

# Seven new species and one new subspecies of *Euptychia* Hübner, 1818 (Lepidoptera: Nymphalidae: Satyrinae) from the tropical Andes

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**Abstract:** Seven new species of *Euptychia* Hübner, 1818, *E. truncata* Nakahara & Hall, n. sp., *E. pillaca* Nakahara & Willmott, n. sp., *E. padroni* Nakahara, Lamas & Willmott, n. sp., *E. enyita* Nakahara, Lamas & Willmott, n. sp., *E. granatina* Nakahara, Le Crom & Hall, n. sp., *E. fernandae* Nakahara & Willmott, n. sp., *E. pegasus* Nakahara & Hall, n. sp., and one new subspecies *E. cesarensis obtusa* Nakahara, n. ssp. are described herein. Adults and their genitalia are illustrated for all species and distribution maps are provided.

**Resumen:** Se describen siete especies nuevas de *Euptychia* Hübner, 1818, *E. truncata* Nakahara & Hall, n. sp., *E. pillaca* Nakahara & Willmott, n. sp., *E. padroni* Nakahara, Lamas & Willmott, n. sp., *E. enyita* Nakahara, Lamas & Willmott, n. sp., *E. granatina* Nakahara, Le Crom & Hall, n. sp., *E. fernandae* Nakahara & Willmott, n. sp., *E. pegasus* Nakahara & Hall, n. sp., y una nueva subespecie *E. cesarensis obtusa* Nakahara, n. ssp.. Se ilustran los adultos y sus genitalias, y se proporciona datos y mapas de distribución para cada especie.

**Key words:** Colombia, Ecuador, Euptychiina, Neotropical, Peru, Satyrini, taxonomy

## INTRODUCTION

The tropical Andes are the world's richest biodiversity 'hot spot' (Myers *et al.*, 2000), and this fauna certainly contributes to the countries of Colombia, Ecuador and Peru being recognized as three of the world's few 'megadiversity' countries (Mittermeier *et al.*, 1997). The high diversity of the tropical Andes is associated with many species that have restricted distributions and/or occur at low abundance, resulting in a relatively high proportion of species that are still undescribed. This situation certainly applies to the satyrine butterfly genus *Euptychia* Hübner, 1818, the subject of this paper.

Lamas (2004) listed 29 species in *Euptychia*, with a remarkable 16 of those undescribed. Since then, descriptions of new species (Brévignon, 2005; Pulido *et al.*, 2011; Neild *et al.*, 2014, 2015; Nakahara *et al.*, 2014, 2015c,d; Fratello *et al.*, 2015), and transferral of species in and out of the genus (Freitas *et al.*, 2012, 2013; Nakahara *et al.*, 2015b), in addition to ongoing work to revise the genus by SN, has resulted in a total of at least 44 species, of which about half are still undescribed. *Euptychia* species are typically small, either brown or white, and marked with ventral lines and ocelli that are typical of the subtribe Euptychiina, of which *Euptychia* is the type genus. The extent of undescribed taxonomic diversity in *Euptychia* is also typical of Euptychiina, a group containing more than 400 predominantly lowland species of Neotropical satyrine butterflies, many of which also await description (e.g., Brévignon & Benmesbah, 2011; Matos-Maraví *et al.*, 2013; Cong & Grishin, 2014; Warren *et al.*, 2014; Zubek *et al.*, 2014; Nakahara *et al.*, 2015a). However, recent phylogenetic studies suggest that *Euptychia* may not form a clade with remaining members of Euptychiina (Peña *et al.*, 2010), and indeed *Euptychia* is highly unusual in the subtribe in terms of its larval hostplants (Singer *et al.*, 1971; Singer & Mallet, 1986; DeVries, 1987; Brévignon, 2008; Hamm, 2015) and its relatively high diversity in montane habitats, where most of the new taxa described here occur.

During the course of our fieldwork we have observed a number of *Euptychia* species showing stereotypical 'perching' behavior, in which males wait at prominent but spatially restricted sites such as hill and ridge tops (Scott, 1975), up to 7 m above the ground, in a manner more typical of butterfly families such as the Riodinidae and Lycaenidae (e.g., Callaghan, 1983; Hall, 1999; Prieto & Dahners, 2009). These biogeographic and behavioral traits, in combination with their small size and drab coloration, have resulted in many *Euptychia* being particularly poorly represented in, or absent from, historical collections, and several taxa have thus only been uncovered as a result of intensive faunistic inventories over the last few decades.

Despite uncertainty about the phylogenetic relationships of the genus, a number of recent papers on *Euptychia* (e.g., Freitas *et al.*, 2012, 2013; Nakahara *et al.*, 2014, 2015b, c, d; Neild *et al.*, 2014, 2015; Hamm, 2015; Lamas & Nakahara, 2015; Fratello *et al.*, 2015), combined with ongoing morphological and molecular research by SN, has helped identify morphological synapomorphies for the genus that permit confident generic placement and assessment of species relationships for the new taxa described herein. The purpose of this paper, therefore, is to describe seven new species and one new subspecies of *Euptychia* from the tropical Andes, to contribute partly to a taxonomic revision of the genus by SN, and partly to ongoing faunistic studies of the Neotropical region by the authors. One species occurring in Colombia and Ecuador is co-authored with Jean-François Le Crom, who is conducting a systematic study of the butterflies of Colombia (e.g., Le Crom *et al.*, 2002, 2004).

