forewing length 2.9-3.8 mm. Head: frons shining ochreous-white, vertex and neck tufts shining dark brown with reddish gloss, laterally narrowly lined white, collar shining dark brown; labial palpus first segment very short, white, second segment three-quarters of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined brown laterally, extreme apex white; scape dorsally shining dark brown with a white anterior line, ventrally shining white, antenna shining dark brown with a white line from base to two-thirds, distal part interrupted, followed towards apex by six white segments, two dark brown, two white, ten dark brown and seven white segments at apex. Thorax and tegulae shining dark brown with reddish gloss, thorax with a posterior white spot. Legs: shining dark brown, femora of midleg and hindleg shining ochreous-white, foreleg with a white line on tibia and tarsal segments, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segment one, two and four with white apical rings, segment five entirely white, tibia of hindleg with a very oblique white medial line and a white apical ring, tarsal segments with white longitudinal lines, spurs white dorsally, brown ventrally. Forewing shining dark brown with reddish gloss, five narrow white lines in the basal area, a first subcostal, from base to one-quarter, slightly bending from costa, a short second subcostal be-

tween first subcostal and the transverse fascia, a medial from base to one-third and just above fold, a short oblique subdorsal from one-quarter almost to the end of the second subdorsal, a dorsal from beyond base to one-quarter, a bright yellow transverse fascia beyond the middle, with a broad prolongation towards apex and with a long and narrow apical protrusion to the middle of the apical area, bordered at the inner edge by two tubercular pale golden metallic subcostal and subdorsal spots, the subcostal spot with a patch of blackish scales on the outside, the subdorsal spot further from base, bordered at the outer edge by two tubercular pale golden metallic costal and dorsal spots, the costal spot inwardly lined dark brown, the dorsal spot twice as large and more towards base than the costal, a white costal streak from the outer costal spot, a shining white apical line from the apical protrusion to apex, cilia dark brown at apex, paler towards dorsum. Hindwing shining dark brownish grey, darker in female, cilia dark brown. Underside: forewing shining greyish brown, the transverse fascia and the white apical line indistinctly visible, hindwing shining greyish brown. Abdomen dorsally dark brown with reddish gloss, ventrally shining dark grey, segments banded shining yellowish white posteriorly and with a broad shining yellowish white longitudinal streak, anal tuft dorsally and ventrally dark grey, laterally blackish (fig. 110).

*Male genitalia.* Right brachium of uncus narrow, bent distally, tip pointed, left brachium slightly bent and pointed. Valvae gradually widening distally, before apex dorsal edge slightly narrowing, tip broad and rounded. Anellus lobes slightly narrowed in middle, dorsal margin rounded at apex, reaching well beyond aedeagus, both lobes joined to one-fifth from base. Aedeagus tubular, bulbous part tapering in basal and apical half, basal part about one-third of length of bulbous part (fig. 198).

*Female genitalia.* Posterior edge of sternite VII semicircular, distally sometimes a little flattened, completely covering sterigma. Sterigma bowl-shaped, tapering anteriorly, ostium irregular. Ductus bursae slightly widening after ductus seminalis, about as long as the length of corpus bursae. Corpus bursae egg-shaped to oval, two pocket-shaped signa with a weak sclerotization posteriorly (fig. 267).

Biology.— Unknown. Adults have been collected in March and in August and September, indicating more than one generation.

Distribution.— Brazil: Para; Peru: Loreto (fig. 308).

Etymology.— Named after Isonoe, a moon of Jupiter. To be treated as a noun in apposition.

Remarks.— The specimens from Brazil and Peru, excluding the holotype, have been described as *Cosmopterix interfracta* Meyrick, 1922 and are thus misidentified paralectotypes of this species; see under that species for more details. Sánchez & Sánchez (1992) give the morphology of a *Pebobs* species from Peru. Unfortunately the figures of the male and female genitalia do not show sufficient detail to arrive at a sound identification. The species involved is likely to be *P. isonoe*.

*Pebobs kale* spec. nov.  
(figs 111, 199, 268, 319)

Type material.— Holotype ♂, Trinidad and Tobago: St. George, St. Augustine, 17.vi 15.viii.1976; J.S. Noyens; gen. slide BM 29935 (BMNH). Paratypes: 1 ♂, 3 ♀, 1 specimen gender unknown. Peru: 2 ♀,

Dept. Lima, 36: 10 km E Imperial, 8.iii.1987, 150 m, O. Karsholt leg.; gen. slide JCK 5460 (ZMUC). Trinidad and Tobago: 1 ♂, 1 ♀, 1 specimen (sex not stated: without metathorax, hindwings and abdomen) same data as holotype, gen. slide BM 29934 (BMNH).

Diagnosis.— In the male genitalia it strongly resembles *P. tetragramma*, but differs by the shorter valvae which do not reach to the tip of the right brachium of the uncus and by the anellus lobes which are joined to one-third from base. In the female genitalia the bowl-shaped sterigma with the long lateral sclerites are characteristic.

Description.— Male, female. Forewing length 2.9–3.8 mm. Head: frons shining ochreous-white with greenish and reddish reflections, vertex and neck tufts shining bronze brown with greenish and reddish reflections, collar shining bronze brown; labial palpus first segment very short, white, second segment four-fifths of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined brown laterally; scape dorsally shining dark brown with a white anterior line, ventrally shining white, antenna shining dark brown, with a white line from base to two-thirds, followed towards apex by six to eight white segments, two dark brown, two white, ten dark brown and about seven white segments at apex. Thorax and tegulae shining bronze brown with reddish reflection, thorax with a white median line. Legs: femora of midleg and hindleg shining pale ochreous, foreleg brownish grey with a white line on tibia and tarsal segments, tibia of midleg brownish grey with white oblique basal and medial streaks and a white apical ring, tarsal segment one and two with an ochreous-white streak, tarsal segment four with a white apical ring, segment five ochreous white, tibia of hindleg brownish grey with a white, very oblique streak from base to beyond middle and a white apical ring, tarsal segment one with whitish basal and apical rings, segments two and three with whitish apical rings, segments four and five entirely whitish, spurs ochreous-white. Forewing shining bronze brown, five narrow white lines in the basal area, a first subcostal from base to one-quarter and slightly bending from costa, a short second subcostal in the middle between the end of the first subcostal and the transverse fascia, a medial from before the middle of the first subcostal to one-third and just above fold, an oblique subdorsal from before the end of the medial to beyond the end of the second subcostal, a short dorsal from beyond base to one-fifth, a light yellow transverse fascia beyond the middle with a broad prolongation towards apex and with a narrow apical protrusion, bordered at the inner edge by two tubercular pale golden metallic subcostal and dorsal spots, the subcostal spot with a patch of blackish scales on the outside and more towards base, two tubercular pale golden metallic costal and dorsal spots at three-quarters of the transverse fascia, both spots opposite, the costal spot lined brown at the inside, the dorsal spot more towards base and twice as large as the costal, a white costal streak from the outer costal spot, a shining white apical line from the apical protrusion of the transverse fascia to apex, cilia bronze brown around apex, paler towards dorsum. Hindwing shining brownish grey, darker grey in the female, cilia pale brown. Underside: forewing shining ochreous-grey with greenish reflection, apically lighter, the apical line visible, hindwing slightly paler than forewing. Abdomen dorsally shining dark greyish brown, segments six and seven each with a narrow ochreous-white posterior band, laterally ochreous-white, ventrally shining white, anal tuft ochreous-white dorsally, white ventrally (fig. 111).

*Male genitalia.* Right brachium narrow, bent distally, tip pointed, left brachium slightly bent and pointed. Valvae gradually widening distally, before apex dorsal edge slightly narrowing, tip broad and rounded. Anellus lobes slightly narrowed in middle, dorsal margin rounded at apex, reaching well beyond aedeagus, both lobes joined to one-third from base. Aedeagus tubular, bulbous part tapering in basal and apical half, basal part about one-third of length of bulbous part (fig. 199).

*Female genitalia.* Posterior edge of sternite VII concave. Sterigma bowl-shaped with long sclerites laterally, strongly narrowed in middle and widened anteriorly, ostium rounded. Ductus bursae about as long as the length of corpus bursae. Corpus bursae egg-shaped, two arrow-shaped signa on weakly sclerotized plates (fig. 268).

Biology.— Unknown. Adults have been collected in March and between June and August.

Distribution.— Peru; Trinidad and Tobago (fig. 319).

Etymology.— Named after Kale, a moon of Jupiter. To be treated as a noun in apposition.

*Pebobs sanctivincenti* (Walsingham, 1891) comb. n.  
(figs 112, 200, 269, 292)

*Cosmopteryx sancti-vincenti* Walsingham, 1891: 536. Lectotype ♂ (without abdomen) (here designated), Saint Vincent and the Grandines: Kingstown, H.H. Smith; Walsingham Collection (BMNH) [examined].

Material examined.— 1♂, 2♀. Grenada: 1♀, Chantilly Est. (Windward side), H.H. Smith, 13 iv.; gen. slide BM 29293 (BMNH). Saint Vincent and the Grandines: 1♂, same data as lectotype; gen. slide BM 29294. 1♀ (without abdomen): same data as lectotype.

Diagnosis.— Externally similar to *Cosmopteryx xanthura*, but differs in the male and female genitalia. In the male genitalia it resembles *P. aitne*, but it can be distinguished from this species by the anellus lobes which are joined to one-third from base and more gradually bent apically. In the female genitalia the reversed V-shaped posterior edge of sternite VII is characteristic.

Description.— Male, female. Forewing length 3.4–4.2 mm. Head: frons shining ochreous-white with greenish reflection, vertex and neck tufts shining brown with greenish and reddish reflections, laterally and medially lined white, collar shining brown; labial palpus first segment very short, white, second segment three-quarters of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined brown laterally, extreme apex white; scape dorsally shining dark brown with a white anterior line, ventrally shining white, antenna shining dark brown with a white line from base to two-thirds, followed towards apex by one white segment, three dark brown, two white, eight dark brown and three white segments at apex. Thorax and tegulae shining brown with reddish gloss, thorax with a white median line in posterior half. Legs: shining greyish brown, femora of midleg and hindleg shining greyish ochreous, foreleg with a white line on tibia and tarsal segments one to three, segment five entirely white, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segment one and two with white apical rings, segment five entirely white, tibia of hindleg with a very oblique white

line from base to beyond one half and a white apical ring, tarsal segment one with white basal and ochreous apical ring, segment two with an indistinct ochreous apical ring, segment five entirely whitish, spurs white dorsally, brown ventrally. Forewing shining brown with reddish gloss, five narrow white lines in the basal area, a first subcostal, close to costa, from base to one-quarter, followed by a second subcostal between the end of the first subcostal and the transverse fascia, a medial just above fold from beyond base to one-third, a short, slightly oblique subdorsal from one-quarter almost to the end of the second subcostal, a dorsal from one-eighth to one-quarter, a bright yellow transverse fascia beyond the middle with a broad prolongation towards apex and with a long and narrow apical protrusion to the cilia, bordered at the inner edge by two tubercular pale golden metallic subcostal and dorsal spots, the subcostal spot with a patch of blackish scales on the outside, the dorsal spot further from base, two tubercular pale golden metallic costal and dorsal spots at three-quarters of the transverse fascia, both spots opposite, the costal spot greyish brown edged inwardly, the dorsal spot three times as large as the costal, a white costal streak from the outer costal spot, a narrow shining white apical line in the apical cilia, cilia brown at apex, paler towards dorsum. Hindwing shining dark brownish grey, cilia brown. Underside: forewing shining dark greyish brown with an ochreous costal streak in the apical half, the white apical line indistinctly visible, hindwing shining dark greyish brown. Abdomen dorsally dark olive brown with greenish and reddish reflections, laterally with pale ochreous spots, ventrally shining dark grey, segments banded shining yellowish white posteriorly and with a broad shining yellowish white longitudinal streak, anal tuft ochreous-white, in the female dorsally olive brown with golden gloss, ventrally ochreous (fig. 112).

*Male genitalia.* Right brachium of uncus gradually tapering distally, apical part bent downwards, tip pointed, left brachium very short and pointed. Valvae wide at base, narrowing to before one-half, widening to a long triangular apical part. Anellus lobes strongly bent distally, tip rounded, reaching just beyond aedeagus, both lobes joined to one-third from base. Aedeagus wide, bulbous part slightly ventrally bent, basal part a little more than one-third of length of bulbous part (fig. 200).

*Female genitalia.* Posterior edge of sternite VII reverse V-shaped, completely covering sterigma. Sterigma bowl-shaped, ostium oval, ventral wall protruded in middle. Ductus bursae one-quarter longer than the length of corpus bursae. Corpus bursae egg-shaped, two large, funnel-shaped signa with a sclerotized medial ridge (fig. 269).

Biology.— Unknown. The adult from Granada was collected in April.

Distribution.— Grenada; Saint Vincent and the Grenadines (fig. 292).

Remarks.— According to the original description (Walsingham, 1891) the type-series consists of a male and a female from Saint Vincent and the Grenadines, both are missing the abdomens. The male without abdomen is designated here as the lectotype. In the collection of the BMNH there is also a second male with the same label data as both specimens of the type-series and also an additional female specimen from Grenada, both with abdomens. No external differences could be found between these two specimens and the specimens of the type-series. Therefore they have been used to describe the genitalia.



*Pebobs tetragramma* (Meyrick, 1915) comb. n.  
(figs 113, 201, 270, 308)

*Cosmopterix tetragramma* Meyrick, 1915: 203. Lectotype ♂ (designated by J.F.G. Clarke, 1965), Guyana: Mallali, iii.[19]13, Parish 3-13; gen. slide JFGC 6149 (BMNH) [examined].

Material examined.— 4♂, 4♀. Guyana: 3♂, 2♀, Bartica, ii.[19]13, Parish; gen. slides BM 29295, BM 29296. 2♀, same data, i.[19]13. 1♂, Georgetown, iv.[19]13 (BMNH).

Diagnosis.— In the male genitalia it strongly resembles *P. kale*, but differs by longer valvae which reach just beyond the right brachium of the uncus and by the anellus lobes which are joined to one-half from base. In the female genitalia the ventrally flattened posterior edge of sternite VII and the square bowl-shaped sterigma distinguishes this species from *P. isonoe*.

Description.— Male, female. Forewing length 3.3-3.6 mm. Head: frons shining ochreous-white with greenish reflection, vertex and neck tufts shining greyish brown with reddish gloss, white lateral lines hardly visible or absent, collar shining greyish brown; labial palpus first segment very short, white, second segment three-quarters of the length of third, dark brown with white longitudinal lines laterally and ventrally, third segment white, lined brown laterally, extreme apex white; scape dorsally shining dark brown with a white anterior line, ventrally shining white, antenna shining dark brown with a white line from base to beyond one-half, followed towards apex by six white segments, two dark brown, two white, ten dark brown and seven white segments at apex. Thorax and tegulae shining greyish brown with reddish gloss, thorax with a narrow white median line. Legs: shining dark greyish brown, femora of midleg and hindleg shining ochreous-white, foreleg with a white line on tibia and tarsal segments, tibia of midleg with white oblique basal and medial lines and a white apical ring, tarsal segments one, two and four with white apical rings, tarsal segment five entirely white, tibia of hindleg with a very oblique white line from base to beyond one half and a white apical ring, tarsal segment one with basal and apical white rings, segments two and three with indistinct whitish apical rings, segments four and five entirely whitish, spurs white dorsally, brown ventrally. Forewing shining greyish brown with reddish gloss, five narrow white lines in the basal area, a first subcostal, close to costa, from base to one-quarter, followed by a second subcostal between the end of the first subcostal and the transverse fascia, a medial just above fold from beyond base to one-third, a short, slightly oblique subdorsal from one-quarter almost to the end of the second subcostal, a dorsal from one-eighth to one-quarter, a bright yellow transverse fascia beyond the middle with a broad prolongation towards apex and with a narrow apical protrusion to the middle of the apical area, bordered at the inner edge by two tubercular pale golden metallic subcostal and subdorsal spots, the subcostal spot with a patch of blackish scales on the outside, the subdorsal spot further from base than the subcostal, bordered at the outer edge by two tubercular pale golden costal and dorsal spots, both spots opposite, the dorsal spot twice as large as the costal, a white costal streak, inwardly edged greyish brown, from outer costal spot, a shining white apical line from the apical protrusion to the apical cilia, cilia greyish brown at apex, ochreous-brown towards dorsum. Hindwing shining brownish grey, cilia ochreous-brown. Underside: forewing

shining brownish grey, the transverse fascia and the white apical line indistinctly visible, hindwing shining grey. Abdomen dorsally yellowish brown with reddish gloss, ventrally shining dark grey, segments banded shining yellowish white posteriorly and with a broad shining yellowish white longitudinal streak, anal tuft dorsally yellowish brown, ventrally ochreous. Anal tuft in female dark grey (fig. 113).

*Male genitalia.* Right brachium of uncus narrow, bent distally, tip pointed, left brachium very narrow and pointed. Valvae gradually widening distally, tip broad and rounded. Anellus lobes narrow, slightly widening distally, ventral margin straight, dorsal margin rounded at apex, reaching well beyond aedeagus, both lobes joined to one-half from base. Aedeagus narrow, bulbous part tapering in apical half, basal part less than one-half the length of bulbous part (fig. 201).

*Female genitalia.* Posterior edge of sternite VII convex, flattened ventrally, completely covering sterigma. Sterigma square bowl-shaped, ostium not noticeable. Ductus bursae about as long as the length of corpus bursae. Corpus bursae egg-shaped, two small signa, funnel-shaped on a weakly sclerotized plate (fig. 270).

Biology.— Unknown. Adults were collected in November, January, February and April, indicating more than one generation.

Distribution.— Guyana (fig. 308).

Remarks.— In the original description Meyrick (1915) mentioned ten specimens, and this was repeated by Clarke (1965). In the collection of the BMNH only nine specimens were found.

*Pebobs* spec.  
(figs 114, 271, 292)

Material examined. 1 ♀. Puerto Rico: Patillas, 590 m, viii.1987, V.O. Becker; Col. Becker 68183; gen. slide JCK 5481 (VOB).

Diagnosis.— The convex posterior edge of segment VII and the sinuate anterior edge of the membrane between segment VII and VIII in combination with the dense inward scaling of this membrane with broad scales are characteristic.

Description.— Female. Forewing length 4.3 mm. Head: frons shining greyish-white with greenish and reddish reflections, vertex, neck tufts and collar shining bronze brown with greenish and reddish reflections; labial palpus first segment very short, white, second segment four-fifths of the length of third, yellowish brown with white longitudinal lines laterally and ventrally, third segment white, lined brown laterally; scape dorsally shining dark brown with a white anterior line, ventrally shining white, antenna shining dark brown with a white line from base to three-quarters, followed towards apex by two white segments, thirteen dark brown and four white segments at apex. Thorax and tegulae shining bronze brown with reddish reflection, thorax with a white median line. Legs: ochreous grey, femora of midleg and hindleg shining pale ochreous, foreleg with a white line on tibia and tarsal segments one to three, segment five entirely white, tibia of midleg with white narrow oblique basal and medial lines and a white apical ring, tarsal segments one and two dorsally with white apical dots, segment five entirely white, tibia of hindleg with a white, very oblique line from base to beyond the middle and a white apical ring, first tarsal segment with ochreous-white

basal and apical rings, segments two and three dorsally with ochreous apical spots, segment four and five entirely ochreous-grey, spurs brownish grey, inner side ochreous-white. Forewing shining bronze brown with reddish gloss, five narrow white lines in the basal area, sometimes interrupted, a first subcostal from base to one-quarter and very slightly bending from costa distally, a short second subcostal between the first subcostal and the transverse fascia, a medial just above fold from before half of the first subcostal to beyond one-quarter, a subdorsal from one-quarter to the end of the second subcostal, a short dorsal beyond base to one-quarter, a yellow transverse fascia beyond the middle with a short and broad prolongation towards apex and a narrow apical protrusion in the middle, bordered at the inner edge by two tubercular pale golden metallic subcostal and subdorsal spots, the subcostal spot with a patch of blackish scales on the outside and more towards base than the subdorsal, bordered at the outer edge by two tubercular pale golden metallic costal and dorsal spots, the costal spot lined brown on the inside, the dorsal spot slightly more towards base and a little larger than the costal, a white costal streak from the outer costal spot, a narrow white apical line from the apical protrusion to apex, cilia bronze brown around apex, paler towards dorsum. Hindwing shining dark grey, cilia ochreous-grey. Underside: forewing shining greyish brown with greenish and reddish reflections, the apical line very indistinctly visible, hindwing shining greyish brown with greenish and reddish reflections. Abdomen dorsally dark brown, laterally shining grey, ventrally creamy white, anal tuft creamy white (fig. 114).

*Male.* Unknown.

*Female genitalia.* Posterior edge of sternite VII convex, completely covering sterigma. Ostium rounded. Ductus bursae three-quarters of length of corpus bursae. Corpus bursae oval with two pocket-shaped signa (fig. 271).

Biology.— Unknown. The single specimen was collected in August.

Distribution.— Puerto Rico (fig. 292).

Remarks.— Externally this species resembles *P. isonoe*, but it has only one narrow subapical white ring in the antenna. In the female genitalia it differs from *P. isonoe* by the sinuate anterior edge of the membrane between segment VII and VIII, the shorter sterigma and the larger signa. It will be possible that this taxon belongs to *Pebobs aitne* of which the female is still unknown. The narrow subapical and apical white sections of the antenna compared to the two white subapical sections, of which the second one is broad, and the broad white apical section of *P. aitne* indicates that *P. spec. is*, nevertheless, possibly a valid species. For this reason it has been described provisionally without a species name.

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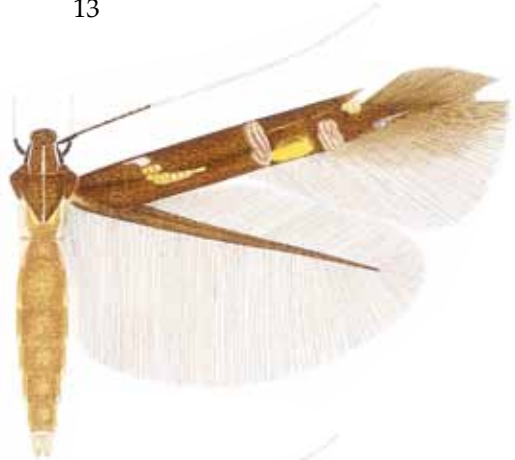
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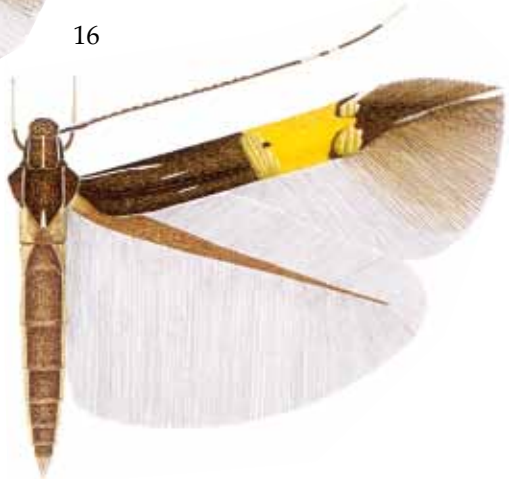
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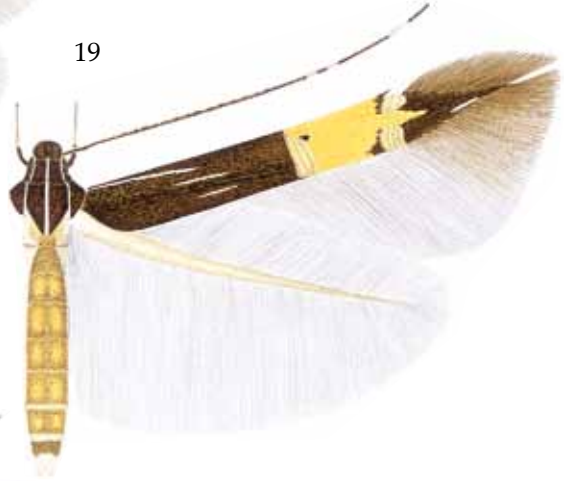


Figs 12-17. *Cosmopterix* spp., adult habitus. 12, *C. abnormalis*, male, Jamaica, Moneague; 13, *C. adrastea*, male holotype; 14, *C. albicaudis*, male holotype; 15, *C. amalthea*, male holotype; 16, *C. ananke*, male holotype; 17, *C. argentifera*, male holotype.

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Figs 18-21. *Cosmopterix* spp., adult habitus. 18, *C. astrapias*, female holotype; 19, *C. attenuatella*, male, Brasilia, Minas Gerais, Nova lima; 20, *C. aurotegulae*, female holotype; 21, *C. bacata*, male, USA, Mississippi, Jackson Co., Shepard State Park.



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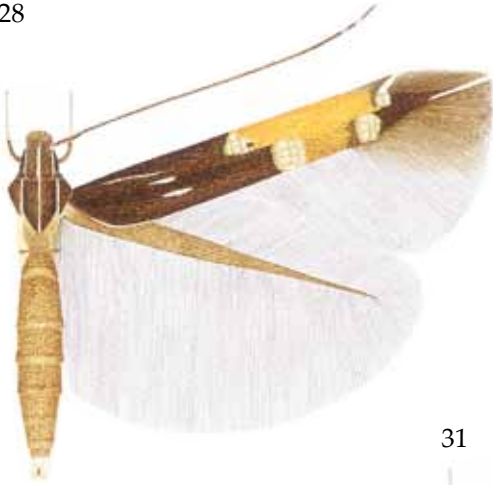


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Figs 22-27. *Cosmopterix* spp., adult habitus. 22, *C. beckeri*, male holotype; 23, *C. callichalca*, male, Argentina, Salta, Quebrada del Toro; 24, *C. callisto*, female holotype; 25, *C. carpo*, male holotype; 26, *C. chaldene*, male holotype; 27, *C. chalupae*, male holotype.

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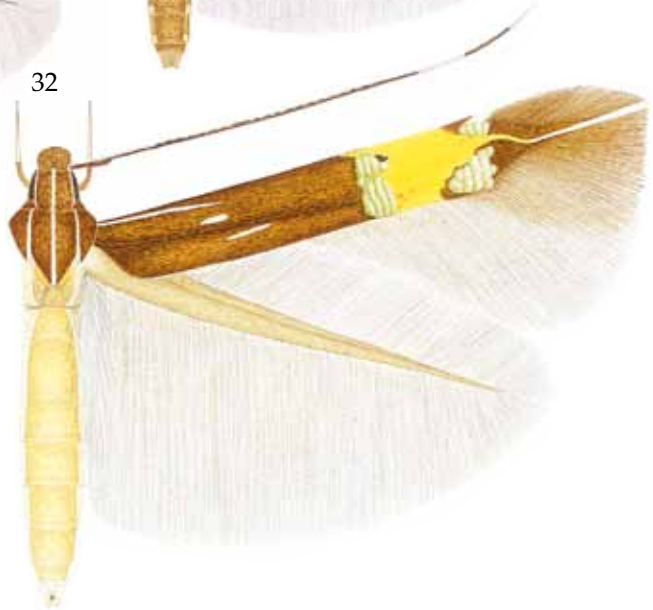
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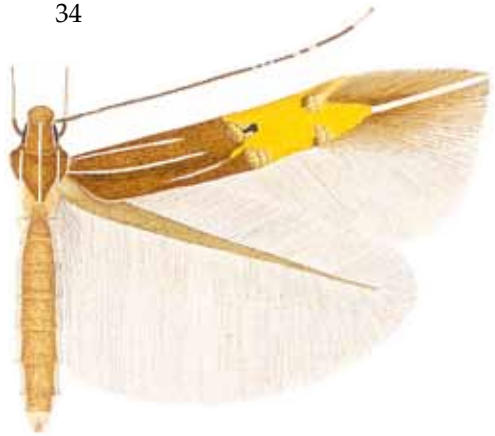


Figs 28-32. *Cosmopterix* spp., adult habitus. 28, *C. chalybaeella*, male, USA, New Mexico, Eddy Co.; 29, *C. chisosensis*, male, Argentina, Salta, Camino de Cornisa; 30, *C. citrinopa*, male, Peru, Iquitos; 31, *C. clandestinella*, male, USA, Michigan, Mason Co.; 32, *C. clemensella*, male, USA, Michigan, Cass Co.

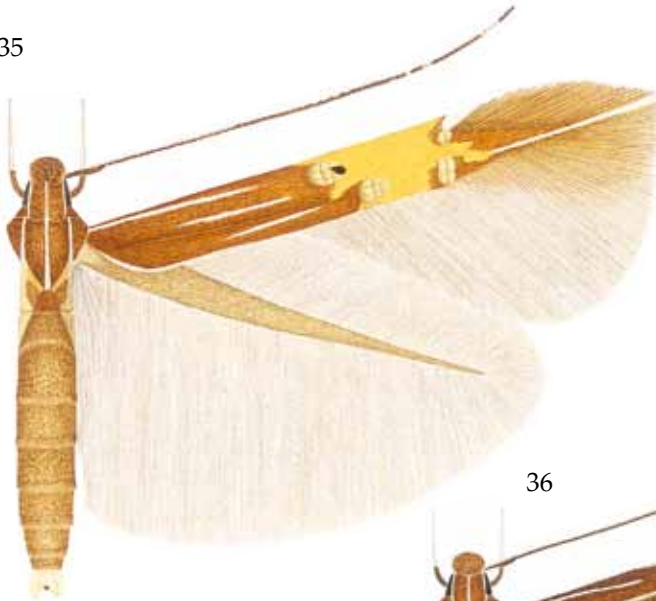
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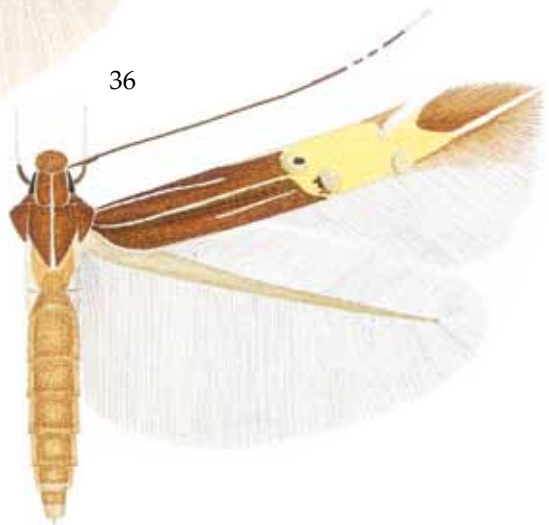
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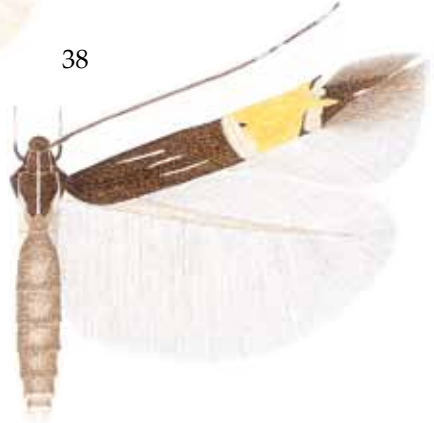


Figs 33-36. *Cosmopterix* spp., adult habitus. 33, *C. dammosa*, male, USA, New Hampshire, Deerfield; 34, *C. dapifera*, male, USA, Alabama, Baldwin Co.; 35, *C. delicatella*, male holotype; 36, *C. diaphora*, female, Mexico, Veracruz-Llave, Tampico.

37



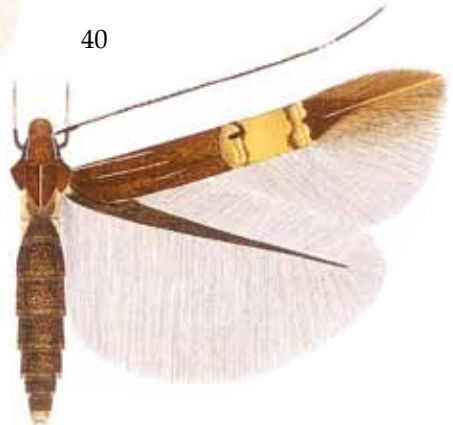
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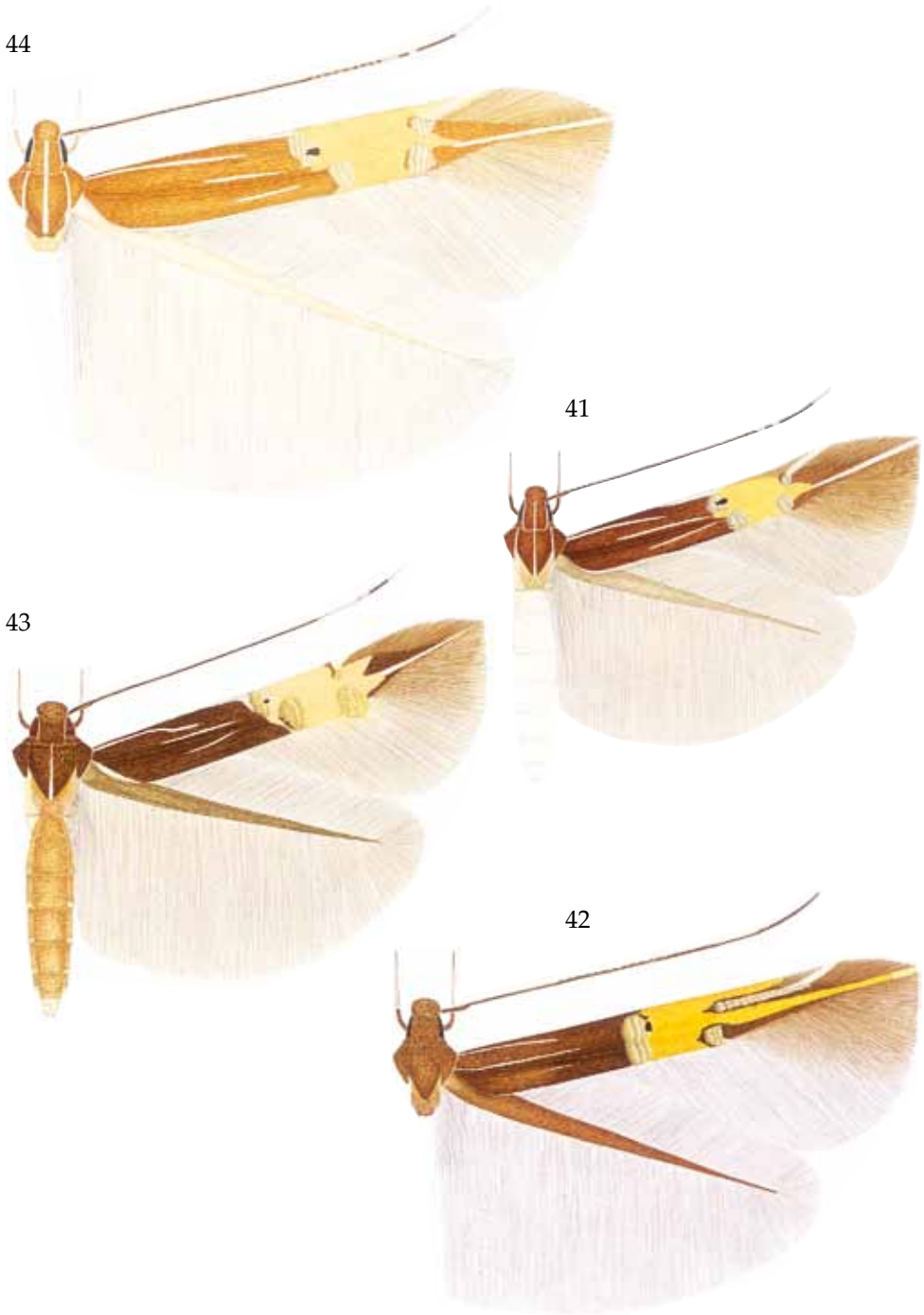
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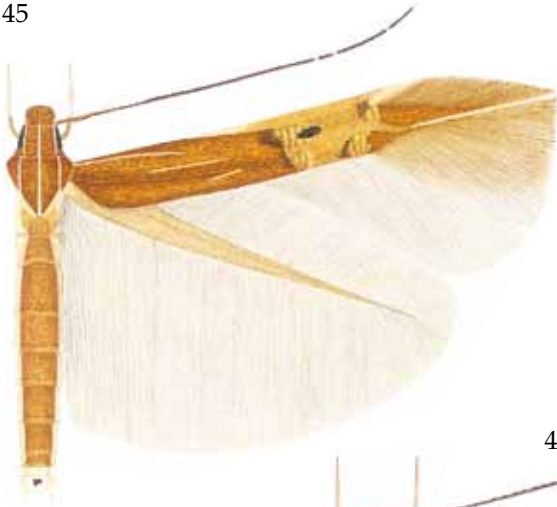


Figs 37-40. *Cosmopterix* spp., adult habitus. 37, *C. ebriola*, male, USA, South Carolina, Charleston Co.; 38, *C. erasmia*, male, Guyana, Bartica; 39, *C. erinome*, male holotype; 40, *C. etmylaurae*, male holotype.

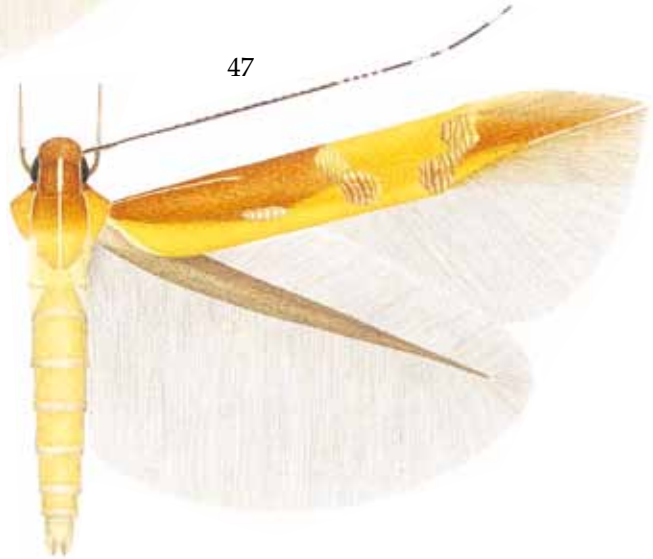


Figs 41-44. *Cosmopterix* spp., adult habitus. 41, *C. euanthe*, male holotype; 42, *C. eukelade*, female holotype; 43, *C. euporie*, male holotype; 44, *C. facunda*, female holotype.

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Figs 45-48. *Cosmopterix* spp., adult habitus. 45, *C. fernaldella*, male, USA, Michigan, Mackinac Co.; 46, *C. floridanella*, male, USA, Florida, Lake Placid, Archbold Bio. Sta.; 47, *C. galapagosensis*, male paratype, Ecuador, Galápagos, Isabela; 48, *C. ganymedes*, male holotype.

49



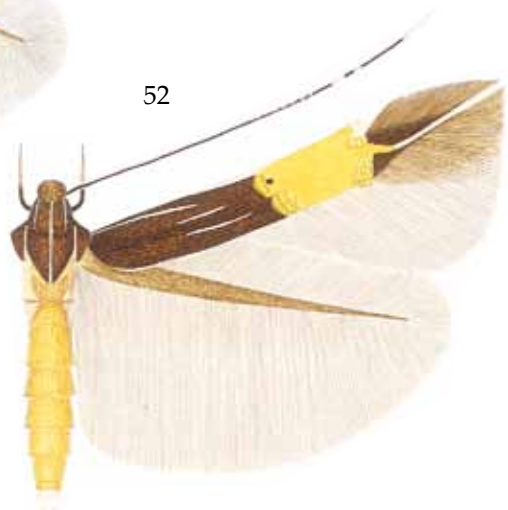
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Figs 49-52. *Cosmopterix* spp., adult habitus. 49, *C. gemmiferella*, male, Canada, Ottawa; 50, *C. gielisorum*, male holotype; 51, *C. gomezpompai*, female holotype; 52, *C. harpalyke*, male holotype.

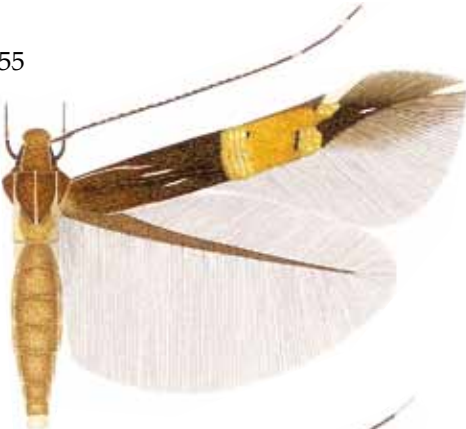
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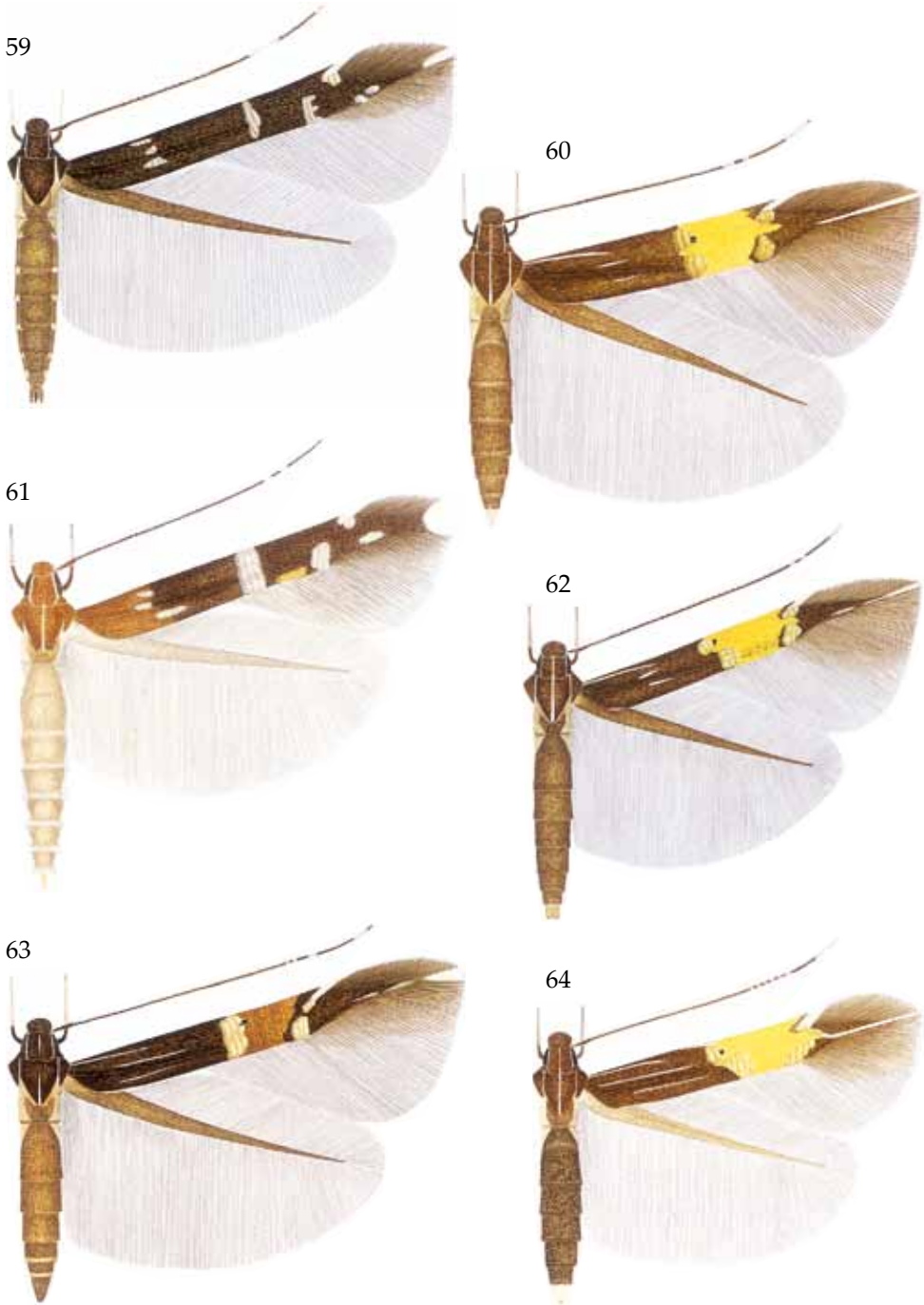


58



Figs 53-58. *Cosmopterix* spp., adult habitus. 53, *C. helike*, male holotype; 54, *C. hermippe*, female holotype; 55, *C. himalia*, female holotype; 56, *C. inaugurate*, male, Guyana, Georgetown; 57, *C. inopis*, male holotype, USA, Arizona, Madera Canyon; 58, *C. interfracta*, male lectotype.



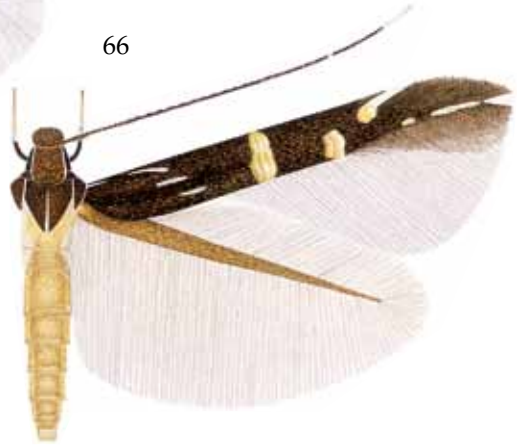


Figs 59-64. *Cosmopterix* spp., adult habitus. 59, *C. io*, male holotype; 60, *C. iocaste*, male holotype; 61, *C. irrubricata*, female, Jamaica, Runaway Bay; 62, *C. isotoma*, male, Brazil, Destrito Fedral, Planaltina; 63, *C. karsholti*, male holotype; 64, *C. langmaidi*, female holotype.

65



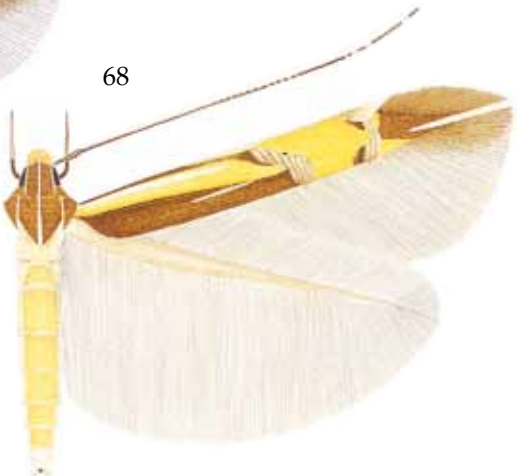
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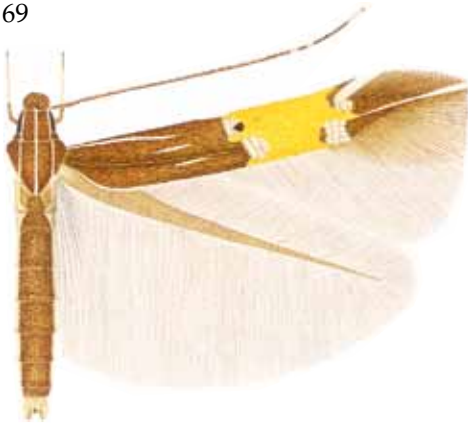


68



Figs 65-68. *Cosmopterix* spp., adult habitus. 65, *C. lespedezae*, female, USA, Mississippi, Winston Co.; 66, *C. lummyae*, male holotype; 67, *C. lysithea*, female holotype; 68, *C. madeleinae*, male paratype, Ecuador, Galápagos, Pinta.

69



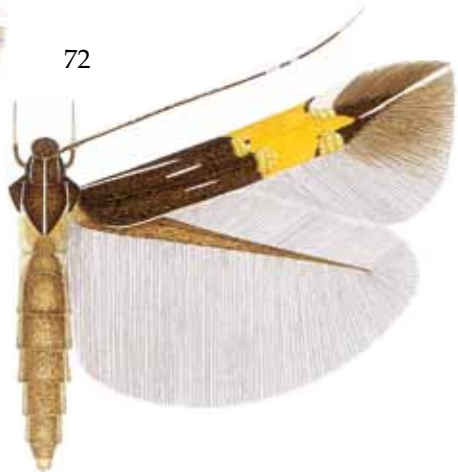
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Figs 69-73. *Cosmopterix* spp., adult habitus. 69, *C. magophila*, male, USA, Michigan, Kalamazoo Co.; 70, *C. metis*, male holotype; 71, *C. minutella*, male, USA, Florida, Monroe Co.; 72, *C. mneme*, female holotype; 73, *C. molybdina*, male holotype.

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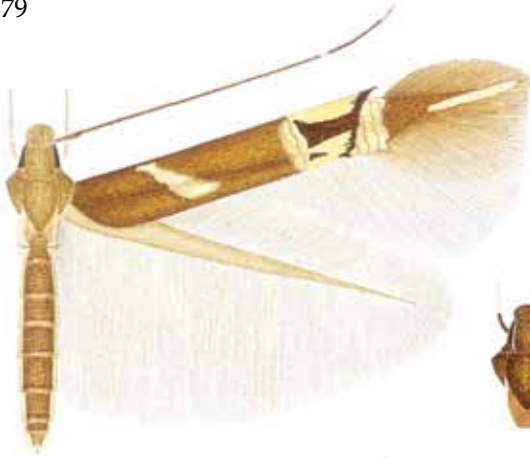


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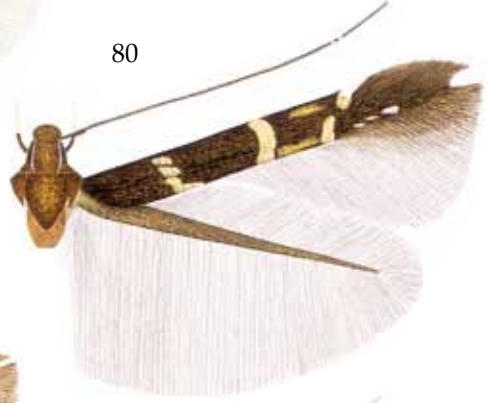


Figs 74-78. *Cosmopterix* spp., adult habitus. 74, *C. montisella*, male, USA, Michigan, Kalamazoo Co.; 75, *C. navarroi*, male holotype; 76, *C. nieukerkeni*, male holotype; 77, *C. nishidai*, female paratype, Costa Rica, San José, San Pedro, U.C.R., Reserva Ecológica Leonel Oviedo; 78, *C. nishidai*, male abdomen.

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Figs 79-83. *Cosmopterix* spp., adult habitus. 79, *C. nitens*, female, USA, South Carolina, Charleston Co.; 80, *C. nyctiphanes*, male lectotype; 81, *C. ochleria*, female holotype; 82, *C. opulenta*, male, USA, New Mexico, Dona Ana Co.; 83, *C. orthosie*, male holotype.

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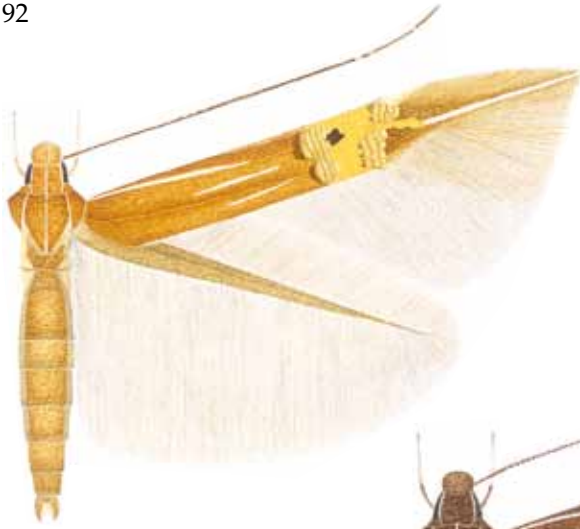


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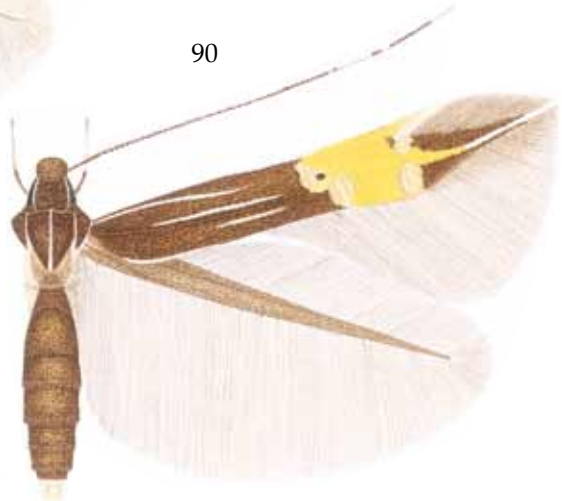


Figs 84-88. *Cosmopterix* spp., adult habitus. 84, *C. pentachorda*, female, Ecuador, Huigra; 85, *C. pimmaarteni* male holotype; 86, *C. praxidike*, male holotype; 87, *C. pulchrimella*, male, USA, Michigan, Berrien Co.; 88, *C. pyrozela*, female holotype.

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Figs 89-92. *Cosmopterix* spp., adult habitus. 89, *C. quadrilineella*, male, USA, Texas, Brewster Co.; 90, *C. saltensis*, male holotype; 91, *C. schouteni*, female holotype; 92, *C. scirpicola*, male, USA, South Carolina, Charleston Co., McClellanville.