## MATERIALS AND METHODS

Adult abdomens and other appendages were soaked in hot KOH for 5-10 min prior to dissection, dissected, and subsequently stored in glycerine. Chlorazol black was used to stain female genitalia. Genitalic dissection vial numbers are indicated in the types section, although several non-type

specimens were also dissected to study variable characters. External morphology was studied using a Leica MZ 16 stereomicroscope. Terminology for wing venation follows the Comstock-Needham system described in Miller (1970: 44) and that for wing pattern elements follows Peña & Lamas (2005). Nomenclature of genitalia mostly follows Klots (1956), but we follow Peña & Lamas (2005) in using the term aedeagus, and Muschamp (1915) in using the term 'brachia' for structures often called the 'gnathos' in previous papers. Finally, we follow Austin & Mielke (2008) in referring to the part of the genitalia typically termed the 'vinculum' as the 'combined ventral arms of tegumen and dorsal arms of saccus', to emphasize that this region is composed of two distinct structural elements. As a historical note, Pierce (1909) initially introduced the term vinculum to refer to the thin connection between the tegumen and the saccus. However, subsequently Pierce (1914) realized that Bethune-Baker (1891) had already recognized this structure as part of the saccus, and he thus corrected his interpretation of the vinculum and instead referred to it as the saccus.

Attempts were made to determine the identity of all described names by locating type specimens of all species through comparison of historical collections with original descriptions. Specimens were studied in many collections, with attempts to locate type material of all described names (Lamas, 2004; subsequent descriptions of *Euptychia* are unambiguous), and the following acronyms are used:

<b>AMNH</b>	American Museum of Natural History, New York, USA
<b>BMNH</b>	The Natural History Museum, London, UK
<b>CMNH</b>	Carnegie Museum of Natural History, Pittsburgh, USA
<b>DATR</b>	David Trembath collection, UK
<b>DZUP</b>	Entomological Collection Padre Jesus Santiago Moure, Zoology Department, Universidade Federal do Paraná, Curitiba, Brazil
<b>FLMNH</b>	McGuire Center for Lepidoptera and Biodiversity, Florida Museum of Natural History, Florida, USA
<b>HAWA</b>	Haydon Warren-Gash collection, France
<b>JARA</b>	Jamie Radford collection, UK
<b>JEPE</b>	Jean-Claude Petit collection, Ducy, France
<b>MECN</b>	Museo Ecuatoriano de Ciencias Naturales, Quito, Ecuador
<b>MUSM</b>	Museo de Historia Natural, Universidad Nacional Mayor de San Marcos, Lima, Peru
<b>PIBO</b>	Pierre Boyer collection, Le Puy Sainte Réparate, France
<b>QCAZ</b>	Pontificia Universidad Católica, Quito, Ecuador
<b>USNM</b>	National Museum of Natural History, Smithsonian Institution, Washington, DC, USA
<b>ZMHU</b>	Zoologisches Museum, Humboldt Universität, Berlin, Germany

Significant collections of *Euptychia* were made by the authors in Ecuador and Peru over the last few decades. Fieldwork consisted mainly of sampling euptychiine faunas in little-known regions, elevations or habitats, to provide better distributional data and material for systematic study.

## DESCRIPTIONS

### *Euptychia truncata* Nakahara & Hall, new species (Figs. 1a-d; 3a; 4a; 5)

**Diagnosis.** *Euptychia truncata* n. sp. can be distinguished from all other *Euptychia* species by the truncated forewing apex of the male, which is also marked with a distinctive, quadrate black spot (see diagnosis for the next species for further information). This taxon appears to be most closely related to five other

undescribed species (SN, unpublished data), which include *E. pillaca* n. sp., described below. Female *Euptychia truncata* n. sp. can be distinguished from the majority of its congeners by possessing black postdiscal ocelli surrounded by rufous rings on the dorsal hindwing (when present; these rings are absent in some specimens), in addition to the absence of postdiscal ocelli and presence of prominent shading on the ventral hindwing in cells  $M_2$  and  $M_3$ . Among described species, the female of the Guianan *E. audacia* Brévignon, Nakahara & Fratello, 2015, is similar, but has larger ventral hindwing ocelli, especially that in cell  $Cu_1$ , and the latter is more broadly surrounded by dark brown scaling. Diagnostic characters for currently undescribed species will be provided in a forthcoming revision of *Euptychia* (Nakahara, in prep.). The male genitalia are similar to closely related species (see diagnosis for the next species for differences in male genitalia between the two). In the female genitalia, examination of the few specimens available (with none examined for *E. pillaca* n. sp.), suggests that the shape of the lamella antevaginalis in ventral view might consistently separate this species from most closely related species.

**MALE (Fig. 1a,b):** FW length 13.9mm – 15.8mm (n=6)

**Head:** Eyes with sparse brown hairs, with white scales at base; first segment of labial palpi covered with long white hair-like scales, with sparse black hair-like scales, second segment slightly longer than eye width and covered with short white hair-like scales and white scales laterally, and with black scales along distal one-third of dorsal surface, ventrally adorned with long black and white hair-like scales 3-4 times as long as segment width, third segment slightly shorter than one-fifth of second segment in length and covered with black scales laterally and ventrally, with creamy-white scales laterally; antennae approximately two-fifths forewing length, with ca. 36-37 segments (n=2), pedicel ca. two-thirds length of scape, flagellum paler than scape and pedicel, first segment relatively long, distal 12-13 segments composing club.

**Thorax:** Dorsally covered with black scales and long multi-colored hair-like scales; ventrally scattered with grayish scales.

**Legs:** Foreleg brown, tarsus and femur almost same length, tibia slightly longer; midleg and hindleg with femur dorsally brown, ventrally pale buff, tibia and tarsus pale buff, terminal segments of tarsus brown, tarsus and tibia adorned with spines ventrally, tibial spurs absent at distal end of tibia.

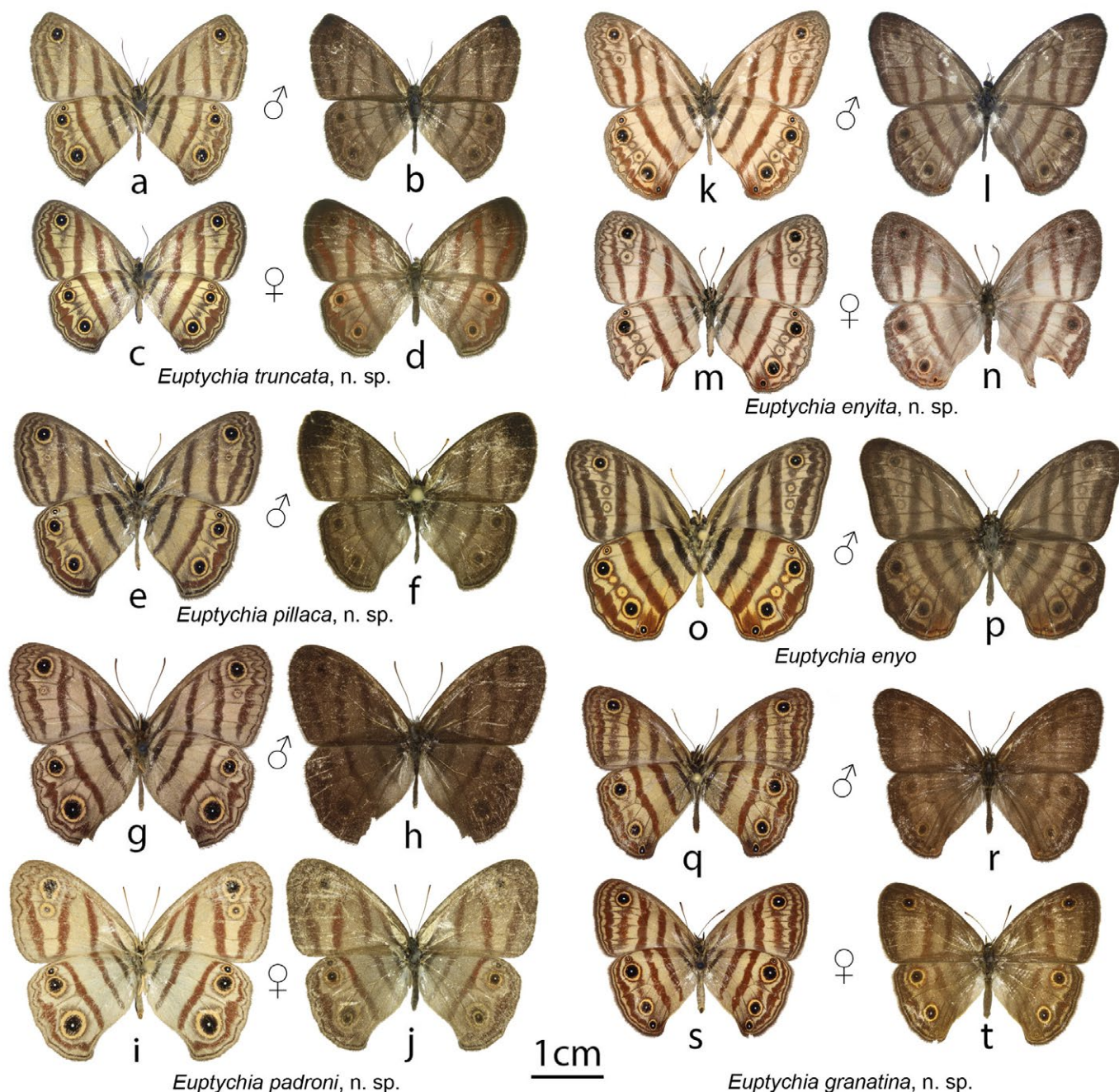
**Abdomen:** Eighth tergite fully developed, similar to seventh tergite, becoming less sclerotized posteriorly.

**Male genitalia (Fig. 3a):** Tegumen somewhat rectangular in lateral view, dorsal margin and anterior margin straight, prominent projection posteriorly from dorsal margin above uncus, posterior margin extending ventrally, forming a 'tooth-like' projection; uncus narrow, slightly curved upwards, without setae, slightly tapered posteriorly, slightly shorter than tegumen; ventral arms of tegumen fused to anterior margin of tegumen, medially divided, middle section roughly straight; appendices angulares present; saccus similar in length to tegumen, dorsal arms of saccus combined with ventral arms of tegumen; juxta present; valvae with setae, positioned at approximately 30° angle to horizontal, basal two-thirds of valva appears somewhat 'lemon-shaped' in lateral view, ventral margin rounded, dorsal margin concave, anteriorly tapered; aedeagus slightly shorter than valvae in length, slightly hooked upwards anteriorly, open anterodorsally, posteriorly bifid, cornuti absent.