93



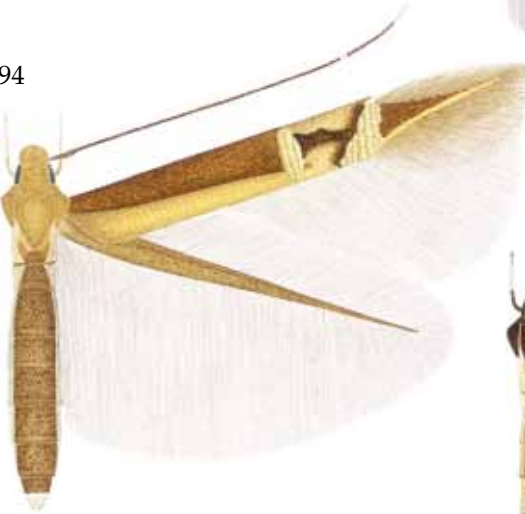
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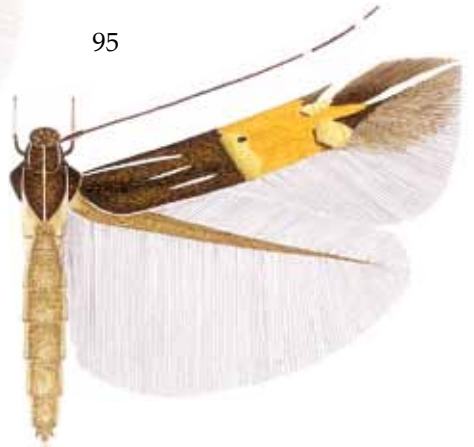
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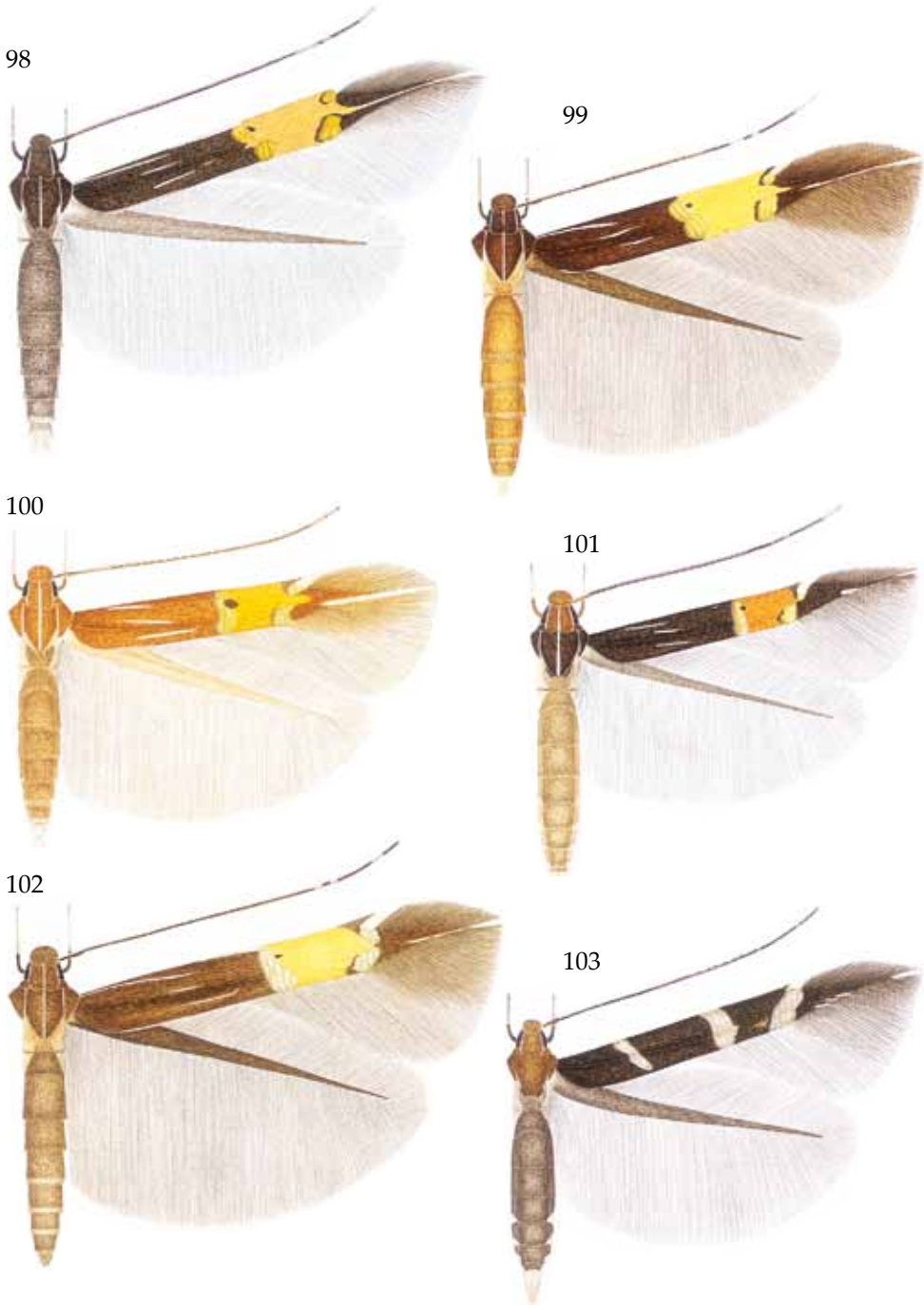


95



Figs 93-97. *Cosmopterix* spp., adult habitus. 93, *C. similis*, male, US Virgin Islands, St. Thomas; 94, *C. sinelinea*, male, USA, South Carolina, McClellanville; 95, *C. taygete*, male holotype; 96, *C. teligera*, female lectotype, Colombia, Cali; 97, *C. tenax*, male holotype.



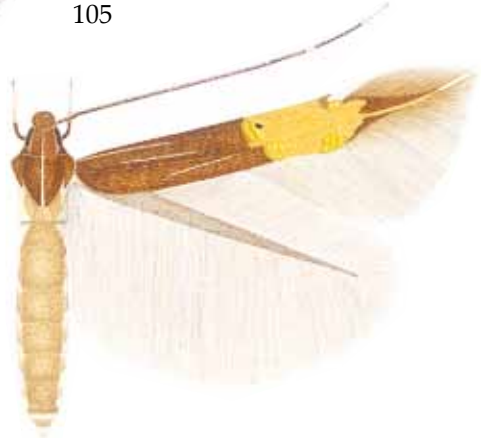


Figs 98-103. *Cosmopterix*, spp., adult habitus. 98, *C. thebe*, male holotype; 99, *C. thelxinoe*, male holotype; 100, *C. themisto*, male holotype; 101, *C. thrasyzela*, female, Guyana, Bartica; 102, *C. thyone*, male holotype; 103, *C. trifasciella*, male holotype.

104



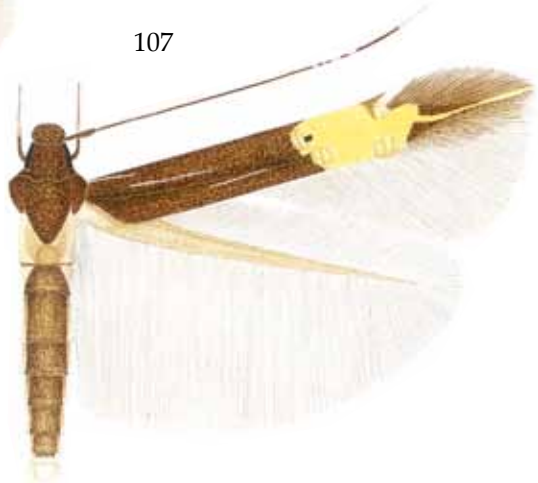
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Figs 104–107. *Cosmopterix* and *Pebobs* spp., adult habitus. 104, *C. vanderwolffi*, male holotype; 105, *C. xanthura*, female, Mexico, Tabasco, Tapea; 106, *C. yvani*, male, Ecuador, Galápagos, Pinta; 107, *P. aitne*, male holotype, Belize, Cayo Distr., San Ignacio.



Figs 108-112. *Pebobs* spp., adult habitus. 108, *P. elara*, male holotype; 109, *P. ipomoeae*, male lectotype; 110, *P. isonoe*, male holotype; 111, *P. kale*, male holotype. 112, *P. sanctivincenti*, female, Grenada, Chantilly Est. (Windward side).

113

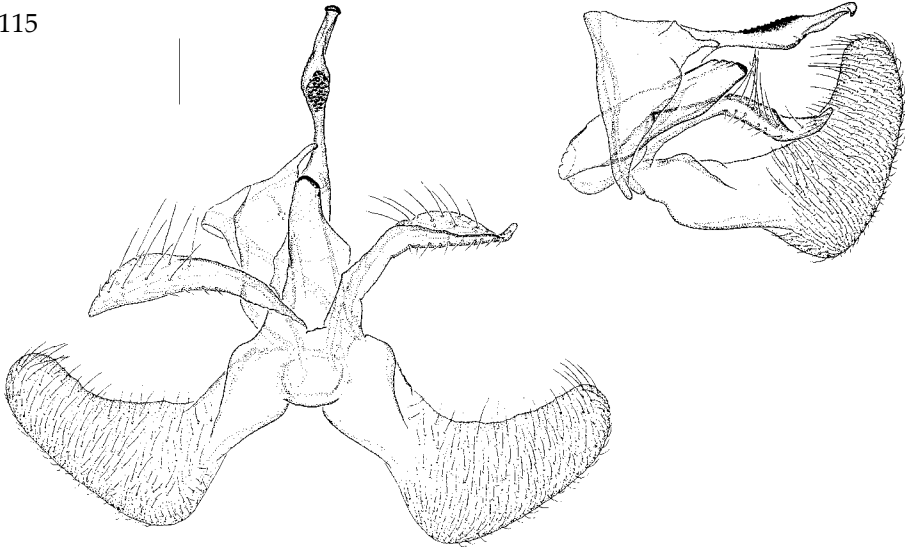


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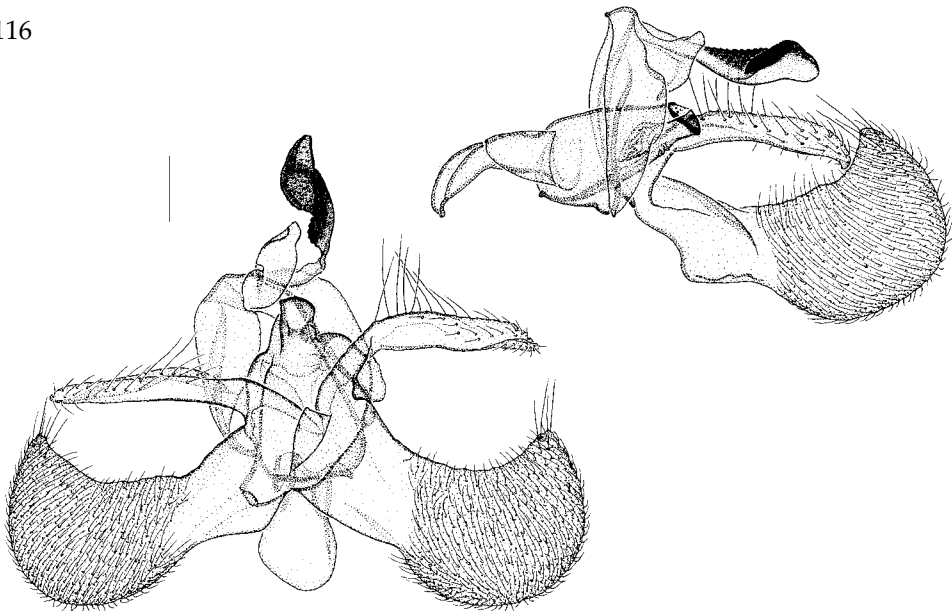


Figs 113-114. *Pebobs* spp., adult habitus. 113, *P. tetragramma*, female, Guyana, Bartica; 114. *P. spec.*, female, Puerto Rico, Patillas.

115

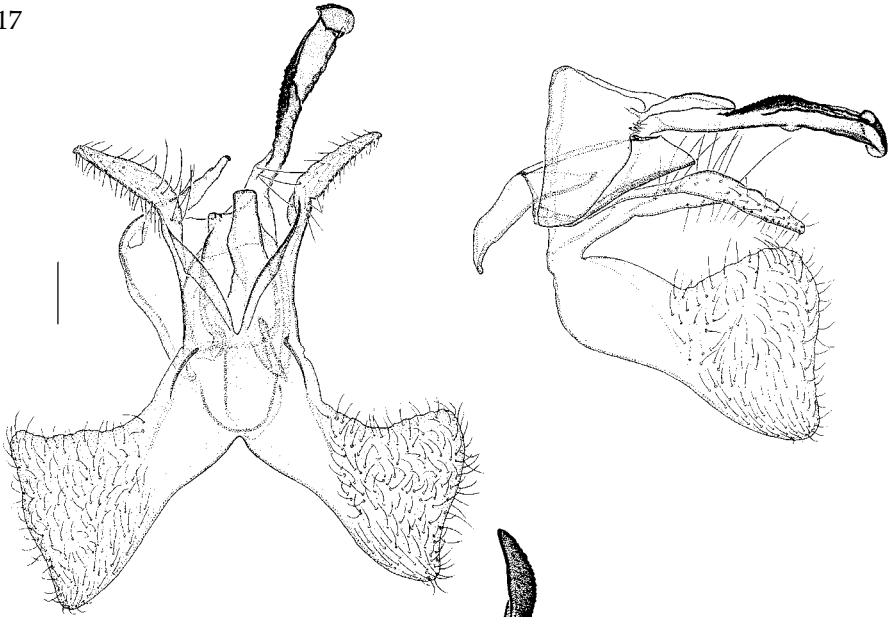


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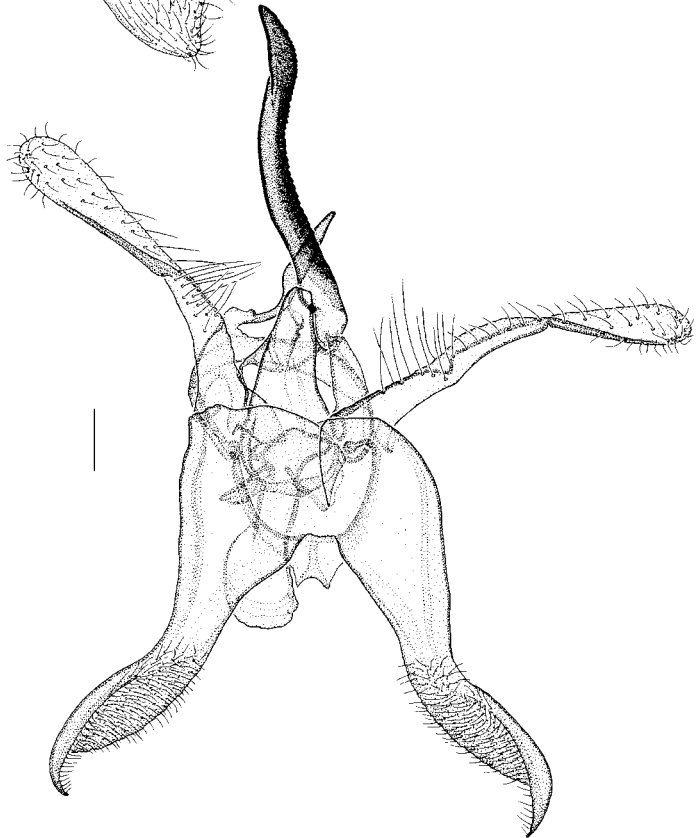


Figs 115-116. *Cosmopterix* spp., male genitalia. 115, *C. abnormalis*, Jamaica, Moneague, slide BM 29554, in ventral and lateral aspect; 116, *C. adrastea*, holotype, slide JCK 5087, in ventral and lateral aspect.

117

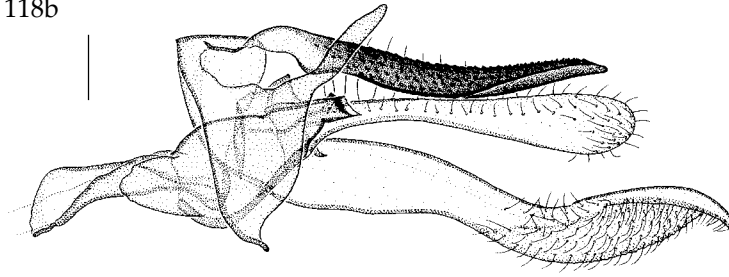


118a

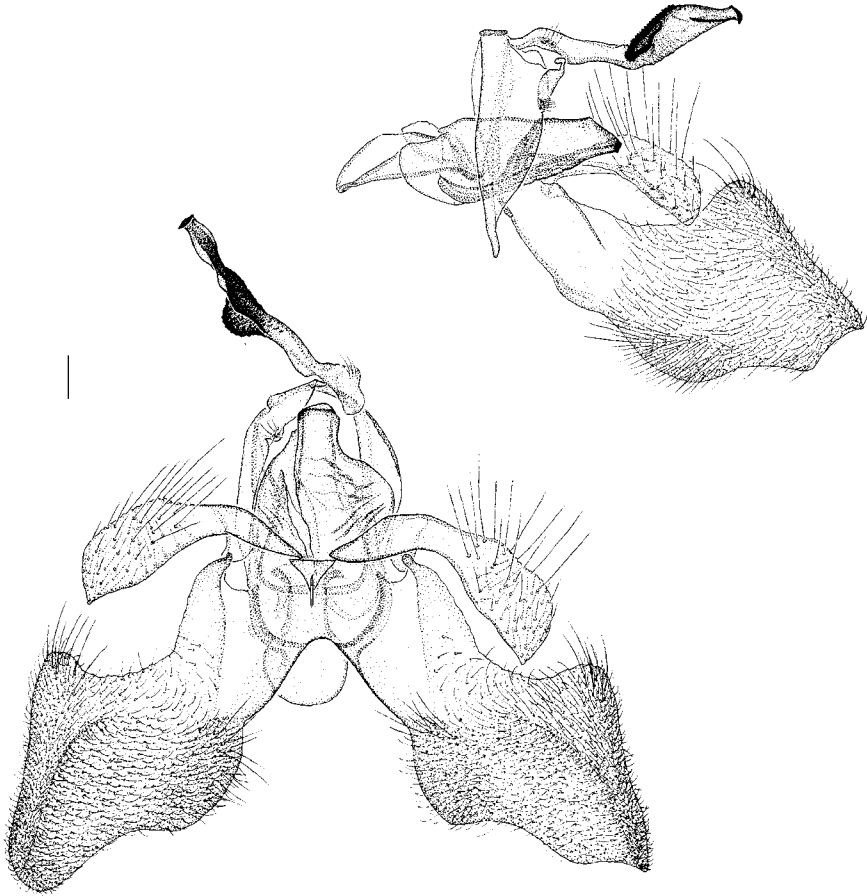


Figs 117-118a. *Cosmopterix* spp., male genitalia. 117, *C. albicaudis*, holotype, slide JCK 4690, in ventral and lateral aspect; 118a, *C. amalthea*, holotype, slide JCK 5088, in ventral aspect.

118b

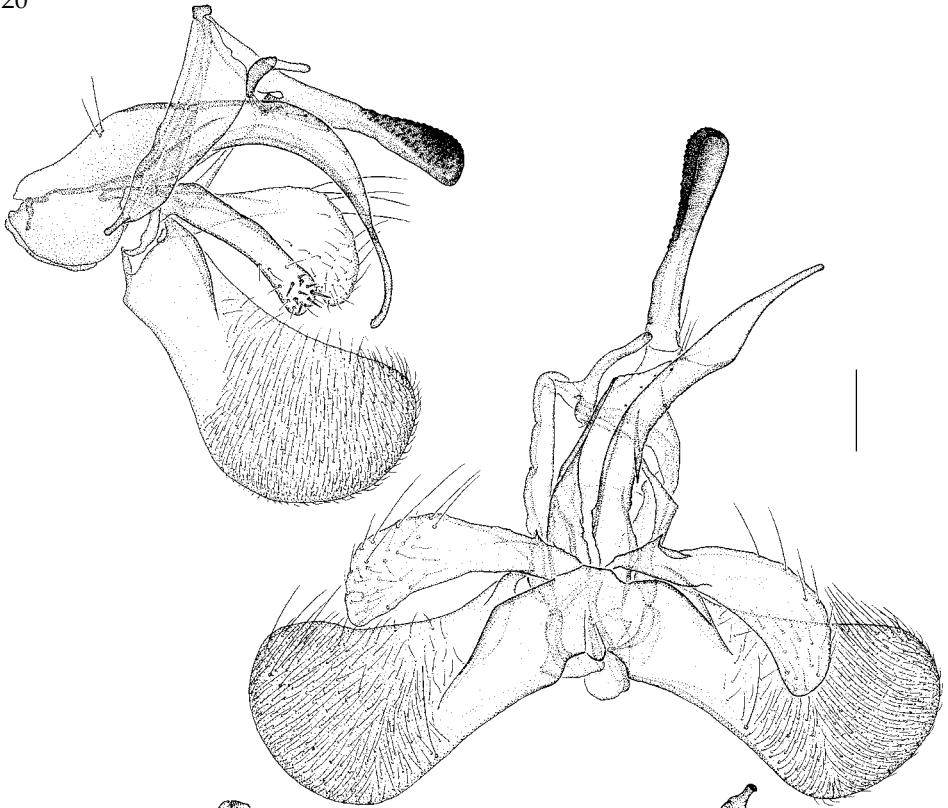


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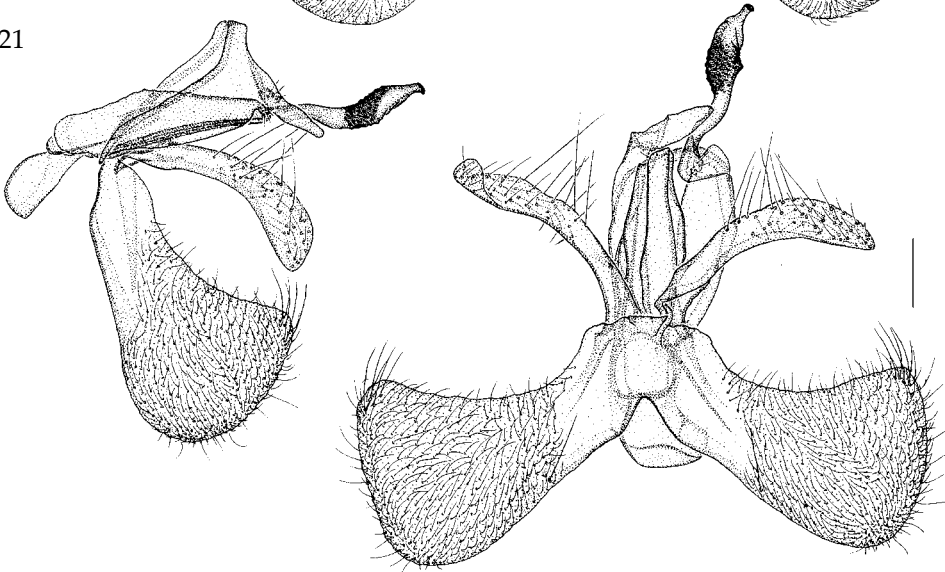


Figs 118b-119. *Cosmopterix* spp., male genitalia. 118b, *C. amalthea*, holotype, slide JCK 5088, in lateral aspect; 119, *C. ananke*, holotype, slide JCK 5499, in ventral and lateral aspect.

120



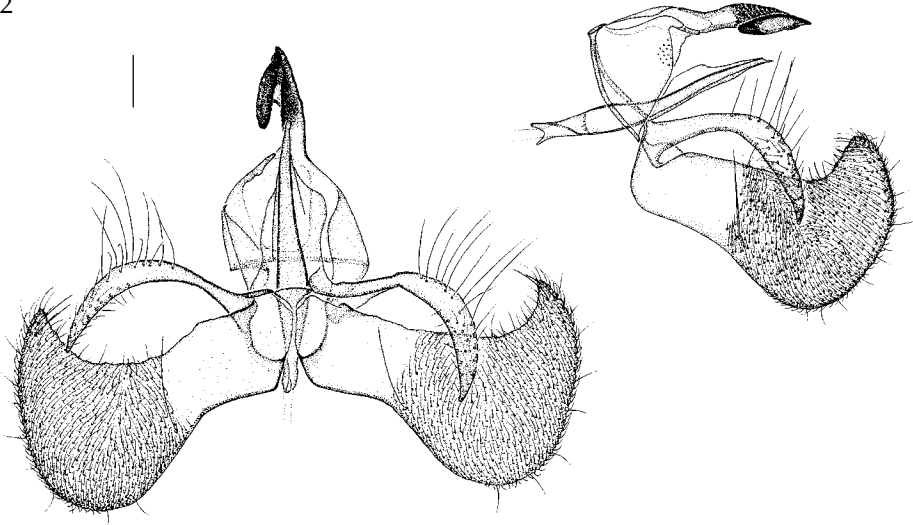
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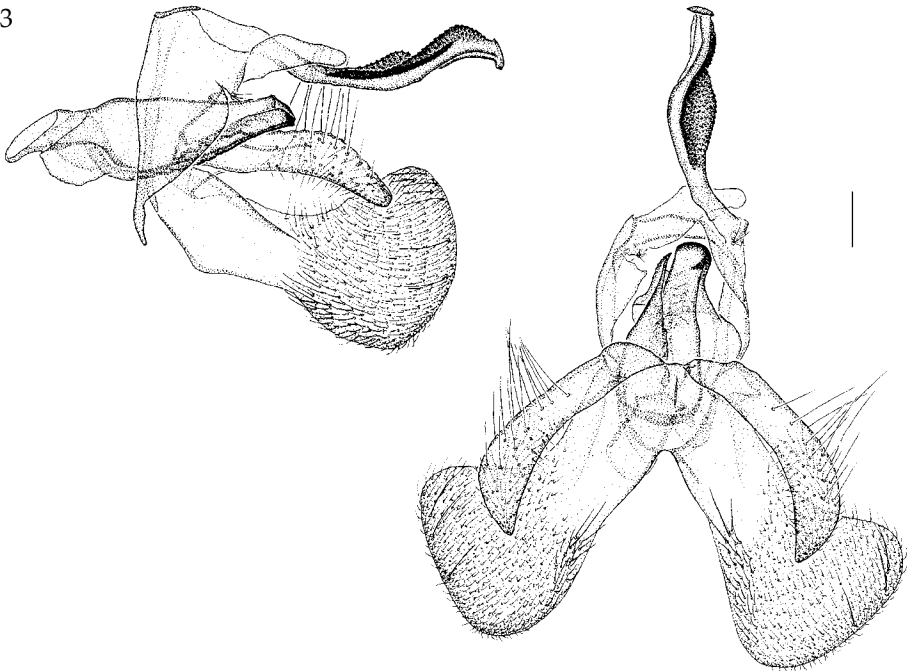
Figs 120-121. *Cosmopterix* spp., male genitalia. 120, *C. argentifera*, holotype, slide BM 29913, in ventral and lateral aspect; 121, *C. astrapias*, Puerto Rico, Cayey, slide JCK 5127, in ventral and lateral aspect.



122



123

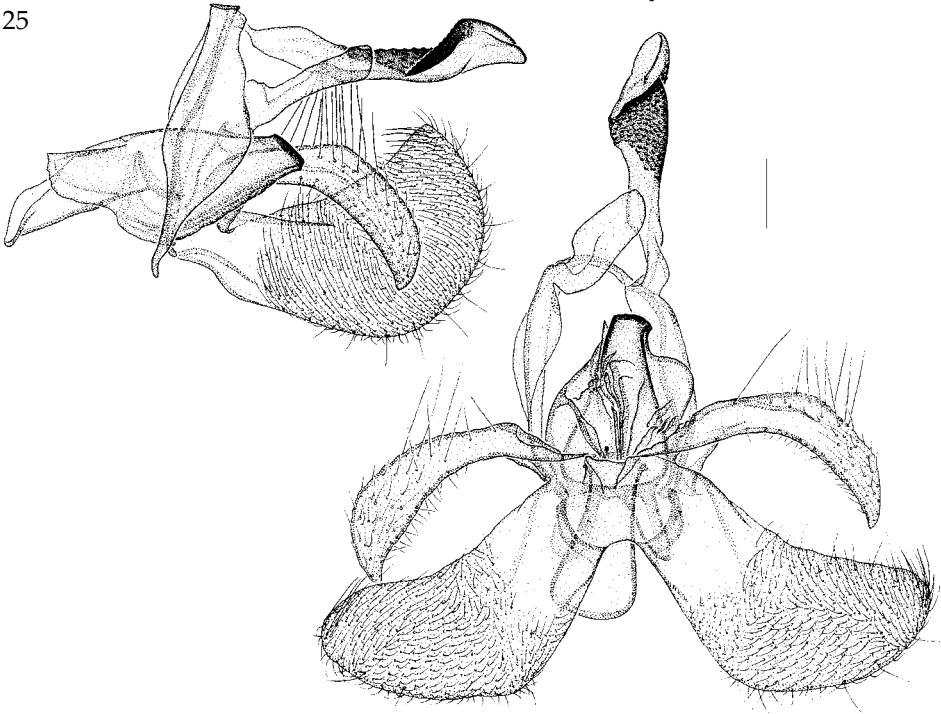


Figs 122-123. *Cosmopterix* spp., male genitalia. 122, *C. attenuatella*, Brazil, Obidos, slide BM 29281, in ventral aspect; Ins. Canar. Tenerife, Puerto de la Cruz, slide JCK 3737, in lateral aspect; 123, *C. bacata*, USA, Alabama, Baldwin Co., slide JCK 6114, in ventral aspect; USA, Alabama, Baldwin Co., slide JCK 6113, in lateral aspect.

124

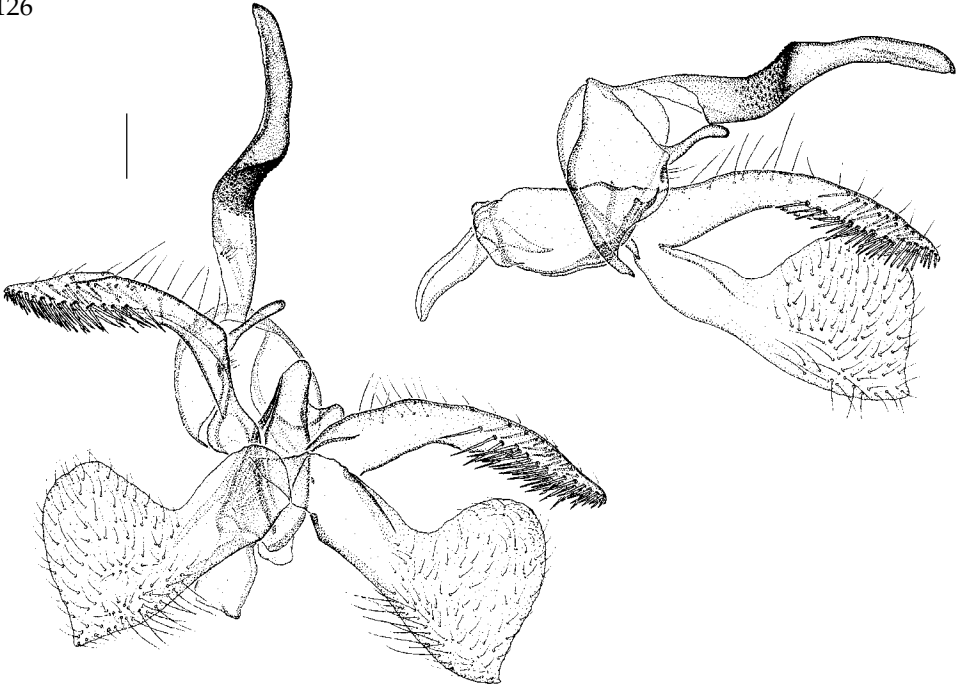


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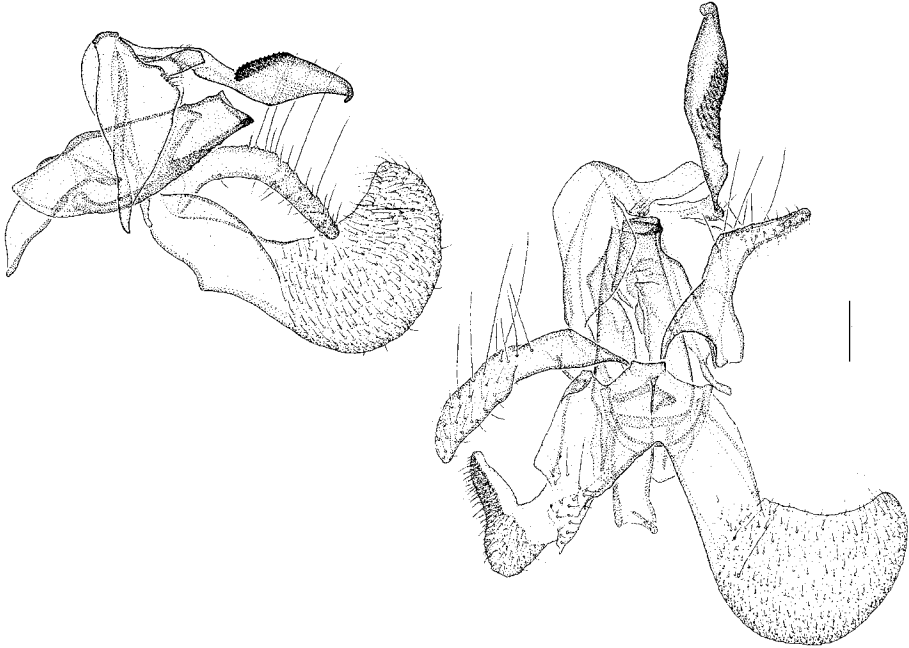


Figs 124-125. *Cosmopterix* spp., male genitalia. 124, *C. beckeri*, holotype, slide JCK 5554, in ventral and lateral aspect; 125, *C. callichalca*, Brazil, Distrito Federal, Planaltina, slide JCK 5130, in ventral and lateral aspect.

126



127



Figs 126-127. *Cosmopterix* spp., male genitalia. 126, *C. carpo*, holotype, slide JCK 5445, in ventral and lateral aspect; 127, *C. chaldene*, holotype, slide JCK 5722, in ventral and lateral aspect.

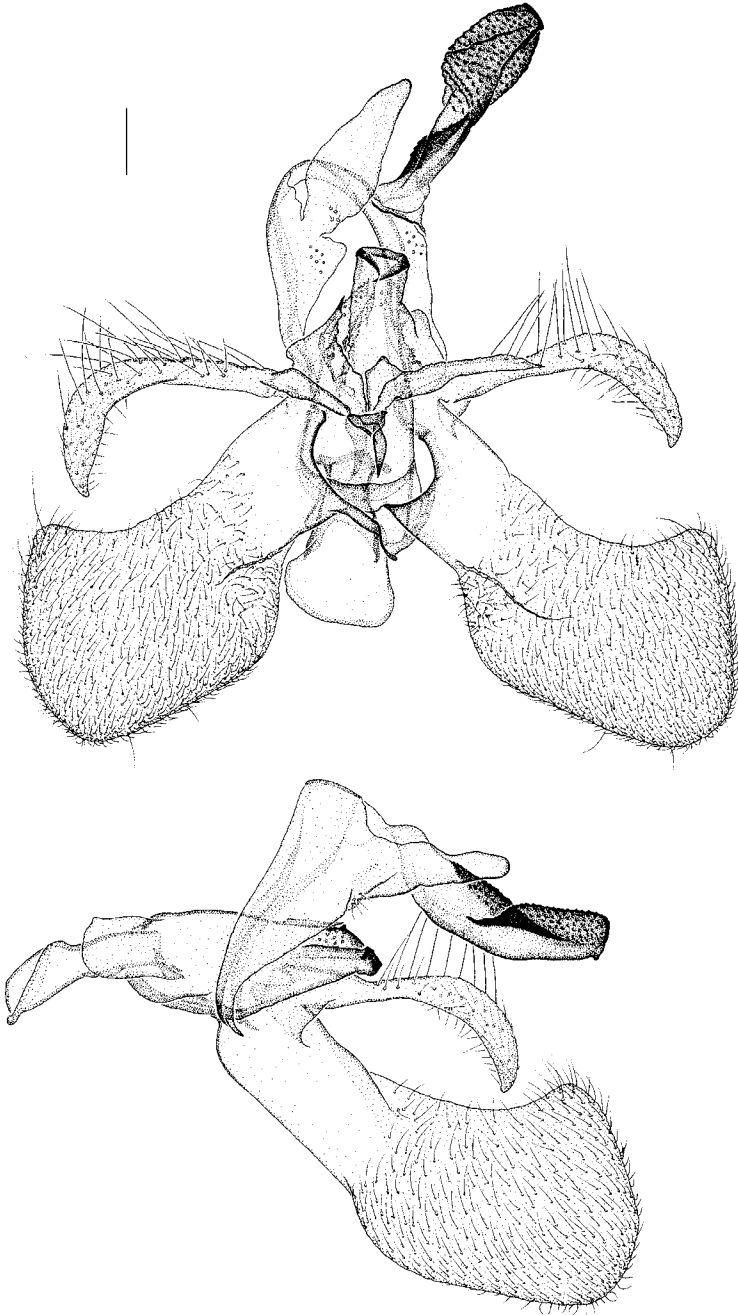
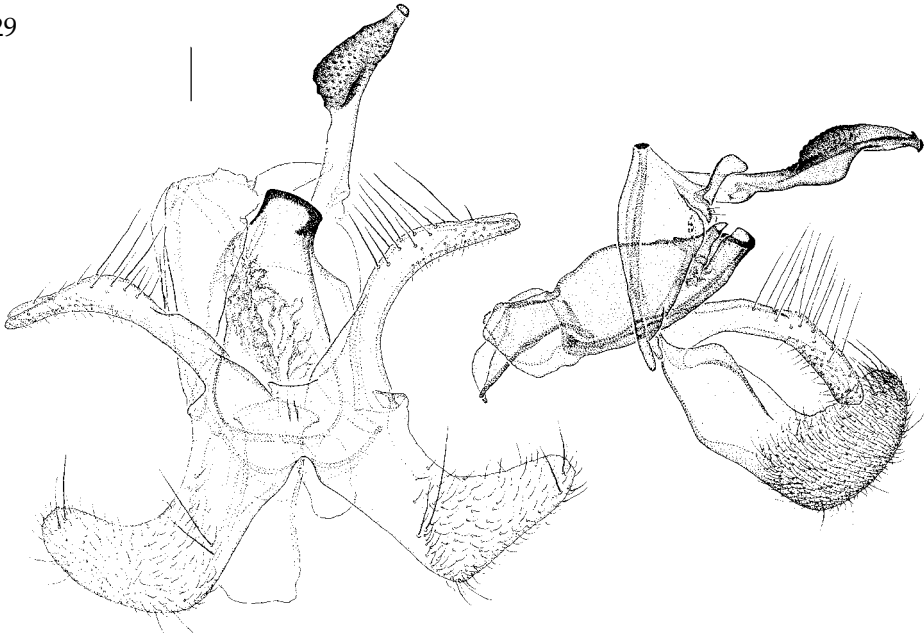
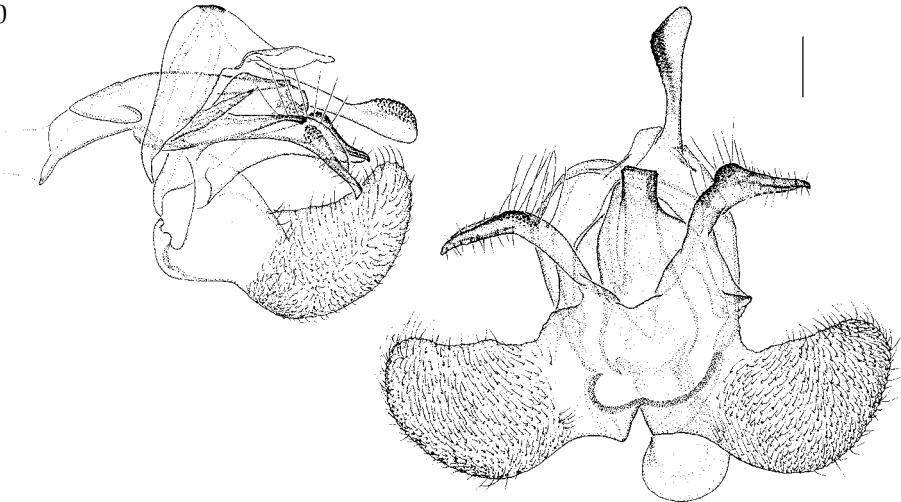


Fig. 128. *Cosmopterix* spp., male genitalia. *C. chalupae*, holotype, slide JCK 4474, in ventral and lateral aspect.

129

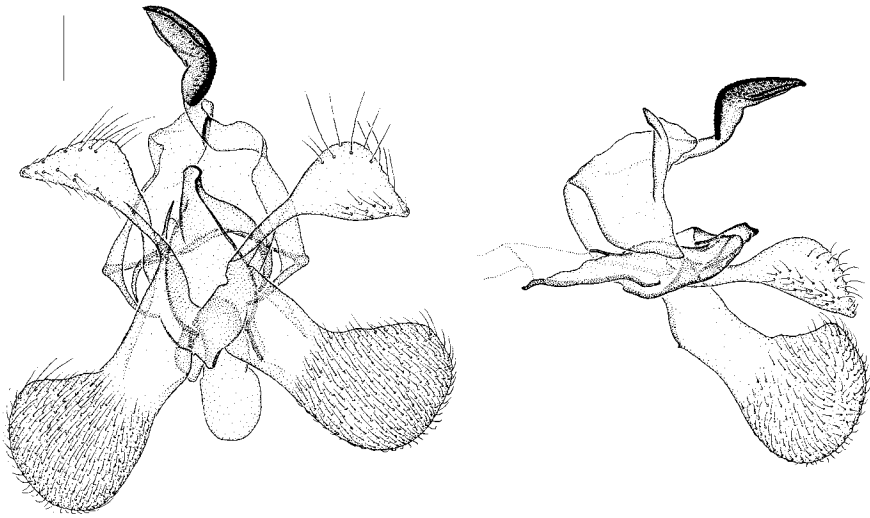


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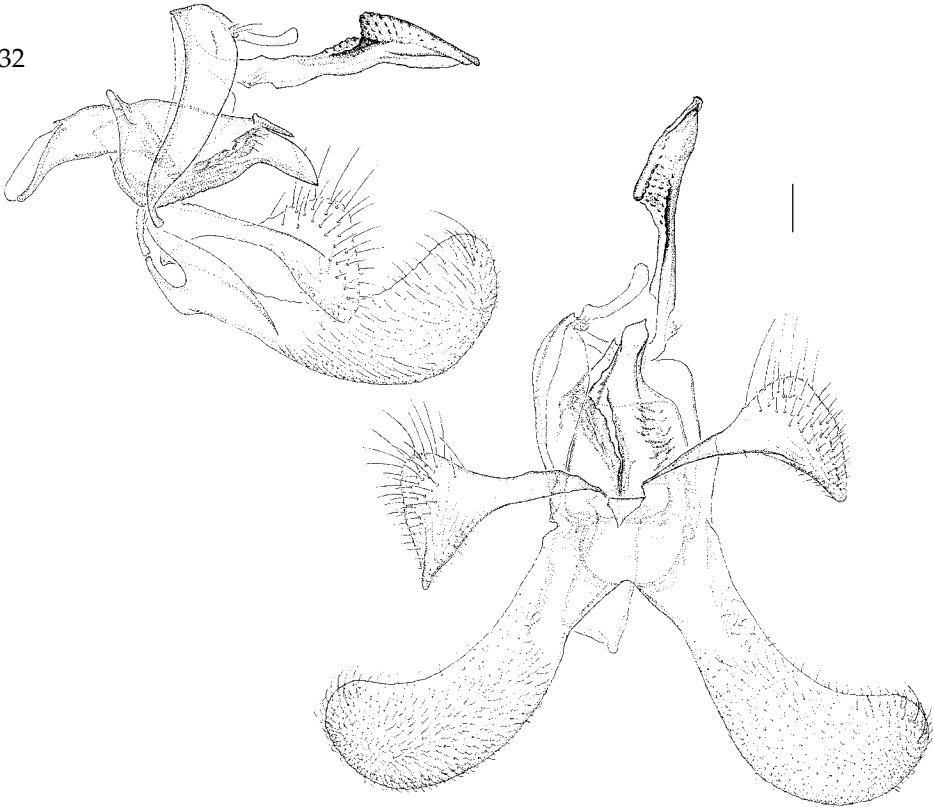


Figs 129-130. *Cosmopterix* spp., male genitalia. 129, *C. chalybaeella*, USA, New Mexico, Eddy Co., slide JCK 6094, in ventral aspect; USA, South West Texas, slide BM 31214, in lateral aspect; 130, *C. chisosensis*, Argentina, Salta, Camino de Cornisa, slide JCK 4469, in ventral aspect; Argentina, Tucumán, slide JCK 4460, in lateral aspect.

131



132



Figs 131-132. *Cosmopterix* spp., male genitalia. 131, *C. citrinopa*, Peru, Iquitos, slide BM 29283, in ventral and lateral aspect; 132, *C. clandestinella*, USA, Michigan, Mason Co., slide JCK 6101, in ventral and lateral aspect.

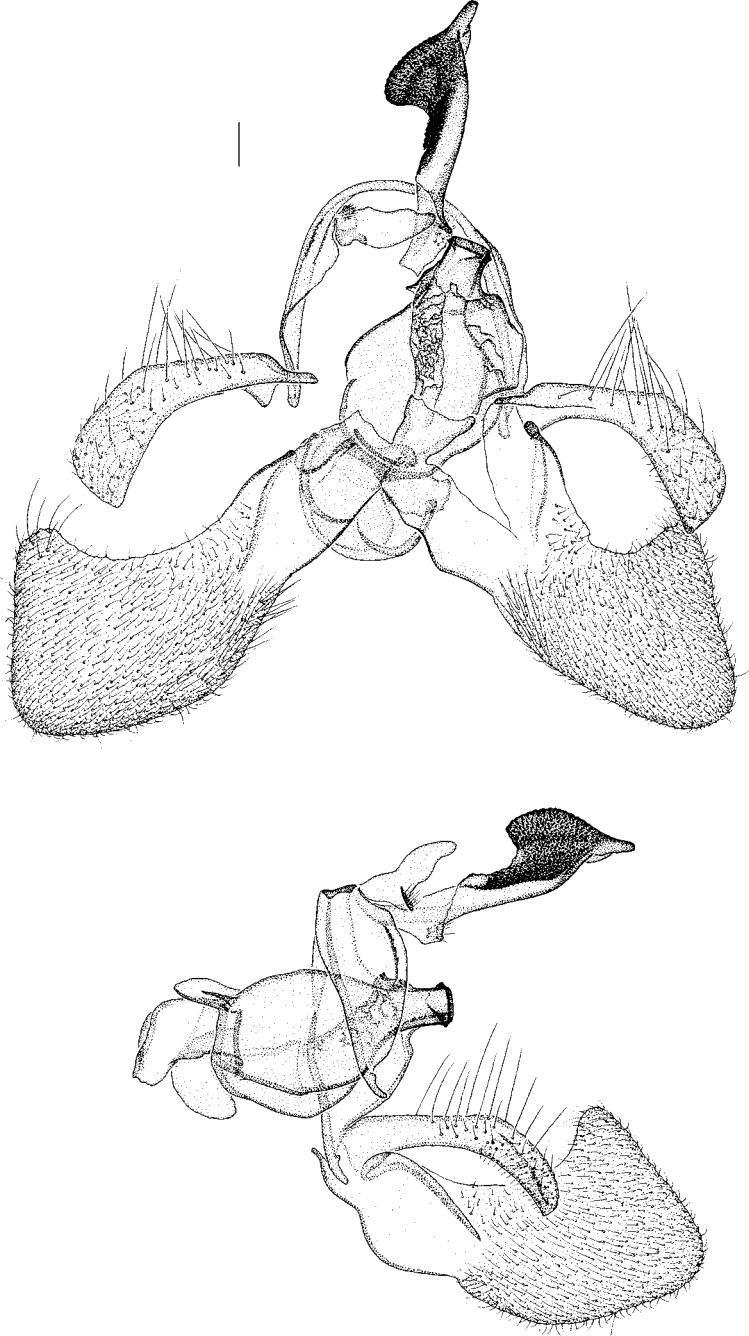


Fig. 133. *Cosmopterix* spp., male genitalia. *C.clemensella*, lectotype, slide BM 29950, in ventral and lateral aspect.

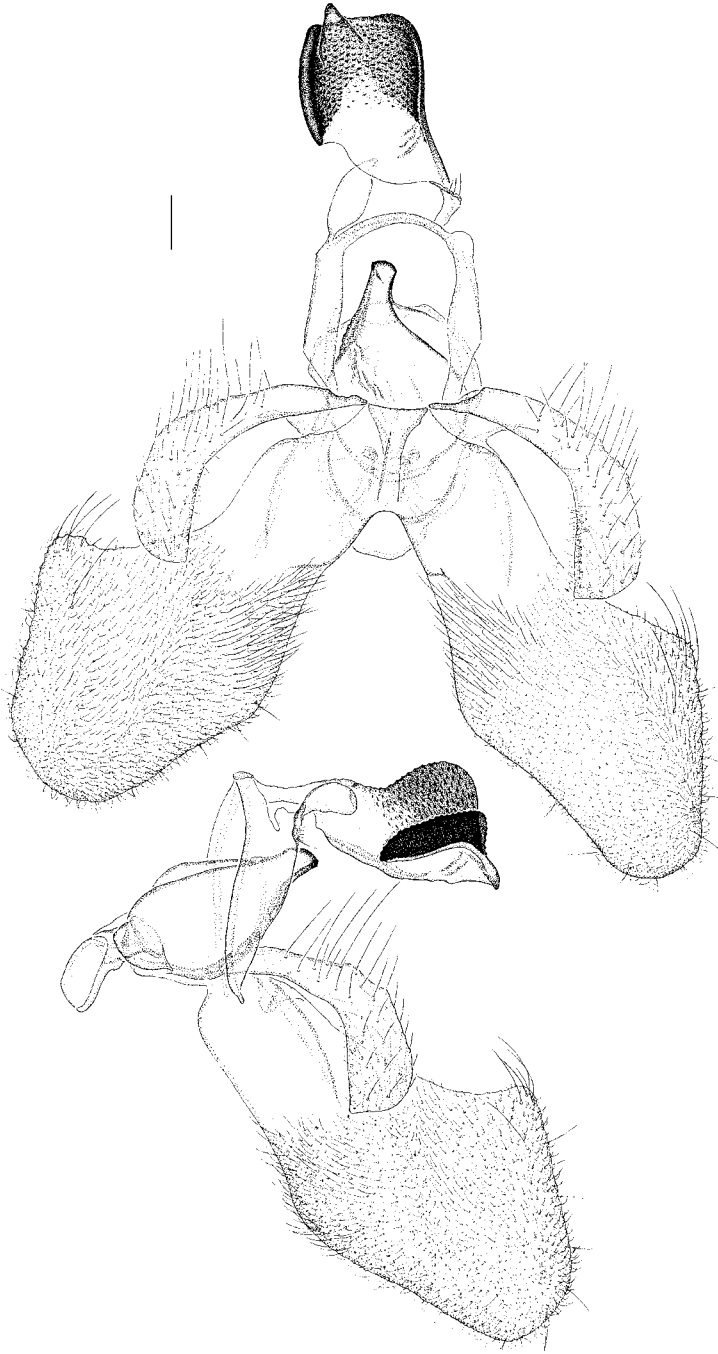
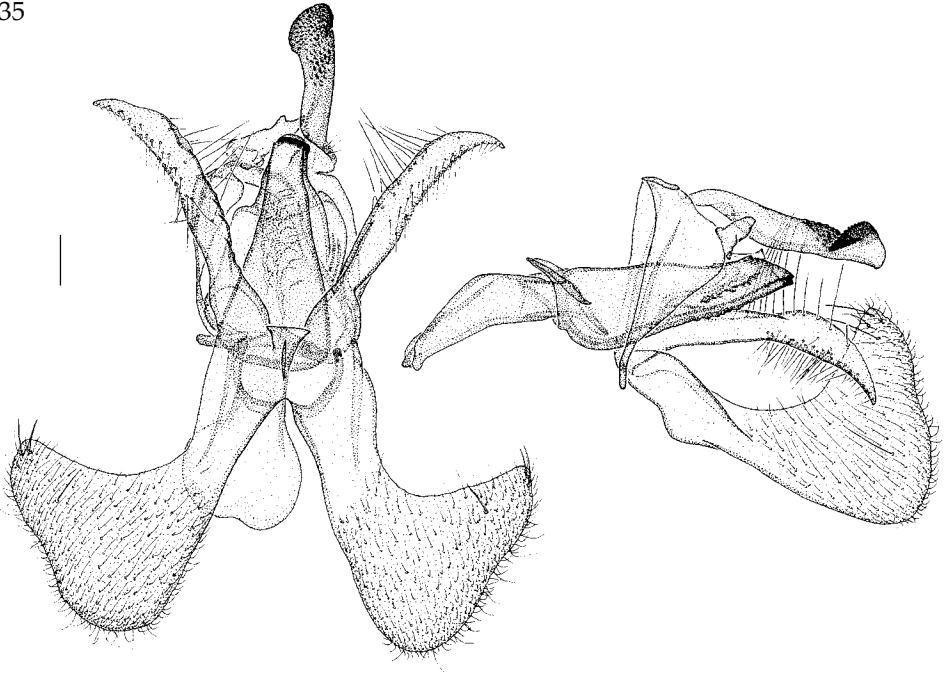


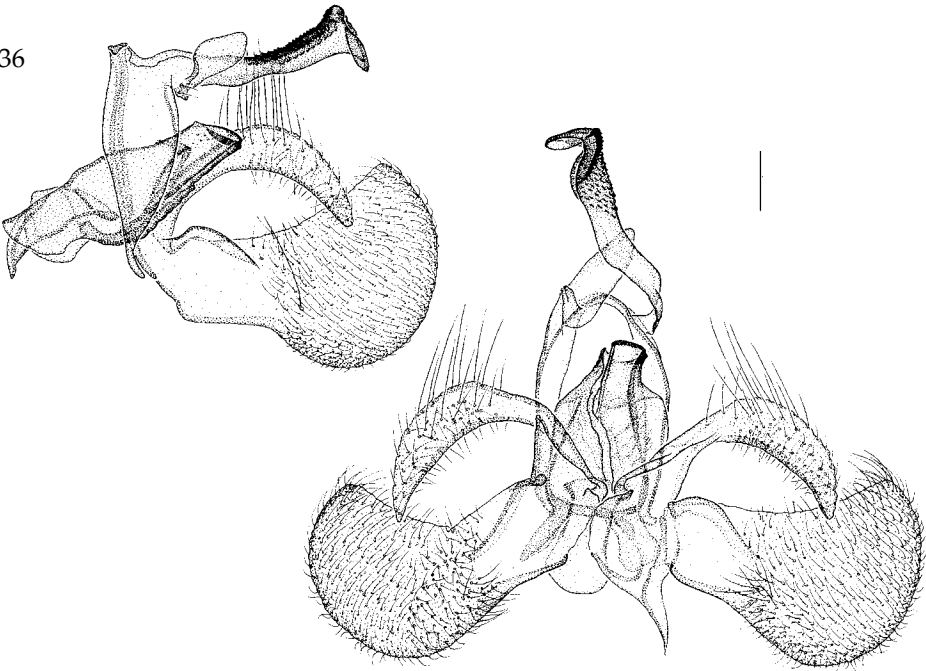
Fig. 134. *Cosmopterix* spp., male genitalia. *C. damnosa*, USA, Michigan, Kalamazoo Co, slide JCK 6095, in ventral and lateral aspect.