**Wing venation:** Forewing recurrent vein present; forewing  $Cu$  with basal thickening absent; hindwing humeral vein not developed, forming a simple, short projection.

**Wing shape:** Forewing outer margin relatively straight from veins  $R_3$  to  $R_5$ , below  $R_5$  strongly curved outwards; hindwing rounded.

**Wing pattern:** Dorsal ground color grayish brown, slightly translucent, revealing ventral bands and ocelli, forewing with scales on distal side of cells  $R_3$ ,  $R_5$ ,  $M_1$  and most of  $R_4$  darker, blacker and denser than on remainder of wing, forming somewhat distinct black spot in apex; ventral forewing ground color grayish; short, straight reddish band along swollen region of vein  $Sc$ ; reddish discal band extending from vein  $R$  to  $2A$ , crossing discal cell in a slightly inward diagonal direction; postdiscal band same color as discal band, almost parallel to discal band, broader than discal band, extending from  $R$



**Fig. 1.** *Euptychia* specimens: **a)** *E. truncata* new species, holotype male (ventral surface); **b)** dorsal surface of (a); **c)** *E. truncata* new species, female (ventral surface); **d)** dorsal surface of (c); **e)** *E. pillaca* new species, holotype male (ventral surface); **f)** dorsal surface of (e); **g)** *E. padroni* new species, holotype male (ventral surface); **h)** dorsal surface of (g); **i)** *E. padroni* new species, female (ventral surface); **j)** dorsal surface of (i); **k)** *E. enyita* new species, holotype male (ventral surface); **l)** dorsal surface of (k); **m)** *E. enyita* new species, female (ventral surface); **n)** dorsal surface of (m); **o)** *Euptychia enyo* Butler, Ecuadorian male (ventral surface); **p)** dorsal surface of (o); **q)** *E. granatina* new species, holotype male (ventral surface); **r)** dorsal surface of (q); **s)** *E. granatina* new species, female (ventral surface); **t)** dorsal surface of (s).

towards inner margin until reaching vein 2A; submarginal band of same color, gradually broadening from apex to vein  $Cu_1$ , extending outward until  $M_2$ , then inward from  $M_2$  to  $Cu_2$ , even in width in cell  $Cu_1$ , slightly narrowing down towards vein 2A, strongly angled inwards below vein 2A; marginal band black, undulating from apex to  $Cu_1$ , relatively straight below  $Cu_1$ ; fringe blackish; submarginal series of ocelli, including ocellus in cell  $M_1$ , extending across cells  $M_1$  and  $M_2$ , black with one white pupil in center, and with yellowish ring; trace of tiny faint ocellus in cell  $M_3$  present in some specimens; ocelli surrounded by dark gray shading along postmedian area that extends into cell  $Cu_1$ ; ventral hindwing ground color same as forewing; straight dark brown band, traversing at base of hindwing from costal margin to inner margin; discal band almost same width as forewing discal band, straight, parallel to former band, extending from costal margin to inner margin; postdiscal band parallel to discal band

and slightly paler and redder, similar in width, extending from costal margin to inner margin; submarginal band gradually broadening from apex towards middle of cell  $M_2$ , strongly inflated towards base in second half of cell  $M_2$ , strongly inflated towards base in first half of cell  $M_3$ , gradually narrowing in second half of cell  $M_3$  and traversing towards tornus, anterior and posterior ends of submarginal band barely connected to postdiscal band with thin dark lines; marginal band black, undulating, thin; fringe grayish; cells  $Rs$ ,  $M_1$ , and  $Cu_1$  each with ringed, submarginal ocellus identical in coloration to forewing ocellus in cell  $M_1$ , ocellus in cell  $Rs$  relatively small, ocellus in cell  $Cu_1$  relatively large, extending across cells  $Cu_2$  and  $Cu_1$ , ocellus in cell  $M_1$  slightly smaller than ocellus in  $Cu_1$ , extending across cell  $M_2$ ; dark gray shading surrounding these ocelli and present in cells  $M_2$  and  $M_3$ .

**FEMALE (Fig. 1c,d):** FW length 13.5mm – 17.0mm (n=6): Similar to male except as follows: female foretarsus divided into five segments; wings rounder, broader and more translucent, with reddish orange rings surrounding black spots mirroring ventral ocelli in forewing cell  $M_1$ , and hindwing cells  $M_1$  and  $Cu_1$ ; dorsal wings with dark reddish-brown basal, discal, postdiscal and submarginal bands faintly visible, mirroring those on ventral surface.

**Female genitalia (Fig. 4a):** Lamella antevaginalis sclerotized, forming a scoop, bottom one-third of female genitalia in posterior view sclerotized; basal side of 8<sup>th</sup> abdominal segment sclerotized; ductus bursae membranous, origin of ductus seminalis close to ostium bursae; corpus bursae oval in dorsal view, extending to fourth abdominal segment, with two relatively thin signa.

**HOLOTYPE MALE: Ecuador:** *Napo*: km 49 Tena-Loreto rd., [0°42'51"S,77°44'26"W], 1300 m, (K. Willmott & J. Hall), 14-15 March 1995, (Genitalia vial: SN-15-86) (to be deposited in MECN). **PARATYPES: Ecuador:** *Sucumbios*: Río Chingual, km 12 La Bonita-Rosa Florida rd., [0°26'30"N,77°31'30"W], 1500-1550 m, (Willmott, K. R., Hall, J. P. W.), 18-20 Mar 1995, 1♀ (FLMNH); *Napo*: km 49 Tena-Loreto rd., [0°42'51"S,77°44'26"W], 1300 m, (Willmott, K. R., Hall, J. P. W.), 14-15 Mar 1995, 2♂, 1♀ (FLMNH), 11 Oct 1996, 1♂ (FLMNH); km 49 Tena-Loreto rd., [0°42'51"S,77°44'26"W], 1350 m, (Hall, J. P. W.), 14-15 Mar 1995, 1♀ [FLMNH-MGCL-191764; Genitalia vial SN-15-170], (FLMNH); 'Río Hollin' [=km 49 Tena-Loreto rd.], [0°42'51"S,77°44'26"W], 1300 m, (Trembath, D. A.), 24 Aug 2010, 1♀ (DATR), 1350 m, (Trembath, D. A.), 19 Sep 1995, 1♂ (DATR), 20 Oct 1997, 1♂ (DATR); Río Napo, Puerto Napo-Ahuano rd., Chichicorrumi, [1°4'11"S,77°37'45"W], 450 m, (Willmott, K. R., Hall, J. P. W.), 17 Feb 1995, 1♀ (FLMNH); *Pastaza*: km 35 Puyo-Tena rd., [1°16'48"S,77°51'48"W], 1000 m, (Willmott, K. R.), 4 Oct 1996, 1♀ (FLMNH); *Morona-Santiago*: Río Abanico (W Ridge), [2°15'23"S,78°12'21"W], 1650 m, (Trembath, D. A., Neild, A.), 29 Aug 2010, 1♂ (DATR); km 19 Macas-Nueve de Octubre rd., Río Abanico, [2°15'18"S,78°12'W], 1600 m, (Warren-Gash, H.), 17,18 Sep 2011, 2♂ (HAWA); km 8.5 Chigüinda-Gualaquiza rd., El Boliche, [3°15'50"S,78°39'48"W], 1800 m, (Willmott, K. R.), 10 Oct 2007, 1♂ [FLMNH-MGCL-113711], (FLMNH); Macas, Loma Kilamo, [2°18'18"S,78°8'42"W], 1470 m, (Willmott, K. R.), 7 Dec 2003, 1♂ (FLMNH); Pablo Sexto, [1°53'20"S,78°5'48"W], 1♀ (JEPE); *Zamora-Chinchipec*: ca. 3 km W Guayguayme Alto, ridge above San Luis, [3°55'14"S,78°54'49"W], 1470 m, (Willmott, K. R., J. C. R., J. I. R.), 23 Jun 2013, 1♀ [FLMNH-MGCL-157400; Genitalia vial SN-15-175], (FLMNH); ca. 4 km N Guayguayme Alto, [3°53'50"S,78°53'25"W], 950 m, (Willmott, K. R., J. C. R., J. I. R.), 19 Jun 2013, 1♂ [FLMNH-MGCL-157399], (FLMNH); km 10 Los Encuentros-El Panguí, San Roque, ridge E, [3°42'11"S,78°35'36"W], 1050 m, (Willmott, K. R., Hall, J. P. W.), 4 Aug 2009, 1♂ [FLMNH-MGCL-145784], (FLMNH); km 13 Los Encuentros-Zarza, [3°48'33"S,78°36'20"W], 1450 m, (Willmott, K. R., Hall, J. P. W.), 8 Aug 2009, 1♂ [FLMNH-MGCL-145786], (FLMNH); km 20 Los Encuentros-Zarza, [3°50'14"S,78°35'31"W], 1450 m, (Willmott, K. R., Hall, J. P. W.), 6 Aug 2009, 1♀ [FLMNH-MGCL-145785], (FLMNH); Parque Nacional Podocarpus, [4°6'4"S,78°57'42"W], 950-1120 m, (Nakahara, S.), 1♂, 2♀ [Genitalia vial for 1♀: SN-14-97], (FLMNH); *Zamora-Yantzaza* rd., Namirez Bajo, [3°58'6"S,78°49'48"W], 1050 m, (Willmott, K. R.), 21 May 2000, 1♂ [Genitalia vial: SN-14-47], (FLMNH). **Peru:** *Amazonas*: Cordillera del Cóndor, Alto Río Comaina, P[uesto de] V[igilancia] 22, Falso Paquisha, [3°58'S,78°25'W], 800 m, (Lamas, G.), 2 Nov 1987, 1♀ (MUSM); *Puno*: Río Tambopata, Z.R. Tambopata - Candamo, Río Távara [13°22'-27'S,69°38'W], 1000 m, (Baynes, H.), 8 Aug 1995, 1♂ (MUSM). **Brazil:** *Acre*: Mâncio Lima, Parque Nacional Serra do Divisor, Porção Norte, [7°26'50"S,73°39'52"W], 200-400 m, (Dolibaina, D., Moura), 10-21 Sep 2011, 1♂ (UFP); Río Moa, Parque Nacional Serra do Divisor (Sede), Mâncio Lima, [7°26'52"S,73°39'55"W], (Mielke, O. H. H., Casagrande, M. M., et al.), 20-27 Jun 2013, 1♂ (UFP), (Mielke, O. H. H., Casagrande, M. M., et al.), 20-27 Jul 2013, 1♂ (UFP).

**Etymology.** This specific epithet refers to the truncated forewing apex of the male. This specific epithet is considered to be a Latinized feminine adjective in accordance with the feminine generic name.