135

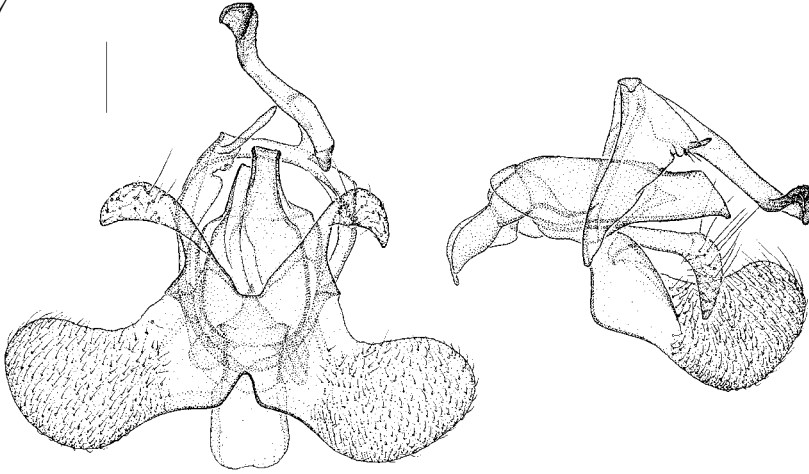


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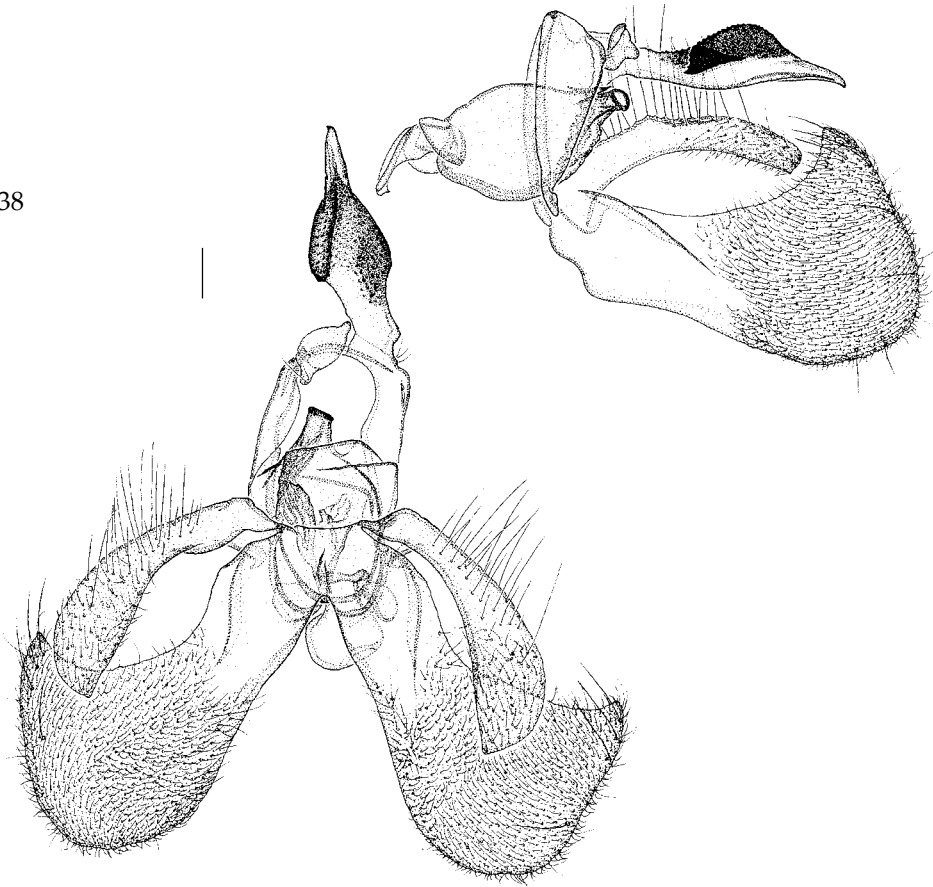


Figs 135-136. *Cosmopterix* spp., male genitalia. 135, *C. dapifera*, USA, Louisiana, Bossier Parish, slide JCK 2659 in ventral and lateral aspect; 136, *C. delicatella*, holotype, slide BM 29949, in ventral and lateral aspect.

137

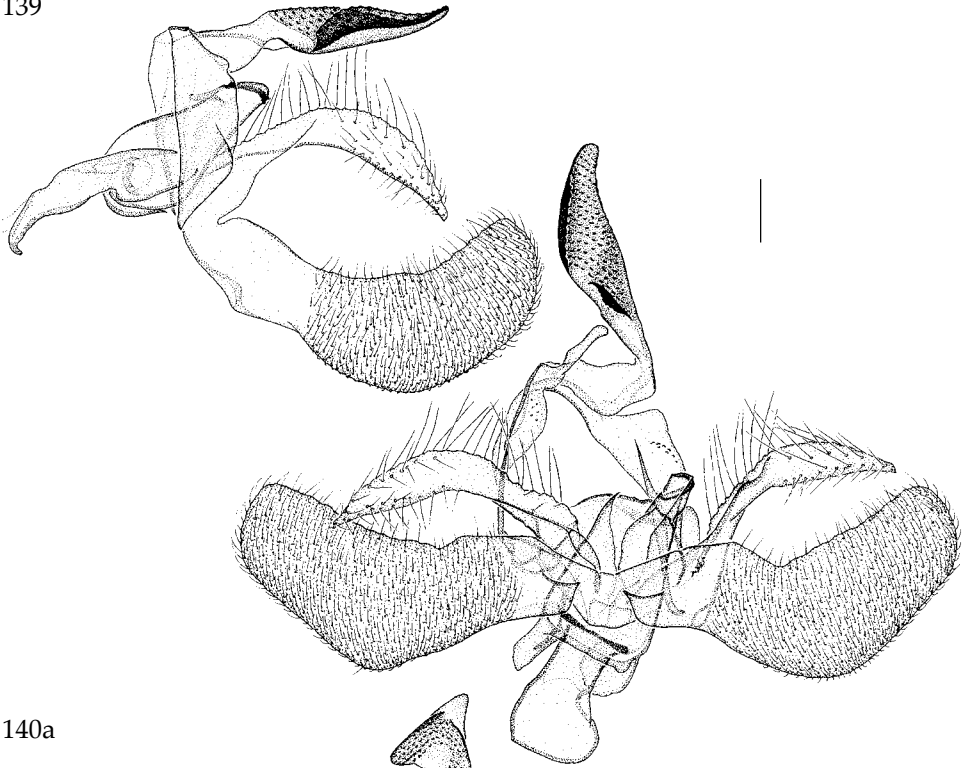


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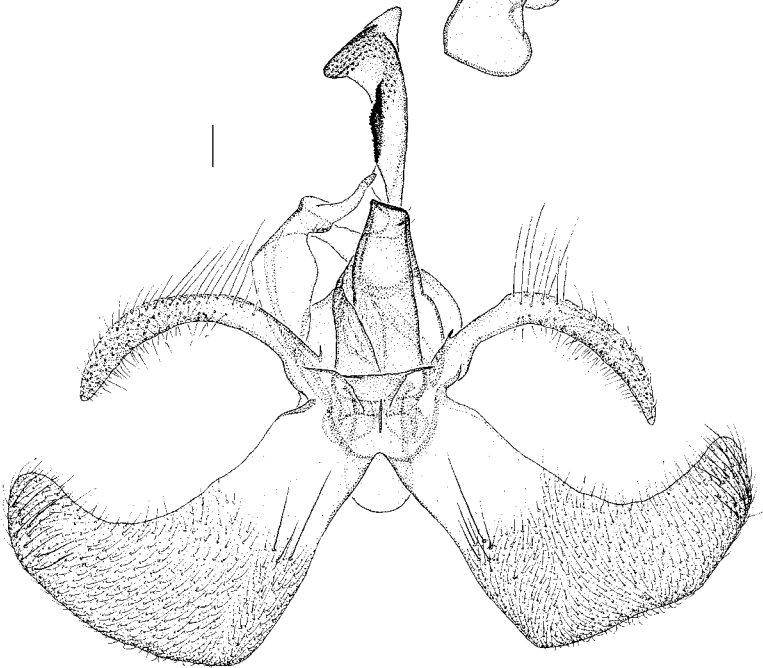


Figs 137-138. *Cosmopterix* spp., male genitalia. 137, *C. diaphora*, paratype, Mexico, Guerrero, Amula, slide JCK 5740, in ventral and lateral aspect; 138, *C. ebriola*, USA, South Carolina, Charleston Co., slide JCK 5797, in ventral and lateral aspect.

139

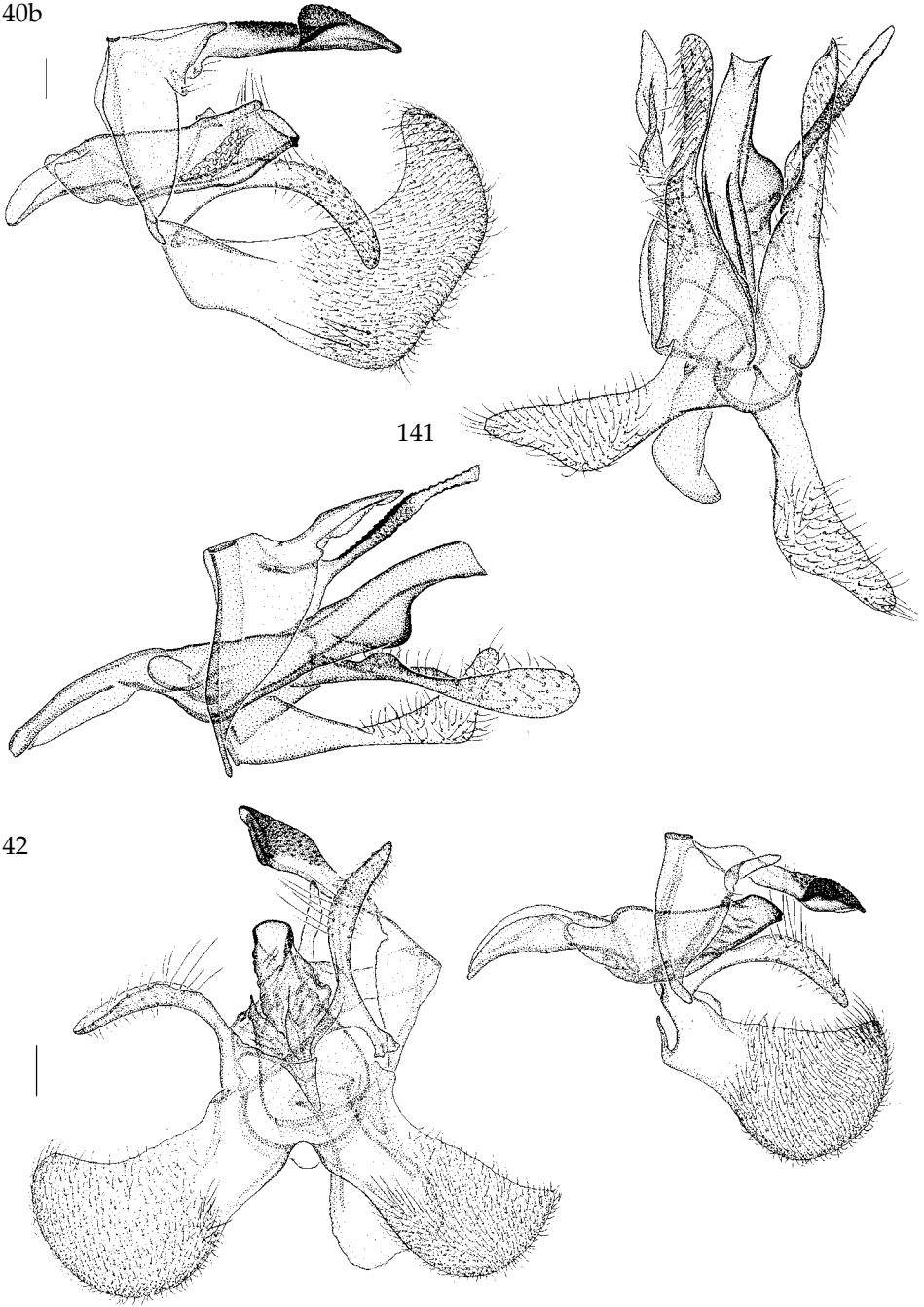


140a



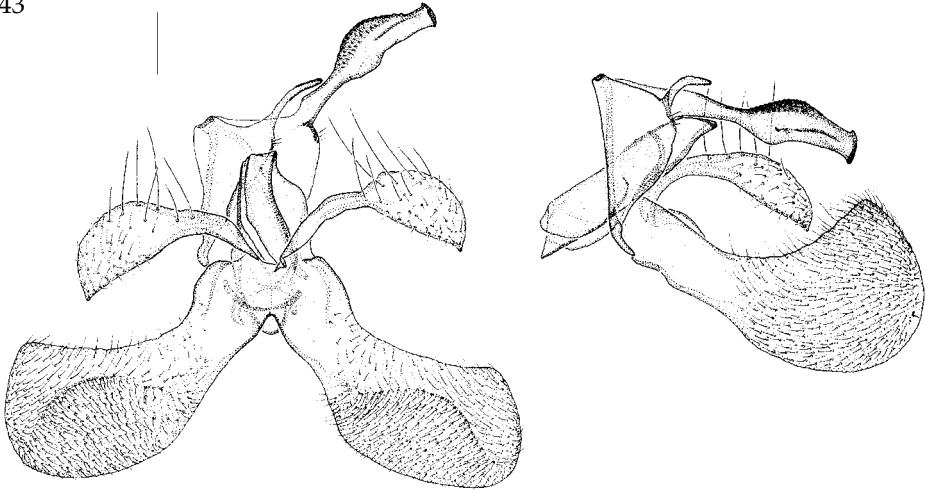
Figs 139-140a. *Cosmopterix* spp., male genitalia. 139, *C. erasmia*, Brazil, Pará, slide BM 29285, in ventral and lateral aspect; 140a, *C. erinome*, holotype, slide JCK 6122, in ventral aspect.

140b

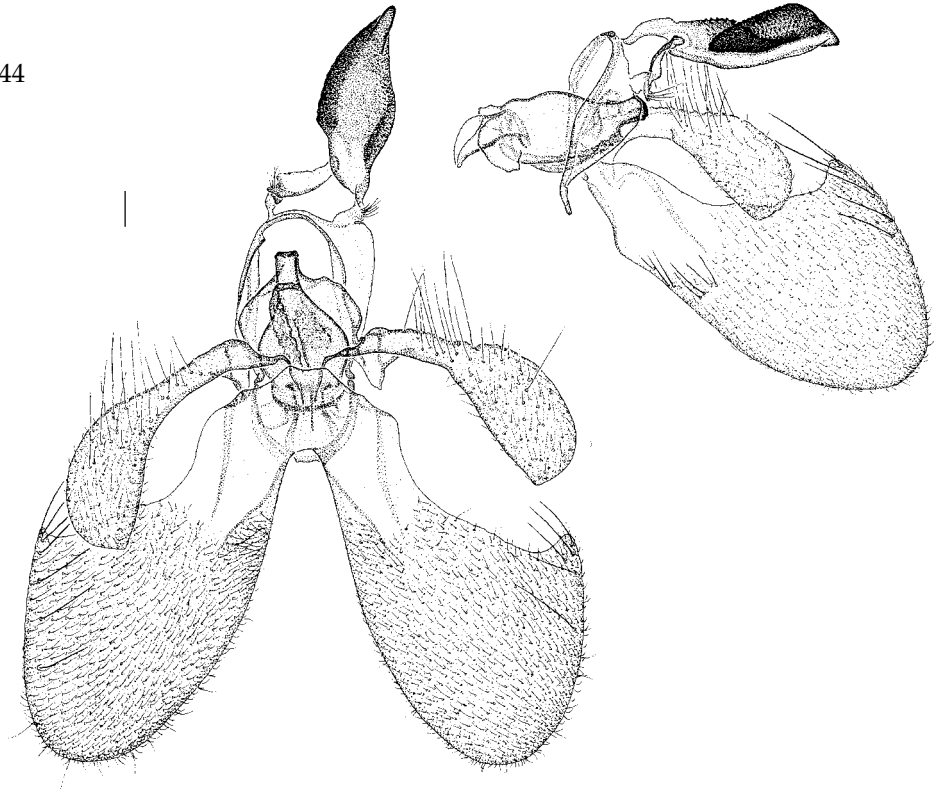


Figs 140b-142. *Cosmopterix* spp., male genitalia. 140b, *C. erinome*, paratype, USA, Shepard Stat Park, slide JCK 6136, in lateral aspect; 141, *C. etmylaurae*, paratype, Costa Rica, San José, San Pedro, slide JCK 5240, in ventral aspect; holotype, slide JCK 5239, in lateral aspect; 142, *C. euanthe*, holotype, slide JCK 5506, in ventral and lateral aspect.

143

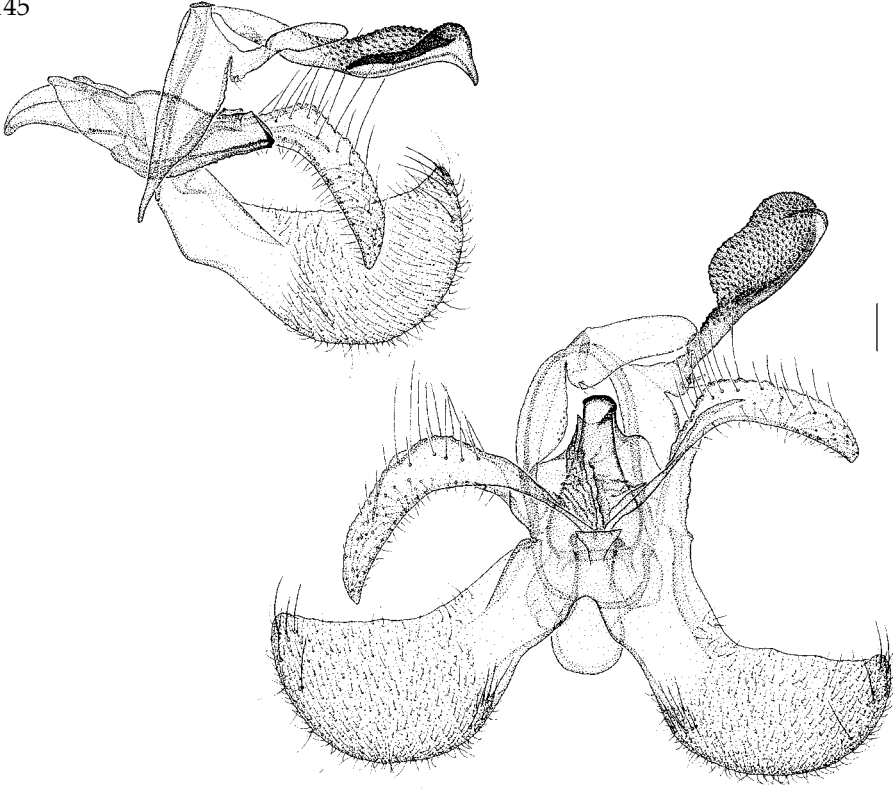


144

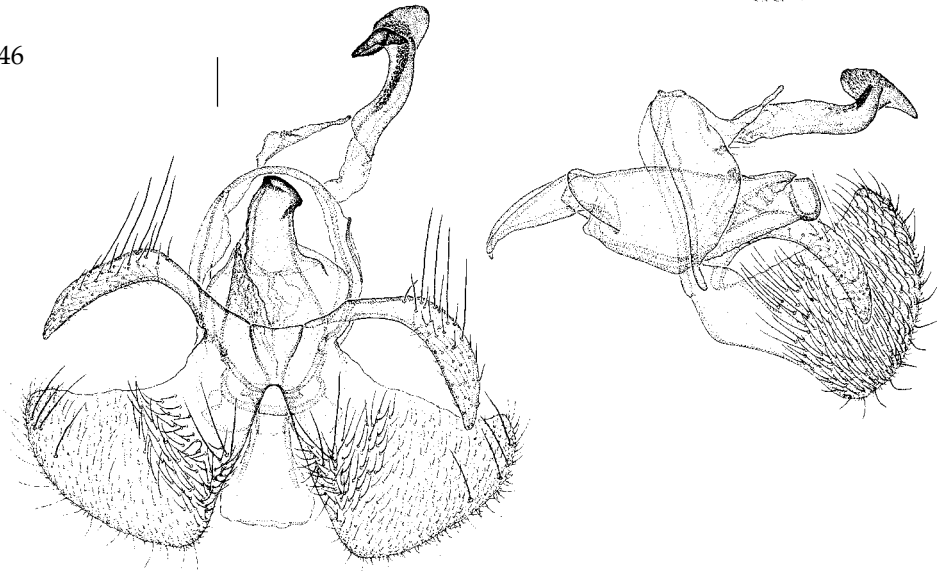


Figs 143-144. *Cosmopterix* spp., male genitalia. 143, *C. euporie* holotype, slide JCK 5447, in ventral and lateral aspect; 144, *C. fernaldella*, Canada, Muskoka, slide BM 31217, in ventral and lateral aspect.

145

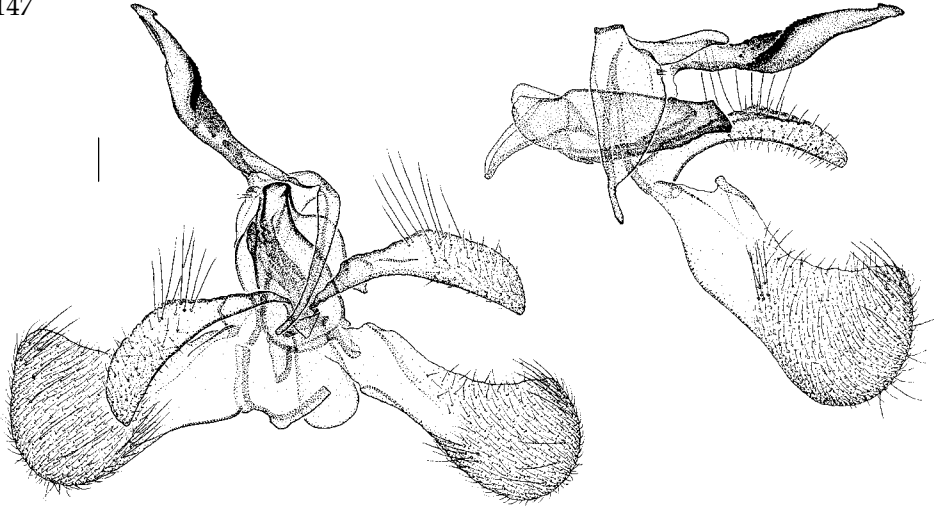


146

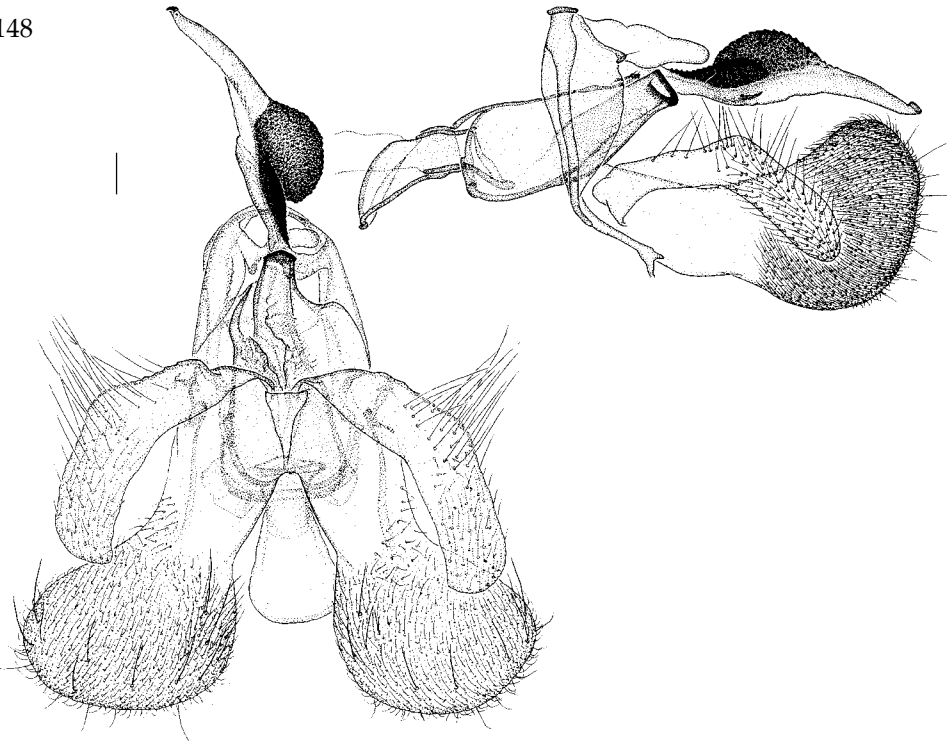


Figs 145-146. *Cosmopterix* spp., male genitalia. 145, *C. floridanella*, USA, Louisiana, Bossier Parish, slide JCK 2660, in ventral and lateral aspect; 146, *C. galapagosensis*, paratype, Ecuador, Galapagos, Isabela, slide JCK 5708, in ventral and lateral aspect.

147

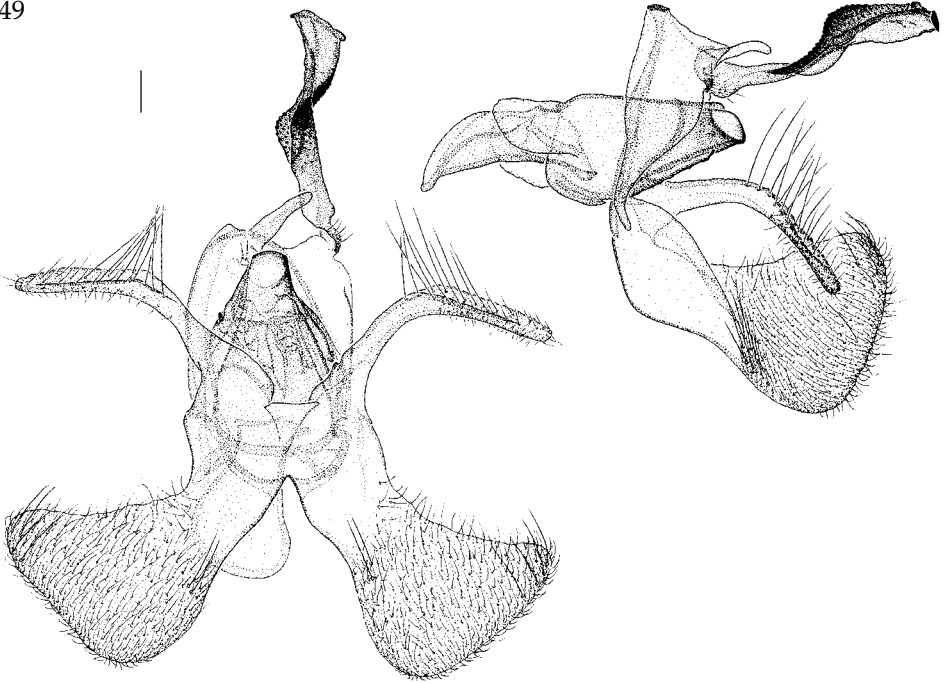


148

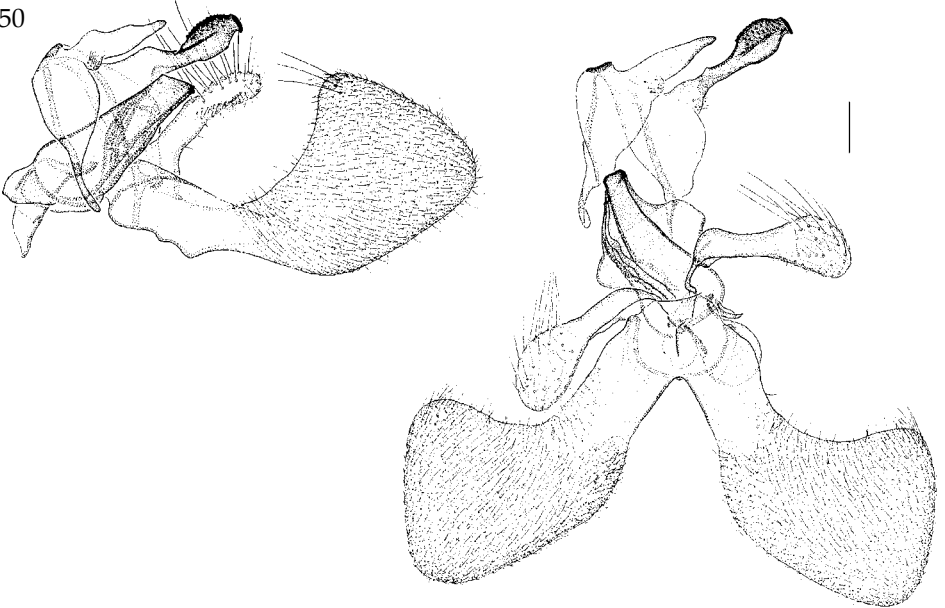


Figs 147-148. *Cosmopterix* spp., male genitalia. 147, *C. ganymedes*, paratype, Brazil, Goias, Teresina, slide JCK 5528, in ventral and lateral aspect; 148, *C. gemmiferella*, Canada, Ottawa, slide JCK 2656, in ventral and lateral aspect.

149



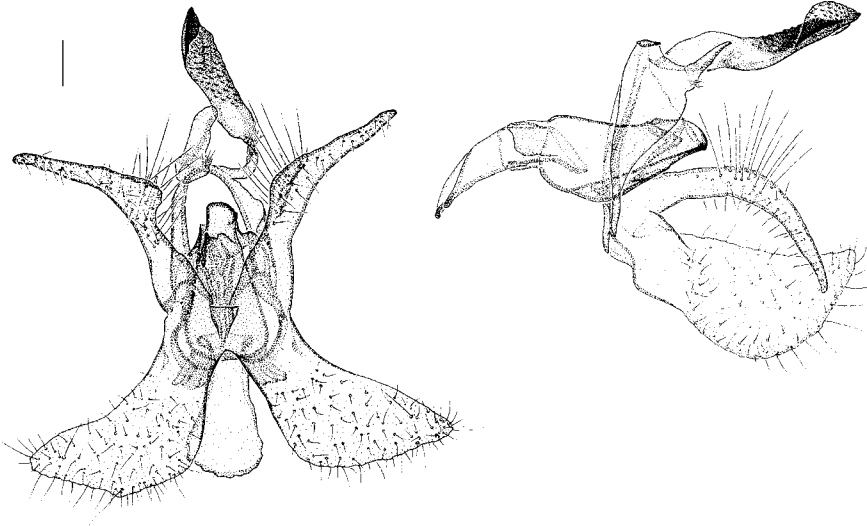
150



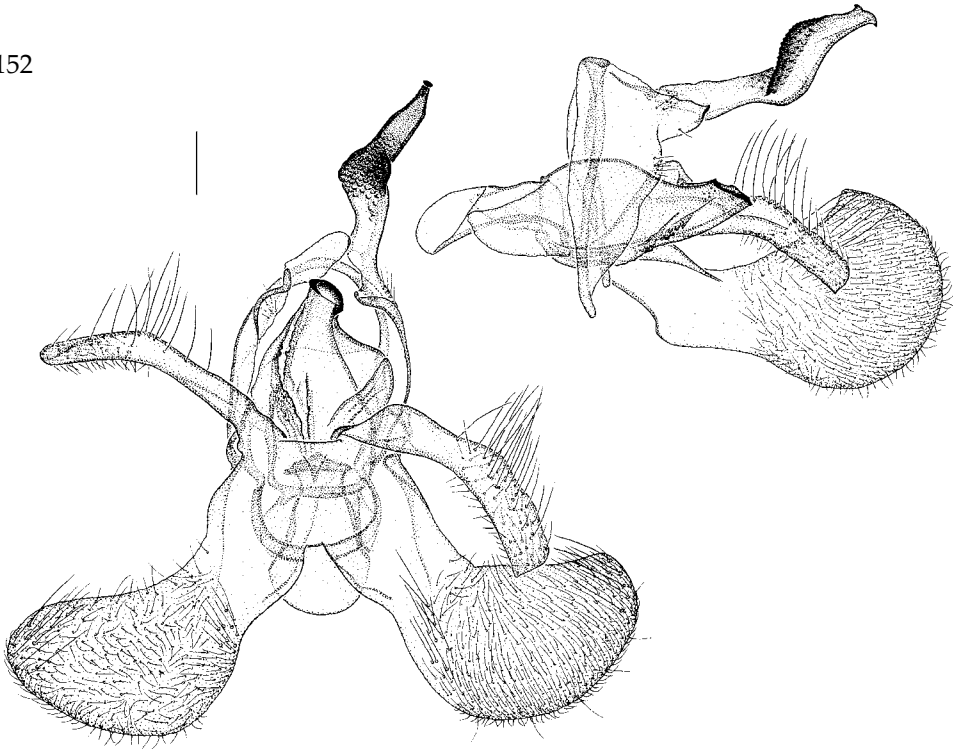
Figs 149-150. *Cosmopterix* spp., male genitalia. 149, *C. gielisorum*, holotype, slide JCK 5531, in ventral and lateral aspect; 150, *C. harpalyke*, holotype, slide JCK 5456, in ventral and lateral aspect.



151

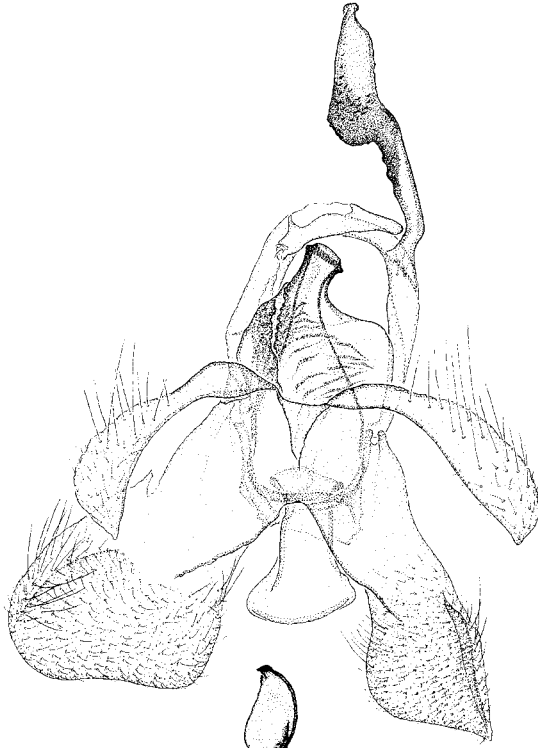


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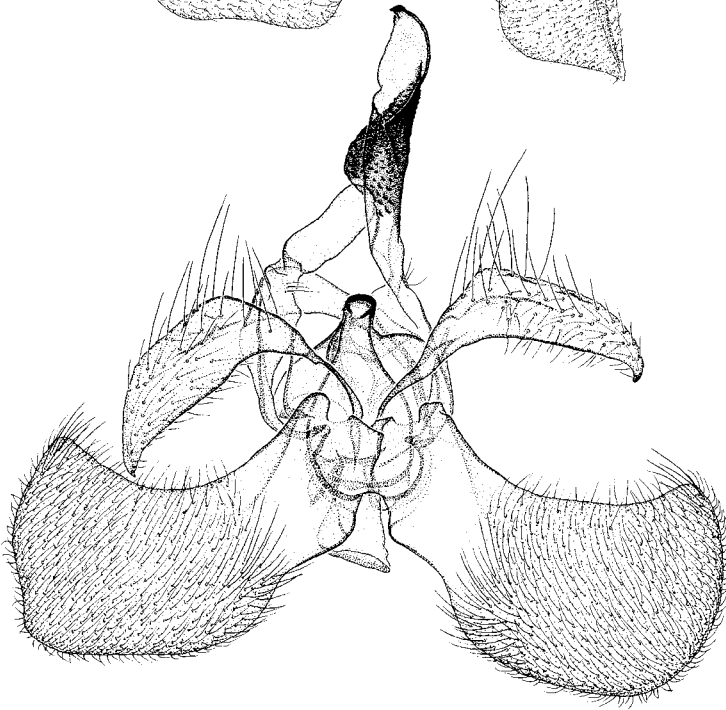


Figs 151-152. *Cosmopterix* spp., male genitalia. 151, *C. helike*, holotype, slide JCK 5527, in ventral and lateral aspect; 152, *C. inaugurata*, Guyana, Georgetown, slide BM 29567, in ventral and lateral aspect.

153

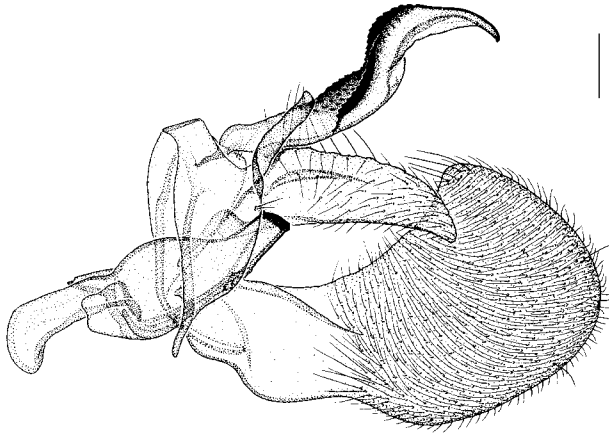


154a

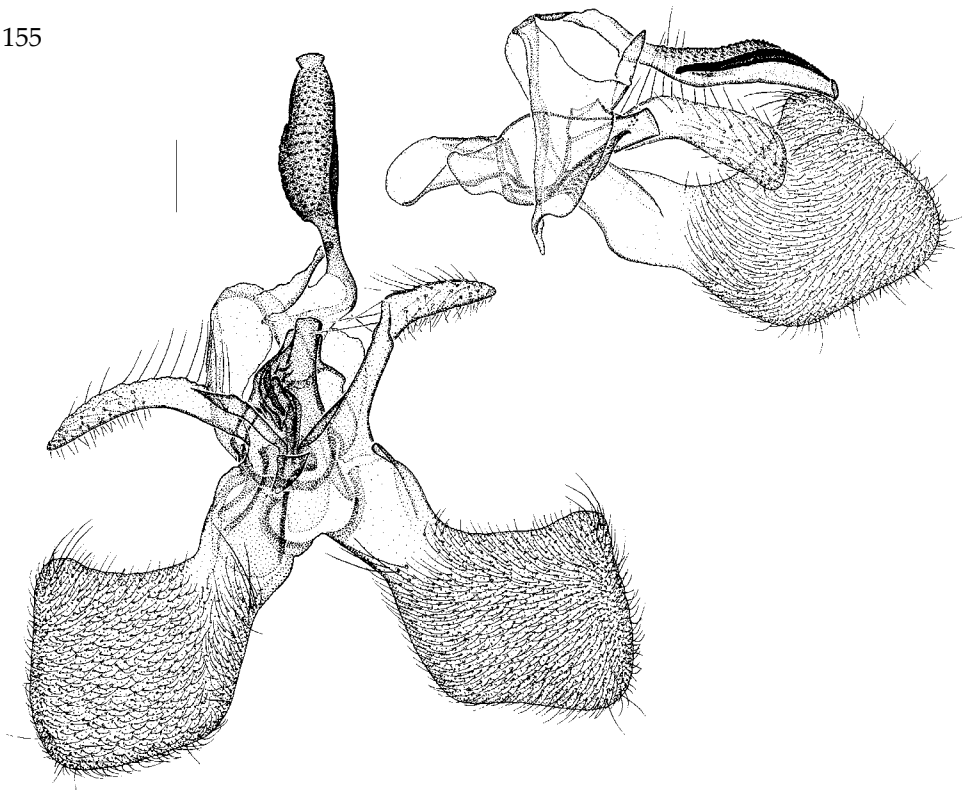


Figs 153-154a. *Cosmopterix* spp., male genitalia. 153, *C. inopis*, holotype, slide CU 3799, in ventral aspect; 154a, *C. interfracta*, Puerto Rico, Cayey, slide JCK 5089, in ventral aspect.

154b

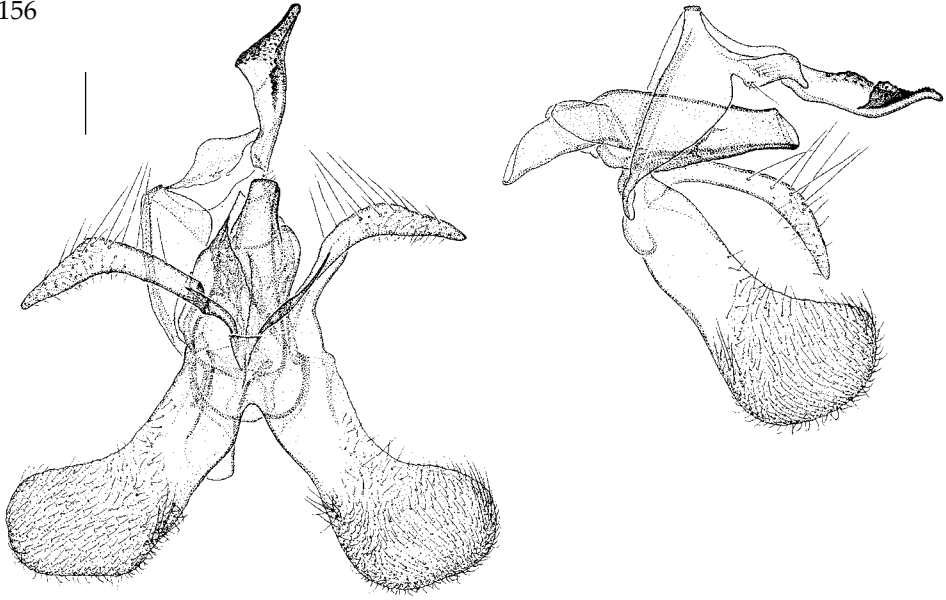


155

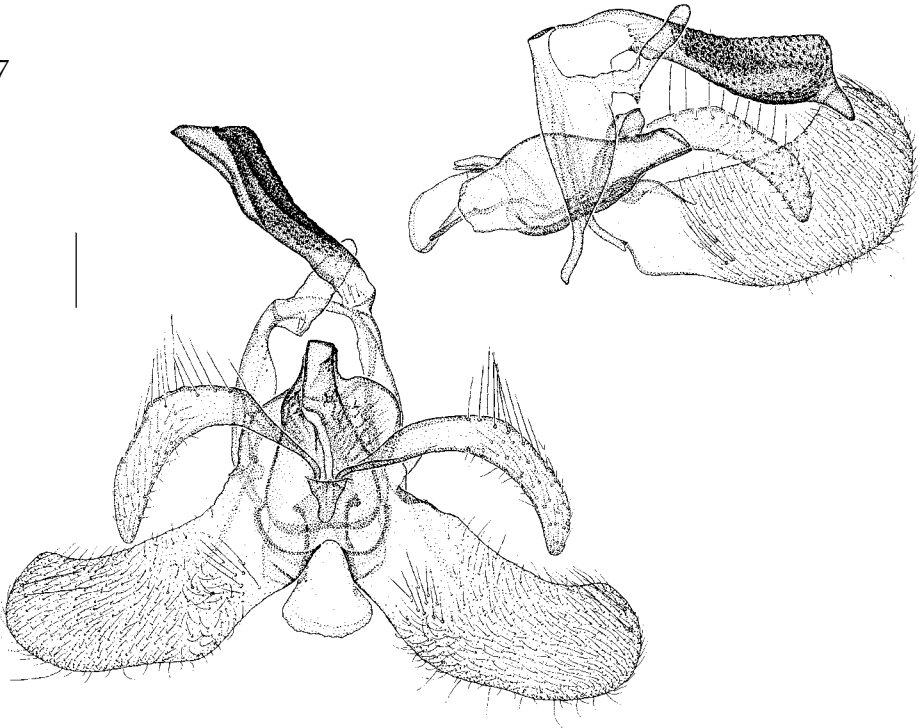


Figs 154b-155. *Cosmopterix* spp., male genitalia. 154b, *C. interfracta*, Puerto Rico, Cayey, slide JCK 5089, in lateral aspect; 155, *C. io*, holotype, slide JCK 5128, in ventral and lateral aspect.

156

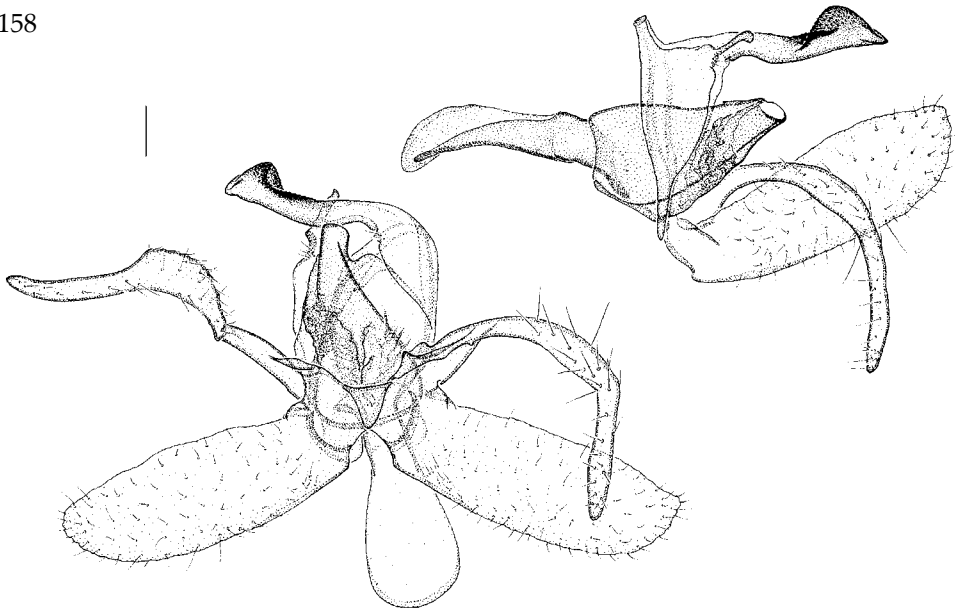


157

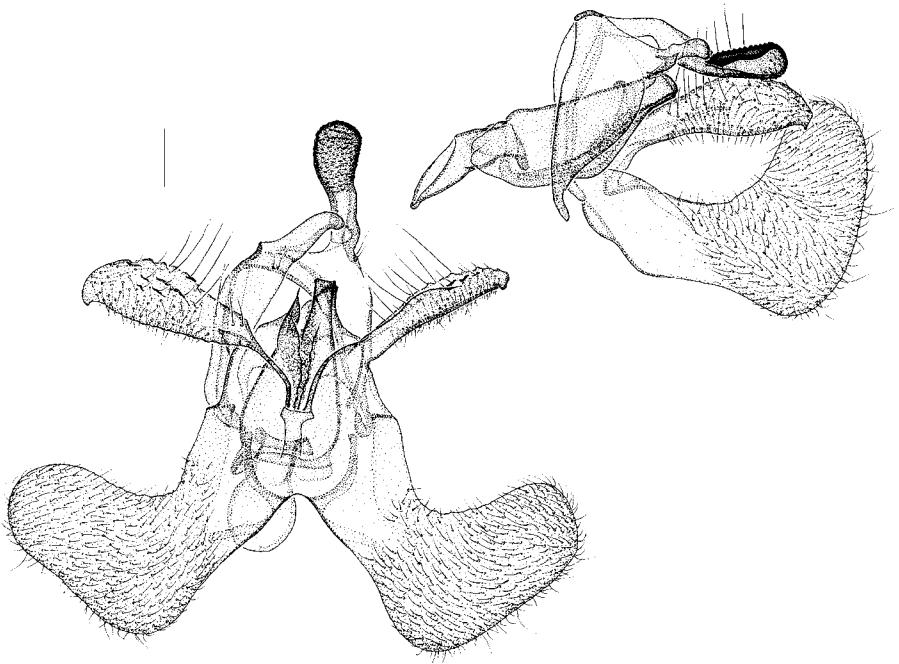


Figs 156-157. *Cosmopterix* spp., male genitalia. 156, *C. iocaste*, holotype, slide JCK 5501, in ventral and lateral aspect; 157, *C. isotoma*, Brazil, Distrito Federal, Planaltina, slide JCK 5472, in ventral and lateral aspect.

158



159



Figs 158-159. *Cosmopterix* spp., male genitalia. 158, *C. karsholti*, holotype, slide JCK 5487, in ventral and lateral aspect; 159, *C. lespedezae*, USA, Texas, Forestburg, slide BM 31233, in ventral and lateral aspect.