**Distribution (Fig. 5).** Most localities for this species are in Ecuador, where the species occurs throughout the east Andean slopes, typically from 950-1800 m elevation but occasionally as low as 450 m. However, a single record from Puno in southern

Peru, and records from the isolated Serra do Divisor on the Brazil-Peru border of phenotypically similar specimens, suggest that the species may be widely distributed in montane areas throughout the eastern tropical Andes and smaller mountains in the adjacent lowlands.

**Biology.** In Ecuador, males of *E. truncata* n. sp. were observed by KW and JH perching in at least six different localities, always on ridgetops and usually in association with small to large light gaps in secondary forest, often near the forest edge. Three records came from 1000-1040 hrs and two from 1250-1300 hrs. Males perched in small groups on prominent leaves from 1-5 m above the ground. A single female was observed at 1425 hrs in the understory of secondary forest on a ridge at 0.5 m. SN observed a single female in a premontane forest along a river side trail inside Podocarpus National Park, resting on low vegetation along the trail, and a male was found settled on a stone inside the forest. Given that the male was a fresh specimen, presumably it was a recently emerged individual. Except when males are encountered perching, the species is uncommon in the field, as well as in collections.

#### *Euptychia pillaca* Nakahara & Willmott, new species

(Figs 1e-f; 3b; 5)

**Diagnosis.** *Euptychia pillaca* n. sp. is similar and apparently closely related to *E. truncata* n. sp. (SN, unpublished data), but males can be separated from this species by the following characters: (1) the forewing outer margin is convex, rather than truncate, at the apex; (2) the area of dark and dense scales on the dorsal forewing in the distal half of the wing extending into cell  $M_2$  and  $M_3$  is more extensive than in *E. truncata* n. sp., not forming a somewhat distinct black apical spot; (3) the posterior half of the projection from the dorsal margin of the tegumen is closely pressed against the uncus; and (4) the apical point of the juxta extends further dorsally. The female of *E. pillaca* n. sp. is not known with certainty to us, although given the similar male wing pattern, it is likely to resemble the female of *E. truncata* n. sp. Characters that might serve to distinguish the two include, in *E. pillaca* n. sp., the overall darker ventral ground color and darker, less rufous discal, postdiscal and submarginal lines, and the clearly joined postdiscal and submarginal dark bands on the ventral forewing at the inner margin (distinct or joined by a very thin line in *E. truncata* n. sp.). These characters, in addition to collection locality, have been used here to associate females of *E. truncata* n. sp. with males of that species, but examination of larger series of specimens of *E. pillaca*, from multiple localities, is needed to determine whether these characters are stable and diagnostic for the species.

**MALE (Fig. 1e,f):** FW length 16.3mm – 17.0mm (n=3)

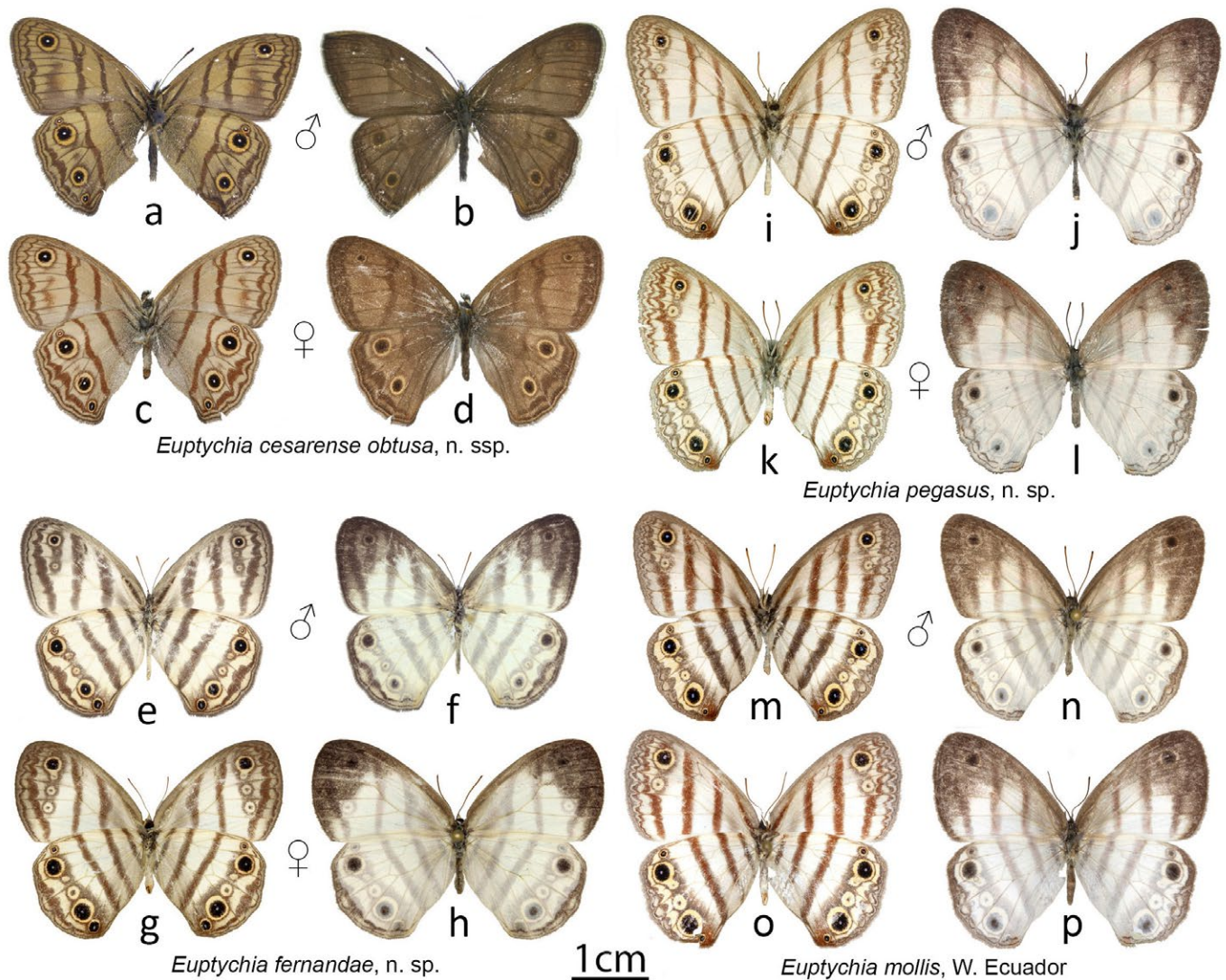
**Head:** Similar to preceding species, except as follows: third segment of labial palpi about one-sixth of second segment in length; antennae with ca. 38 segments (n=1).

**Thorax:** Similar to preceding species.

**Legs:** Similar to preceding species in structure except as follows: foreleg tarsus and femur similar in length, tibia longer.

**Abdomen:** Eighth tergite and sternite posteriorly less sclerotized, anteriorly sclerotized.

**Male genitalia (Fig. 3b):** Similar to preceding species, except as follows



**Fig. 2.** *Euptychia* specimens: **a)** *E. cesarensis obtusa* new subspecies, male (ventral surface); **b)** dorsal surface of (a); **c)** *E. cesarensis obtusa* new subspecies, holotype female (ventral surface); **d)** dorsal surface of (c); **e)** *E. fernandae* new species, holotype male (ventral surface); **f)** dorsal surface of (e); **g)** *E. fernandae* new species, female (ventral surface); **h)** dorsal surface of (g); **i)** *E. pegasus* new species, holotype male (ventral surface); **j)** dorsal surface of (i); **k)** *E. pegasus* new species, female (ventral surface); **l)** dorsal surface of (k); **m)** *E. mollis* Staudinger, Ecuadorian male (ventral surface); **n)** dorsal surface of (m); **o)** *E. mollis*, Ecuadorian female (ventral surface); **p)** dorsal surface of (o).

(two specimens dissected): prominent projection posteriorly from dorsal margin of tegumen above uncus less developed and closely pressed against uncus; posterior region of valvae slightly elongate in lateral view; posterior end of valvae curved inwards at a right angle; base of valvae angular.

**Wing venation:** Forewing recurrent vein slightly shorter than  $m_1$ - $m_2$ ; forewing Cubital vein with basal thickening absent; hindwing humeral vein not developed.

**Wing shape:** Forewing outer margin curved outwards at apex; hindwing rounded.

**Wing pattern:** Dorsal forewing ground color brown, distal half of scales in cells  $R_3$ ,  $R_5$ ,  $M_1$ ,  $M_2$ ,  $M_3$ , and most of those scales in  $R_4$  darker and dense; ventral surface wing pattern similar to preceding species, except darker overall, with darker purplish brown (rather than rufous) bands, forewing postdiscal band bent outwards posterior of vein  $Cu_2$  to connect with submarginal band at inner margin.