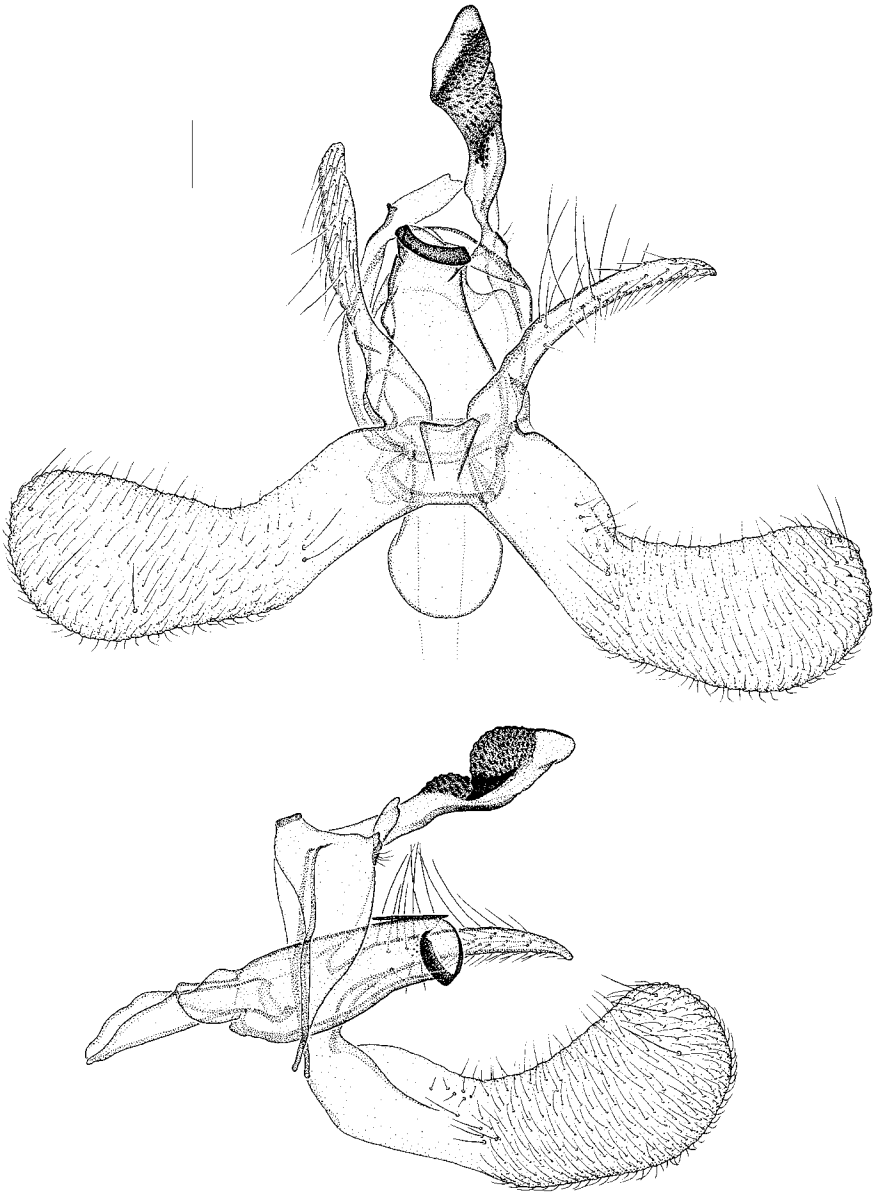
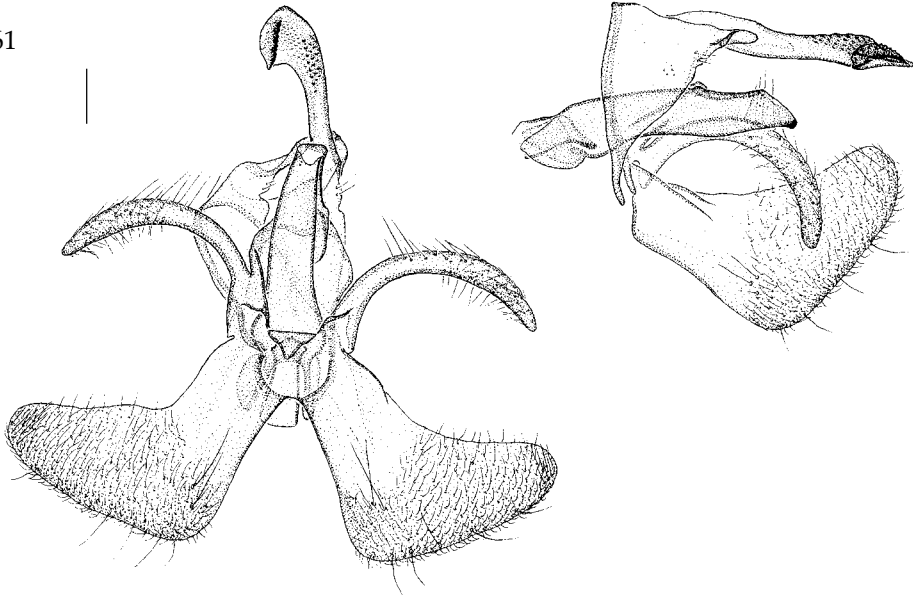
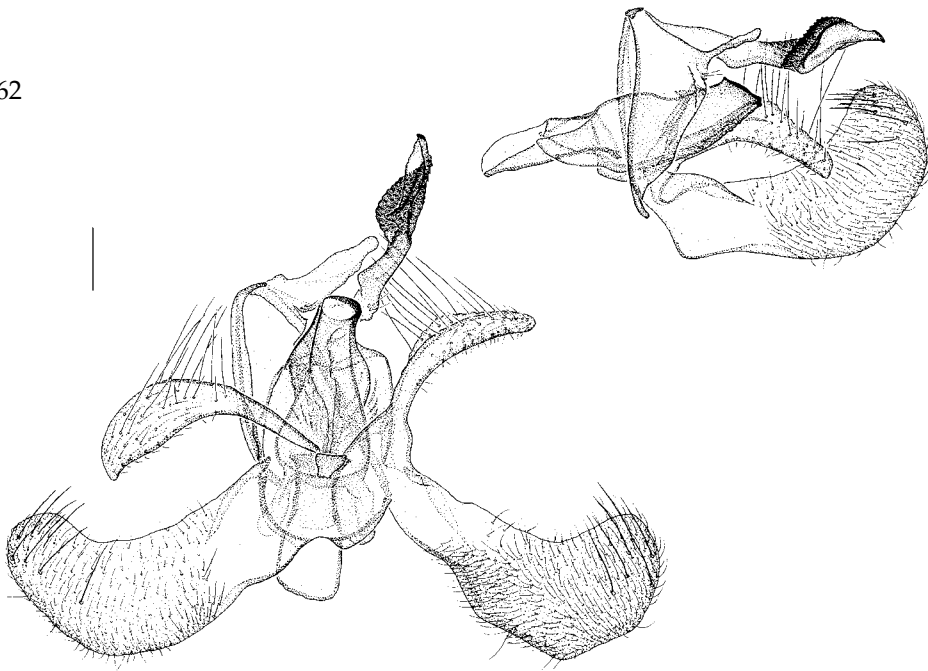


Fig. 160. *Cosmopterix* spp., male genitalia. *C. lummyae*, holotype, slide JCK 5091, in ventral and lateral aspect.

161

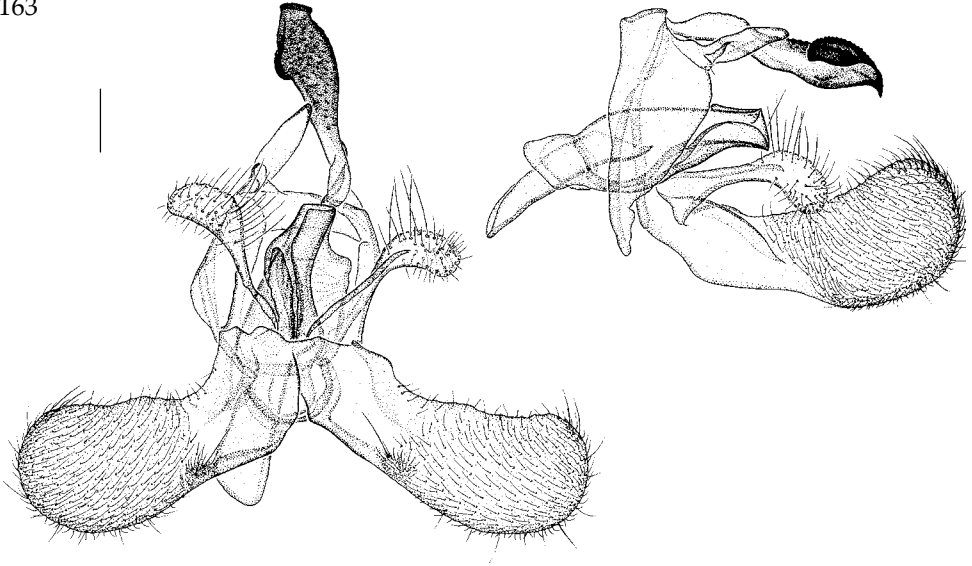


162

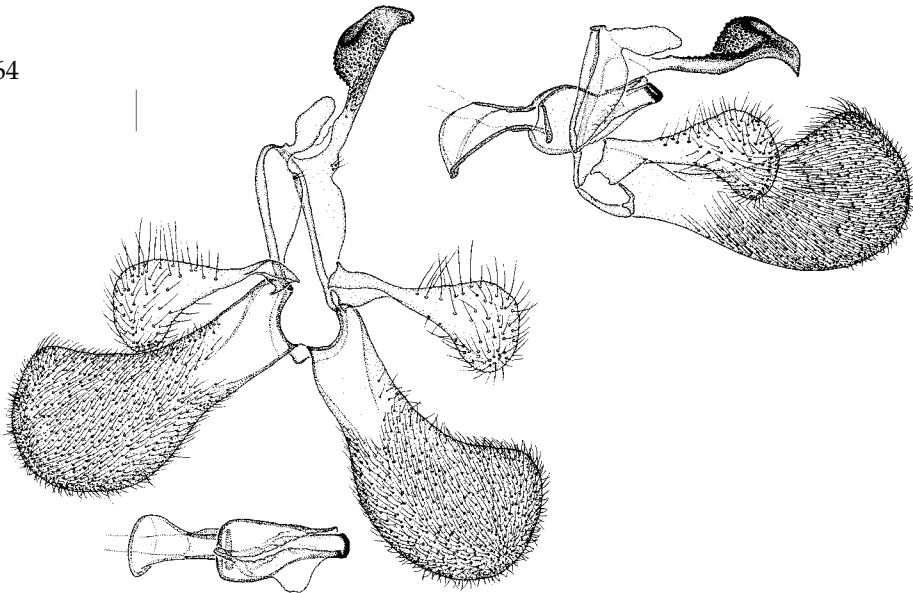


Figs 161-162. *Cosmopterix* spp., male genitalia. 161, *C. madeleineae*, paratype, Ecuador, Galápagos, Pinta, slide JCK 5490, in ventral and lateral aspect; 162, *C. magophila*, USA, North Carolina, Southern Pine, slide BM 31218, in ventral and lateral aspect.

163



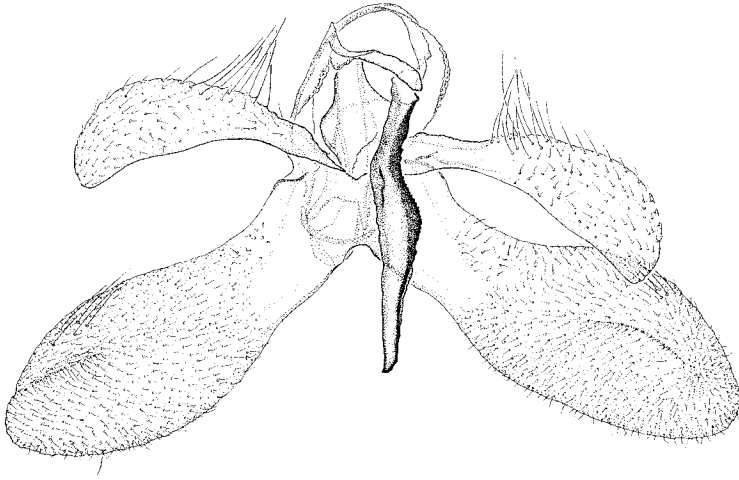
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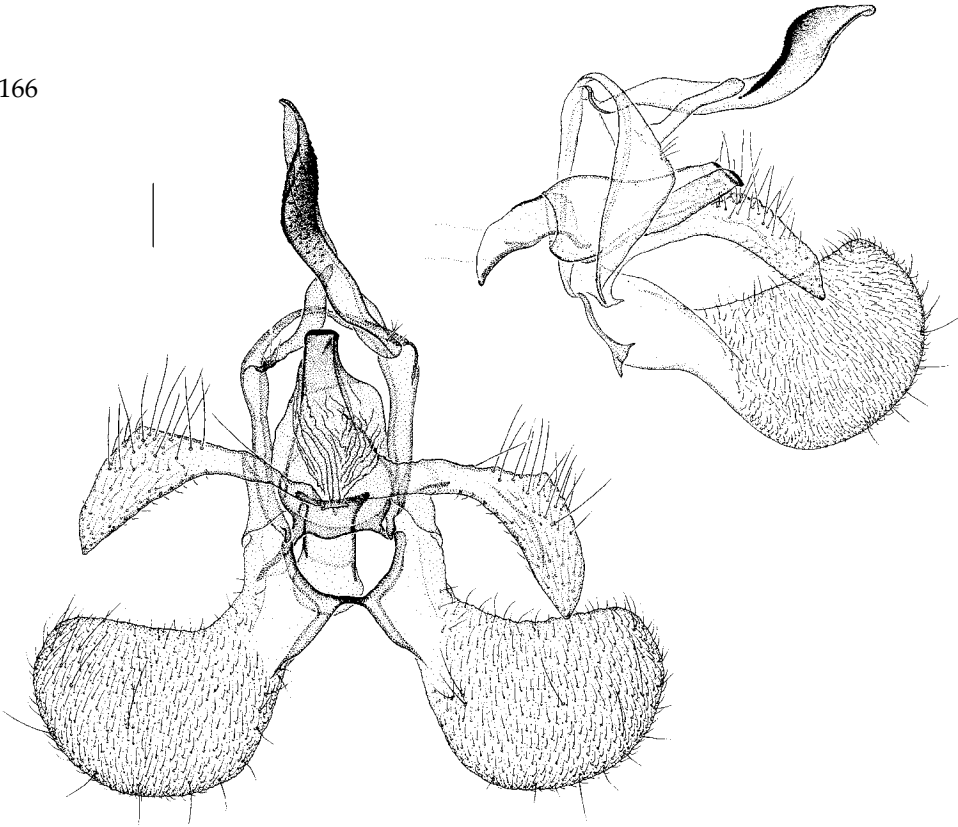
Figs 163-164. *Cosmopterix* spp., male genitalia. 163, *C. metis*, holotype, Brazil, Distrito Federal, Planaltina, slide JCK 5126, in ventral and lateral aspect; 164, *C. minutella*, USA, Florida, Monroe Co., slide JCK 4044, in ventral and lateral aspect.



165

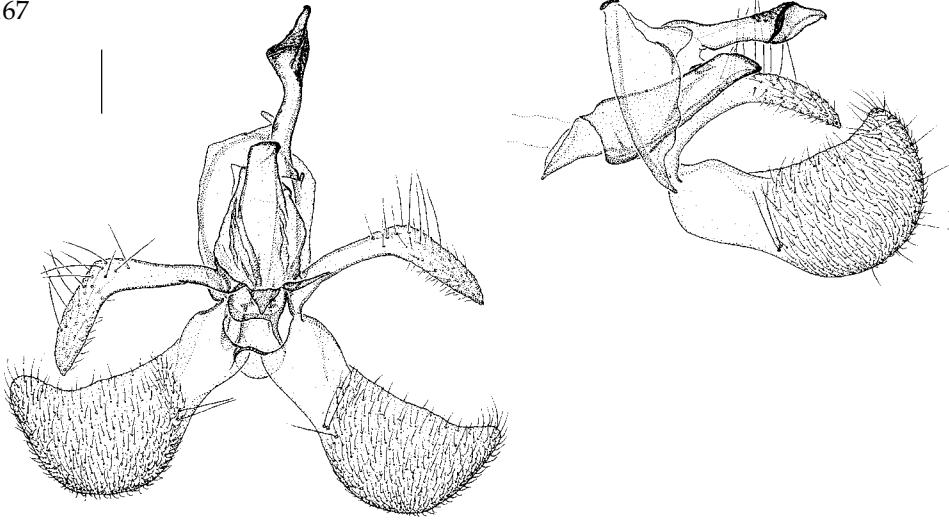


166

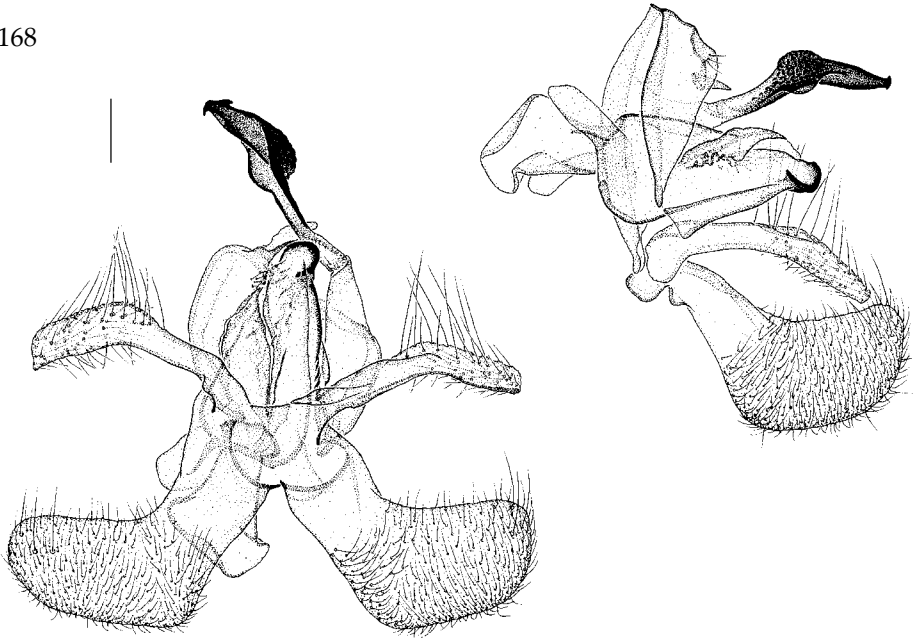


Figs 165-166. *Cosmopterix* spp., male genitalia. 165, *C. molybdina*, holotype, slide CU 3815, in ventral aspect; 166, *C. montisella*, USA, Utah, San Juan Co., slide JCK 4455, in ventral and lateral aspect.

167



168



Figs 167-168. *Cosmopterix* spp., male genitalia. 167, *C. navarroi*, holotype, slide JCK 4473, in ventral and lateral aspect; 168, *C. nieukerkeni*, holotype, slide JCK 4478, in ventral and lateral aspect.

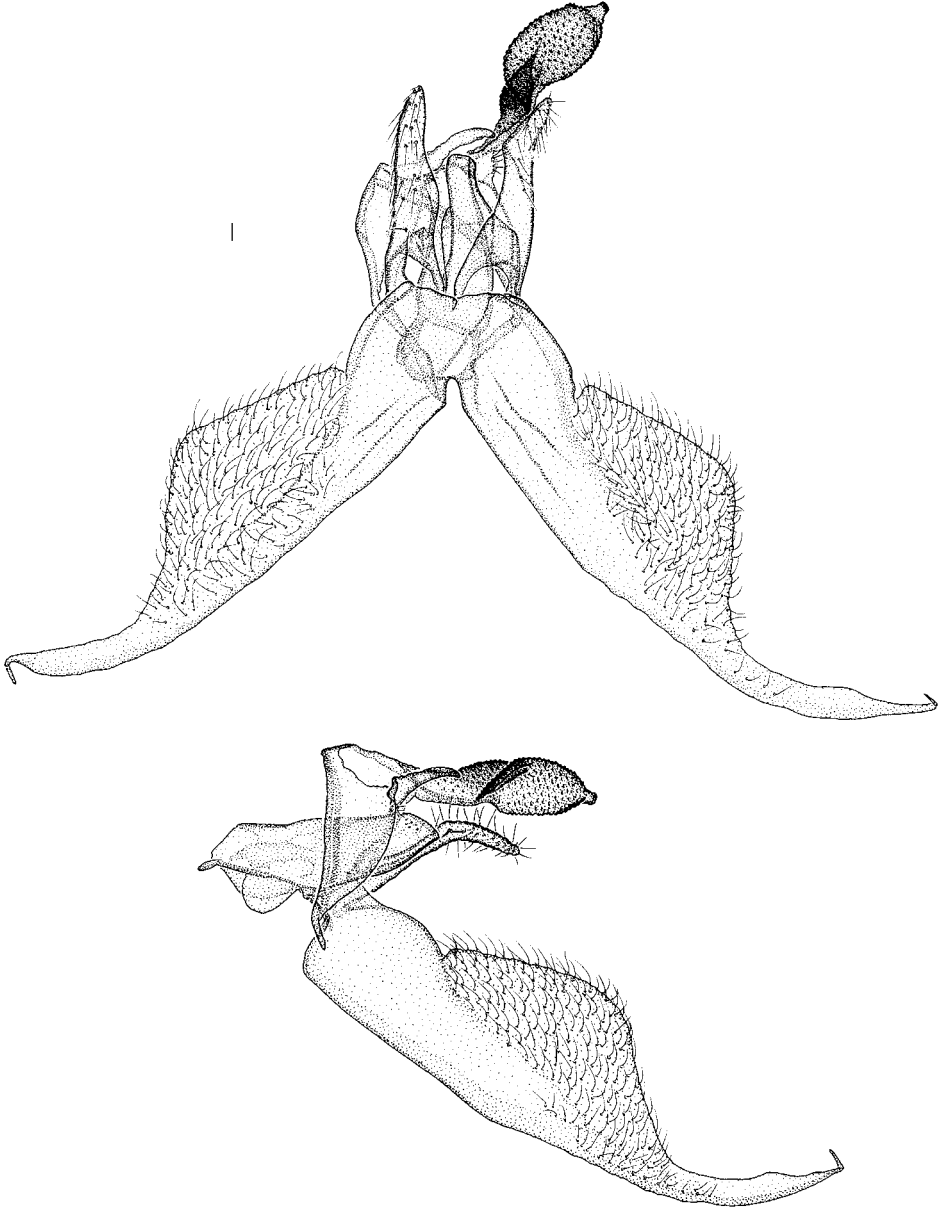
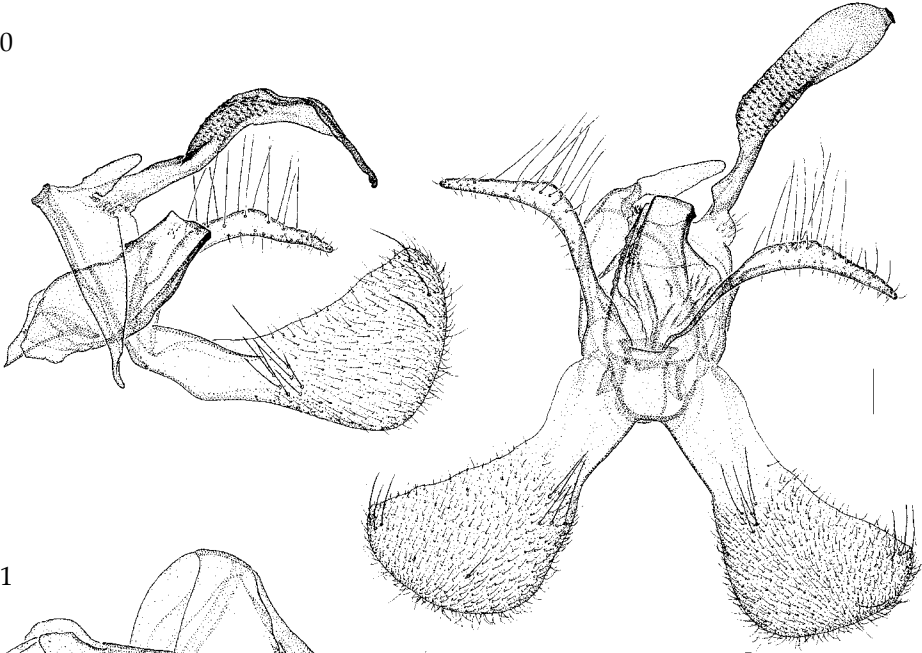
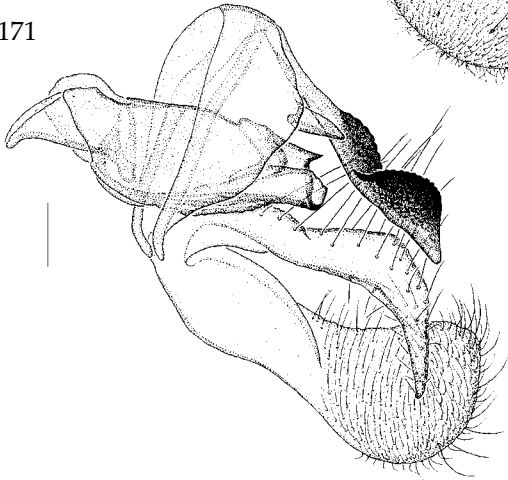


Fig. 169. *Cosmopterix* spp., male genitalia; *C. nishidai*, holotype, slide JCK 5237, in ventral and lateral aspect.

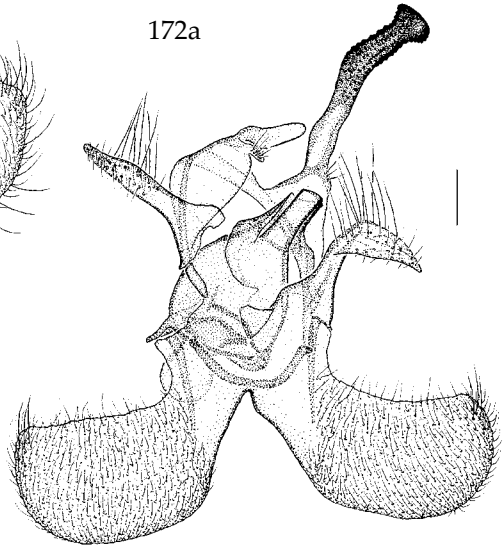
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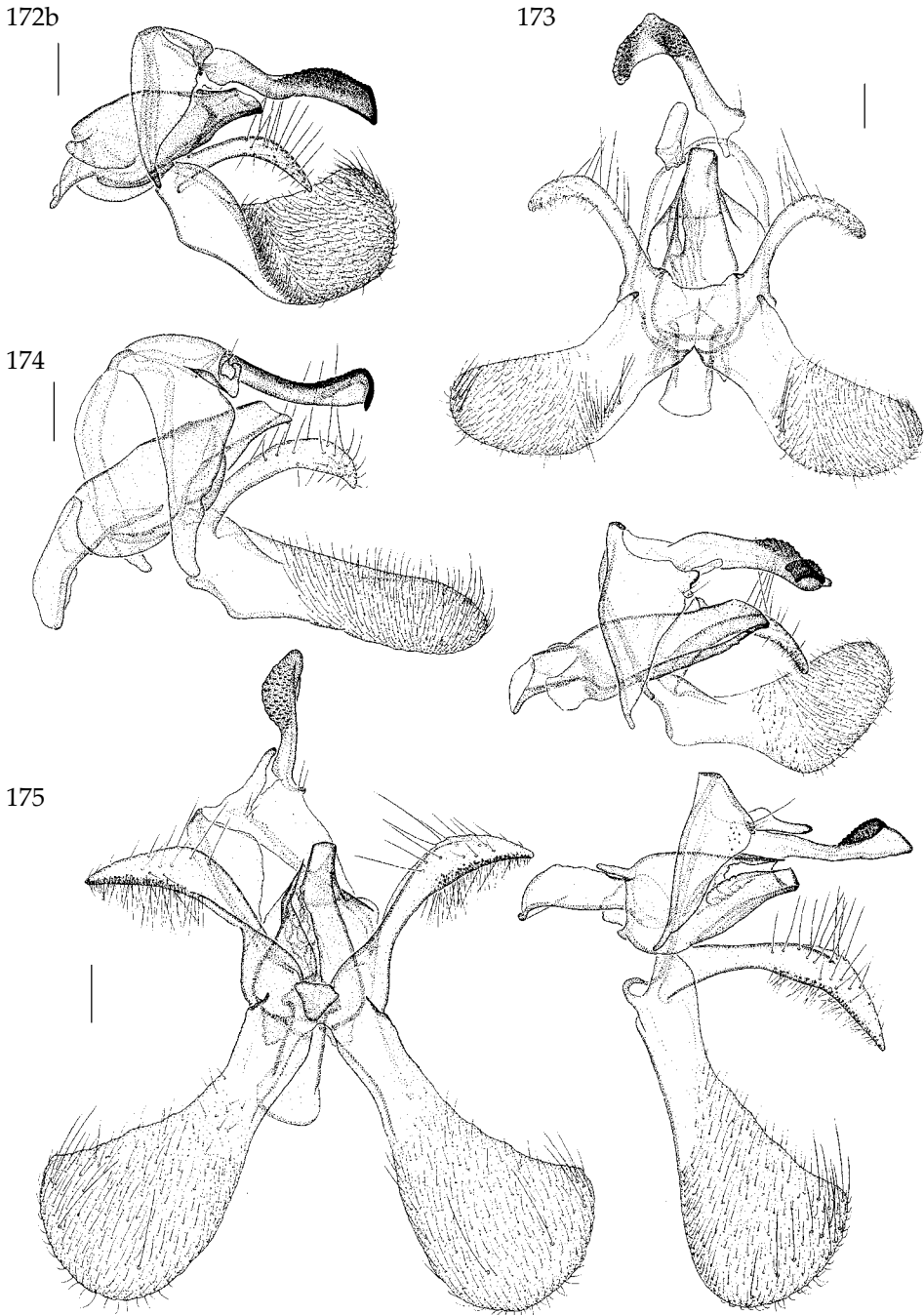
171



172a



Figs 170-172a. *Cosmopterix* spp., male genitalia. 170, *C. nitens*, USA, South Carolina, Charleston Co., slide JCK 5742, in ventral and lateral aspect; 171, *C. nyctiphanes*, lectotype, slide JFGC 6140, in lateral aspect; 172a, *C. opulenta*, Costa Rica, Cartago, Turrialba, slide JCK 5529, in ventral aspect.

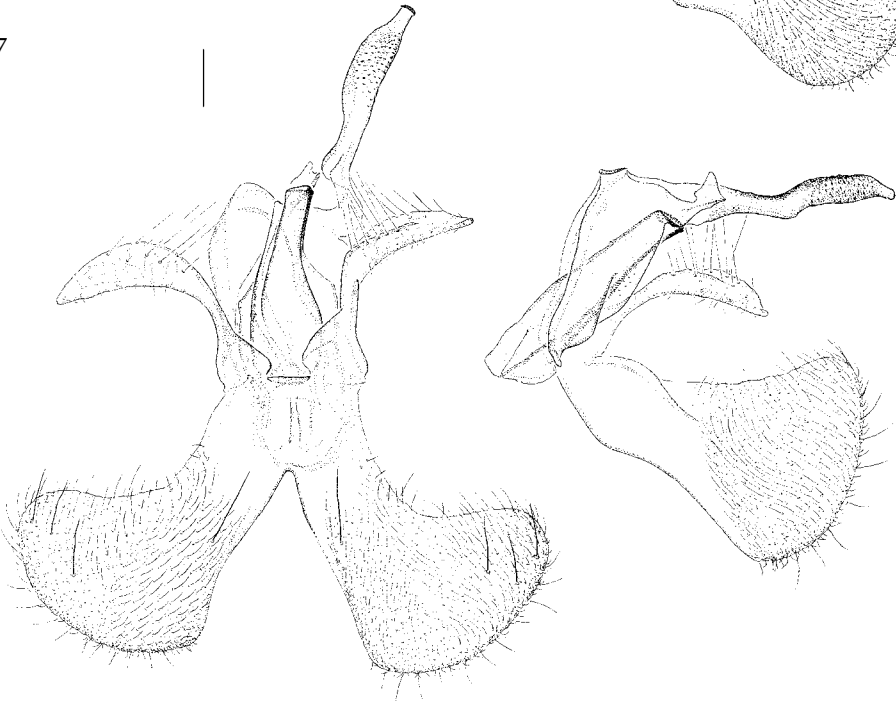


Figs 172b-175. *Cosmopterix* spp., male genitalia. 172b, *C. opulenta*, Costa Rica, Cartago, Turrialba, slide JCK 5529, in lateral aspect; 173, *C. orthosie*, holotype, slide JCK 5454, in ventral and lateral aspect; 174, *C. pentachorda*, lectotype, slide JFGC 6148, in lateral aspect; 175, *C. pimmaarteni*, holotype, slide JCK 5439, in ventral and lateral aspect.

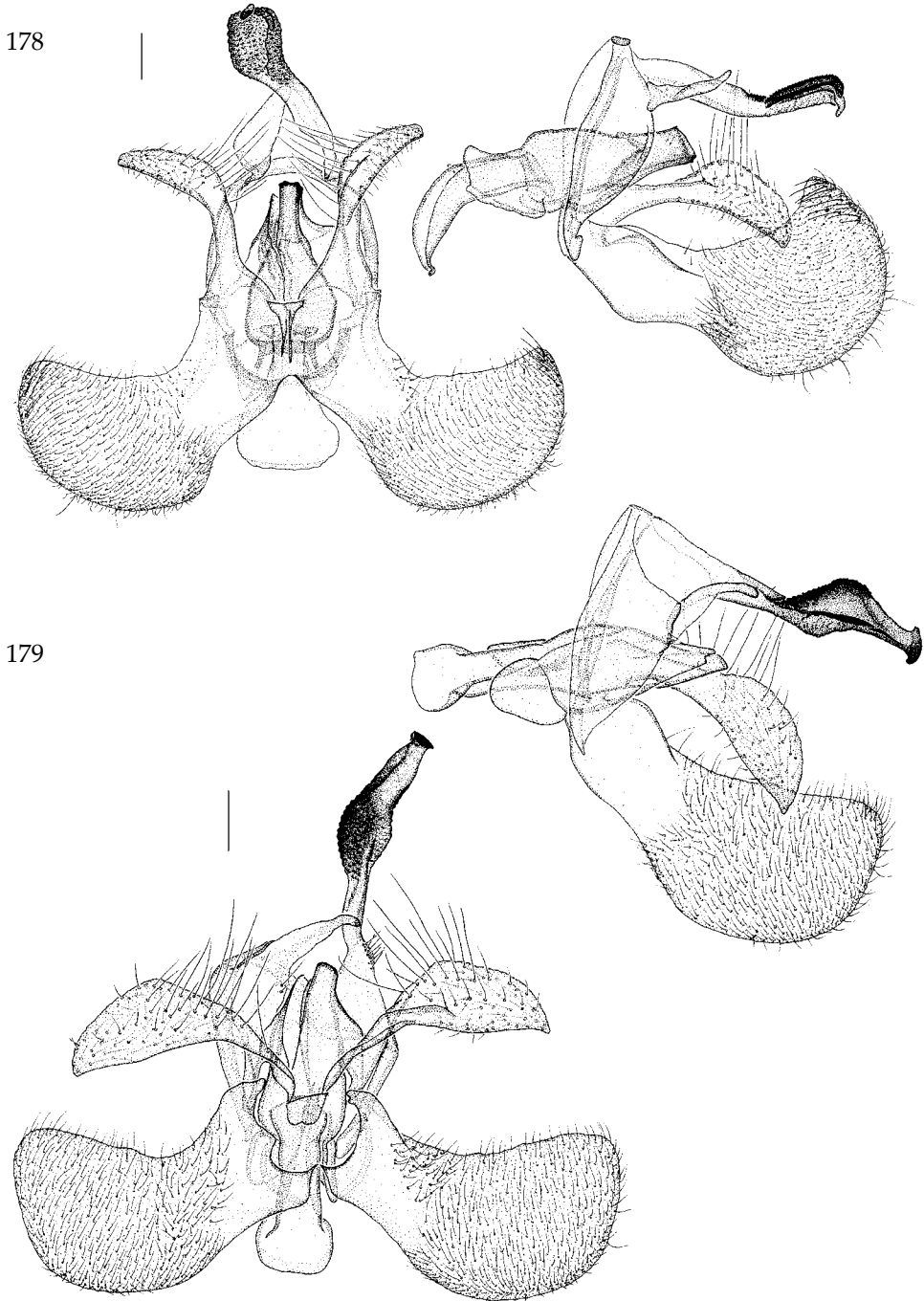
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177

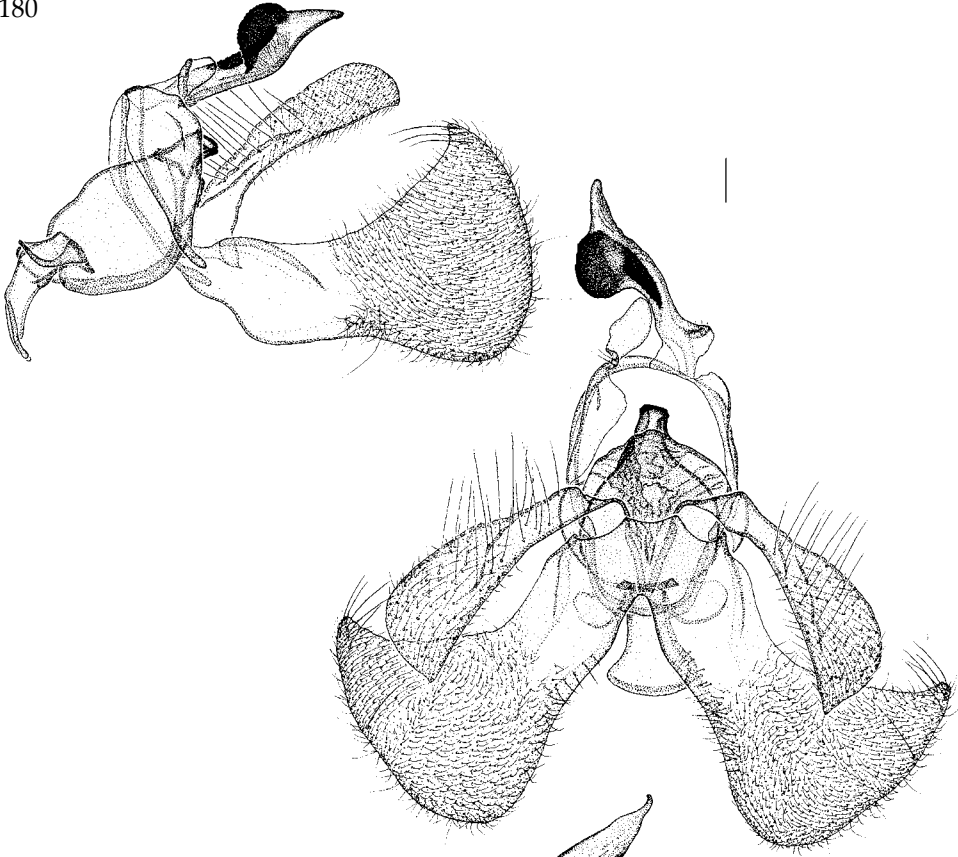


Figs 176-177. *Cosmopterix* spp., male genitalia. 176, *C. praxidike*, holotype, slide JCK 5459, in ventral and lateral aspect; 177, *C. pulchrimella*, USA, New Mexico, Eddy Co., slide JCK 6103, in ventral and lateral aspect.



Figs 178-179. *Cosmopterix* spp., male genitalia. 178, *C. quadrilineella*, USA, Texas, Forestburg, slide BM 31221, in ventral and lateral aspect; 179, *C. saltensis*, holotype, slide JCK 4475, in ventral and lateral aspect.

180



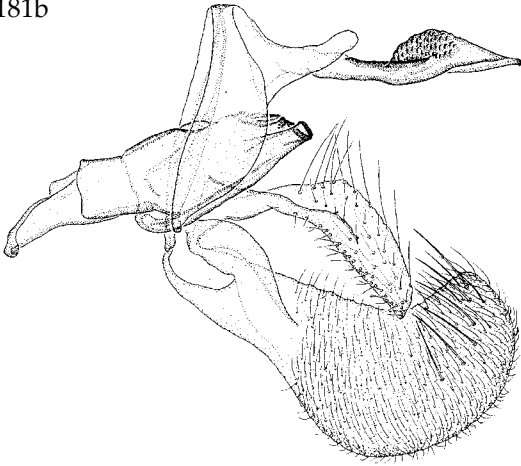
181a



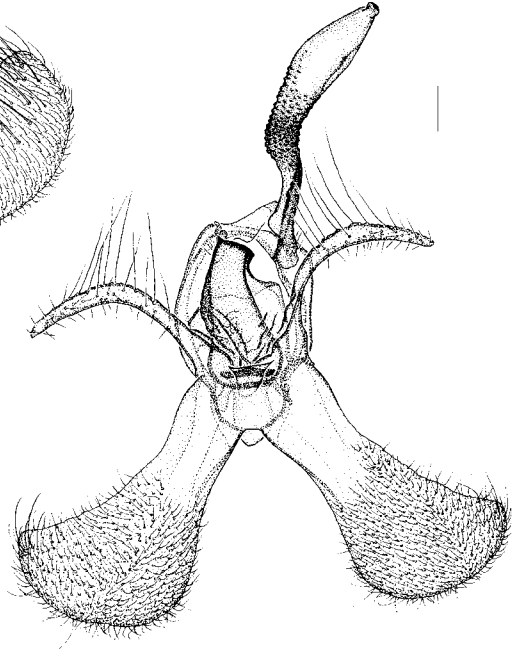
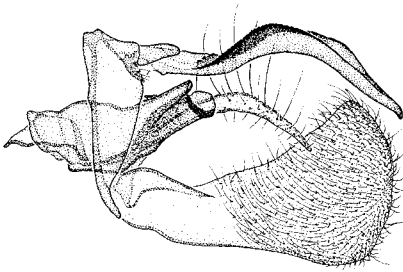
Figs 180-181a. *Cosmopterix* spp., male genitalia. 180, *C. scirpicola*, USA, South Carolina, Charleston Co., slide JCK 5792, in ventral and lateral aspect; 181a, *C. similis*, US Virgin Islands, St. Thomas, slide JCK 4691, in ventral aspect.



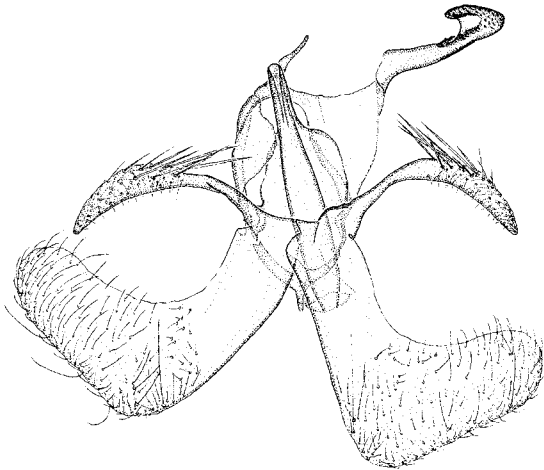
181b



182



183



Figs 181b-183. *Cosmopterix* spp., male genitalia. 181b, *C. similis*, US Virgin Islands, St. Thomas, slide JCK 4691, in lateral aspect; 182, *C. sinelinea*, USA, South Carolina, McClellanville, slide JCK 5794, in ventral and lateral aspect; 183, *C. taygete*, holotype, slide JCK 5452, in ventral aspect.

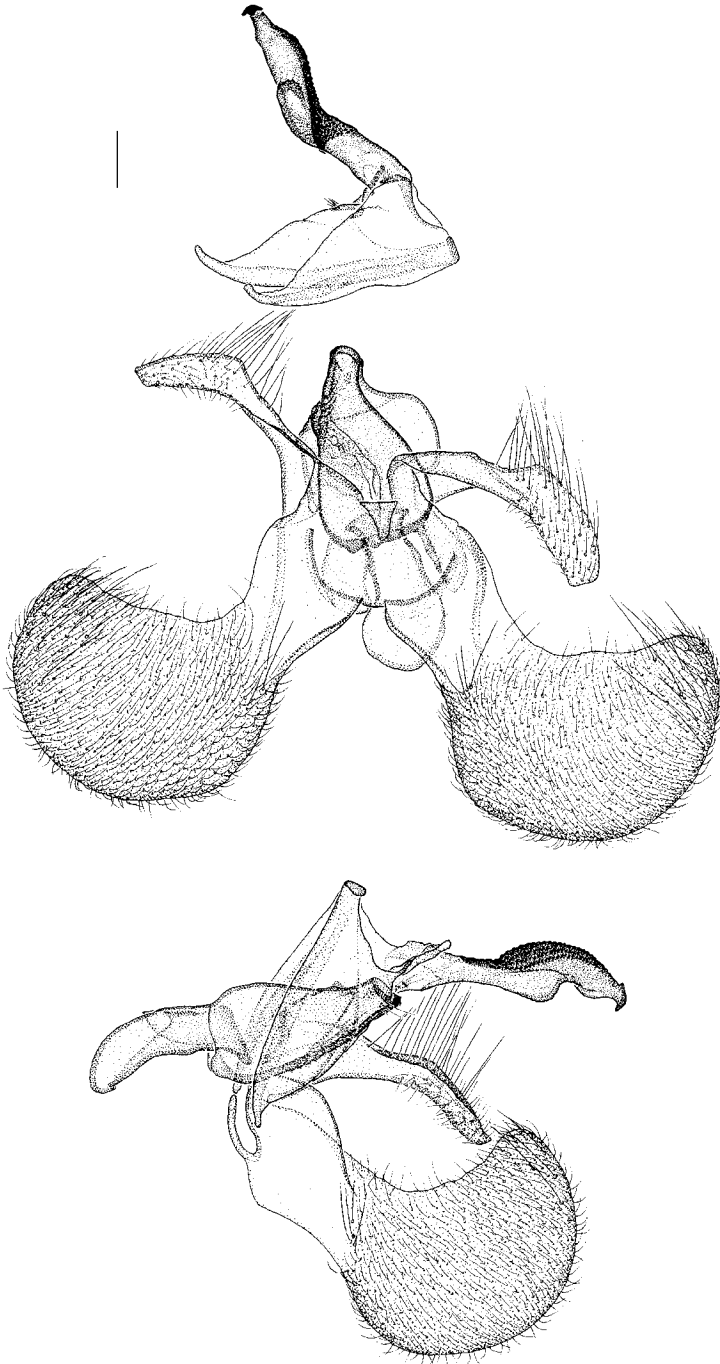
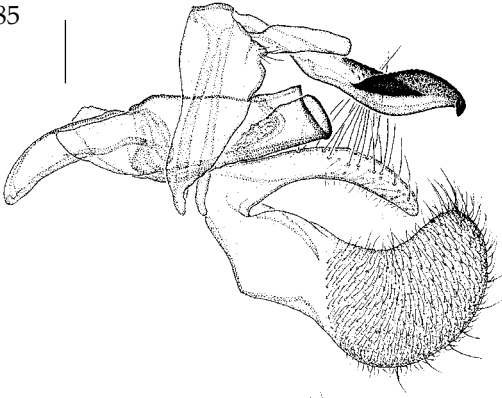
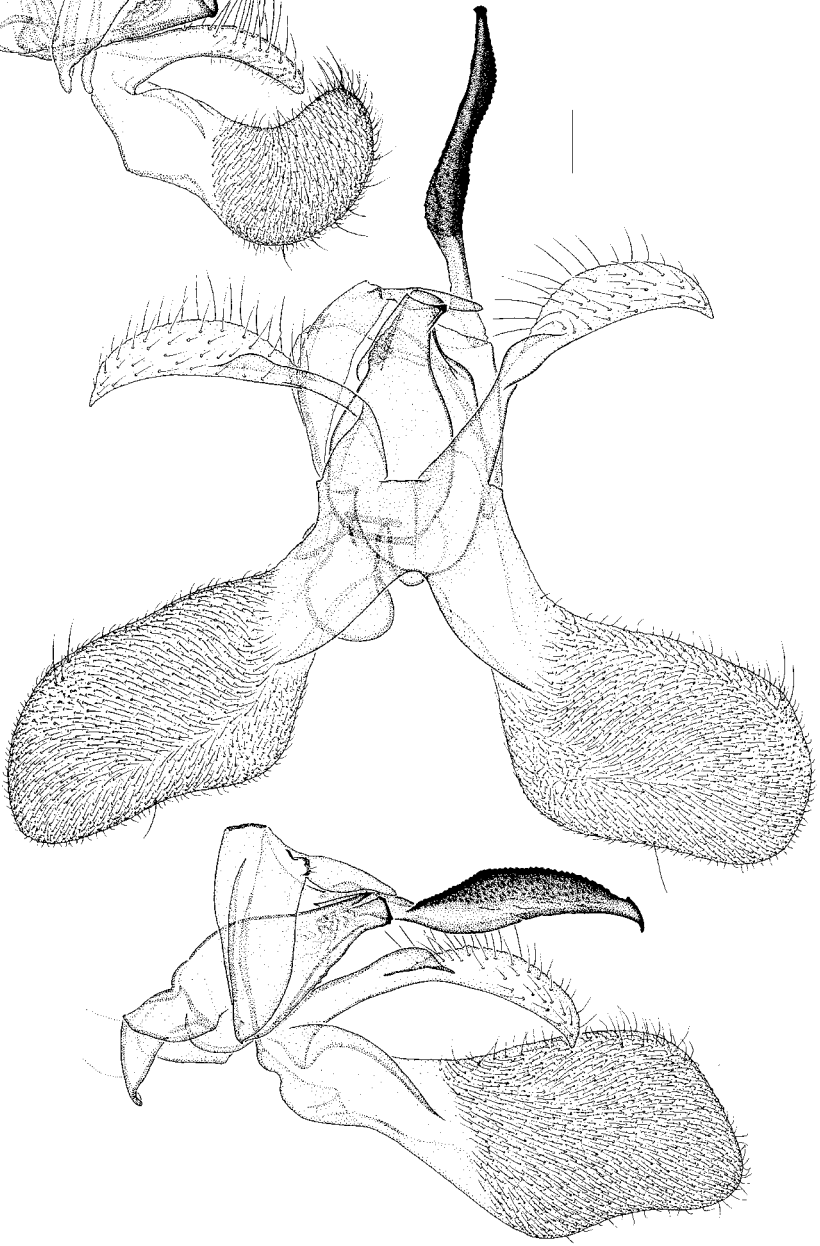


Fig. 184. *Cosmopterix* spp., male genitalia. *C. teligera*, Costa Rica, Turrialba, slide JCK 5469, in ventral and lateral aspect.

185

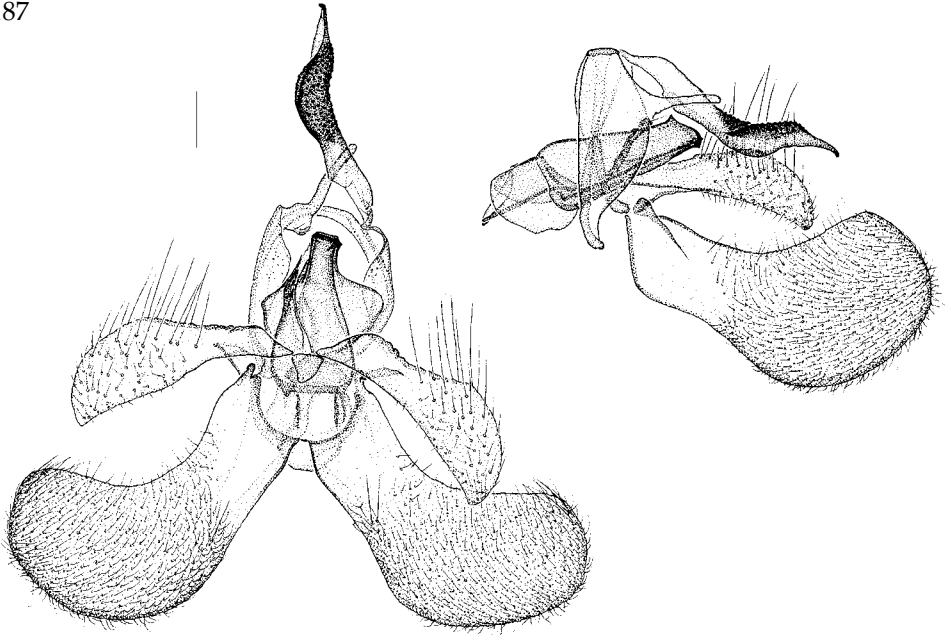


186

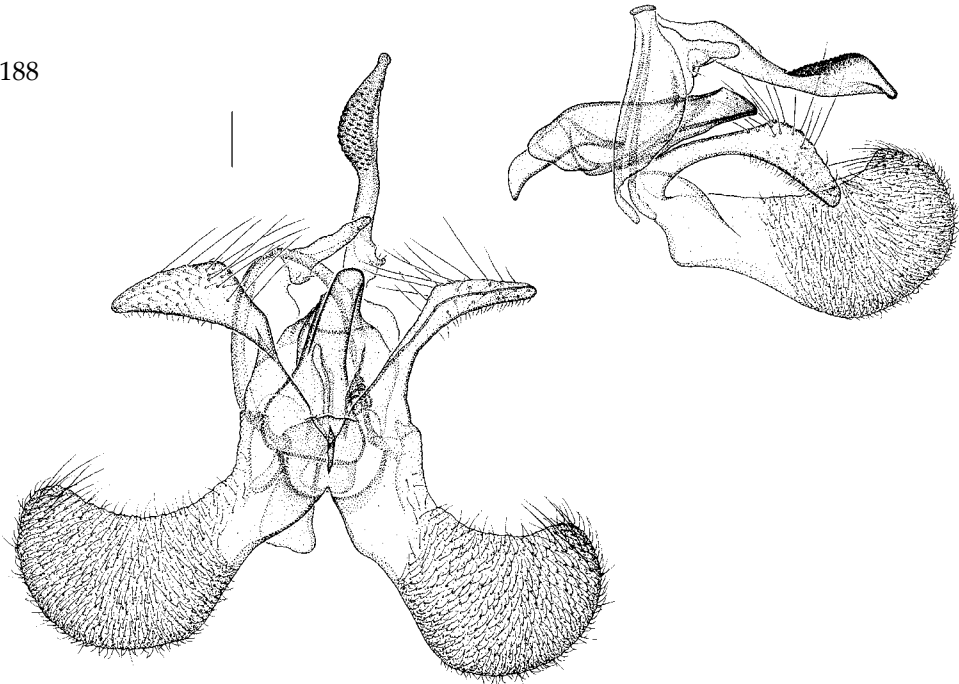


Figs 185-186. *Cosmopterix* spp., male genitalia. 185, *C. tenax*, holotype, slide JFGC 6141, in lateral aspect; 186, *C. thebe*, holotype, slide BM 29288, in ventral and lateral aspect.

187

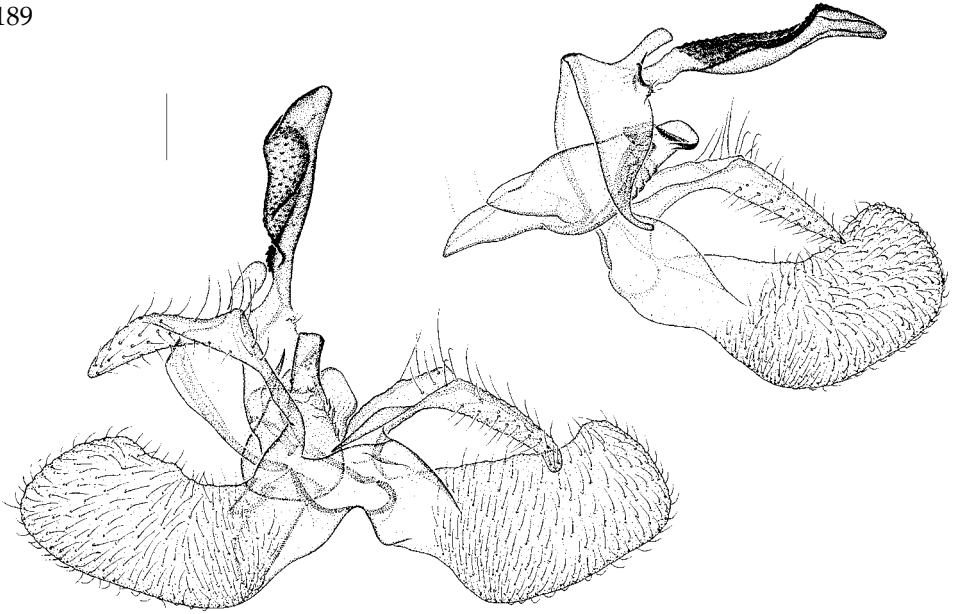


188

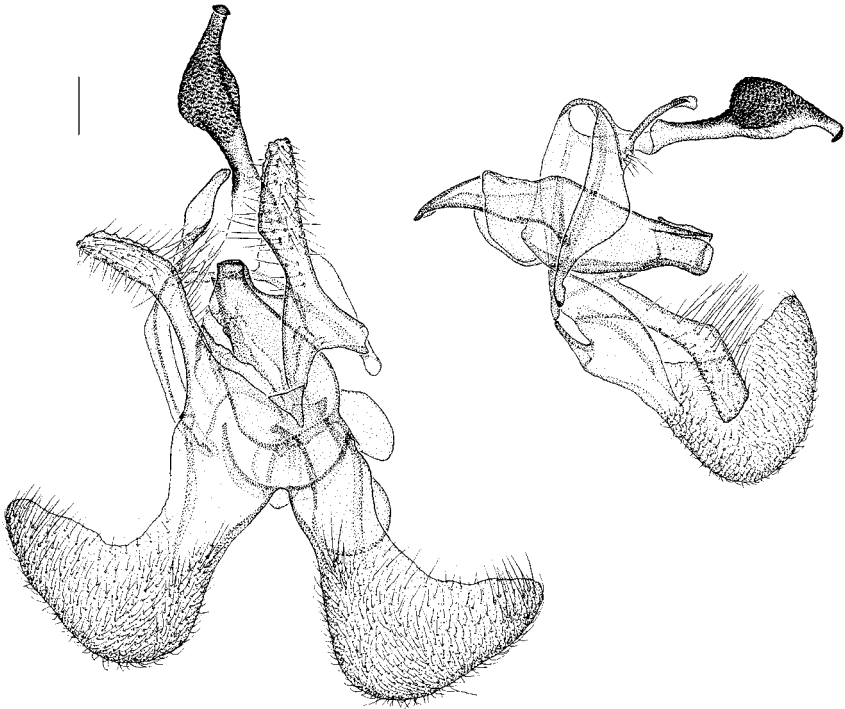


Figs 187-188. *Cosmopterix* spp., male genitalia. 187, *C. thelxinoe*, paratype, Brazil, Distrito Federal, Planaltina, slide JCK 5470, in ventral and lateral aspect; 188, *C. themisto*, holotype, slide BM 29942, in ventral and lateral aspect.

189



190



Figs 189-190. *Cosmopterix* spp., male genitalia. 189, *C. thrasyzela*, Brazil, Para, slide BM 29297, in ventral and lateral aspect; 190, *C. thyone*, holotype, slide JCK 5468, in ventral and lateral aspect.

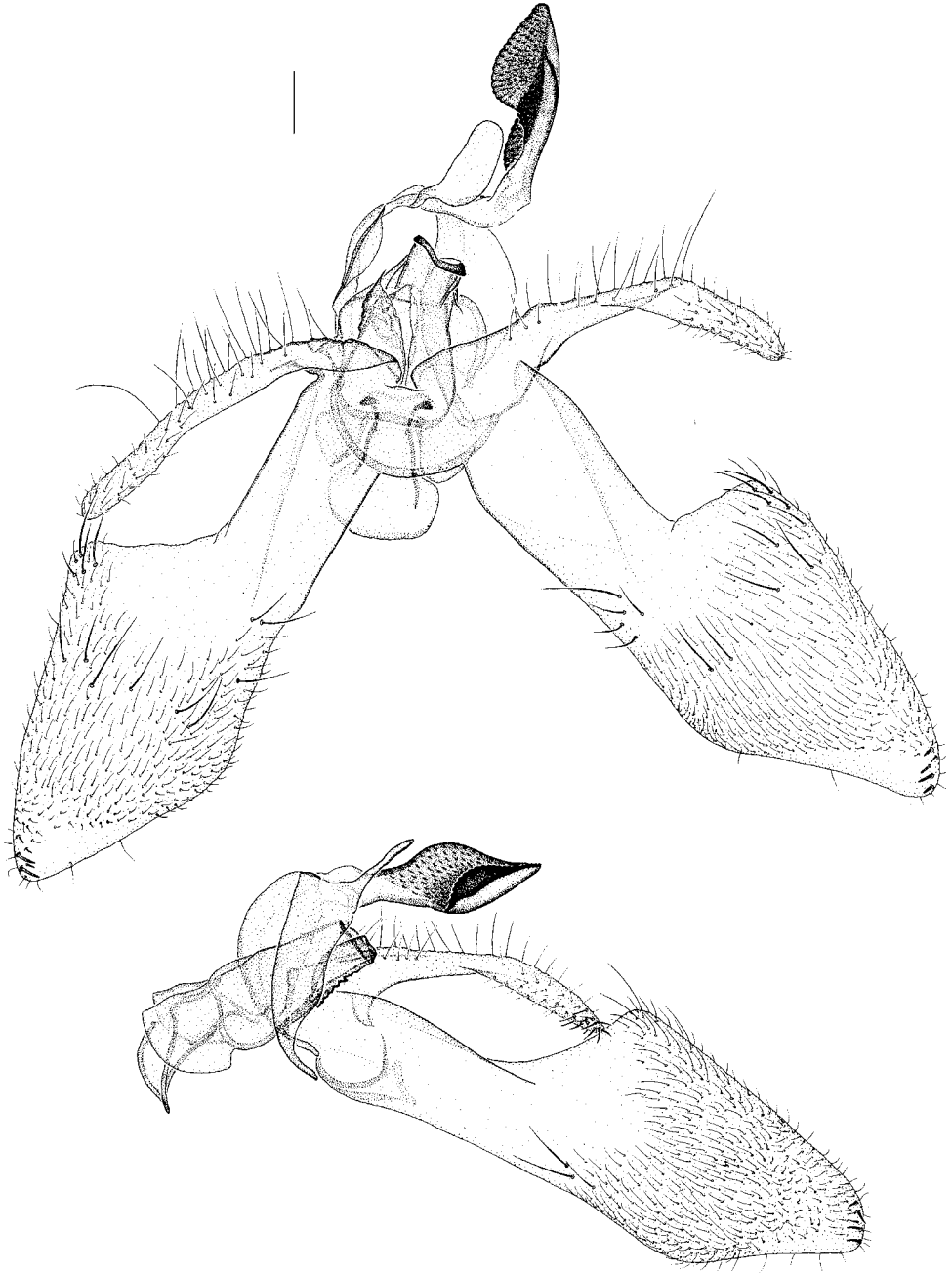
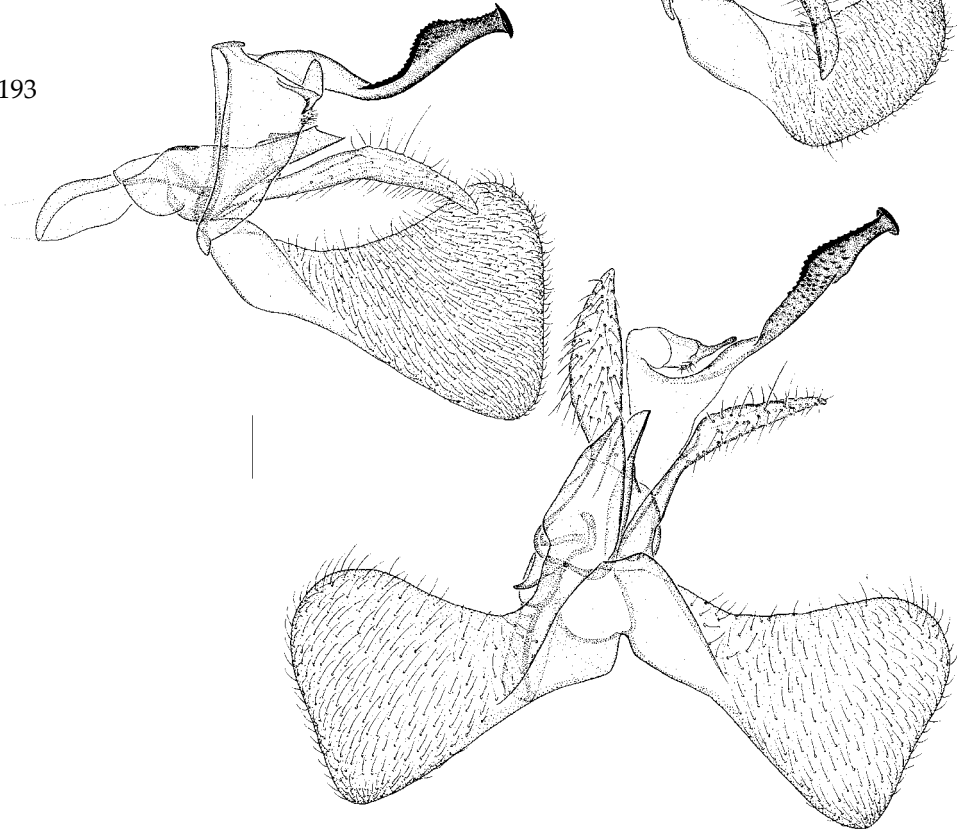


Fig. 191. *Cosmopterix* spp., male genitalia. *C. trifasciella*, holotype, slide BM 29291, in ventral and lateral aspect.

192

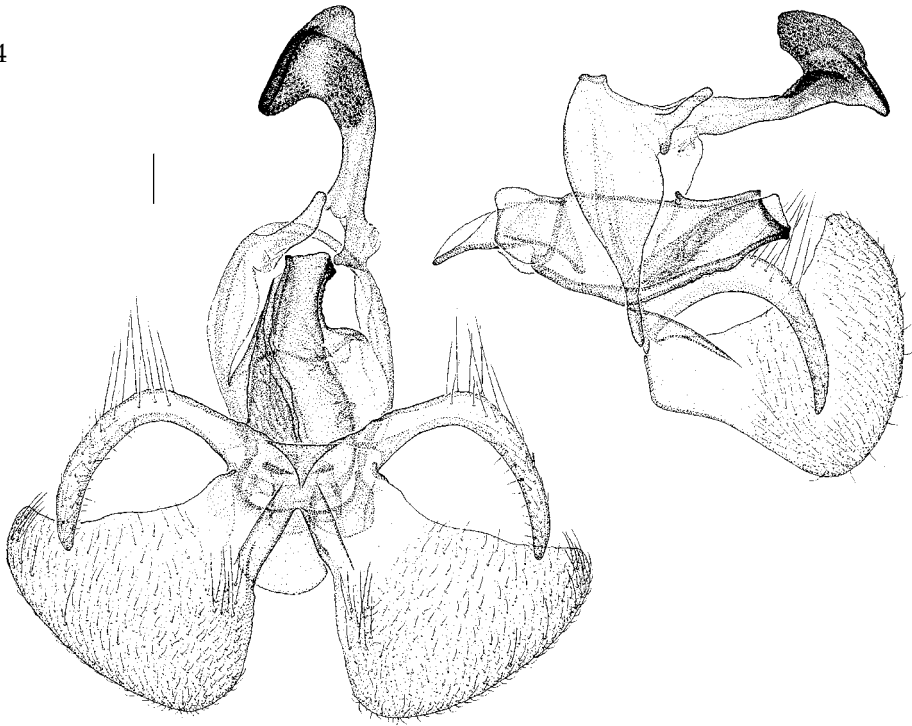


193

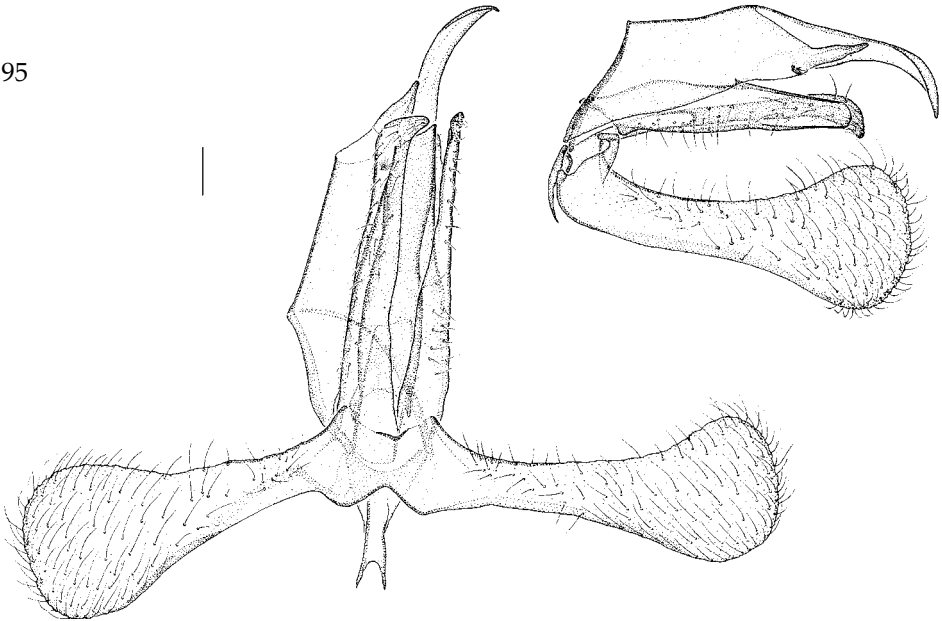


Figs 192-193. *Cosmopterix* spp., male genitalia. 192, *C. vanderwolfi*, holotype, slide JCK 5440, in ventral and lateral aspect; 193, *C. xanthura*, Mexico, Tabasco, Tapea, slide BM 29299, in ventral and lateral aspect.

194



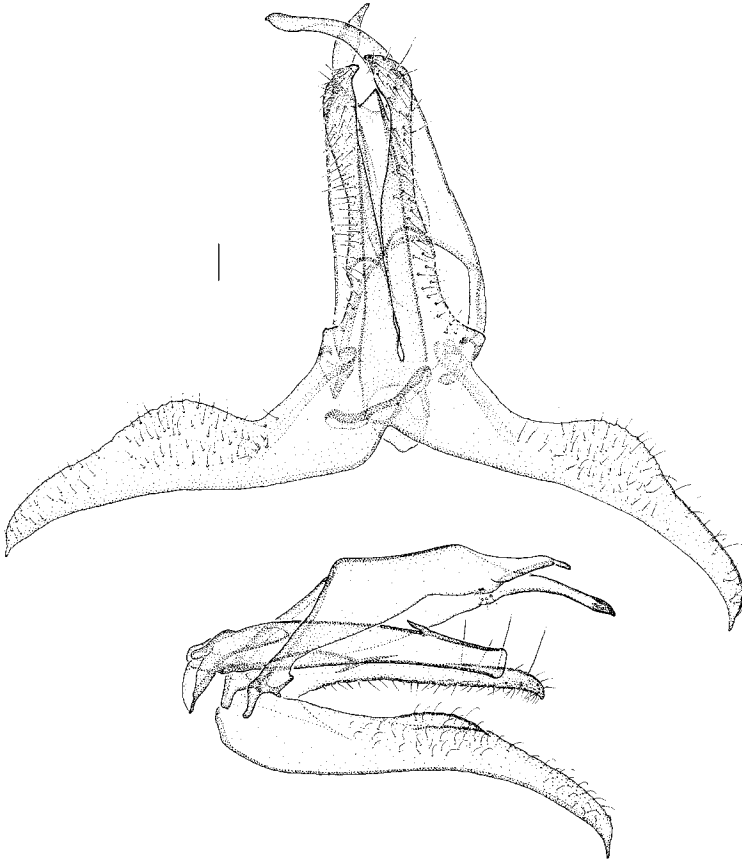
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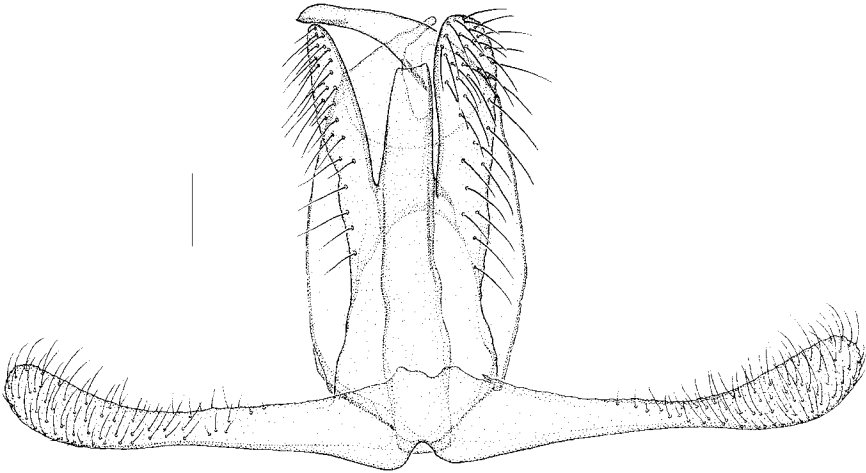
Figs 194-195. *Cosmopterix* and *Pebobs* spp., male genitalia. 194, *C. yvani*, paratype, Ecuador, Galápagos, Pinta, slide JCK 5491, in ventral and lateral aspect; 195, *P. aitne*, holotype, slide BM 29945, in ventral and lateral aspect.



196

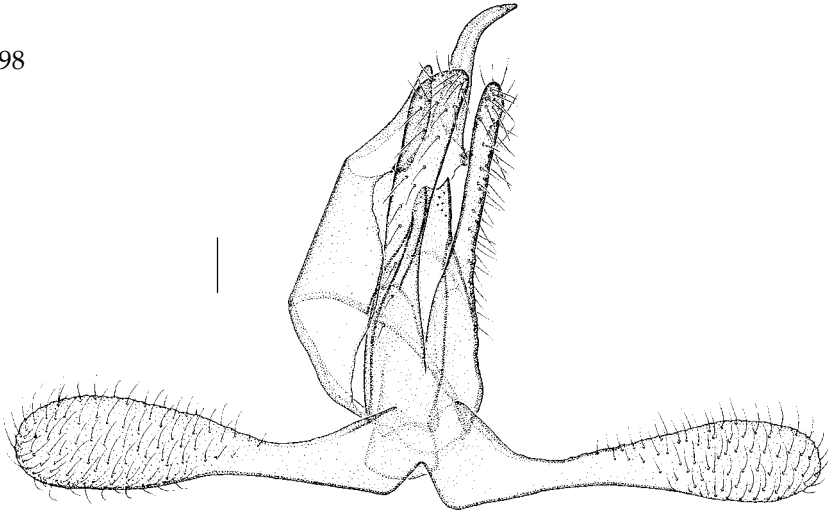


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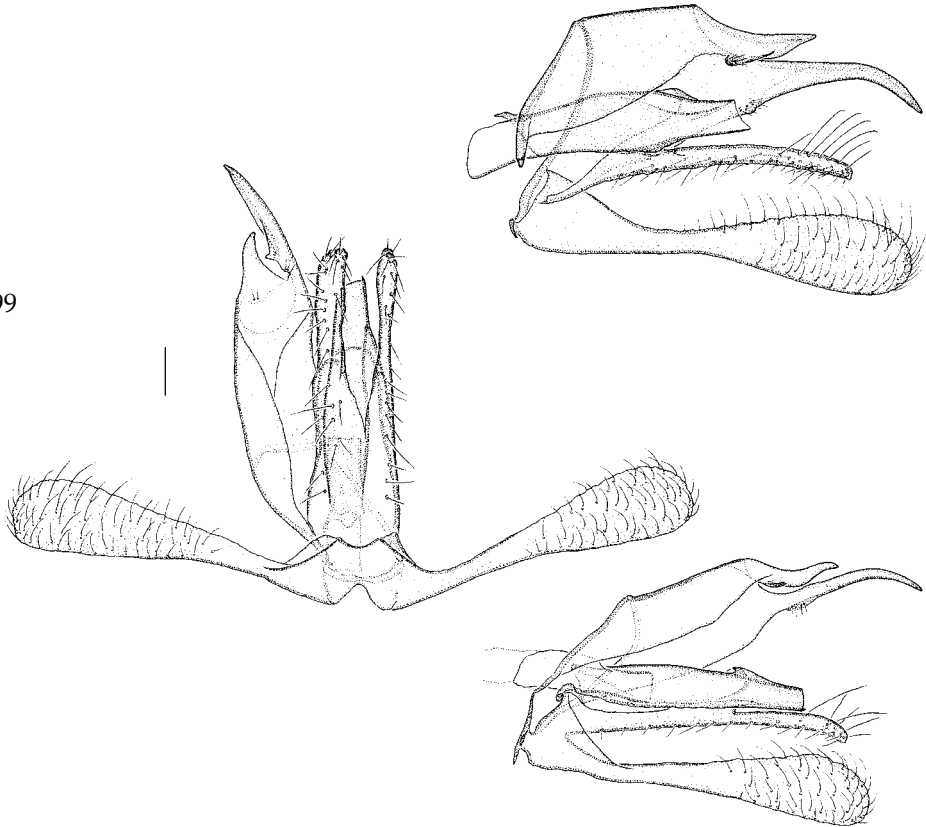


Figs 196-197. *Pebobs* spp., male genitalia. 196, *P. elara*, holotype, slide JCK 5484, in ventral and lateral aspect; 197, *P. ipomoeae*, lectotype, slide USNM 3946, in ventral aspect (USNM).

198



199



Figs 198-199. *Pebobs* spp., male genitalia. 198, *P. isonoe*, holotype, slide BM 29941, in ventral and lateral aspect; 199, *P. kale*, holotype, slide BM 29935, in ventral and lateral aspect.

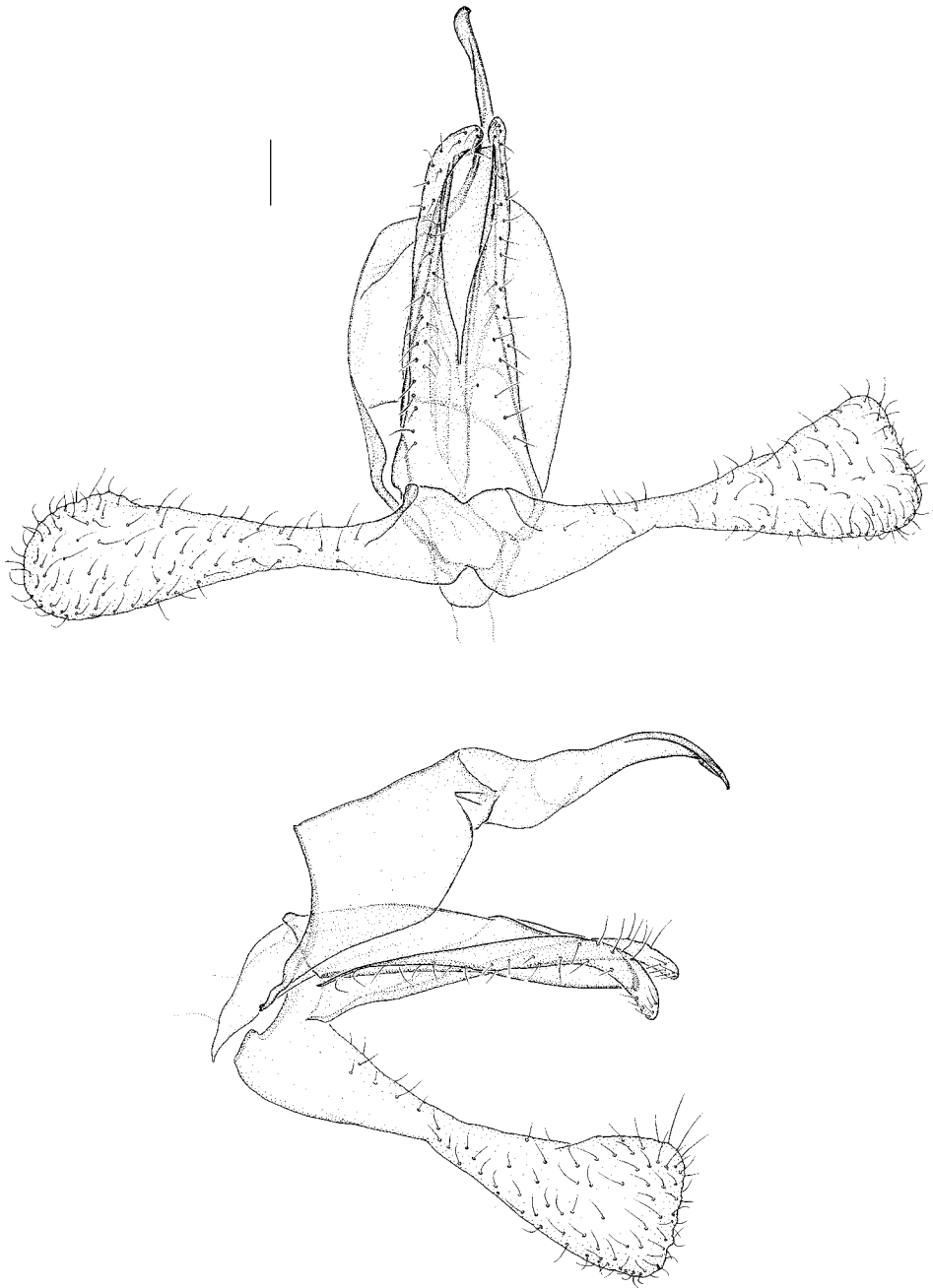


Fig. 200. *Pebobs* spp., male genitalia. *P. sanctivincenti*, Saint Vincent and the Grandines, Kingstown, slide BM 29294, in ventral and lateral aspect.

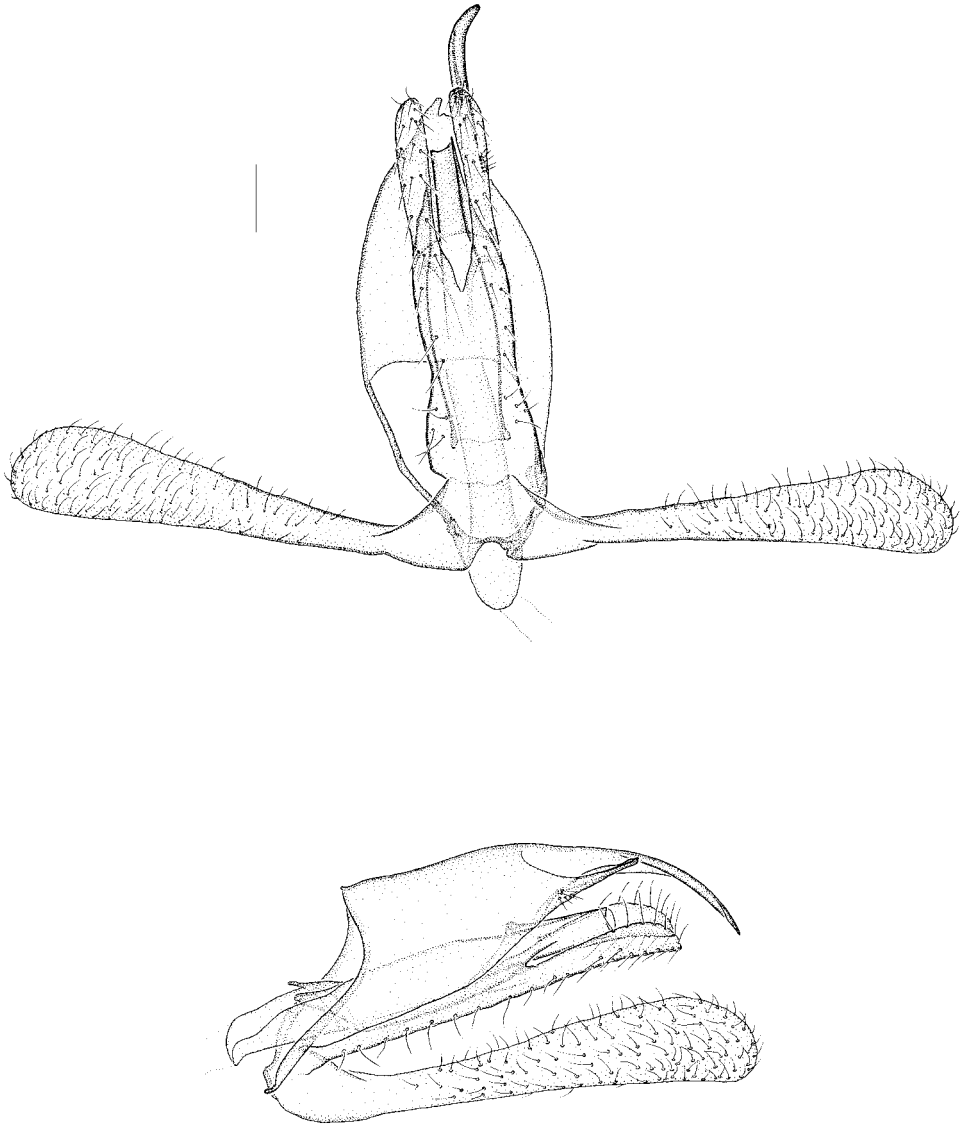


Fig. 201. *Pebobs* spp., male genitalia. *P. tetragramma*, Guyana, Bartica, slide BM 29295, in ventral and lateral aspect.

202

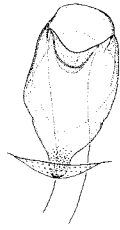
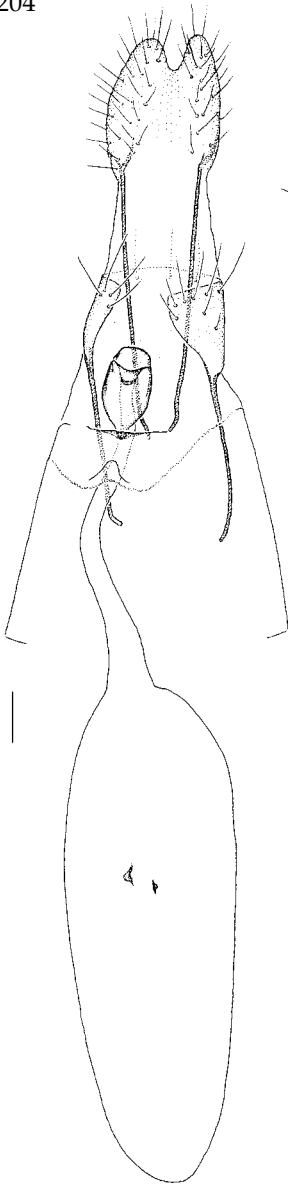


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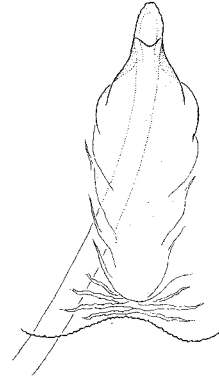
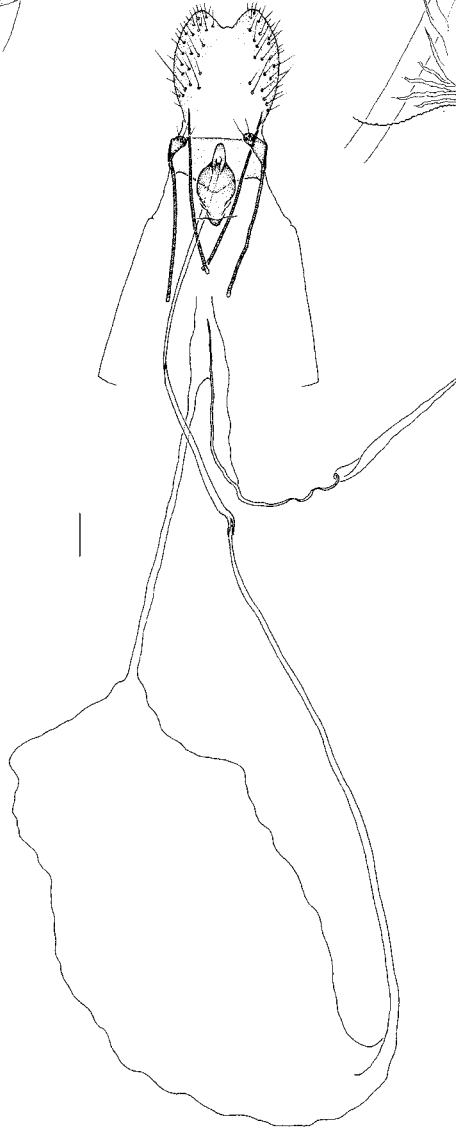


Figs 202-203. *Cosmopterix* spp., female genitalia, sterigma enlarged. 202, *C. abnormalis*, Jamaica, Moneague, slide BM 29555; 203, *C. albicaudis*, Jamaica, Moneague, slide BM 29568.

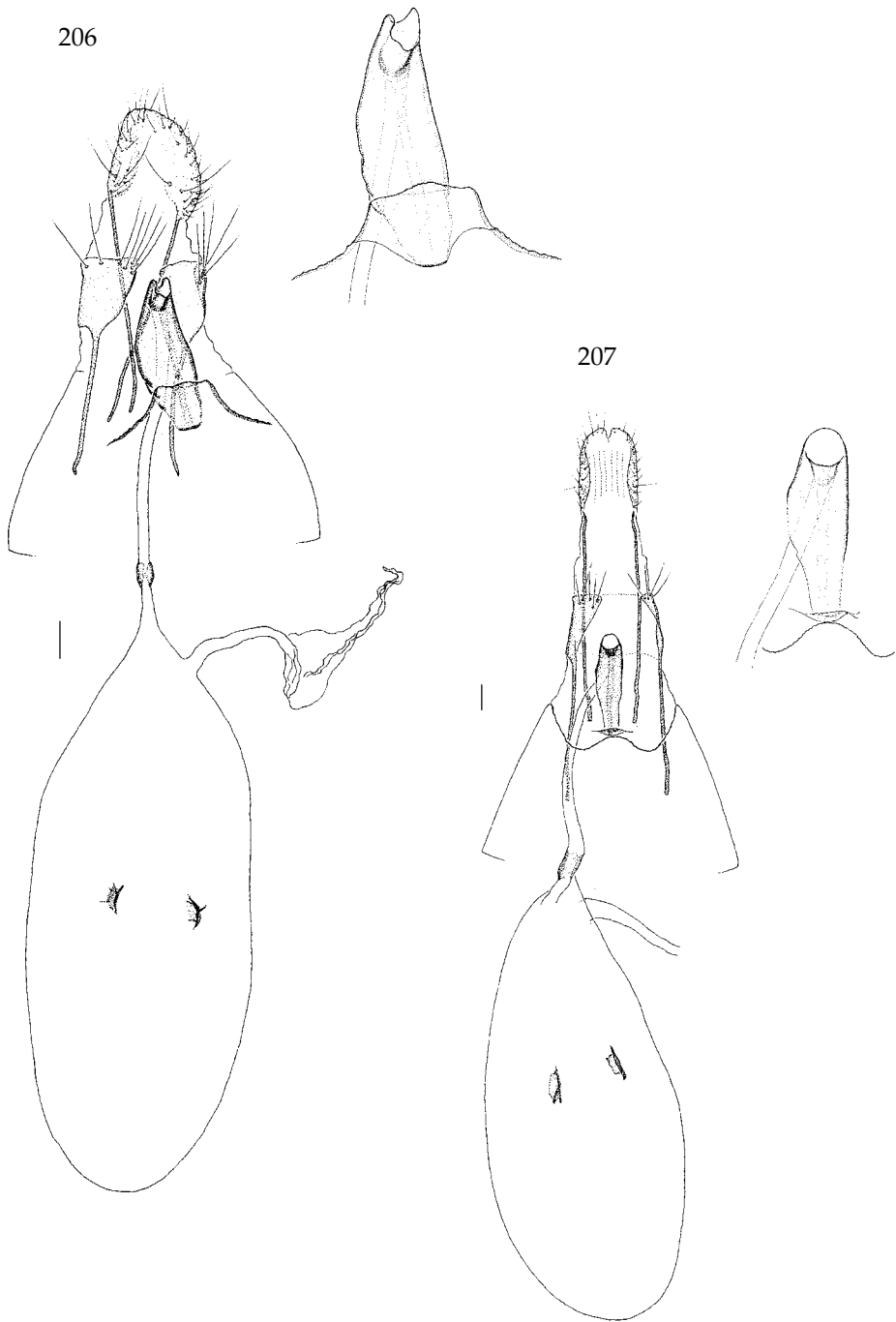
204



205



Figs 204-205. *Cosmopterix* spp., female genitalia, sterigma enlarged. 204, *C. astrapias*, Mexico, Tabasco, Teapa, slide BM 29910; 205, *C. attenuatella*, Portugal, Madeira, Funchal-Lido, slide JCK 3999.



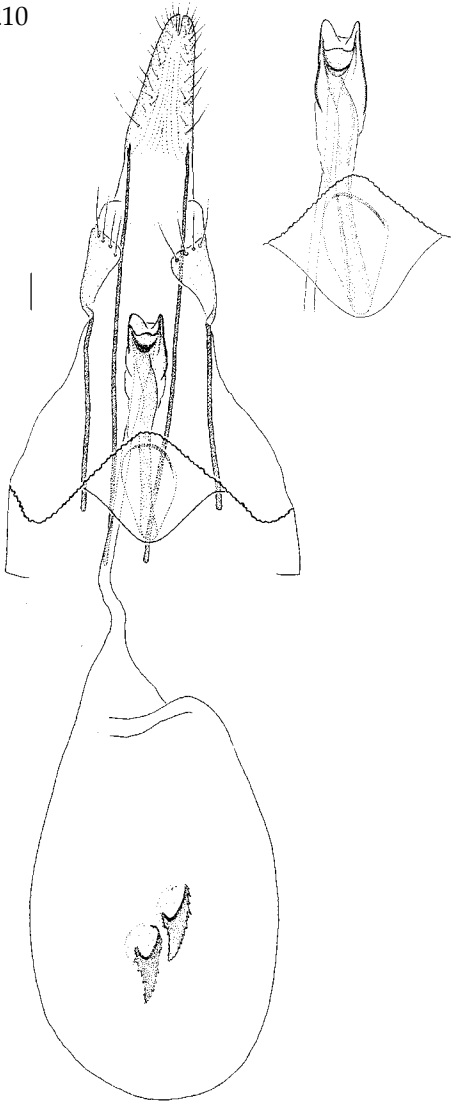
Figs 206-207. *Cosmopterix* spp., female genitalia, sterigma enlarged. 206, *C. aurotegalae*, holotype, slide JCK 6263; 207, *C. bacata*, USA, Louisiana, Calcasieu Par., slide JCK 6130.



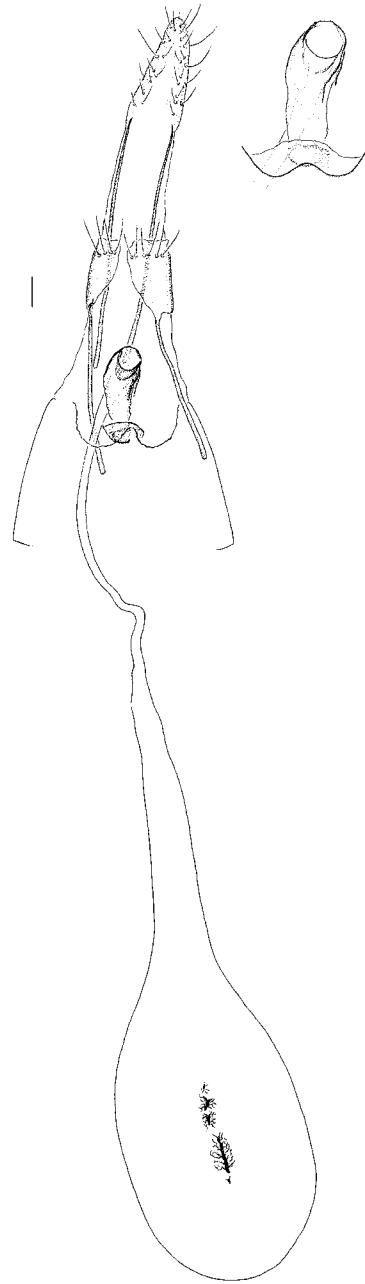
Figs 208-209. *Cosmopterix* spp., female genitalia, sterigma enlarged. 208, *C. callichalca*, USA, Florida, Lake Placid, slide USNM 3773; 209, *C. callisto*, holotype, slide BM 29560.



210

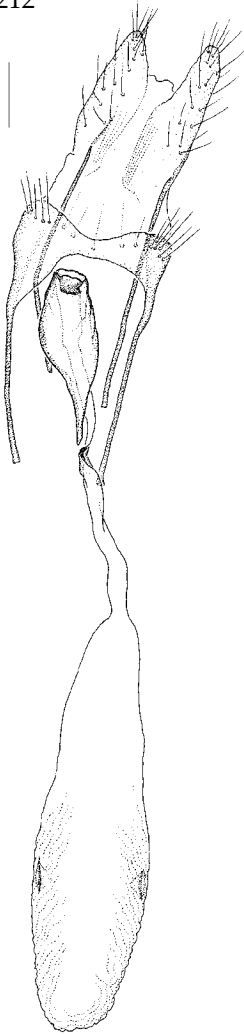


211



Figs 210-211. *Cosmopterix* spp., female genitalia, sterigma enlarged. *C. carpo*, paratype, Puerto Rico, Guanica, slide JCK 5446; 211, *C. chisosensis*, Argentina, Tucumán, slide JCK 4459.

212

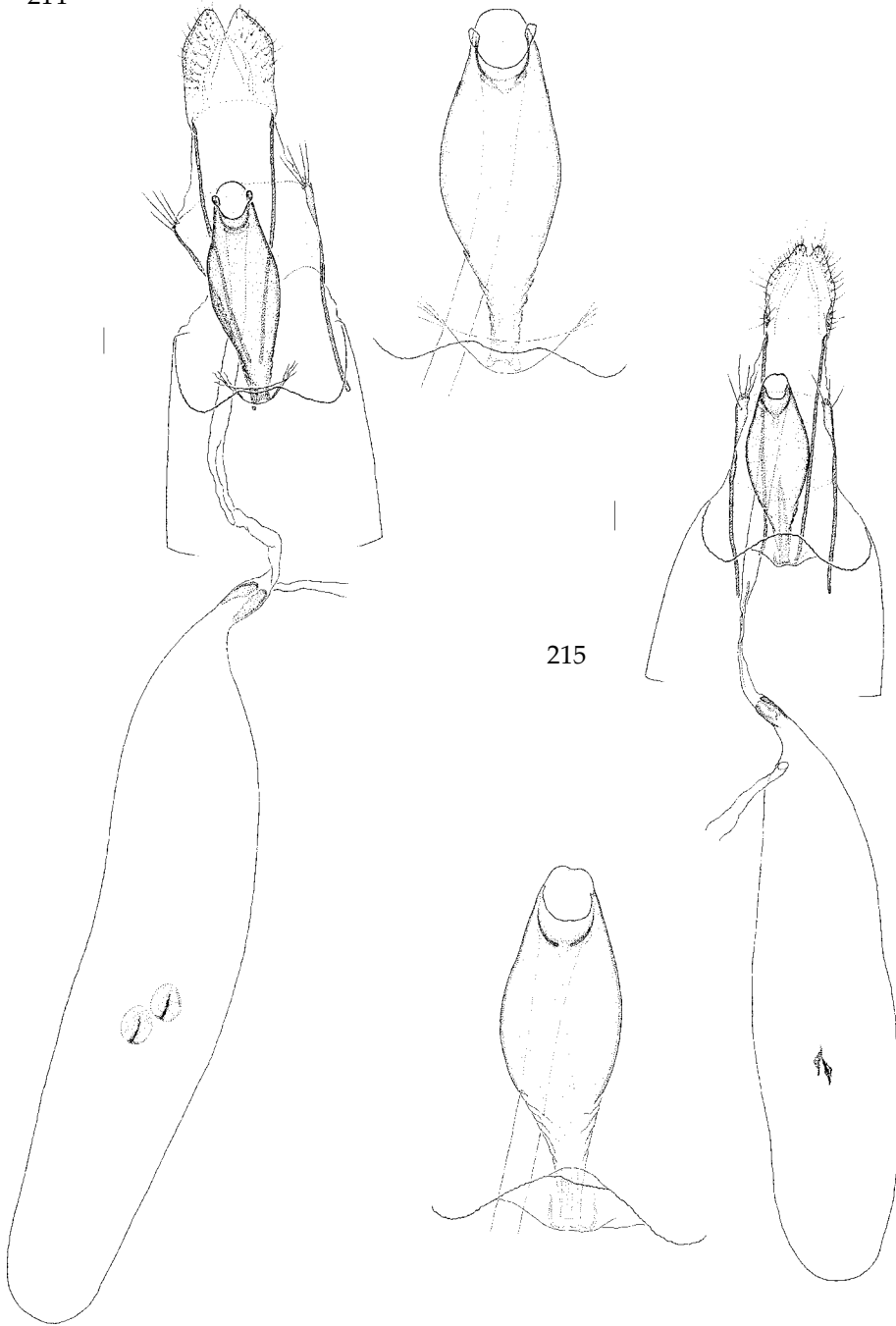


213



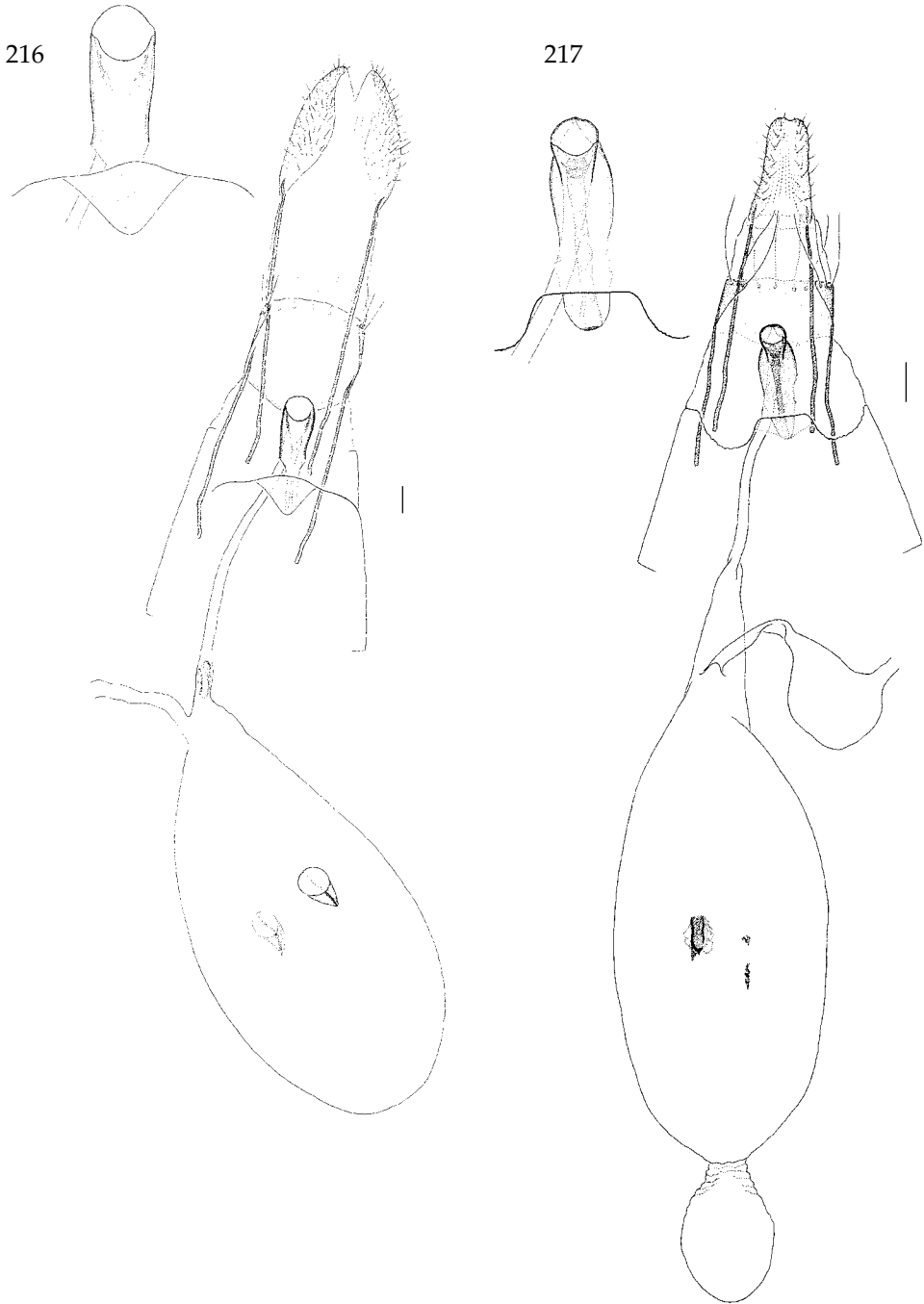
Figs 212-213. *Cosmopterix* spp., female genitalia, sterigma enlarged. 212, *C. citrinopa*, lectotype, slide JFGC 6142; 213, *C. clandestinella*, USA, [no locality], slide BM 31219.

214



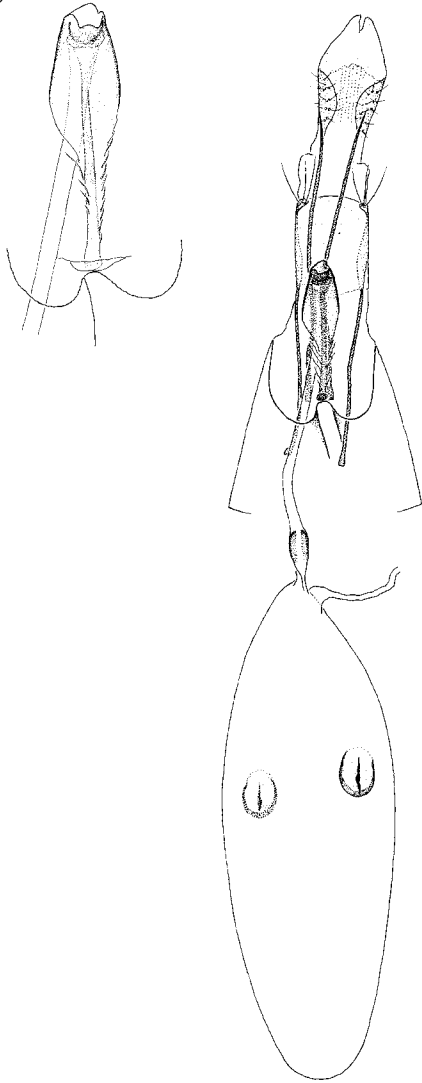
215

Figs 214-215. *Cosmopterix* spp., female genitalia, sterigma enlarged. 214, *C. clemensella*, no data, slide USNM 3918; 215, *C. damnosa*, USA, Mississippi, Franklin Co., slide JCK 6141.

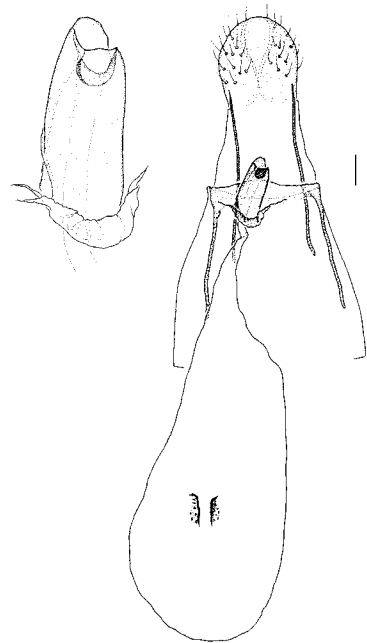


Figs 216-217. *Cosmopterix* spp., female genitalia, sterigma enlarged. 216, *C. dapifera*, paratype, USA, Arizona, Madera Canyon, USNM 1350; 217, *C. diaphora*, Mexico, Veracruz-Llave, Tampico, slide JCK 5497.

218

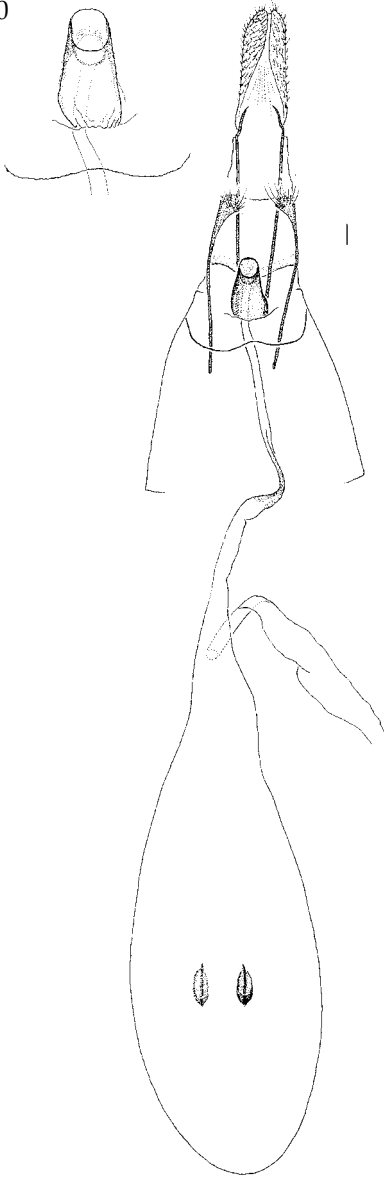


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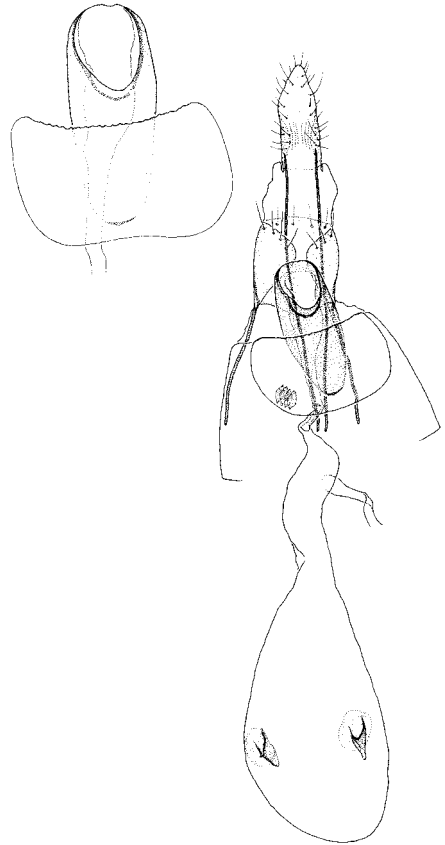


Figs 218-219. *Cosmopterix* spp., female genitalia, sterigma enlarged. 218, *C. ebriola*, USA, South Carolina, Charleston Co., slide JCK 5743; 219, *C. erasmia*, Brazil, Amazonas, Parintins, slide BM 29284.

220

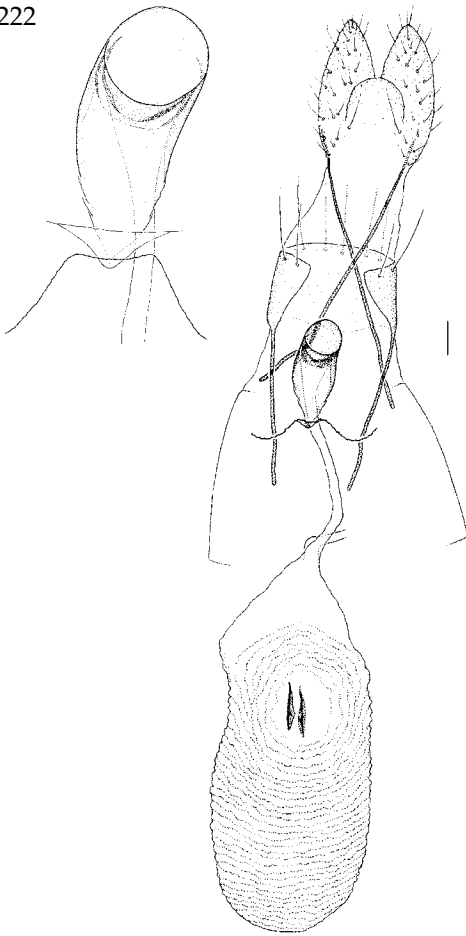


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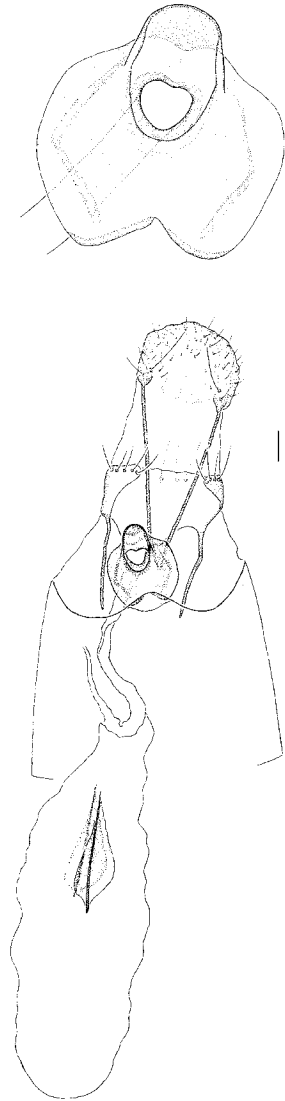


Figs 220-221. *Cosmopterix* spp., female genitalia, sterigma enlarged, 220, *C. erinome*, paratype, USA, Mississippi, Harrison Co., slide JCK 6121; 221, *C. etmylaurae*, paratype, Costa Rica, San José, San Pedro, slide JCK 5799.

222



223



Figs 222-223. *Cosmopterix* spp., female genitalia, sterigma enlarged. 222, *C. euanthe*, paratype, Brazil, Distrito Federal, Planaltina, slide JCK 5450; 223, *C. eukelade*, holotype, slide BM 15927.

225

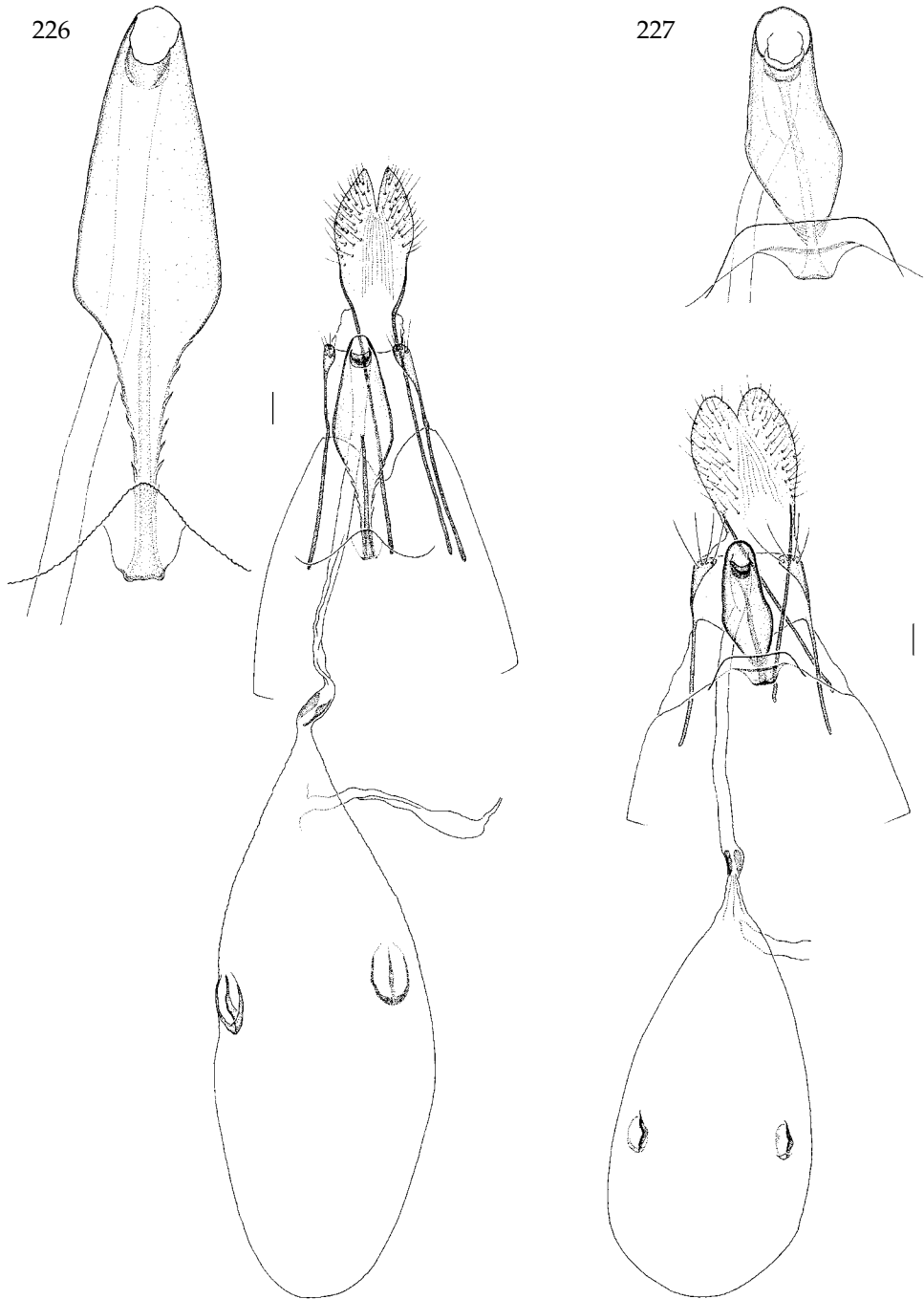


224



Figs 224-225. *Cosmopterix* spp., female genitalia, sterigma enlarged. 224, *C. euporie*, paratype, Brazil, Distrito Federal, Planaltina, slide JCK 5448; 225, *C. facunda*, holotype, slide UNSM 3941.





Figs 226-227. *Cosmopterix* spp., female genitalia, sterigma enlarged. 226, *C. fernaldella*, Canada, Québec, Alymer, slide JCK 4043; 227, *C. floridanella*, USA, Florida, Lake Placid, slide JCK 5790.

228



229



Figs 228-229. *Cosmopterix* spp., female genitalia, sterigma enlarged. 228, *C. galapagosensis*, paratype, Ecuador, Galápagos, Sta Cruz, slide JCK 5709; 229, *C. gemmiferella*, USA, Arkansas, Wash. Co., slide JCK 5791.

230

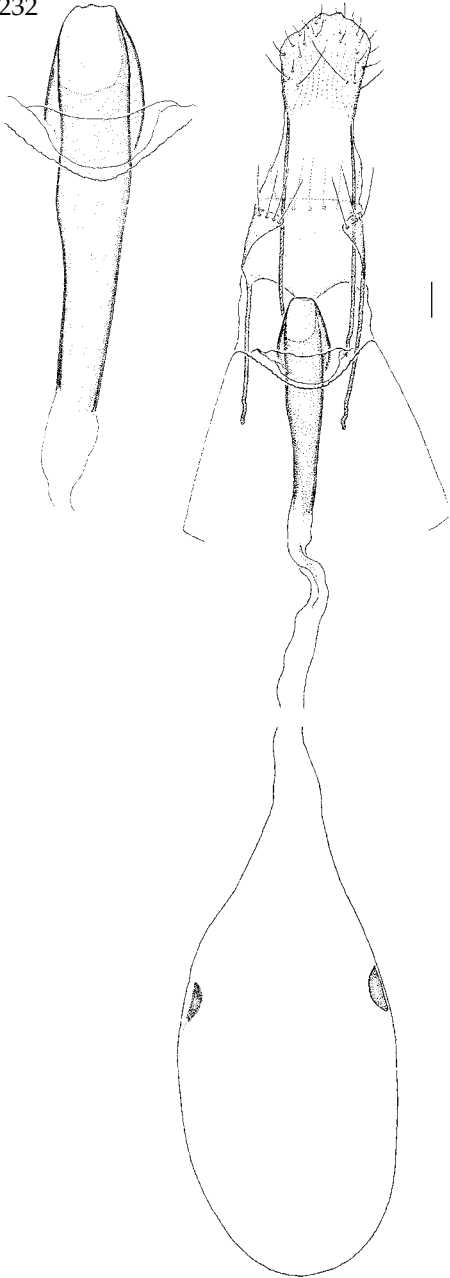


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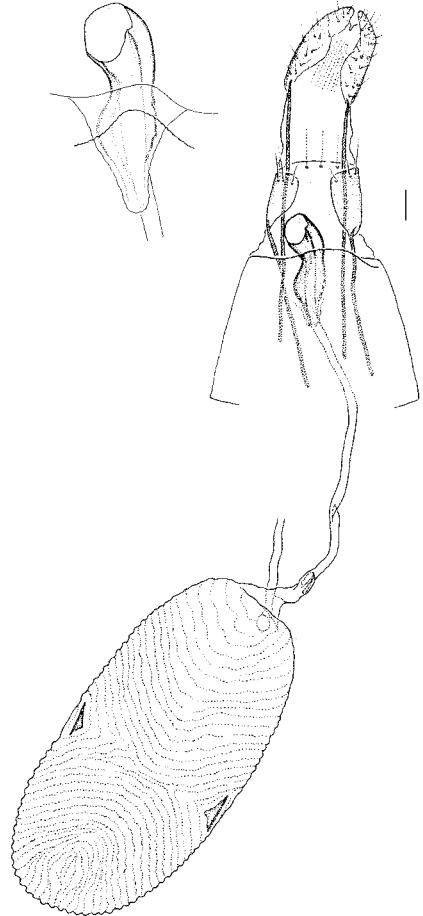


Figs 230-231. *Cosmopterix* spp., female genitalia, sterigma enlarged. 230, *C. gomezpompai*, holotype, slide JCK 6171; 231, *C. harpalyke*, paratype, Brazil, Distrito Federal, Planaltina, slide JCK 5505.

232



233



Figs 232-233. *Cosmopterix* spp., female genitalia, sterigma enlarged. 232, *C. hermippe*, holotype, slide JCK 5504; 233, *C. himalia*, holotype, slide JCK 5438.

234

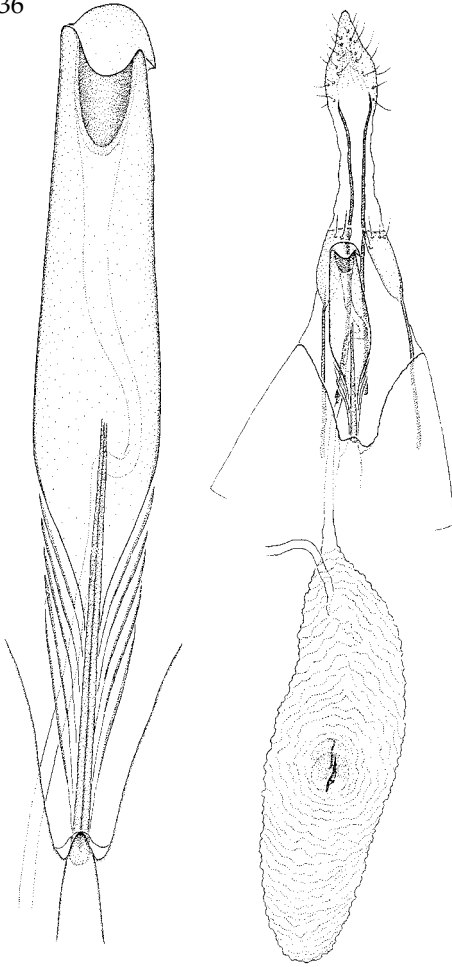


235



Figs 234-235. *Cosmopterix* spp., female genitalia, sterigma enlarged. 234, *C. inopis*, USA, Florida, Homestead, slide USNM 3905; 235, *C. interfracta*, Jamaica, Moneagua, slide BM 31232.

236



237



Figs 236-237. *Cosmopterix* spp., female genitalia, sterigma enlarged. 236, *C. irrubricata*, Jamaica, Runaway Bay, slide BM 29287; 237, *C. langmaidii*, holotype, Belize, Cayo Distr., slide BM 29944.

238

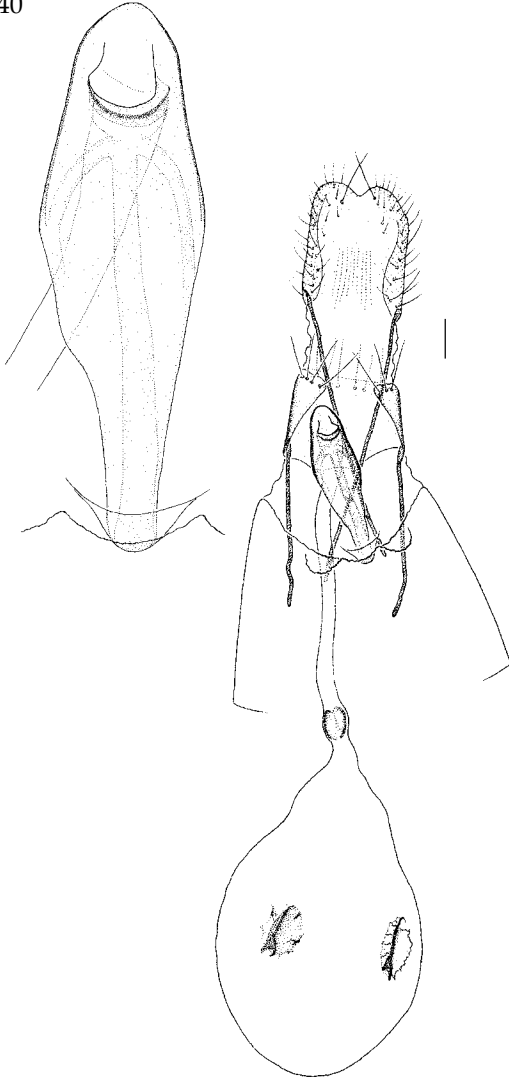


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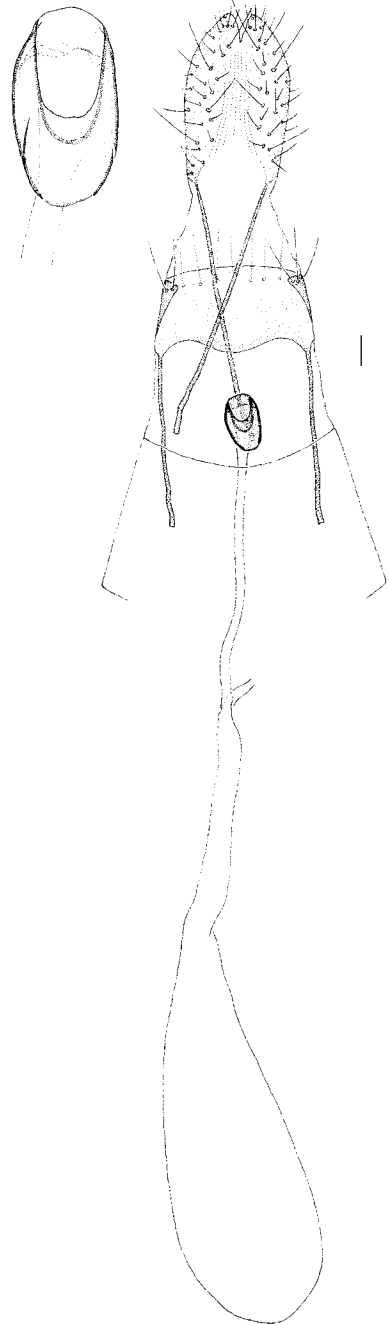


Figs 238-239. *Cosmopterix* spp., female genitalia, sterigma enlarged. 238, *C. lespedezae*, USA, Mississippi, Winston Co., slide JCK 5800; 239, *C. lummyae*, paratype, Brazil, Distrito Federal, Planaltina, slide JCK 5124.

240

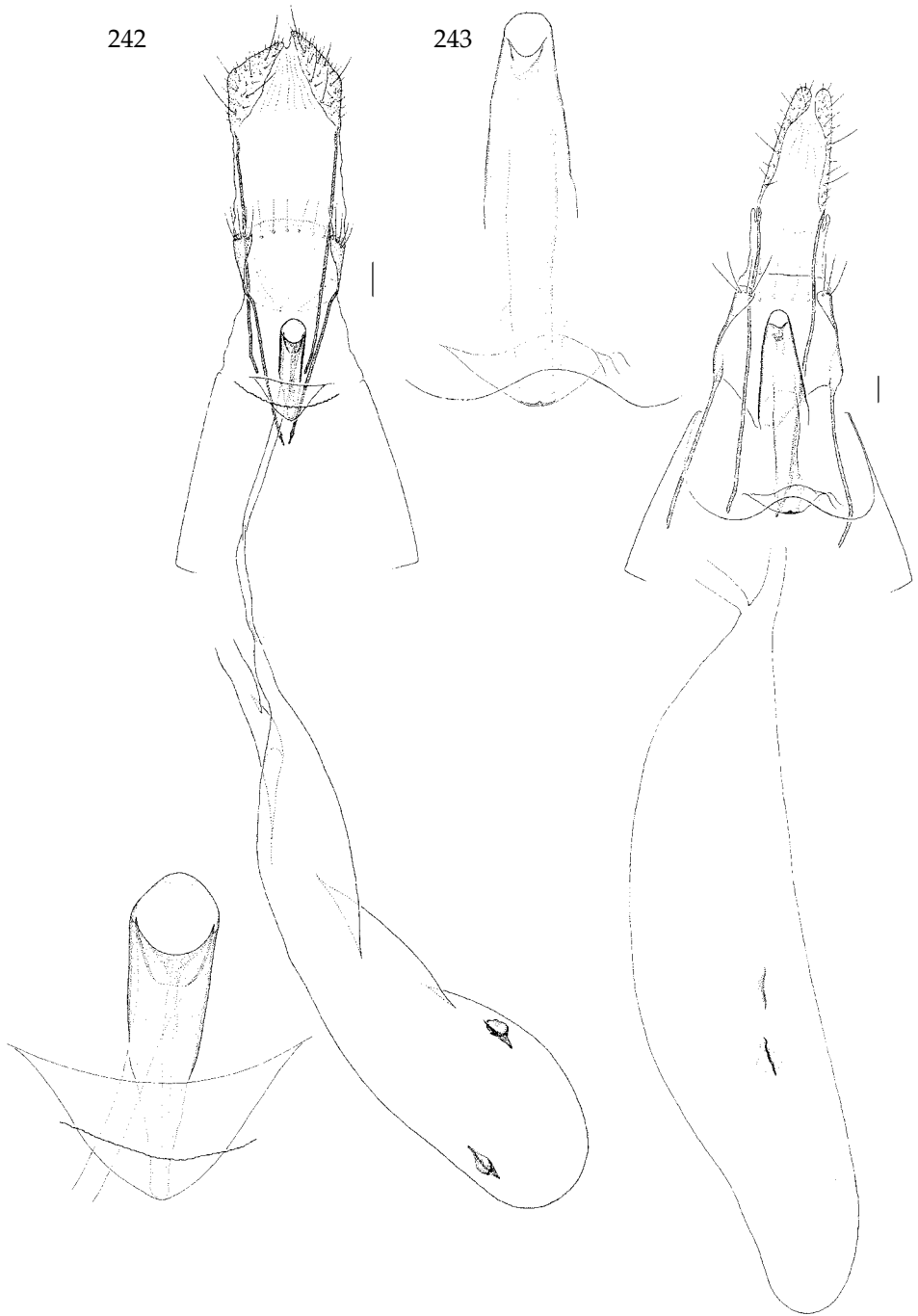


241



Figs 240-241. *Cosmopterix* spp., female genitalia, sterigma enlarged. 240, *C. lysithea*, holotype, Brazil, Distrito Federal, Planaltina, slide JCK 5437; 241, *C. madeleinae*, Ecuador, Galápagos, San Cristóbal, slide BL 1263.





Figs 242-243. *Cosmopterix* spp., female genitalia, sterigma enlarged, 242, *C. mneme*, holotype, Brazil, Bahia, Barra Grande, slide JCK 5451; 243, *C. molybdina*, USA, Maine, Bar Harbor, slide USNM 4239.

244



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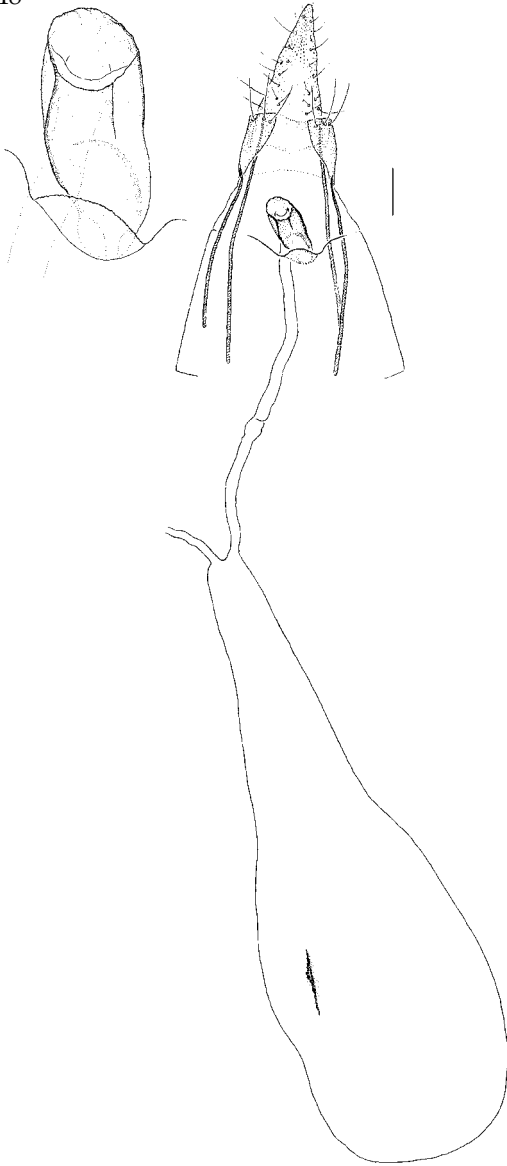


Figs 244-245. *Cosmopterix* spp., female genitalia, sterigma enlarged. 244, *C. montisella*, USA, Arizona, Santa Rita Mtns., slide JCK 5744; 245, *C. nishidai*, paratype, Costa Rica, San José, San Pedro, slide JCK 5488.

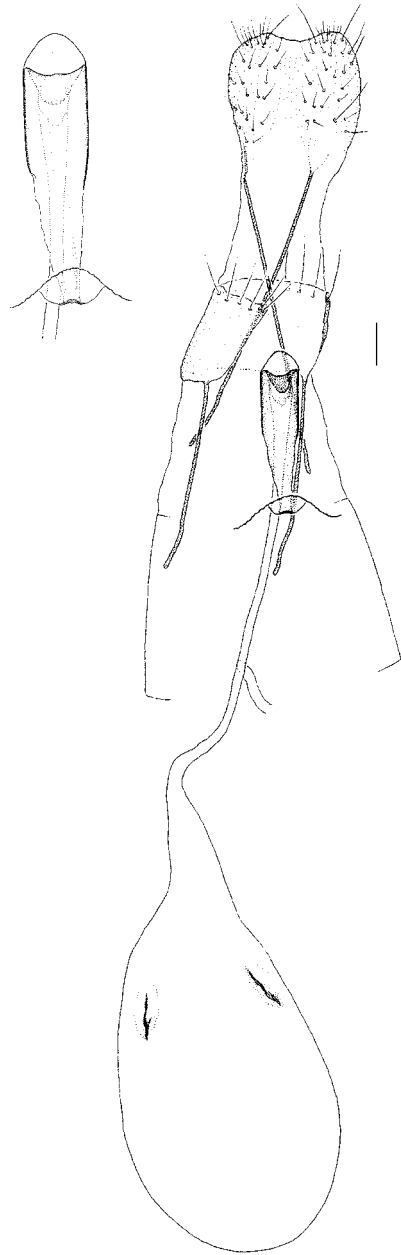


Figs 246-247. *Cosmopterix* spp., female genitalia, sterigma enlarged. 246, *C. nitens*, USA, S.W. Texas, slide BM 31220; 247, *C. opulenta*, USA, Arizona, Santa Rita Mnts., slide USNM 2596.

248



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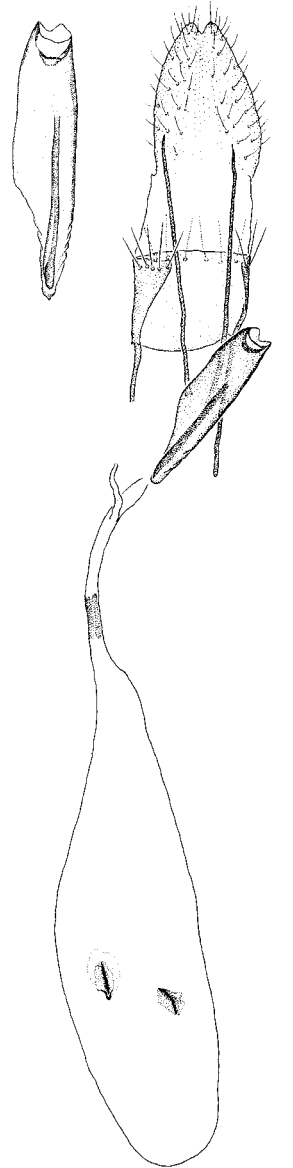


Figs 248-249. *Cosmopteryx* spp., female genitalia, sterigma enlarged. 248, *C. pentachorda*, Ecuador, Huigra, slide BM 29292; 249, *C. pimmaarteni*, paratype, Brazil, Distrito Federal, Planaltina, slide JCK 5494.

250



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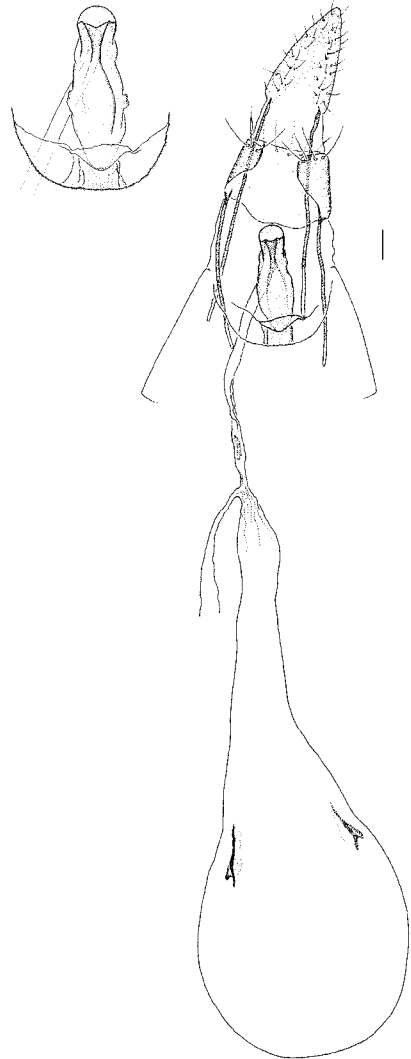


Figs 250-251. *Cosmopterix* spp., female genitalia, sterigma enlarged. 250, *C. pulchrimella*, USA, Michigan, Keweenaw Co., slide JCK 6104; 251, *C. pyrozela*, holotype, slide JFGC 6158.

252



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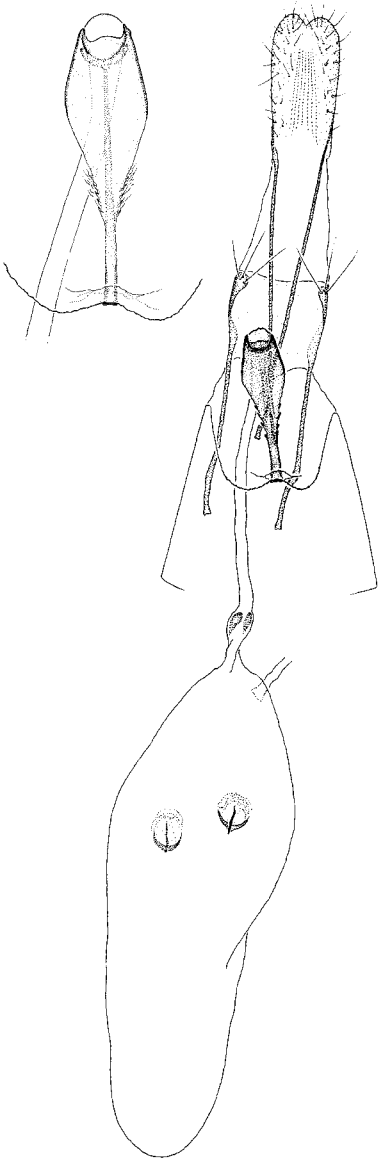


Figs 252-253. *Cosmopterix* spp., female genitalia, sterigma enlarged. 252, *C. quadrilineella*, USA, Arkansas, Hope, slide BM 31222; 253, *C. saltensis*, paratype, Argentina, Salta, Quebrada del Toro, slide JCK 4476.

254



255



Figs 254-255. *Cosmopterix* spp., female genitalia, sterigma enlarged. 254, *C. schouteni*, holotype, slide JCK 4472; 255, *C. scirpicola*, USA, South Carolina, Charleston Co., slide JCK 5793.

256



257



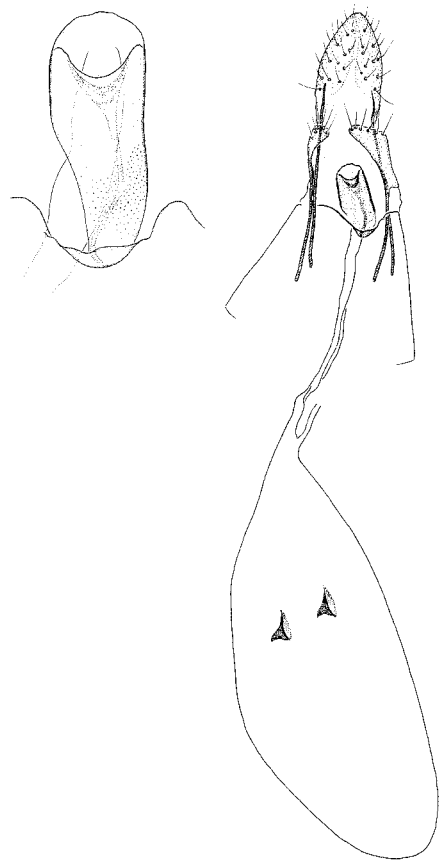
Figs 256-257. *Cosmopterix* spp., female genitalia, sterigma enlarged. 256, *C. similis*, holotype, US Virgin Islands, St. Thomas, slide BM 29911; 257, *C. sinelinea*, USA, South Carolina, McClellanville, slide JCK 5796.



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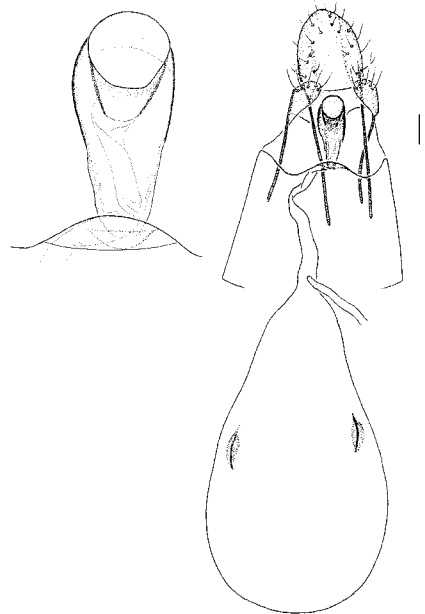


Figs 258-259. *Cosmopterix* spp., female genitalia, sterigma enlarged. 258, *C. teligera*, lectotype, slide JFGC 6144; 259, *C. thebe*, paratype, Peru, Yurimaguas, slide BM 29289.

260

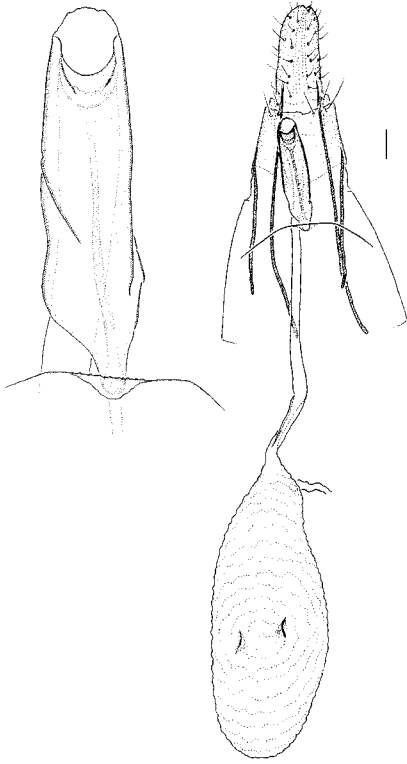


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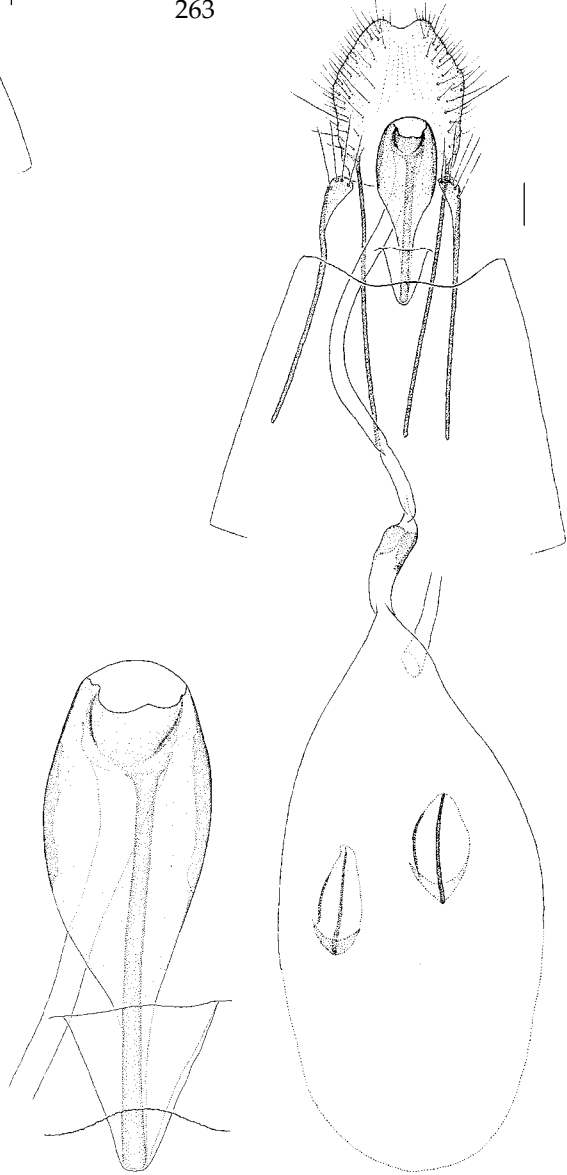


Figs 260-261. *Cosmopterix* spp., female genitalia, sterigma enlarged. 260, *C. thelxinoe*, paratype, Brazil, Distrito Federal, Planaltina, slide JCK 5471; 261, *C. thrasyzela*, Brazil, Para, slide BM 29298.

262



263



Figs 262-263. *Cosmopterix* spp., female genitalia, sterigma enlarged. 262, *C. trifasciella*, paratype, Ecuador, Huigra, slide BM 29290 ; 263, *C. vandervolffi*, paratype, Puerto Rico, Patillas, slide JCK 5441.

264

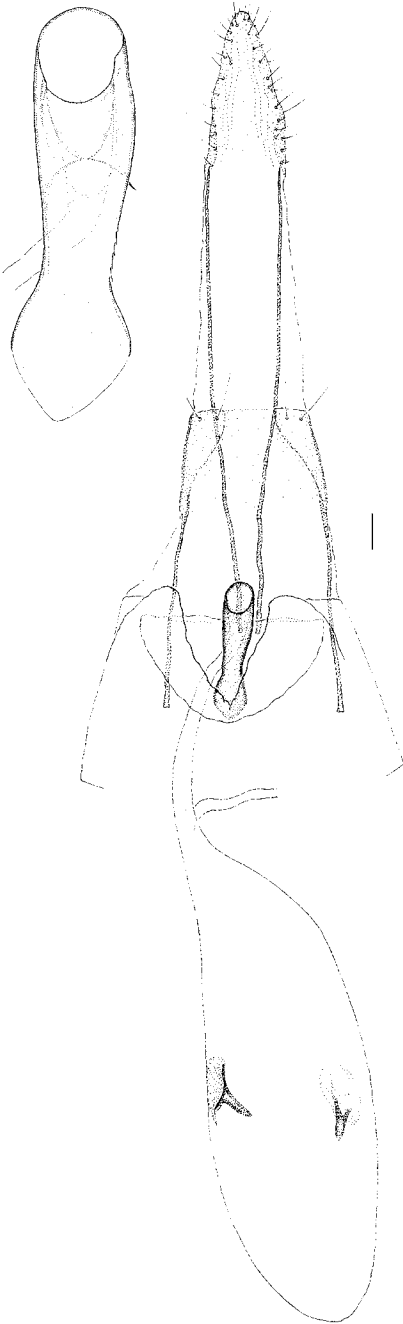


265



Figs 264-265. *Cosmopterix* and *Pebobs* spp., female genitalia, sterigma enlarged. 264, *C. xanthura*, paratype, Mexico: Tabasco, Tapea, slide BM 29553; 265, *P. elara*, paratype, Jamaica, Runaway Bay, slide BM 29559.

266

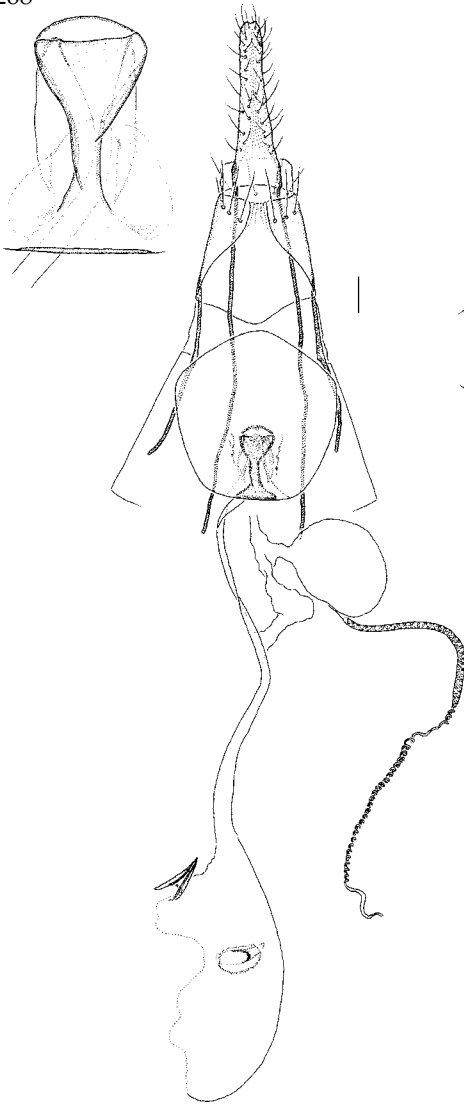


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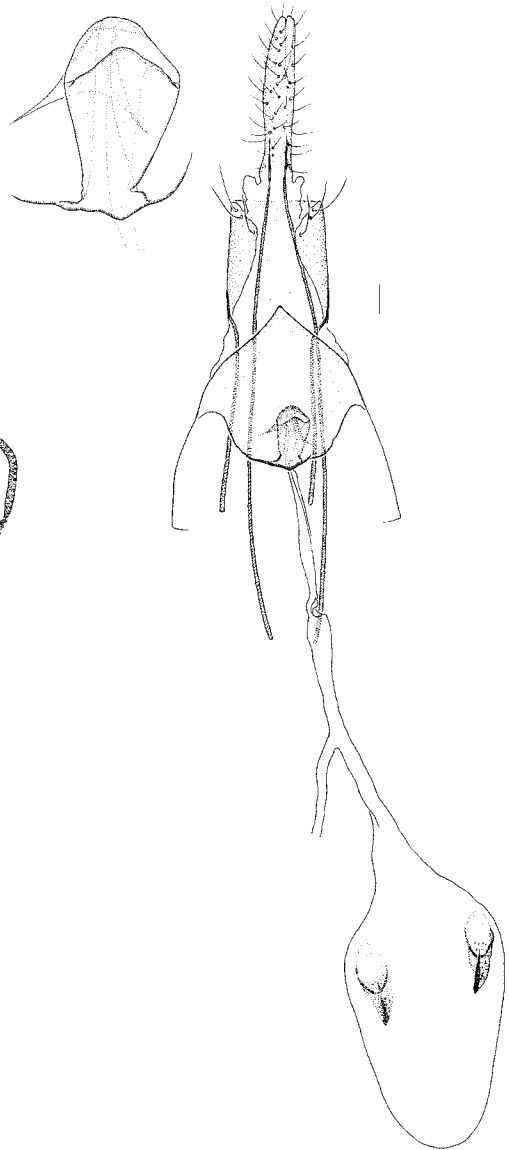


Figs 266-267. *Pebobs* spp., female genitalia, sterigma enlarged. 266, *P. ipomoeae*, USA, Florida, Ft. Lauderdale, slide USNM 3945; 267, *P. isonoe*, paratype, Brazil, R. Trobetas, slide BM 29286.

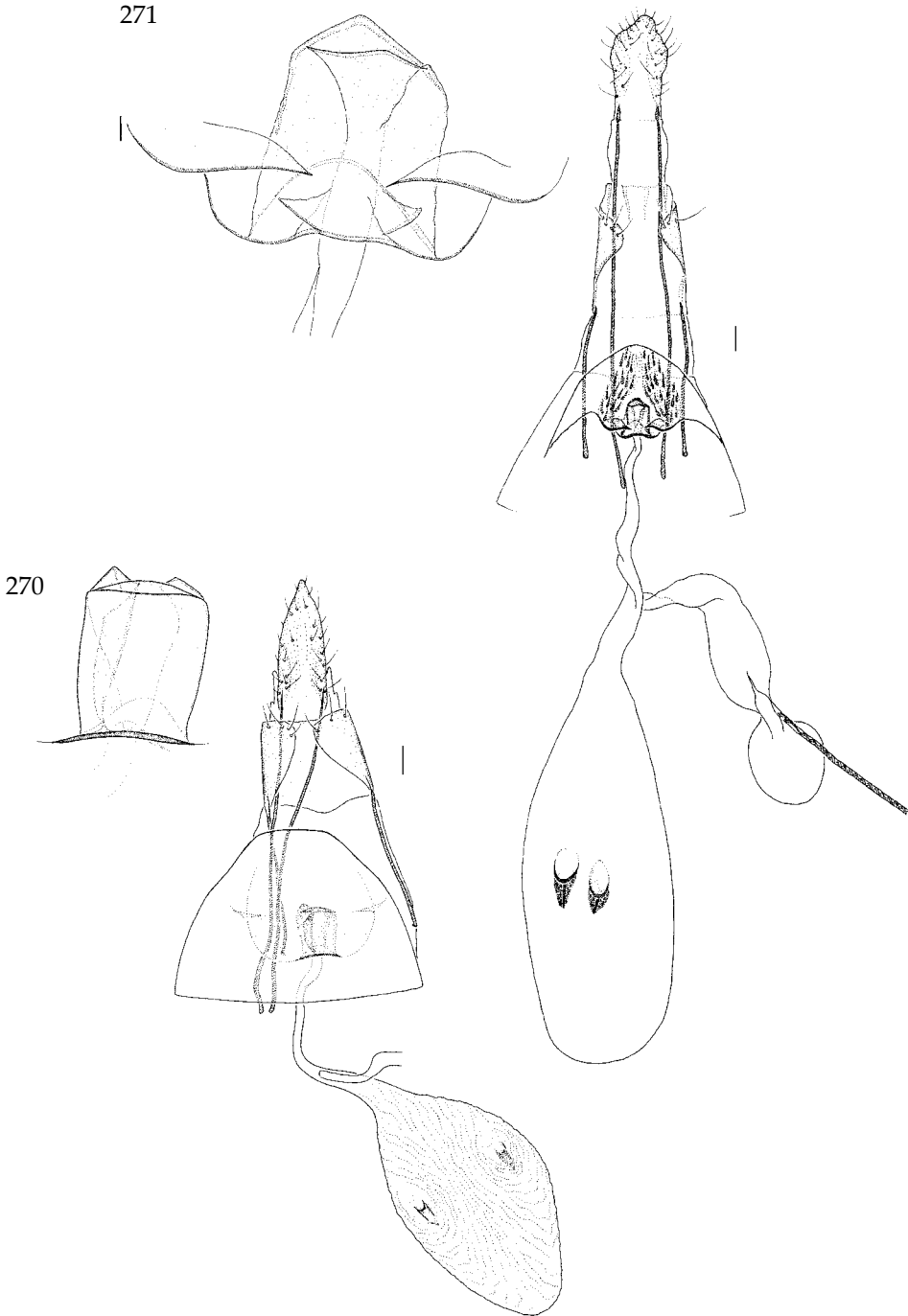
268



269



Figs 268-269. *Pebobs* spp., female genitalia, sterigma enlarged. 268, *P. kale*, paratype, Trinidad and Tobago, St. George, slide BM 29934; 269, *P. sanctivincenti*, Grenada, Chantilly Est. (Windward side), slide BM 29293.



Figs 270-271. *Pebobs* spp., female genitalia, sterigma enlarged. 270, *P. tetragramma*, Guyana, Bartica, slide BM 29295; 271, *P. spec.*, Puerto Rico, Patillas, slide JCK 5481.

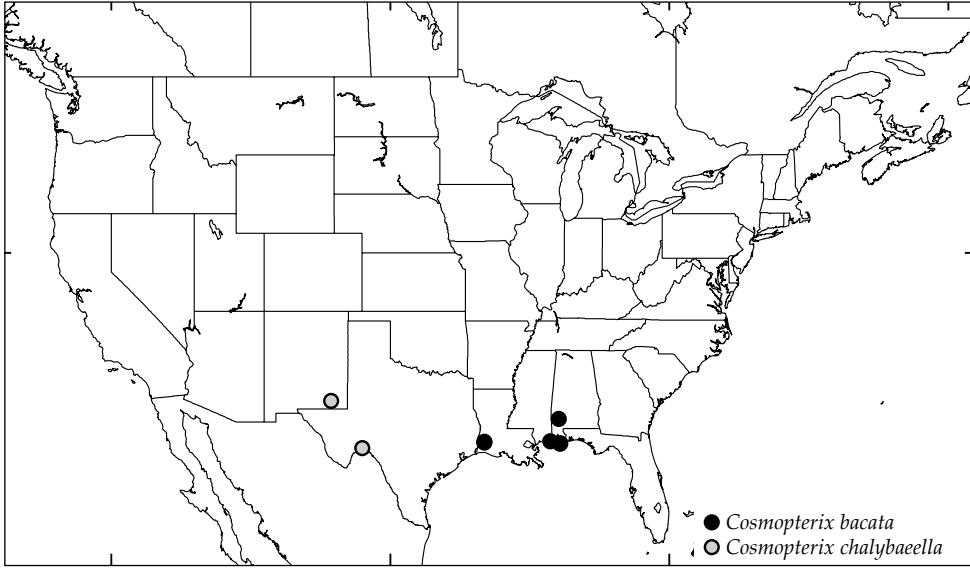


Fig. 272. *Cosmopterix* spp., distribution. *C. bacata* (closed dots) and *C. chalybaeella* (open dots).

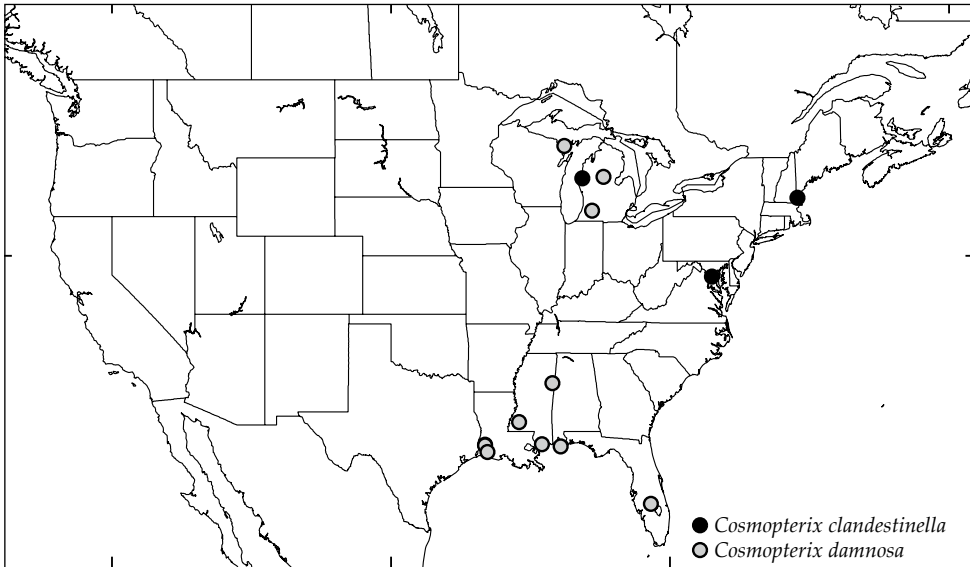


Fig. 273. *Cosmopterix* spp., distribution. *C. clandestinella* (closed dots) and *C. damnosa* (open dots).



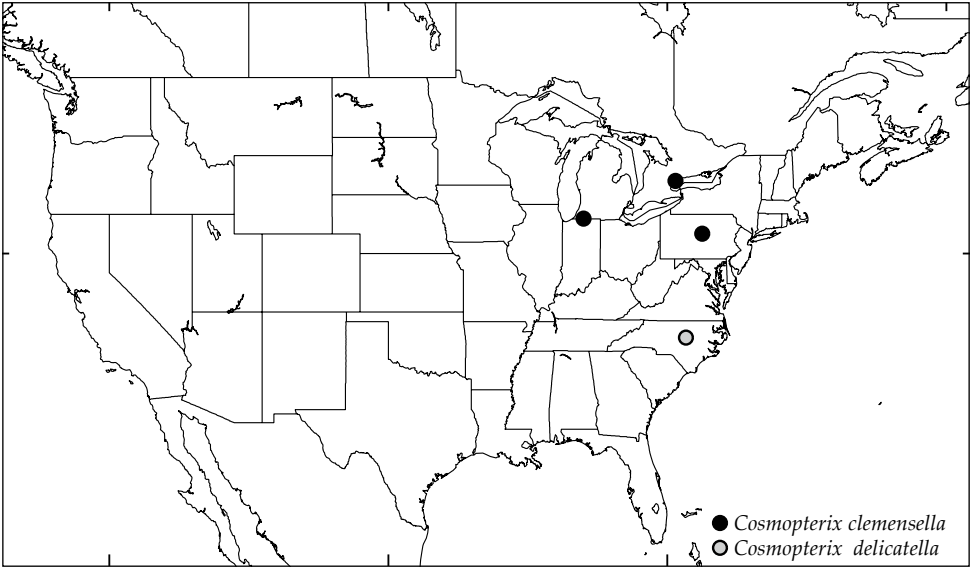


Fig. 274. *Cosmopterix* spp., distribution. *C. clemensella* (closed dots) and *C. delicatella* (open dot).

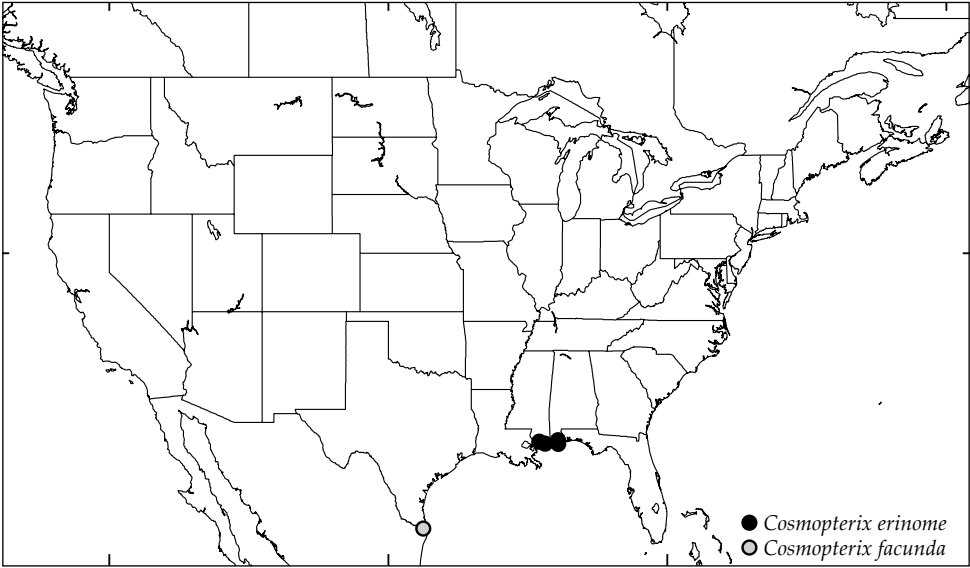


Fig. 275. *Cosmopterix* spp., distribution. *C. erinome* (closed dots) and *C. facunda* (open dot).

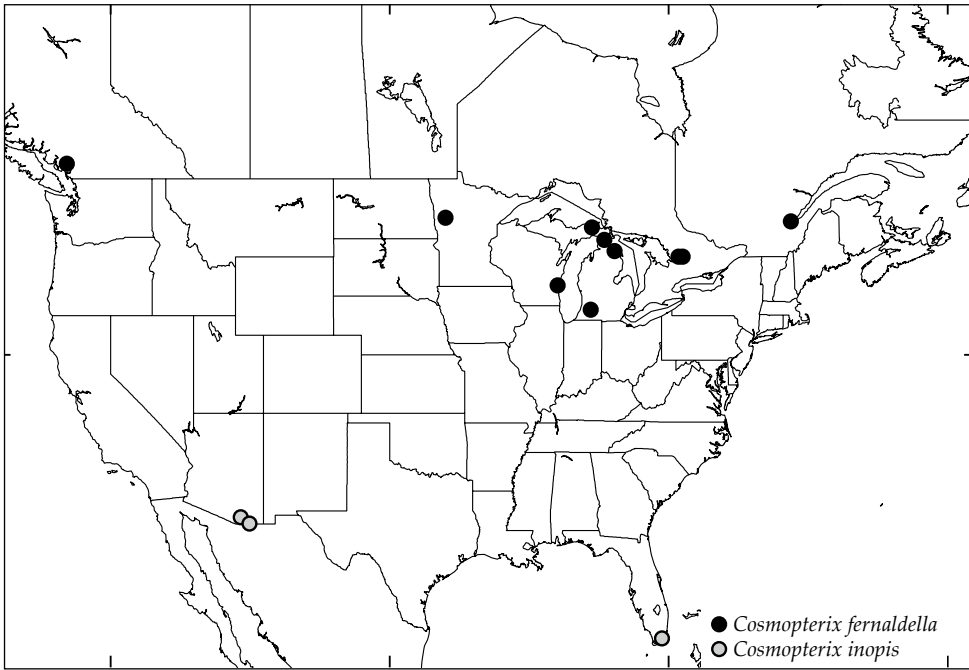


Fig. 276. *Cosmopteryx* spp., distribution. *C. fernaldella* (closed dots) and *C. inopis* (open dots).

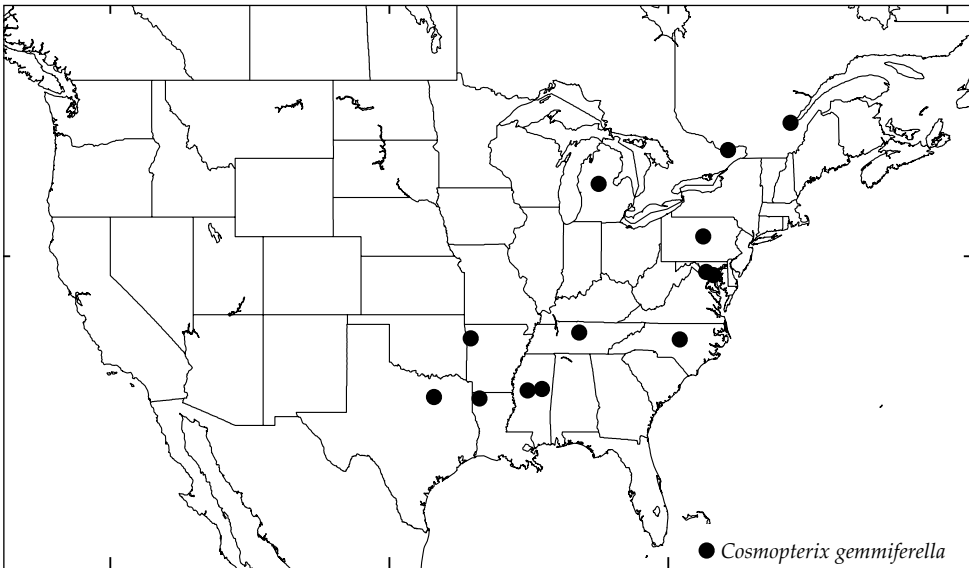


Fig. 277. *Cosmopteryx* spp., distribution. *C. gemmiferella*.

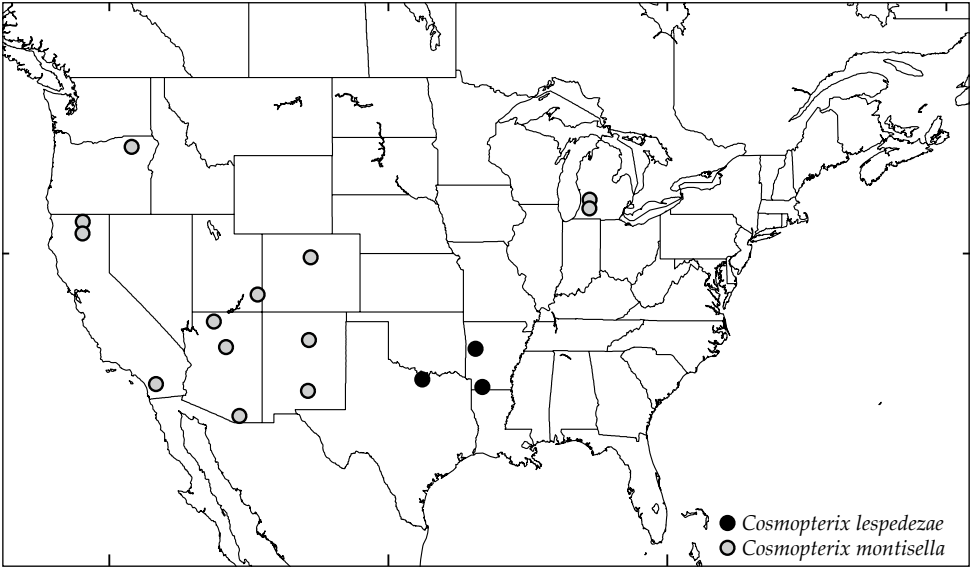


Fig. 278. *Cosmopterix* spp., distribution. *C. lespedezae* (closed dots) and *C. montisella* (open dots).



Fig. 279. *Cosmopterix* spp., distribution. *C. molybdina*.



Fig. 280. *Cosmopterix* spp., distribution. *C. minutella* (closed dot), *C. opulenta* (open dots) and *C. sinelinea* (triangle).

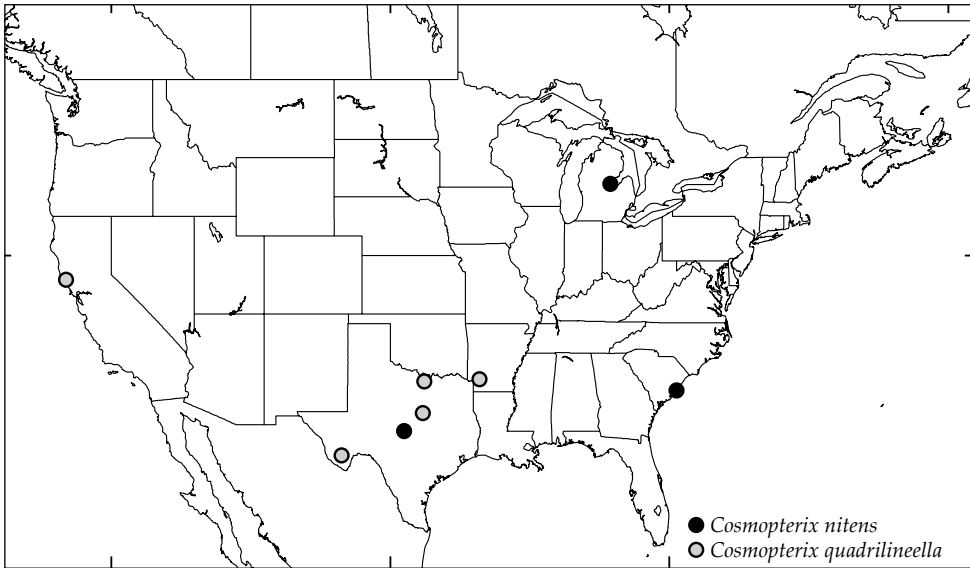


Fig. 281. *Cosmopterix* spp., distribution. *C. nitens* (closed dots) and *C. quadrilineella* (open dots).

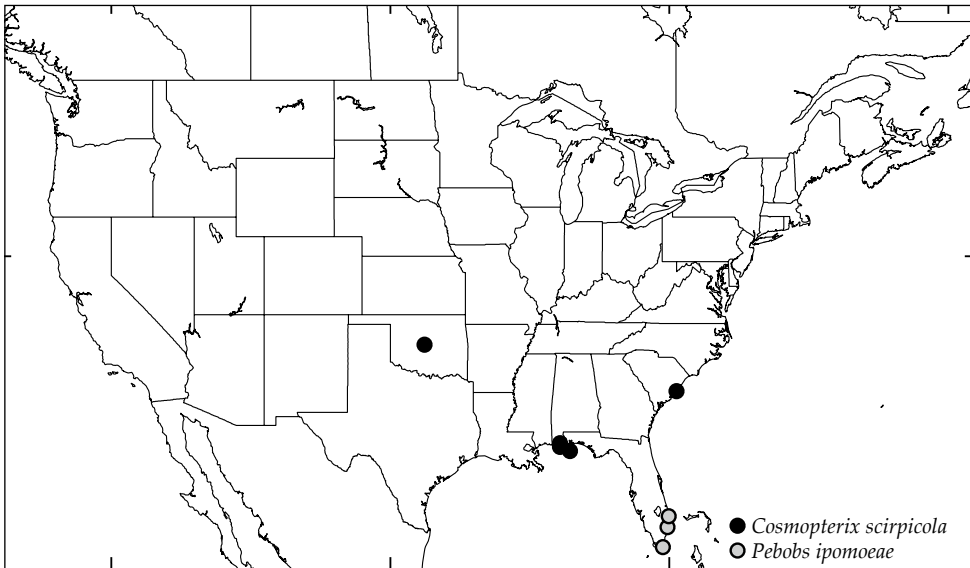


Fig. 282. *Cosmopterix* and *Pebobs* spp., distribution. *C. scirpicola* (closed dots) and *P. ipomoeae* (open dots).



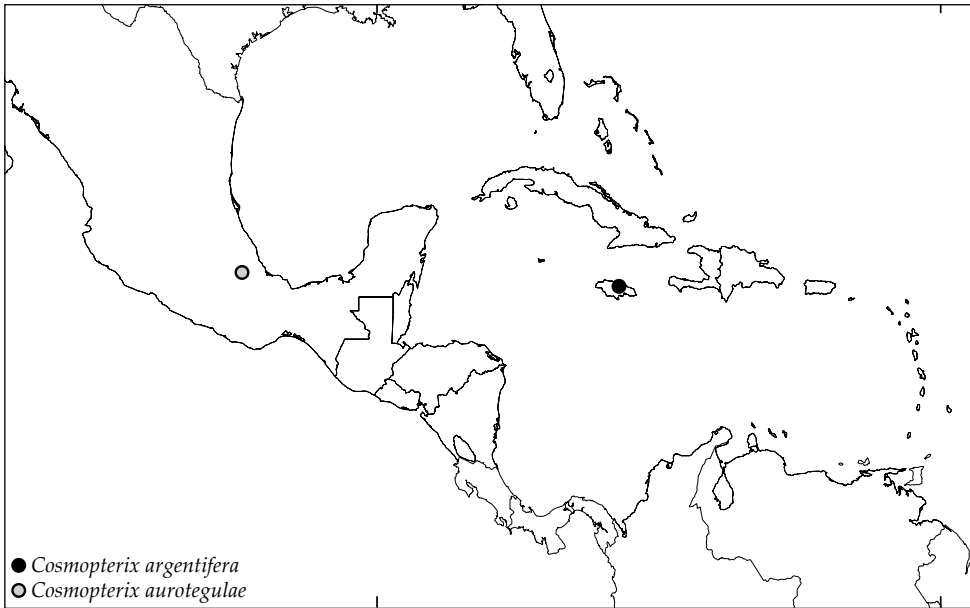


Fig. 285. *Cosmopterix* spp., distribution. *C. argentifera* (closed dot) and *C. aurotegulae* (open dot).

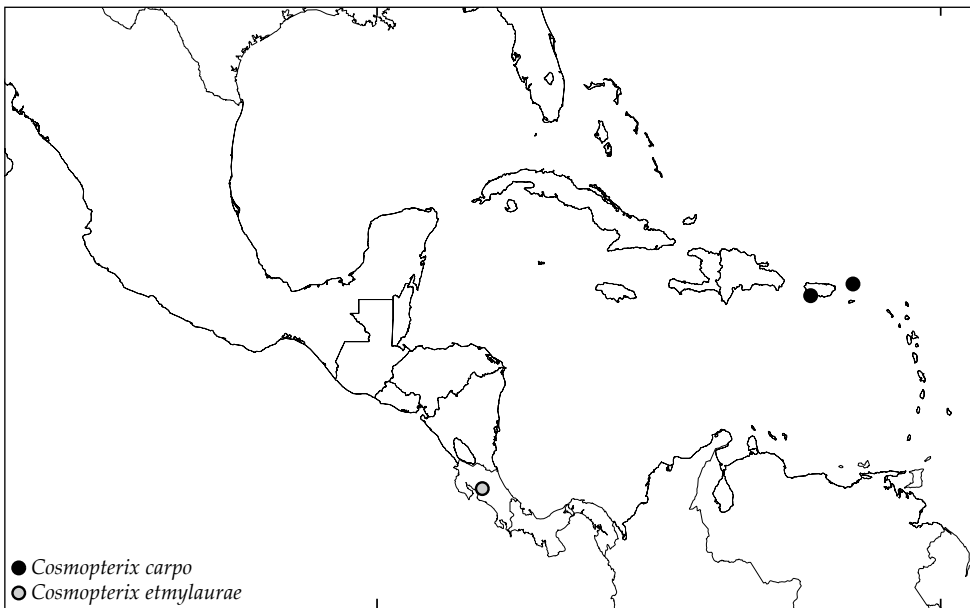


Fig. 286. *Cosmopterix* spp., distribution. *C. carpo* (closed dots) and *C. etmylaurae* (open dot).

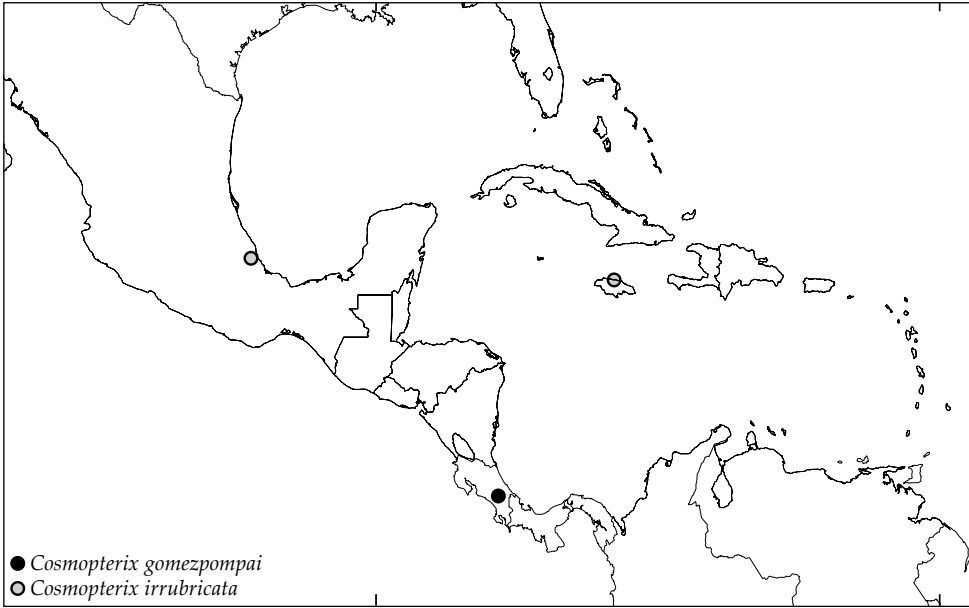


Fig. 287. *Cosmopterix* spp., distribution. *C. gomezpapai* (closed dot) and *C. irrubicata* (open dots).

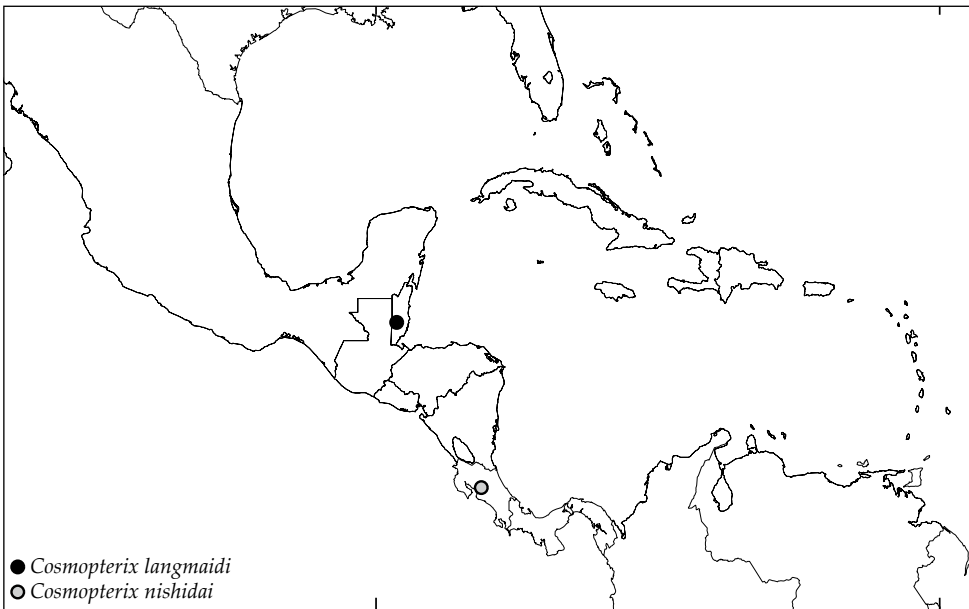


Fig. 288. *Cosmopterix* spp., distribution. *C. langmaidi* (closed dot) and *C. nishidai* (open dot).



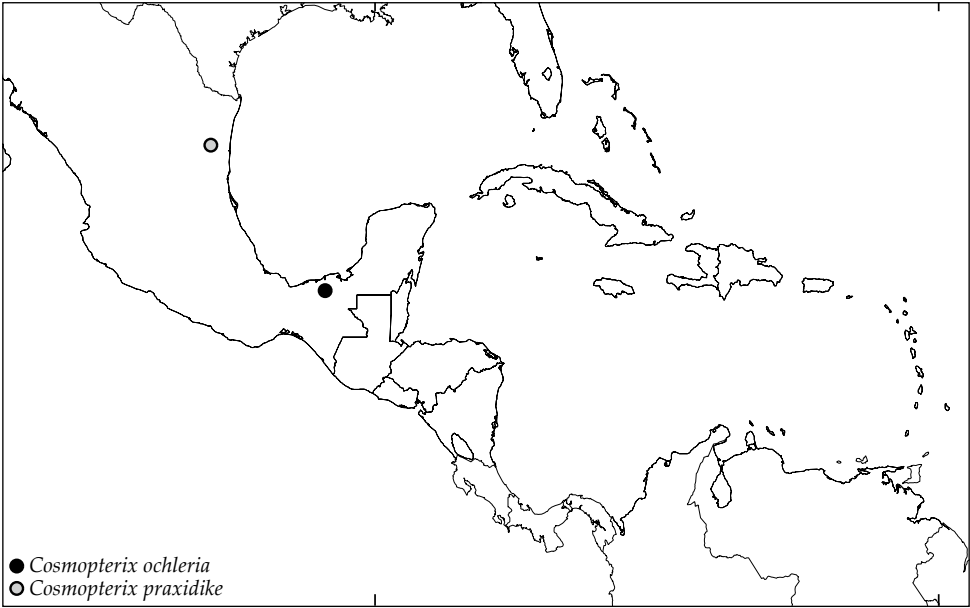


Fig. 289. *Cosmopterix* spp., distribution. *C. ochleria* (closed dot) and *C. praxidike* (open dot).

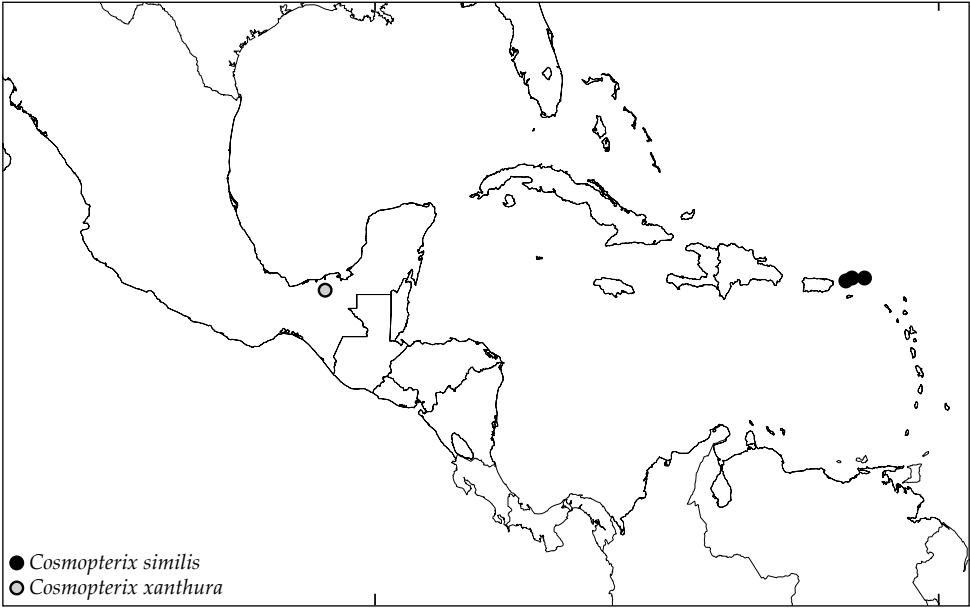


Fig. 290. *Cosmopterix* spp., distribution. *C. similis* (closed dots) and *C. xanthura* (open dot).



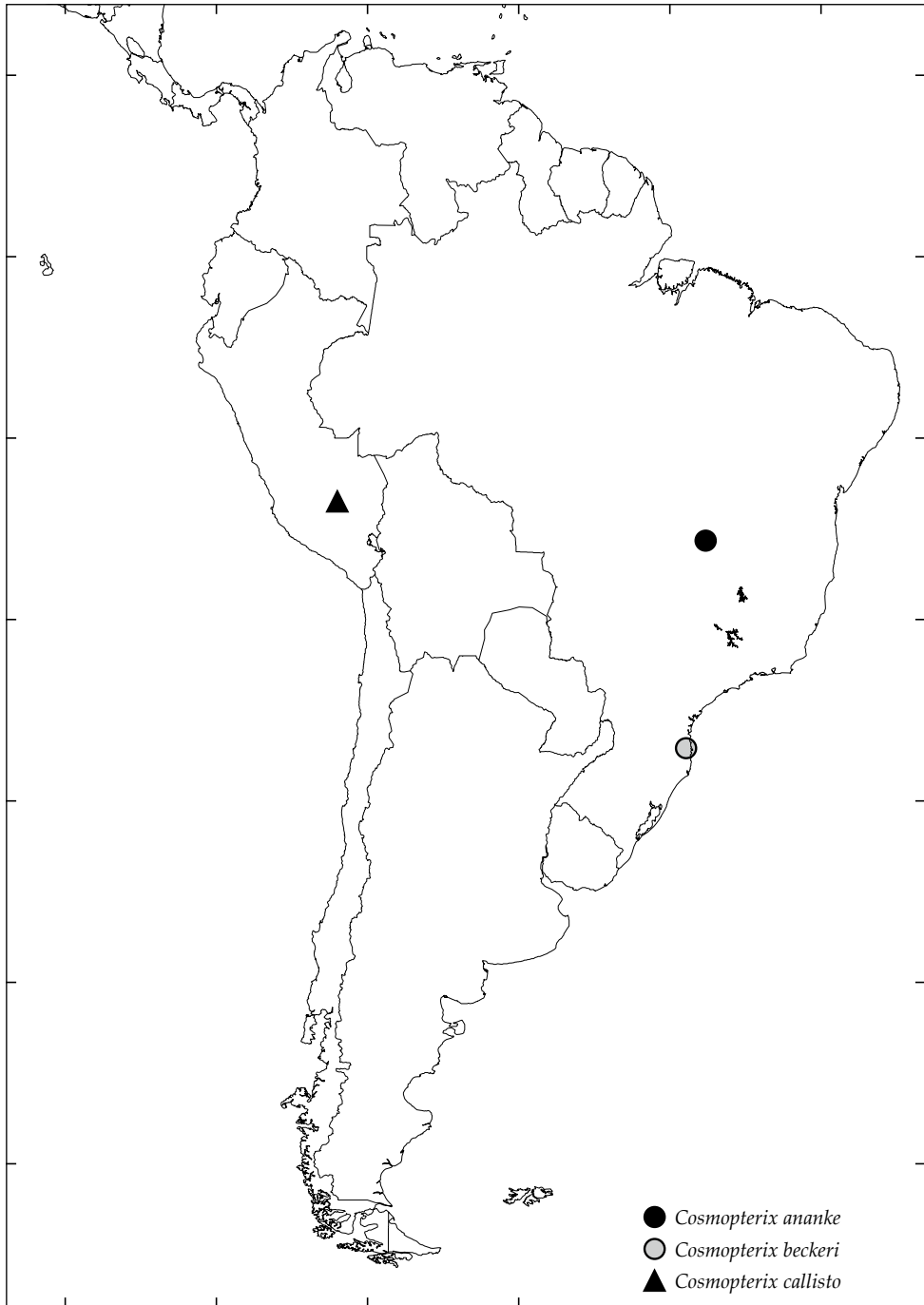


Fig. 293. *Cosmopterix* spp., distribution. *C. ananke* (closed dot), *C. beckeri* (open dot) and *C. callisto* (triangle).

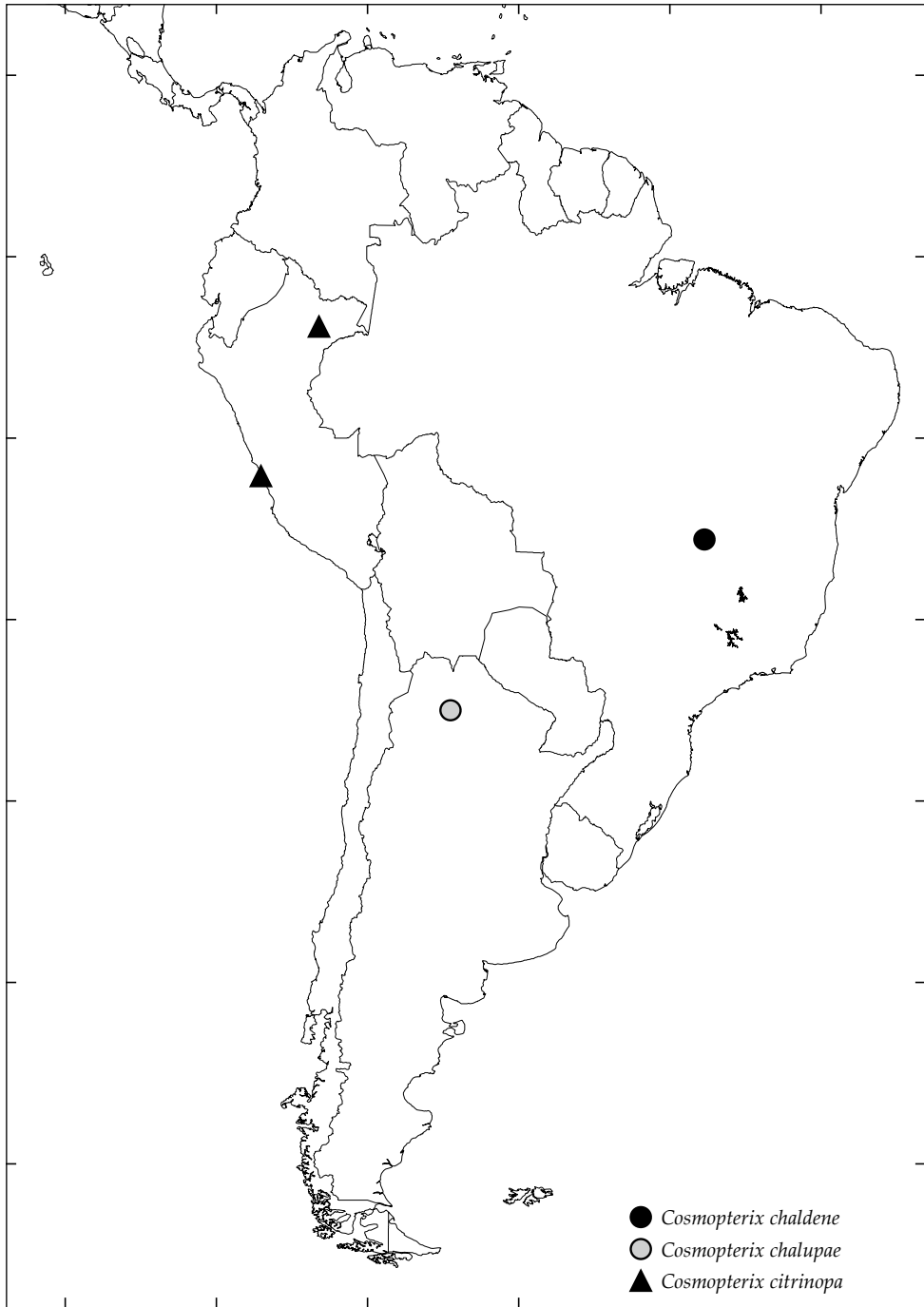


Fig. 294. *Cosmopterix* spp., distribution. *C. chaldene* (closed dot), *C. chalupae* (open dot) and *C. citrinopa* (triangles).

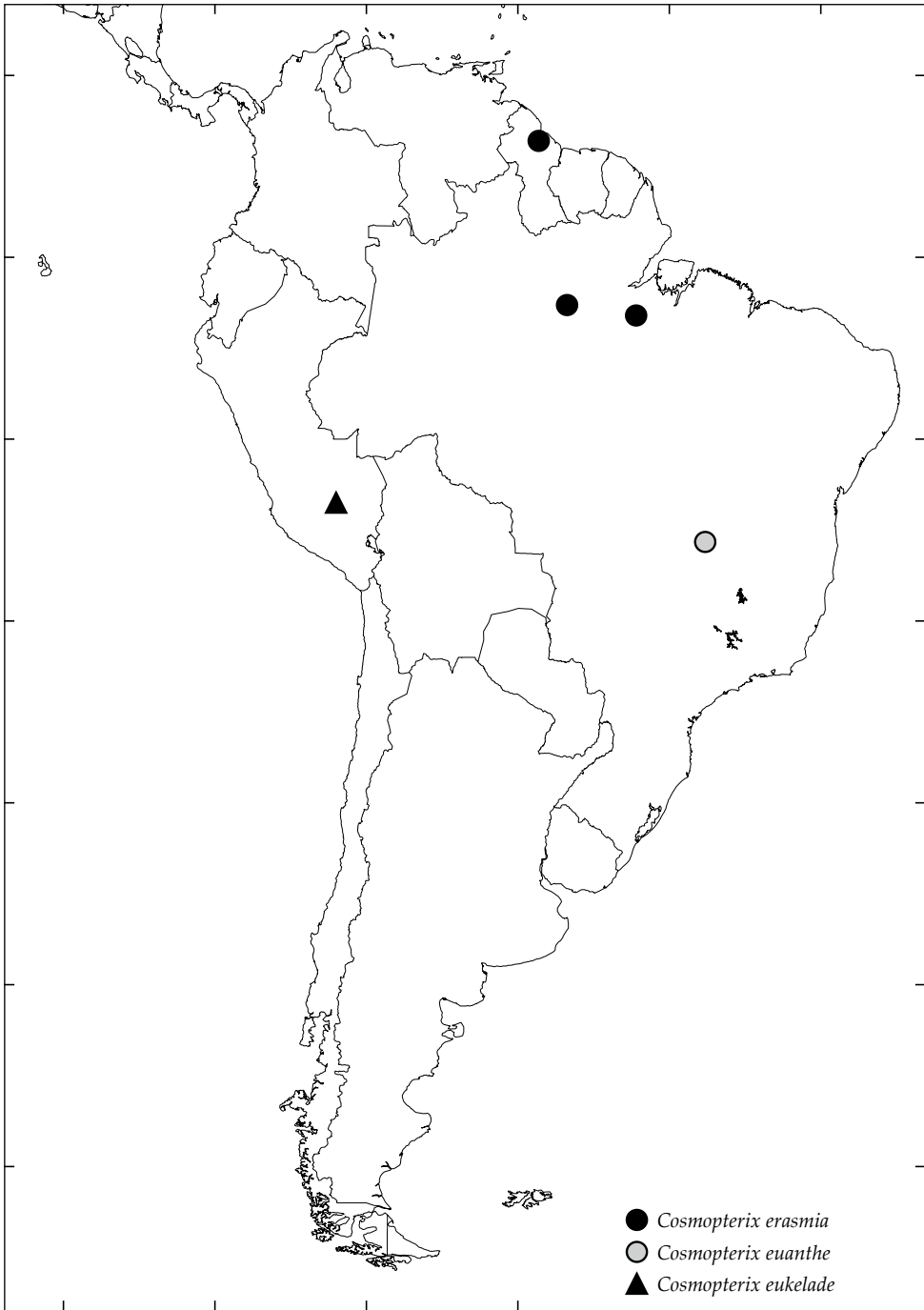


Fig. 295. *Cosmopterix* spp., distribution. *C. erasmia* (closed dots), *C. euanthe* (open dot) and *C. eukelade* (triangle).

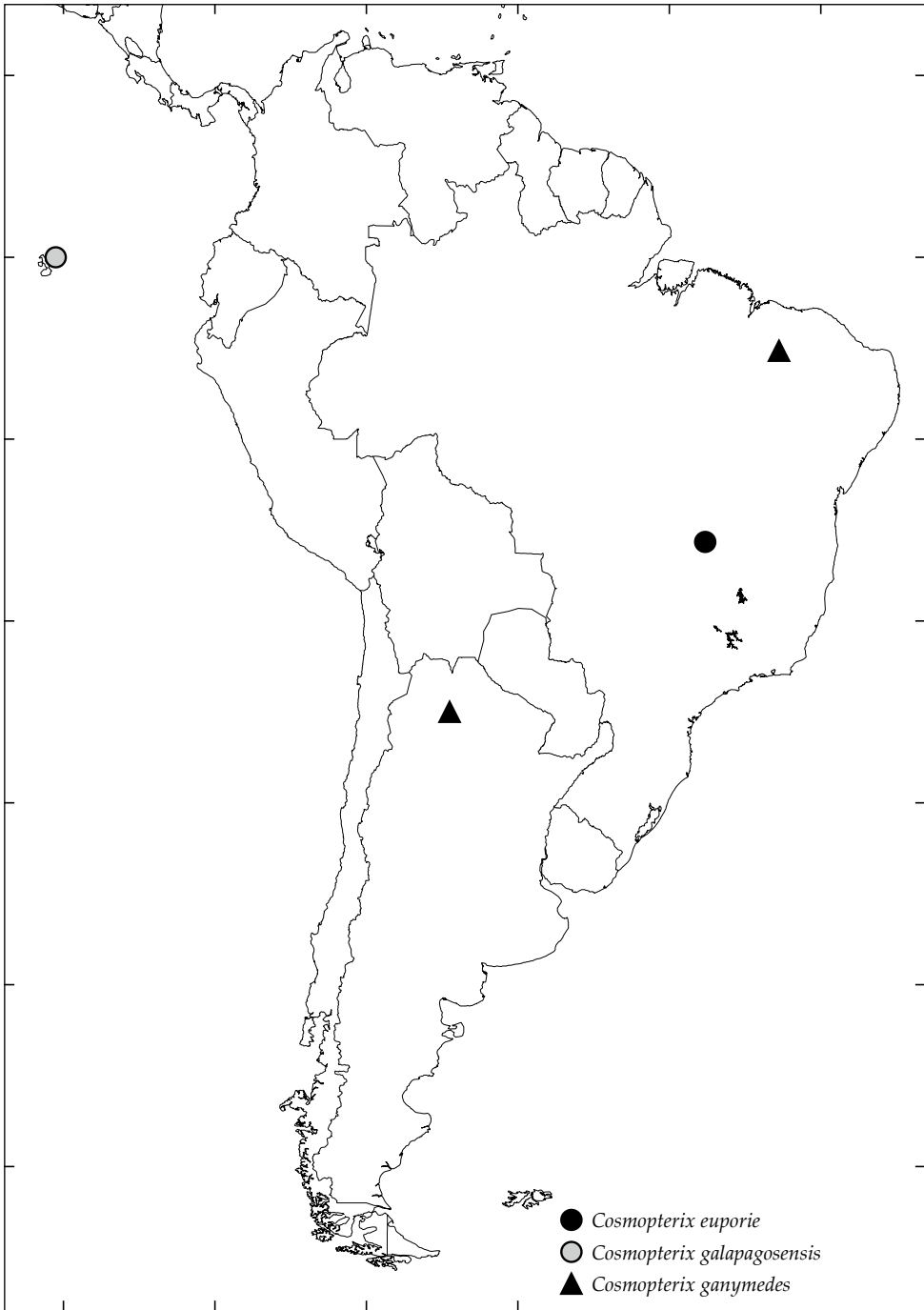


Fig. 296. *Cosmopteryx* spp., distribution. *C. euporie* (closed dot), *C. galapagosensis* (open dot) and *C. ganymedes* (triangles).

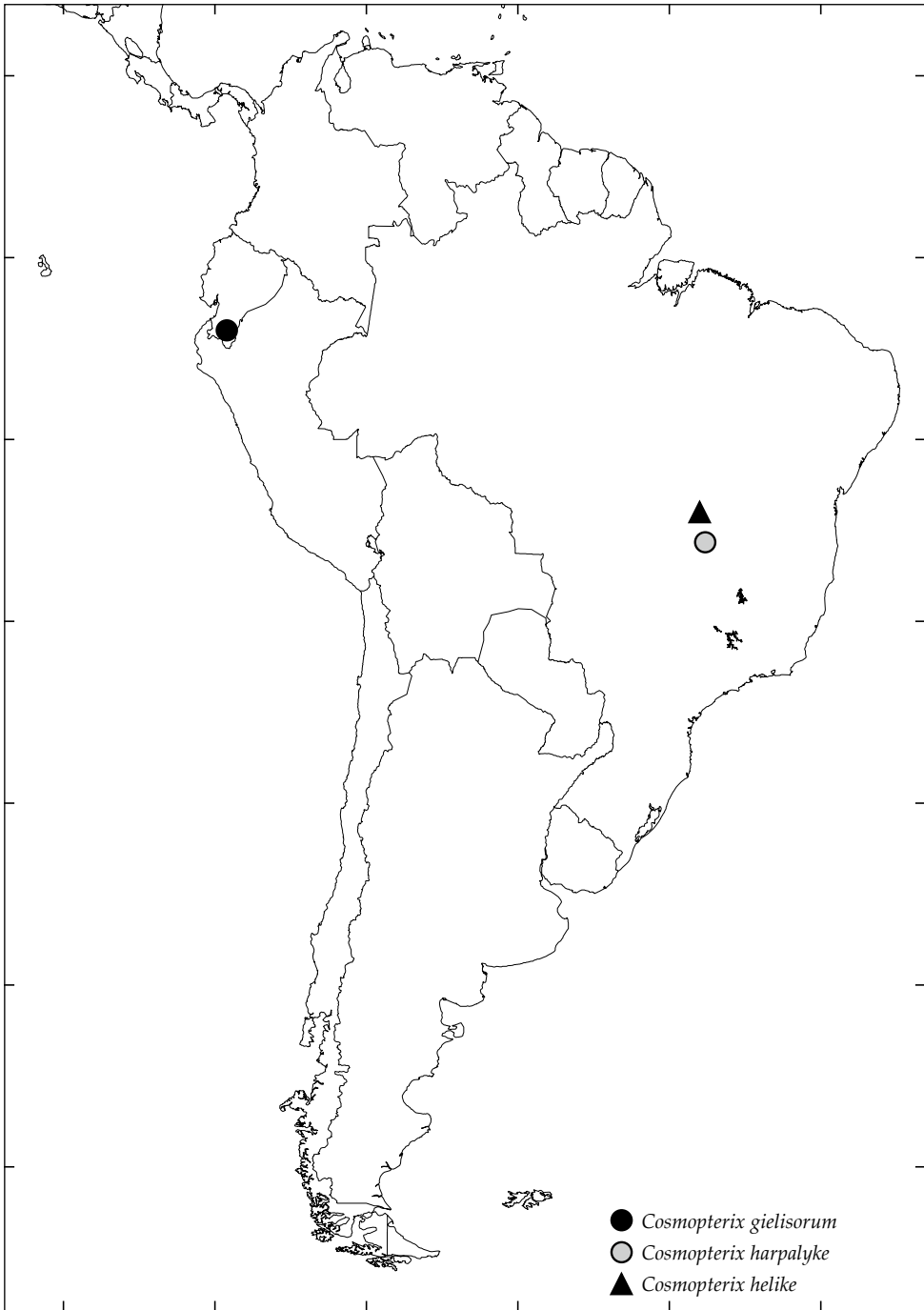


Fig. 297. *Cosmopterix* spp., distribution. *C. gielisorum* (closed dot), *C. harpalyke* (open dot) and *C. helike* (triangle).

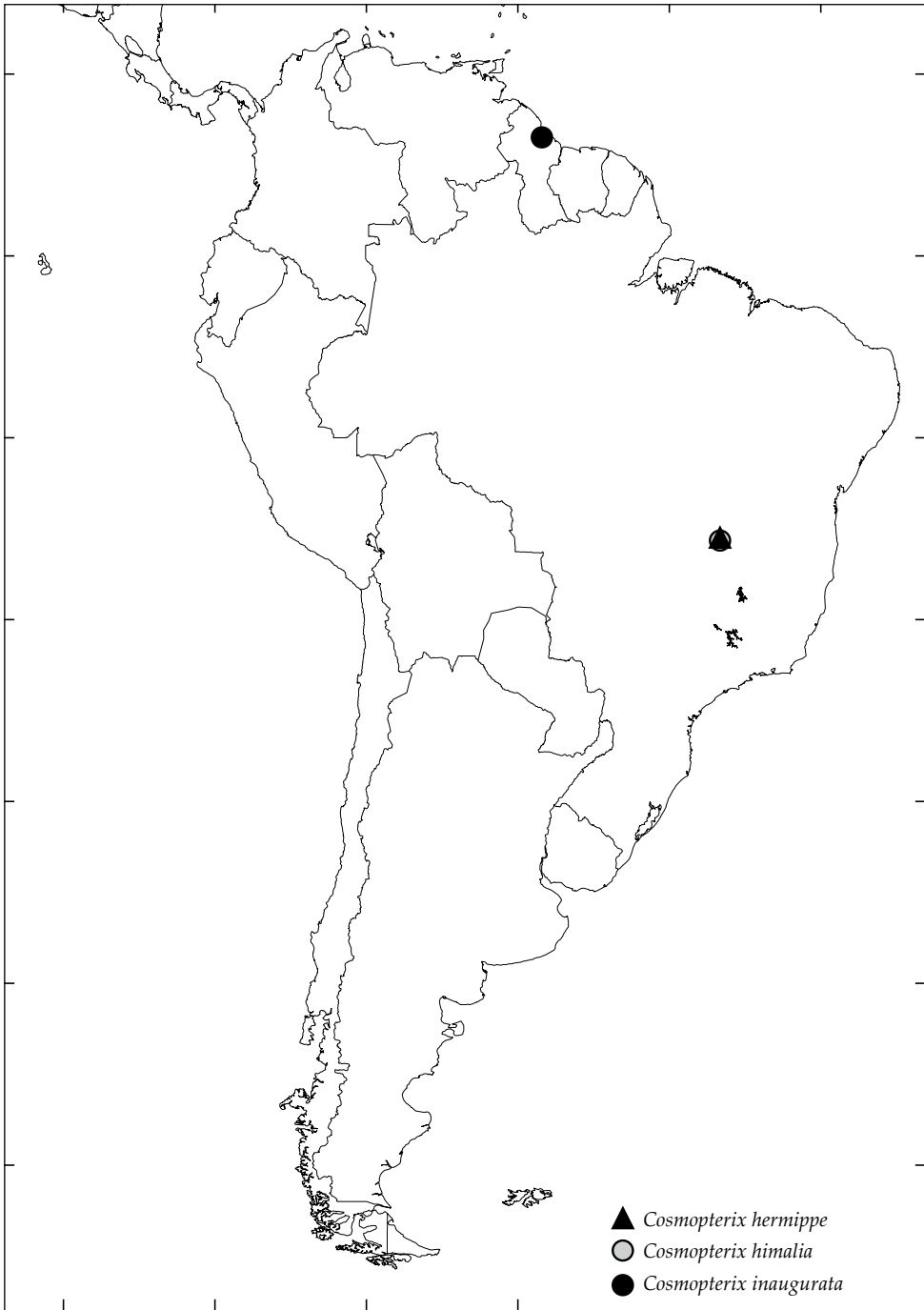


Fig. 298. *Cosmopterix* spp., distribution. *C. hermippe* (triangle), *C. himalia* (open dot) and *C. inaugurata* (closed dot).



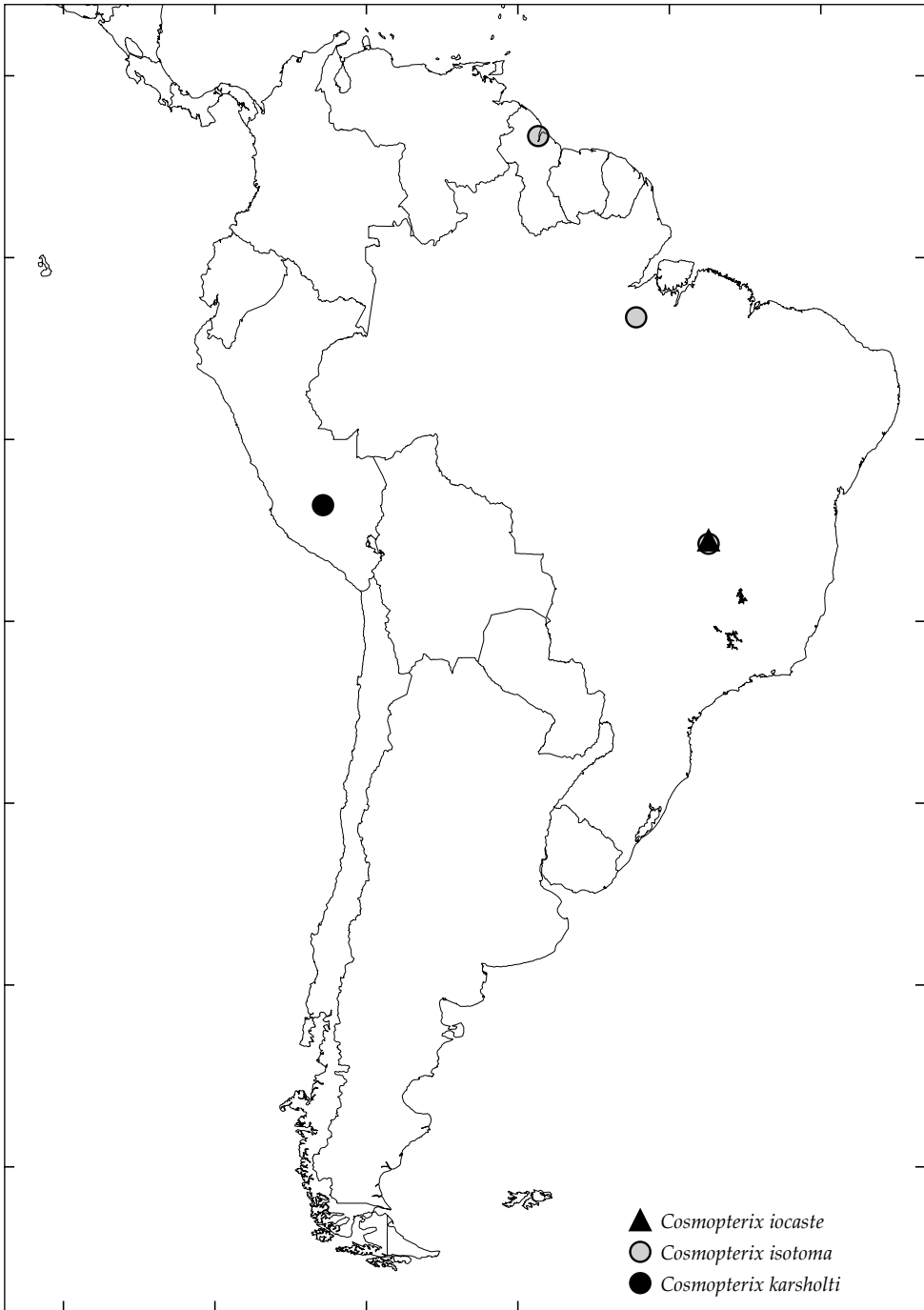


Fig. 299. *Cosmopterix* spp., distribution. *C. iocaste* (triangle), *C. isotoma* (open dots) and *C. karsholti* (closed dot).



Fig. 300. *Cosmopterix* spp., distribution. *C. lummyae* (closed dots) and *C. madeleineae* (open dot).



Fig. 301. *Cosmopterix* spp., distribution. *C. lysisithea* (open dot) and *C. metis* (triangle).

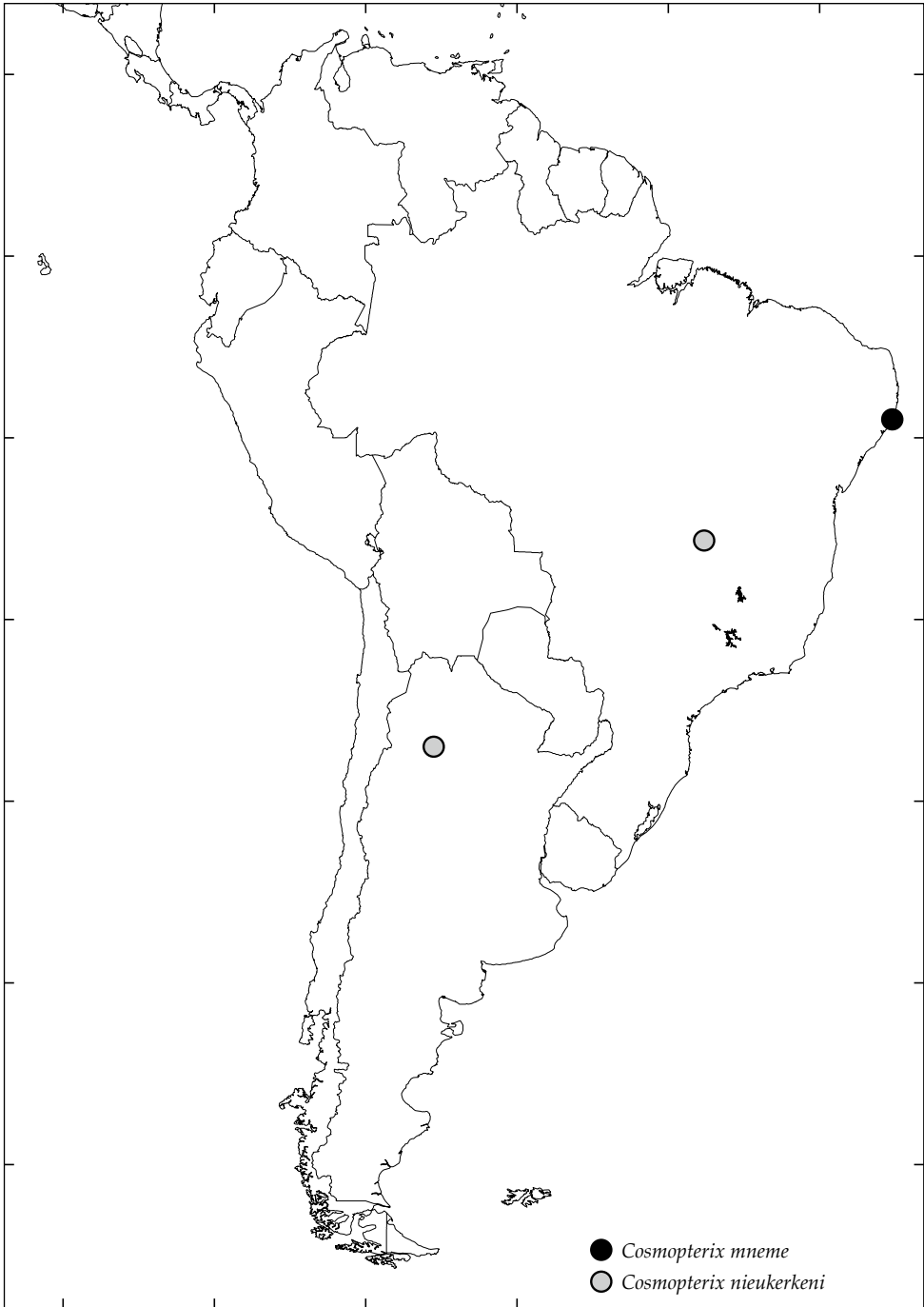


Fig. 302. *Cosmopteryx* spp., distribution. *C. mneme* (closed dot) and *C. nieukerkeni* (open dots).

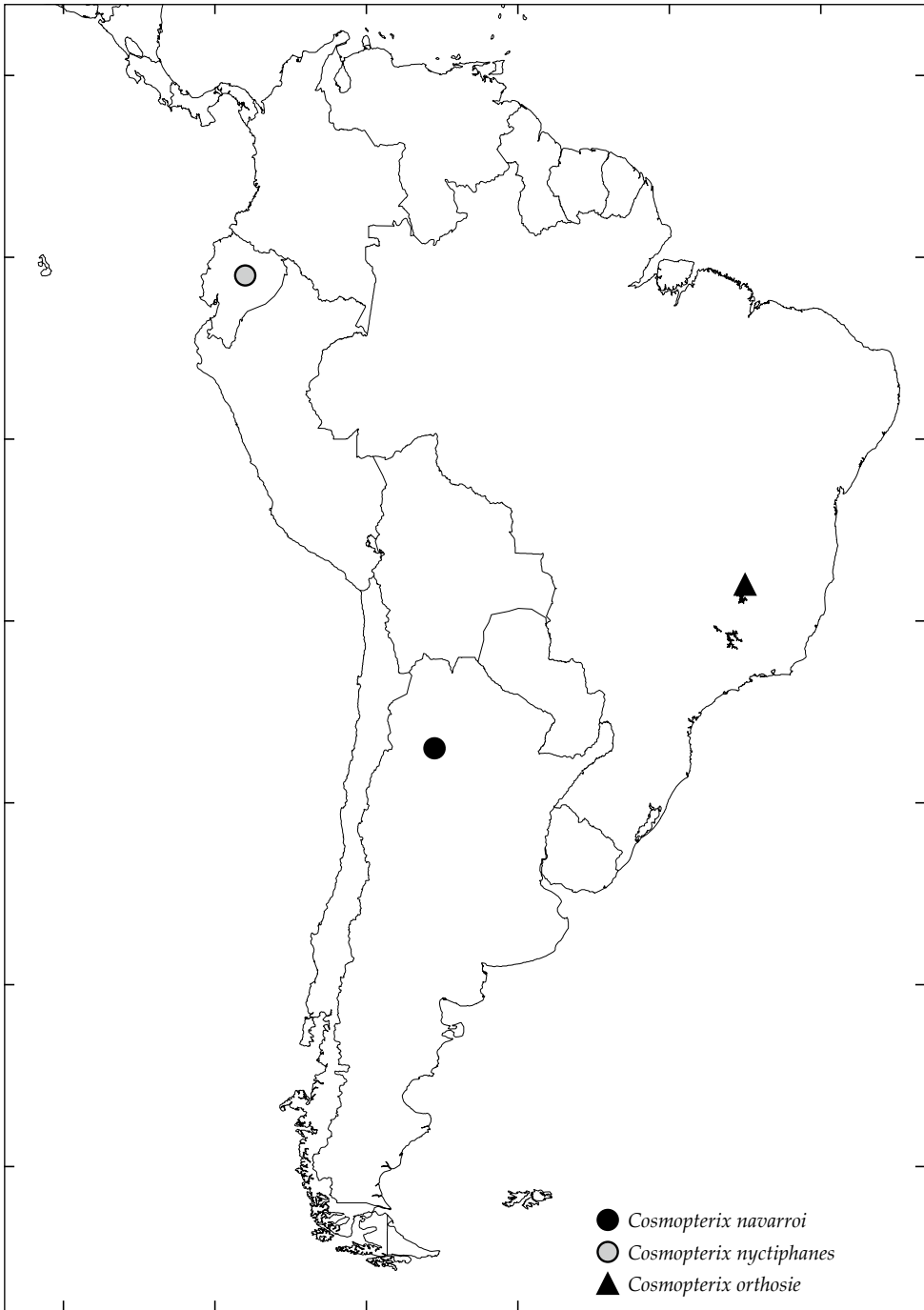


Fig. 303. *Cosmopterix* spp., distribution. *C. navarroi* (closed dot), *C. nyctiphanes* (open dot) and *C. orthosie* (triangle).

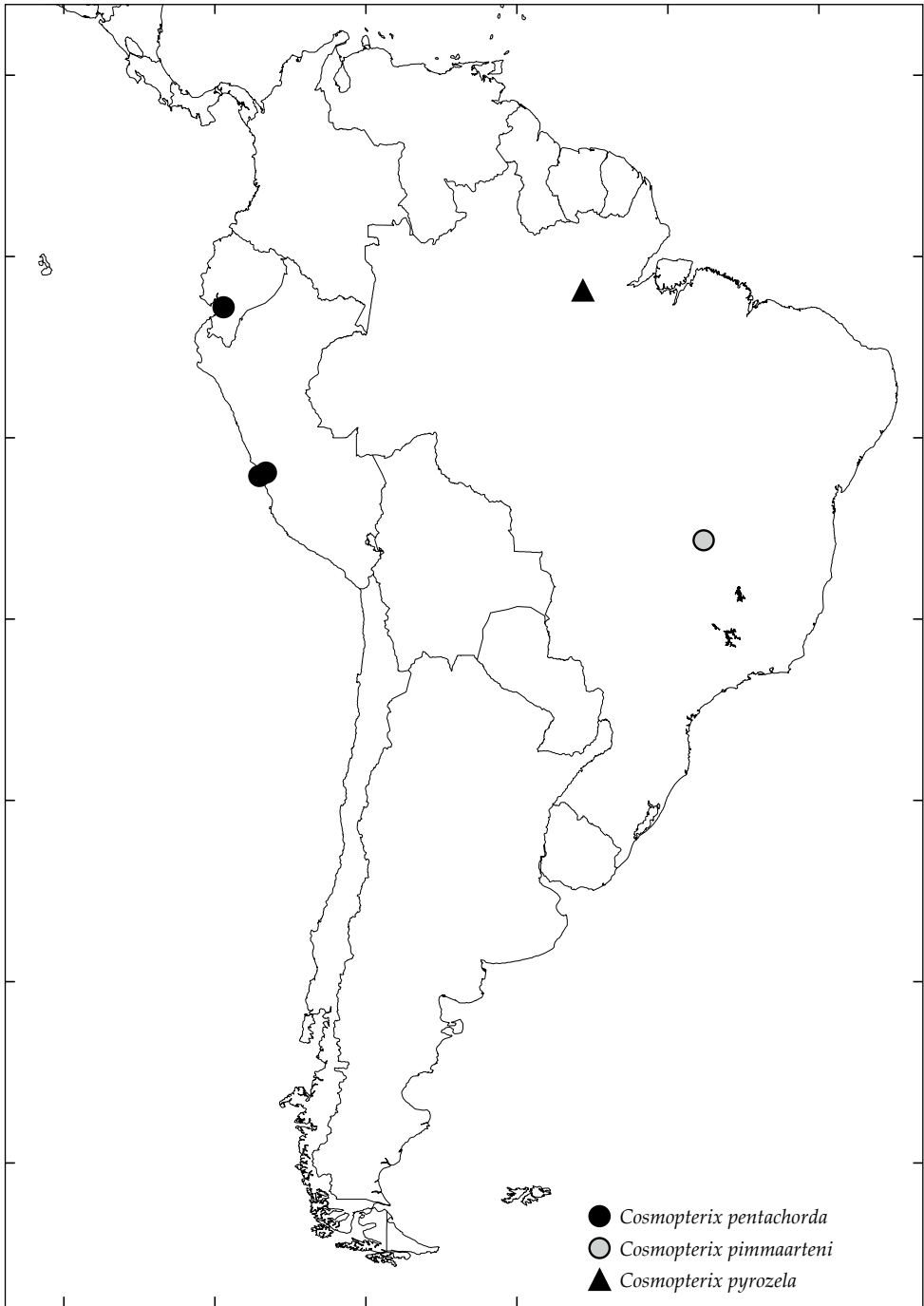


Fig. 304. *Cosmopterix* spp., distribution. *C. pentachorda* (closed dots), *C. pimmaarteni* (open dot) and *C. pyrozela* (triangle).

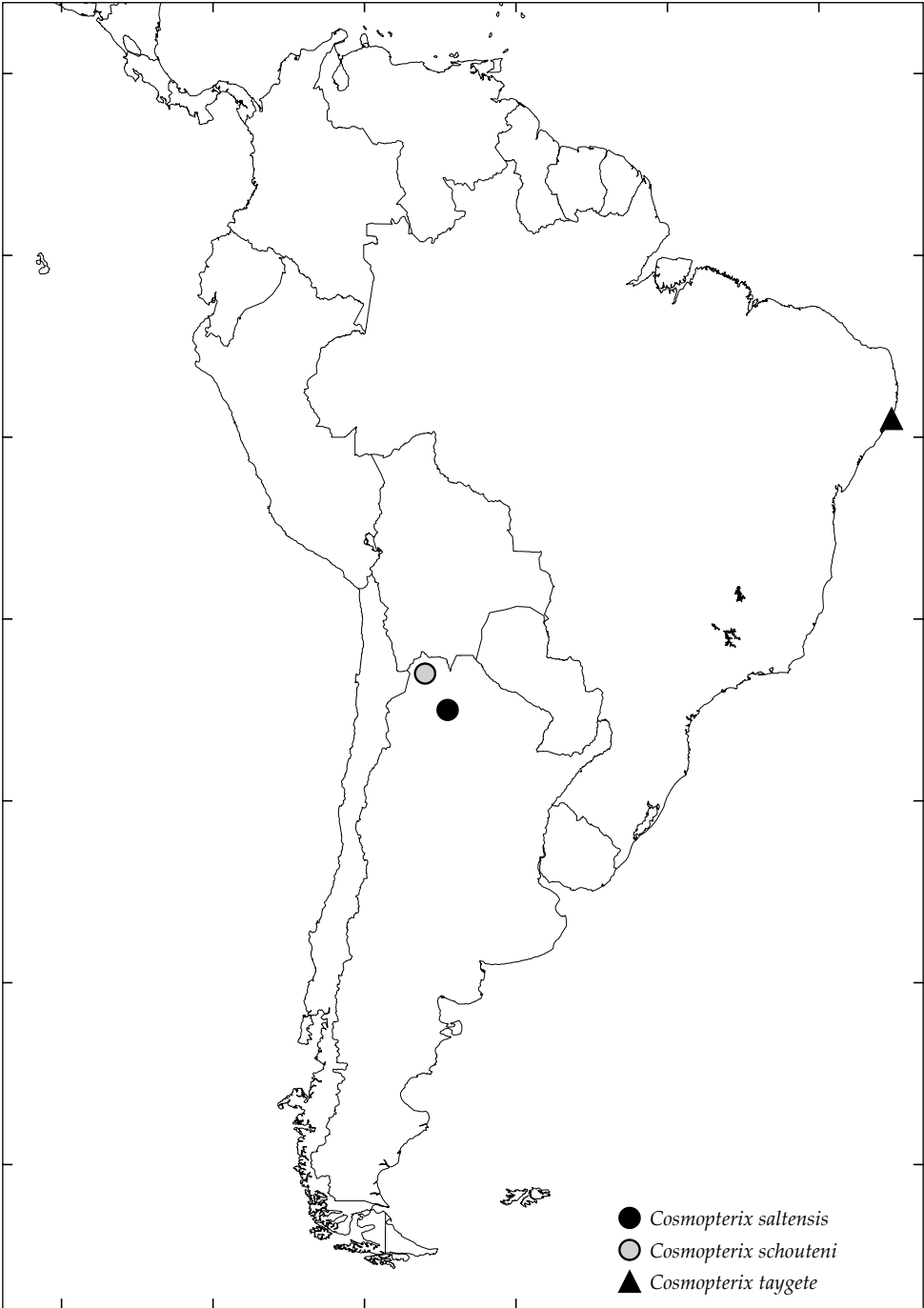


Fig. 305. *Cosmopterix* spp., distribution. *C. saltensis* (closed dot), *C. schouteni* (open dot) and *C. taygete* (triangle).

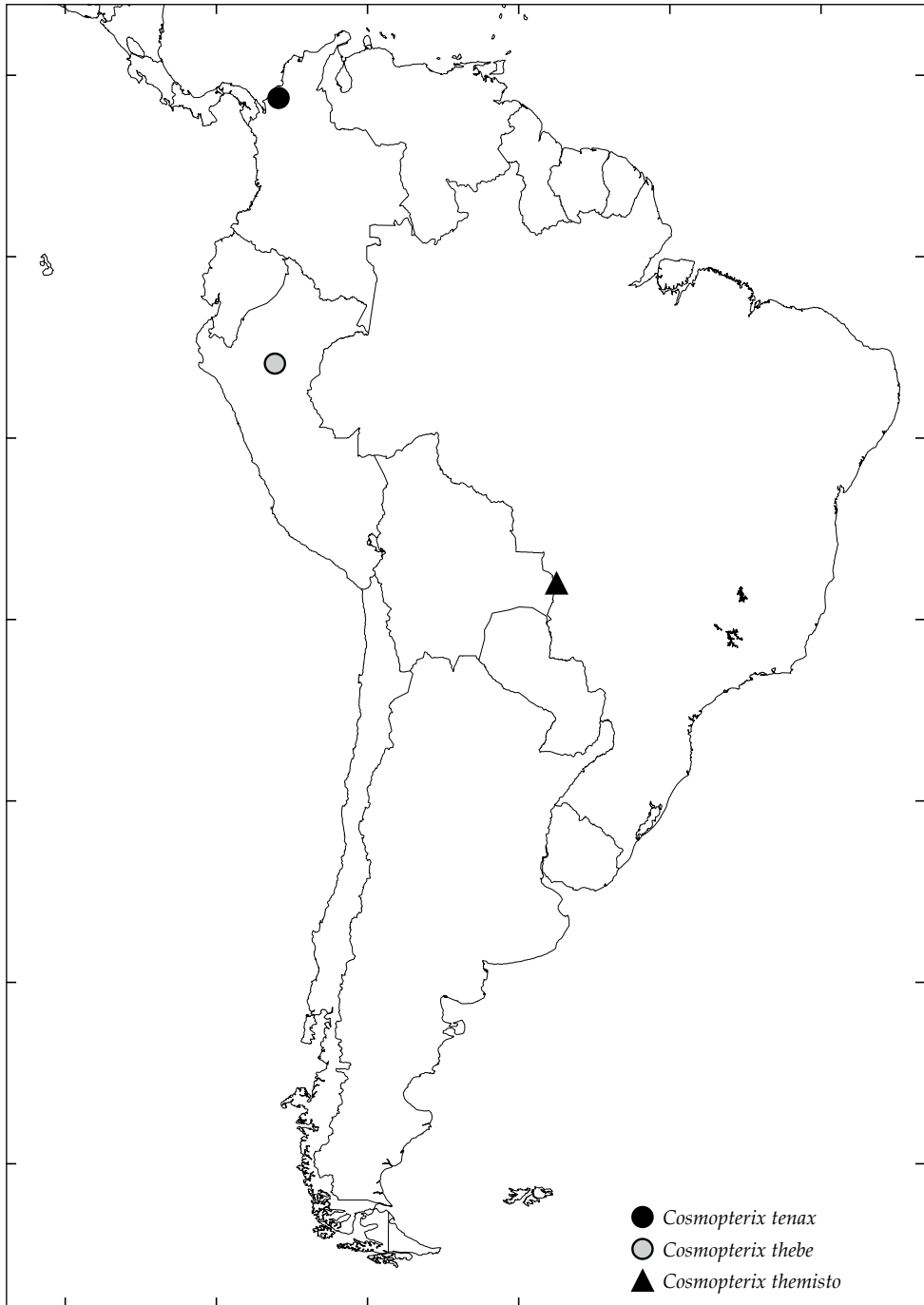


Fig. 306. *Cosmopterix* spp., distribution. *C. tenax* (closed dot), *C. thebe* (open dot) and *C. themisto* (triangle).



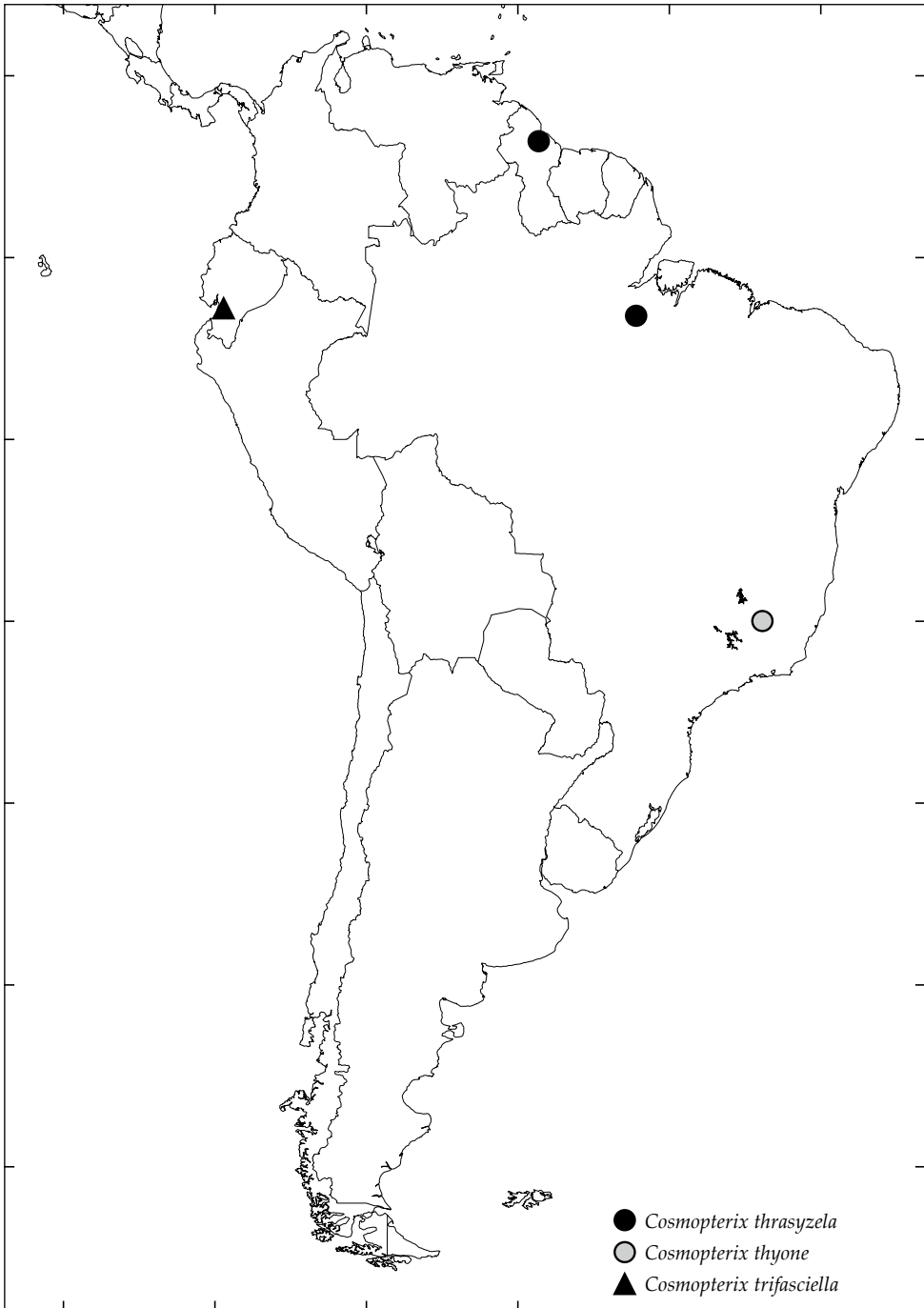


Fig. 307. *Cosmopterix* spp., distribution. *C. thrasyzela* (closed dots), *C. thyone* (open dot) and *C. trifasciella* (triangle).

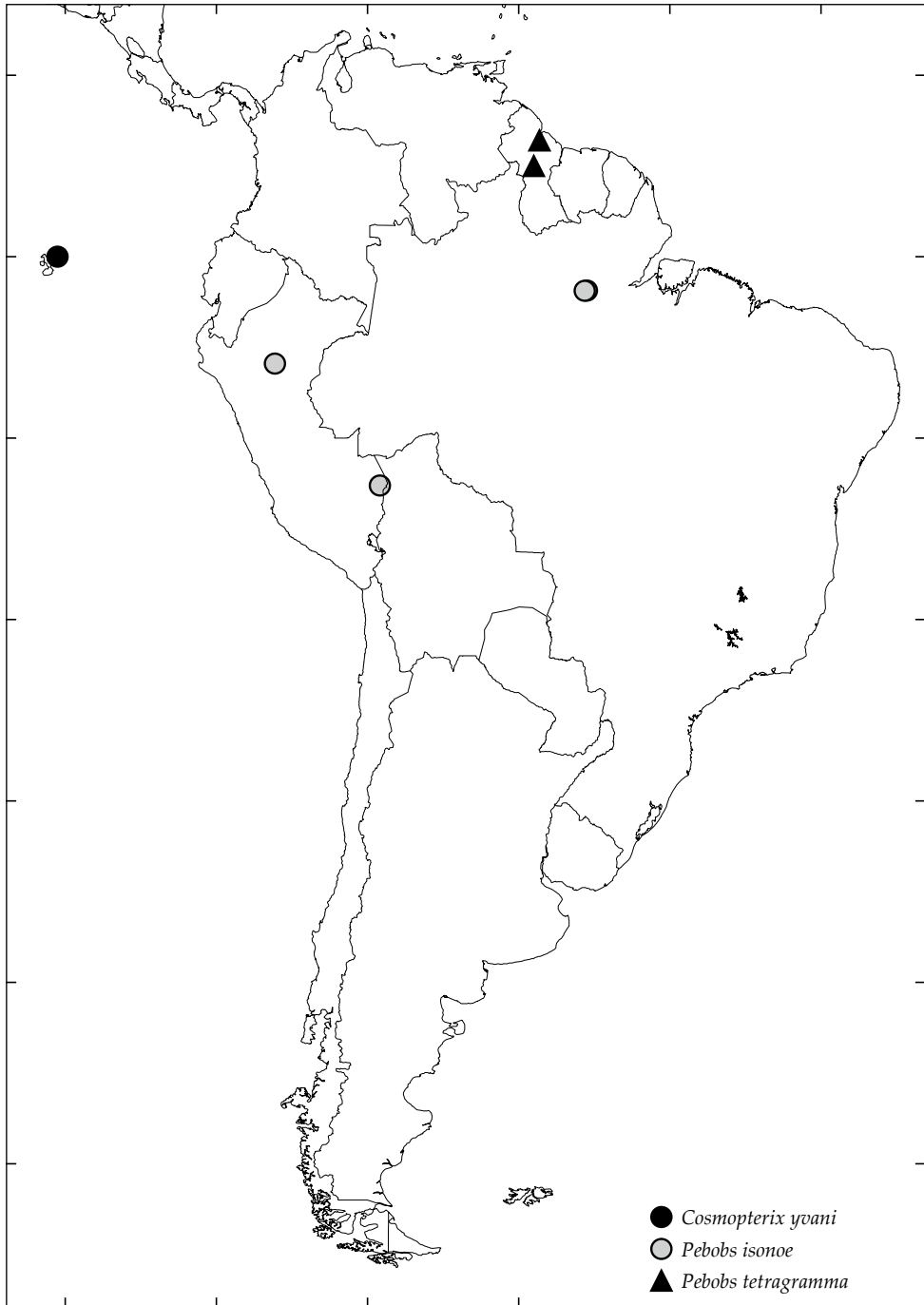


Fig. 308. *Cosmopterix* and *Pebobs* spp., distribution. *C. yvani* (closed dot), *P. isonoe* (open dots) and *P. tetragramma* (triangles).

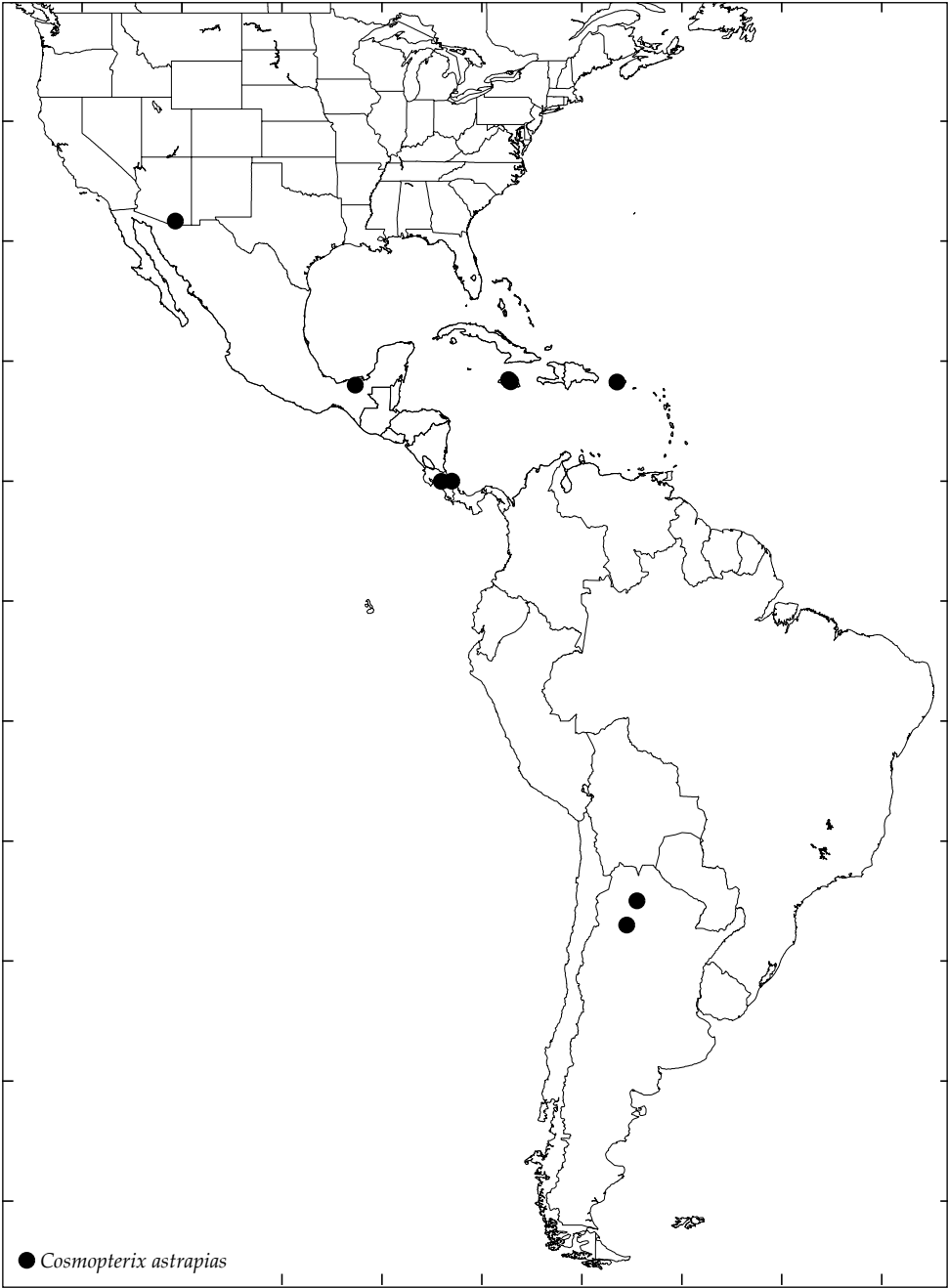


Fig. 309. *Cosmopterix* spp., distribution. *C. astrapias*.

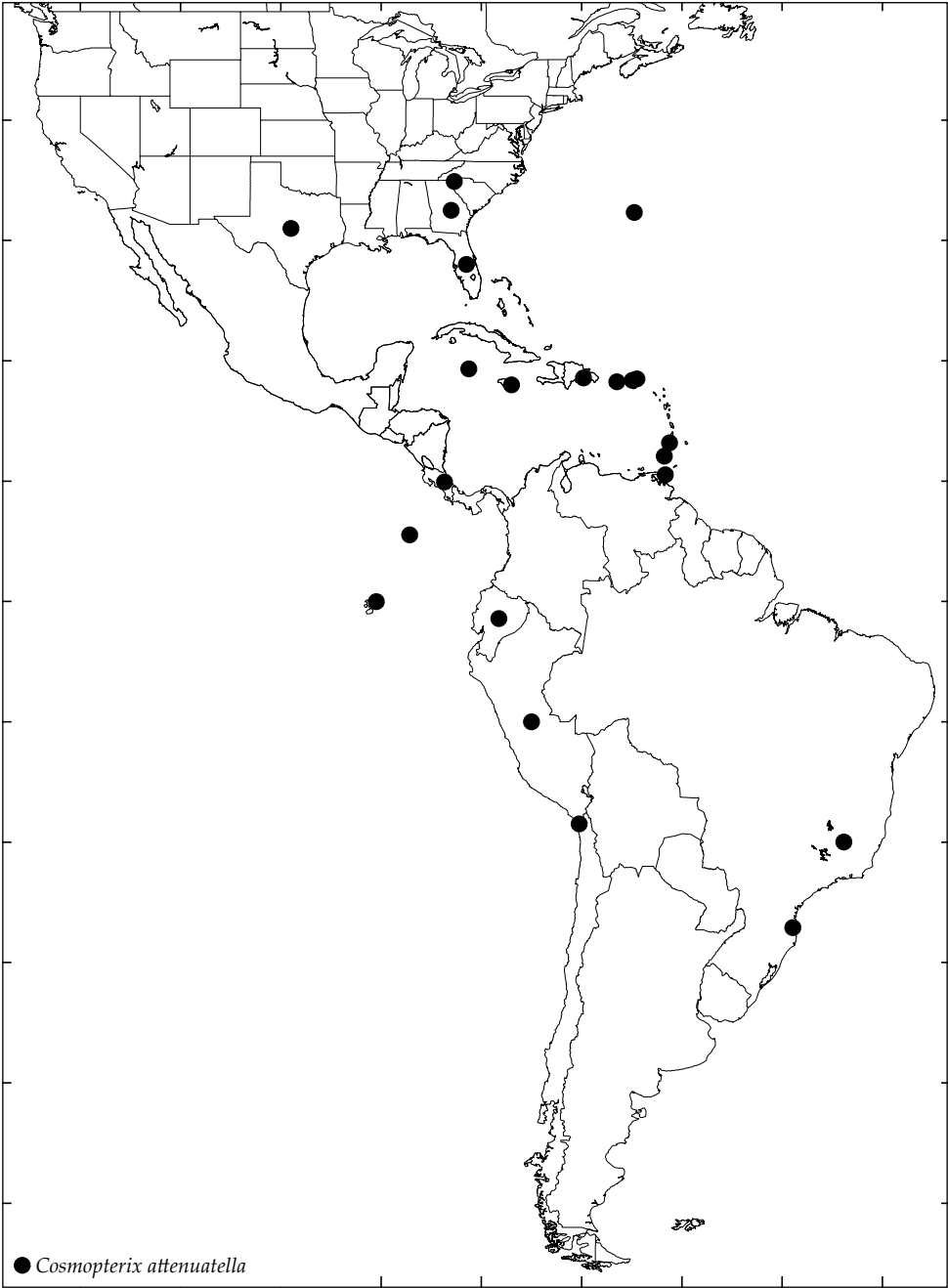


Fig. 310. *Cosmopteryx* spp., distribution. *C. attenuatella*.

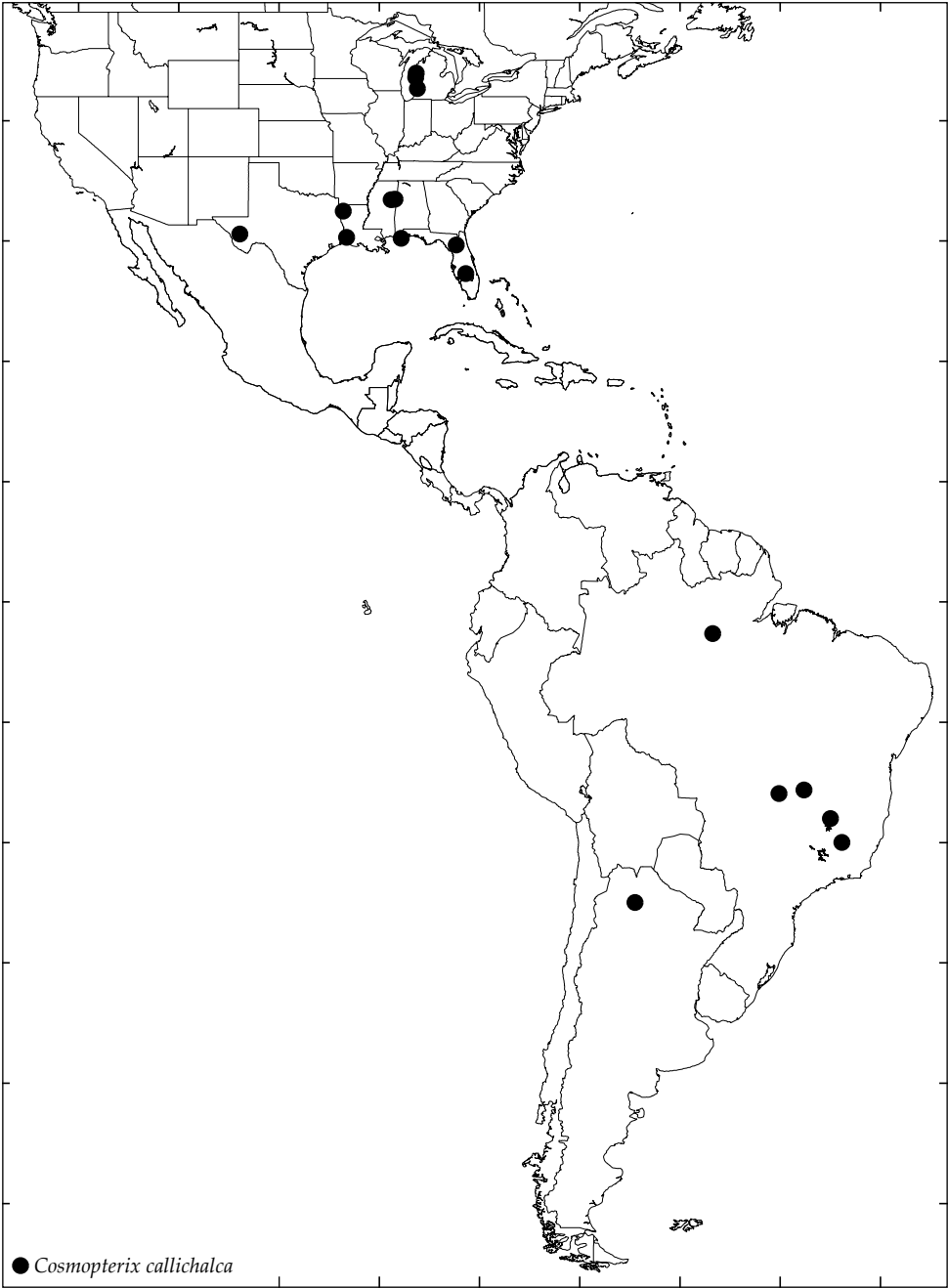


Fig. 311. *Cosmopterix* spp., distribution. *C. callichalca*.



Fig. 312. *Cosmopteryx* spp., distribution. *C. chisosensis*.

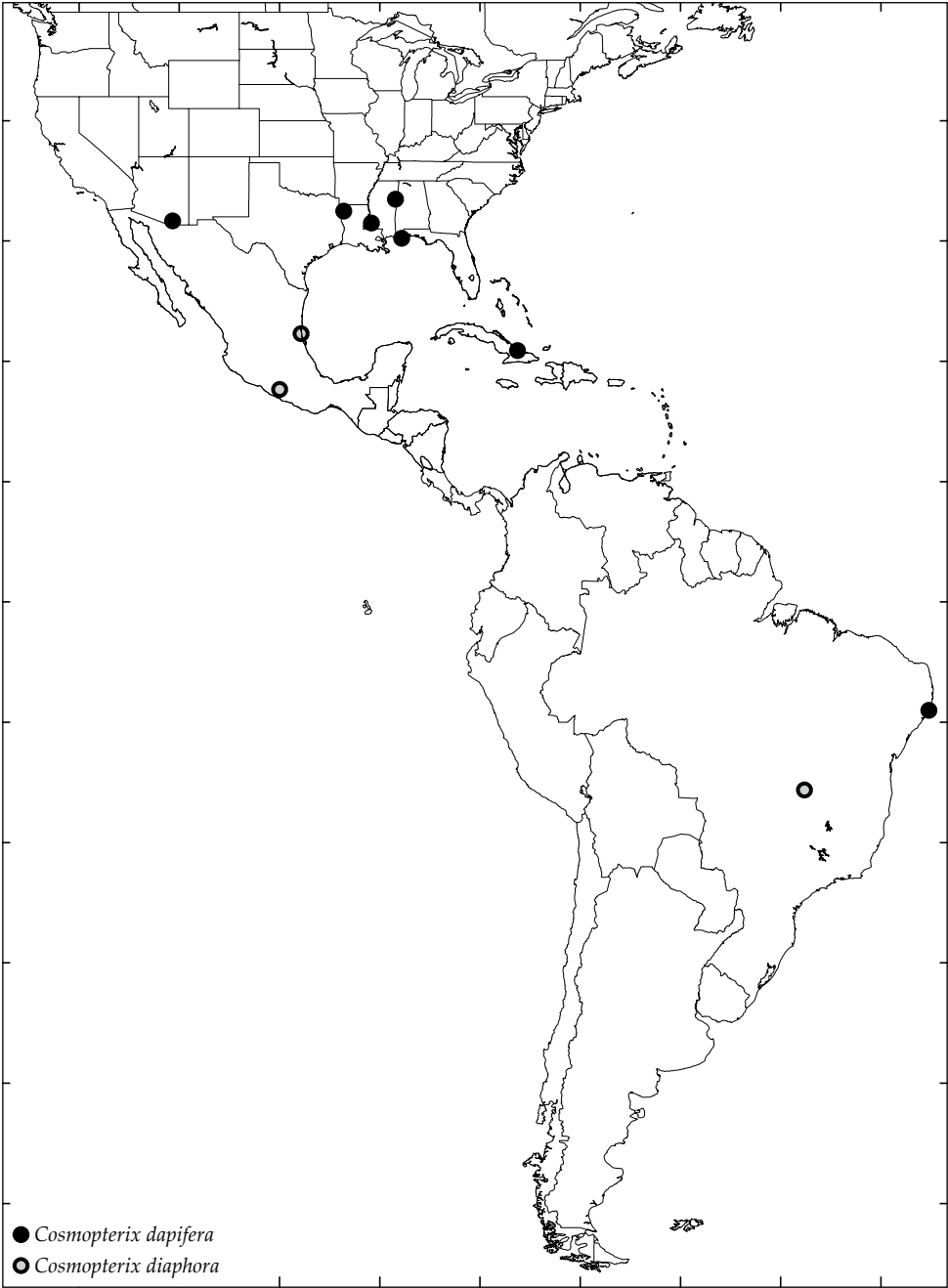


Fig. 313. *Cosmopterix* spp., distribution. *C. dapifera* (closed dots) and *C. diaphora* (open dots).

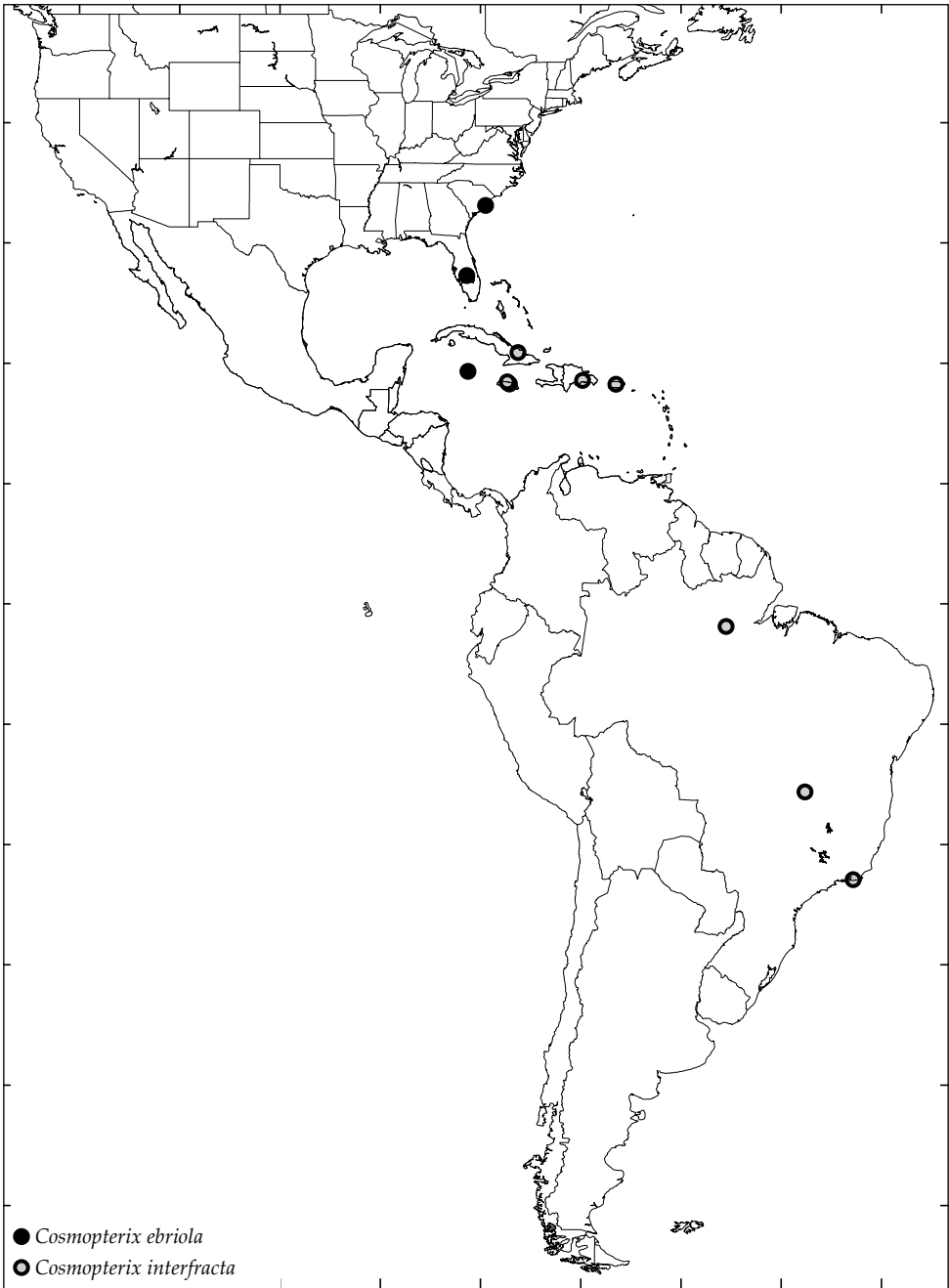


Fig. 314. *Cosmopterix* spp., distribution. *C. ebriola* (closed dots) and *C. interfracta* (open dots).



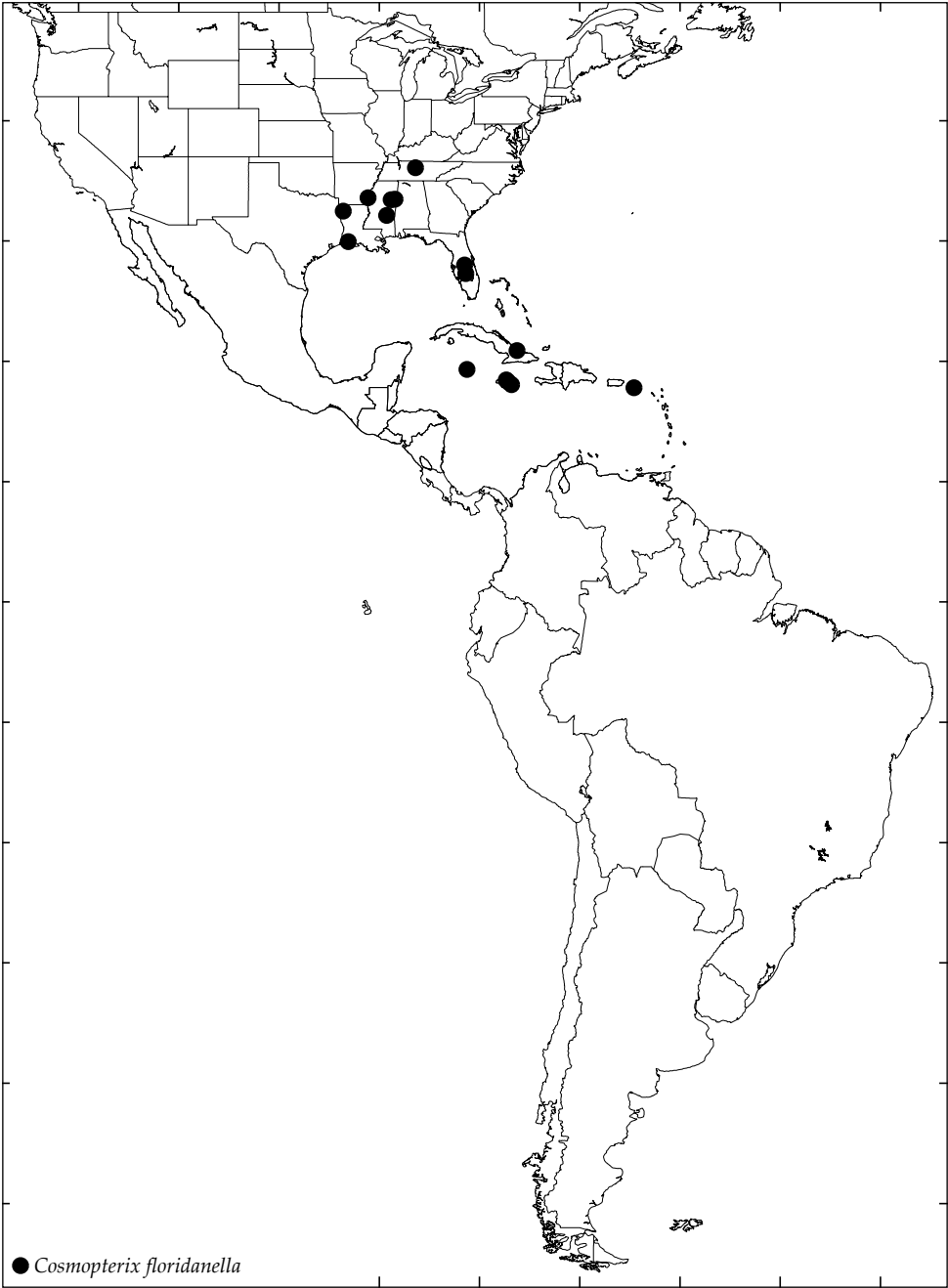


Fig. 315. *Cosmopterix* spp., distribution. *C. floridanella*.



Fig. 316. *Cosmopteryx* spp., distribution. *C. magophila* (closed dots) and *C. io* (open dots).

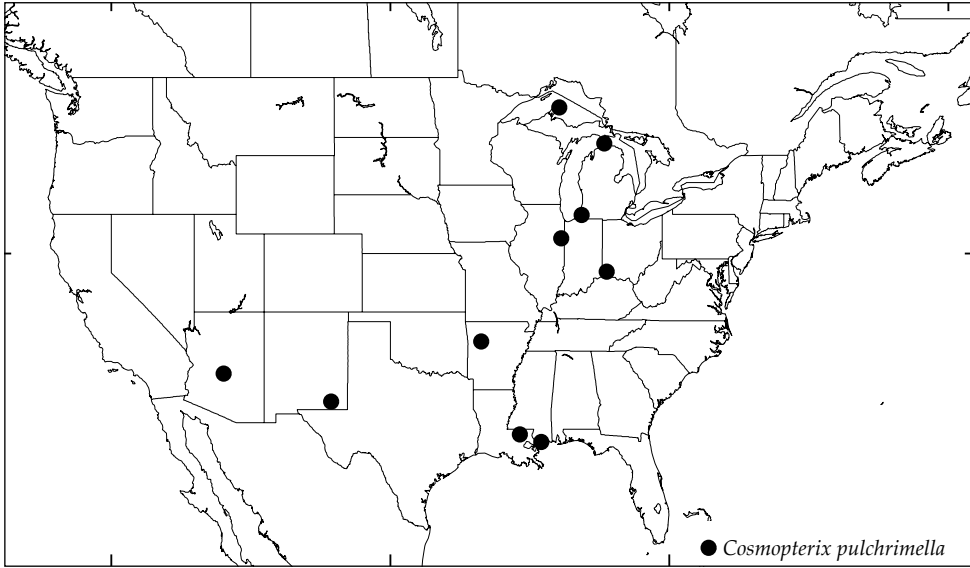


Fig. 317. *Cosmopterix* spp., distribution. *C. pulchrimella*.





Fig. 319. *Cosmopterix* and *Pebobs* spp., distribution. *C. thelxinoe* (closed dots) and *P. kale* (open dots)