**FEMALE:** Not known with certainty.

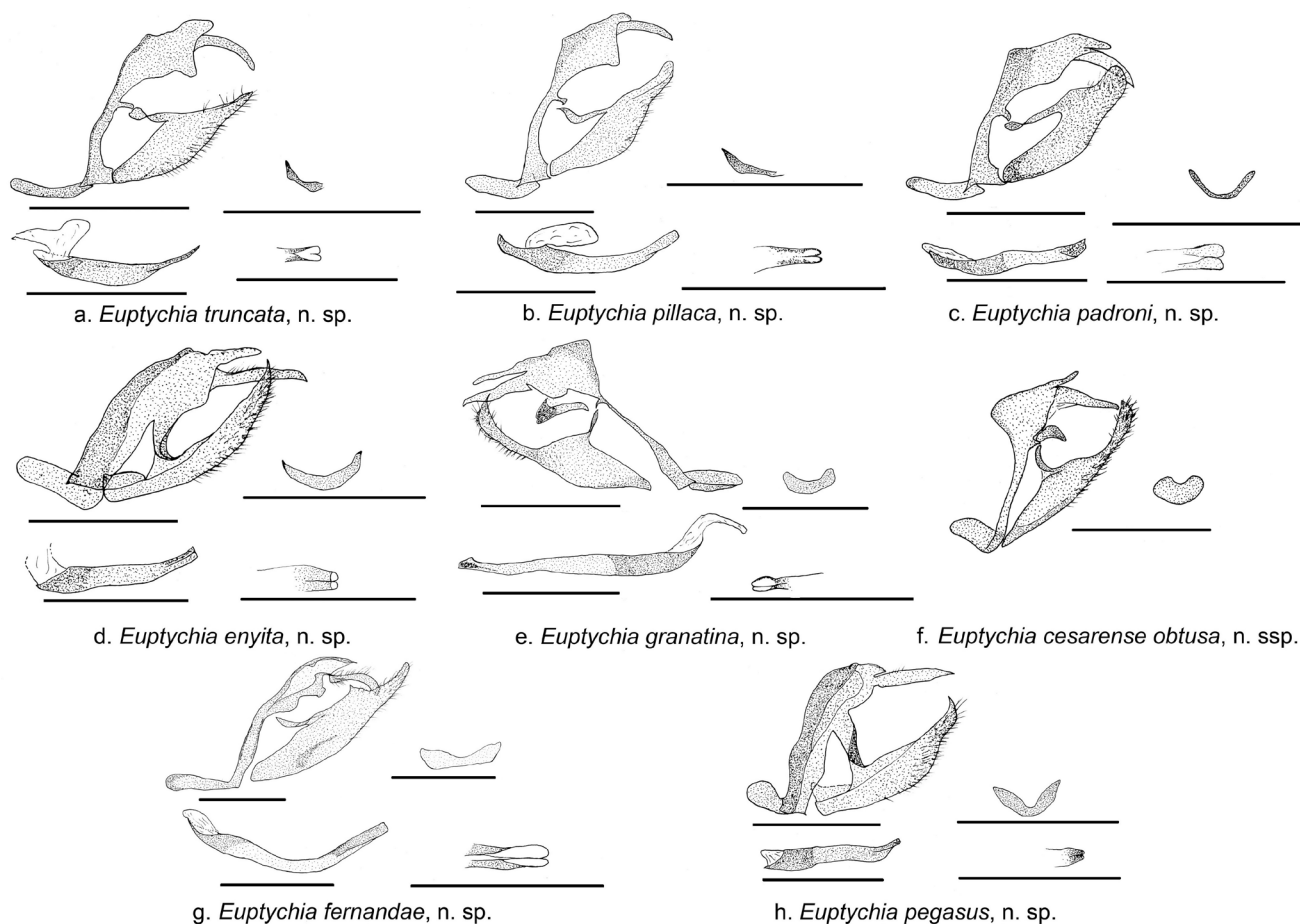
**HOLOTYPE MALE:** Ecuador: Zamora-Chinchipec: km 10 Los Encuentros-El Panguí, San Roque, ridge E, [3°42'11"S, 78°35'36"W], 1050 m, (Willmott, K. R., Hall, J. P. W.), 4 August 2009, [FLMNH-MGCL-145783], (to be deposited in MECN). **PARATYPES:** same data as HT, 1♂, [FLMNH-MGCL-145799; Genitalia vial: SN-14-159], 1♂, [FLMNH-MGCL-145787; Genitalia vial:

SN-15-87], (FLMNH). **OTHER EXAMINED SPECIMENS:** Peru: Amazonas: Cordillera del Cóndor, P[uesto de] V[igilancia] 3 (Alfonso Ugarte), [3°55'S, 78°26'W], 1000-1200 m, (Lamas, G.), 18 Jul 1994, 1♂, 1♀, (MUSM).

**Etymology.** This specific epithet is based on the Quechua word, 'pillaca', which means purple and black, referring to the purple ventral bands and black apex of the dorsal forewing of this species. This specific epithet is treated as a Latinized feminine adjective.

**Distribution (Fig. 5).** This species is known only from the type locality in southeastern Ecuador and a locality in the nearby Cordillera del Cóndor, on the Ecuador-Peru border.

**Biology.** The three known Ecuadorian males of this species were collected on the same cloudy morning between 1050-1100 hrs perching on bushes 3 m above the ground along a wide trail through secondary forest. The trail was near the edge of a steep slope dropping down the eastern side of one of the distinctive



**Fig. 3.** Male genitalia of *Euptychia* taxa described here (Scale bar = 1mm). Clockwise from top left, figures show genitalic capsule in lateral view, juxta in posterior view, posterior tip of aedeagus in dorsal view, aedeagus in lateral view. **a)** *Euptychia truncata* **new species** (Genitalia vial SN-15-170); **b)** *Euptychia pillaca*, **new species** (Genitalia vial SN-14-159); **c)** *Euptychia padroni*, **new species** (Genitalia vial SN-15-36); **d)** *Euptychia enyita*, **new species** (Genitalia vial SN-14-8); **e)** *Euptychia granatina*, **new species** (Genitalia vial SN-14-105); **f)** *Euptychia cesarense obtusa*, **new subspecies** (Genitalia vial KW-09-02; aedeagus not located in vial); **g)** *Euptychia fernandae*, **new species** (Genitalia vial SN-15-1); **h)** *Euptychia pegasus*, **new species** (Genitalia vial SN-14-16).

sandstone 'tepuis' that are common in southeastern Ecuador. A single male of *Euptychia truncata* **n. sp.** was found perching on the same bushes 10 min earlier.

**Remarks.** A male and female pair of specimens in the MUSM, listed above under 'Other examined specimens', are tentatively identified as this species but not included as paratypes. Differences between the Peruvian and Ecuadorian males include, in the former, slightly less black scaling in the dorsal forewing apex (although this may be an artifact since the wing is a little worn), a paler ventral surface, a larger ventral hindwing tornal ocellus, and a slightly more angled forewing shape. Given the similarities among species in this species group (SN, unpublished data), determining the identity of these specimens will require further investigation.

***Euptychia padroni*** Nakahara, Lamas & Willmott, **new species**  
(Figs 1g-j; 3c; 4b; 5)

**Diagnosis.** *Euptychia padroni* **n. sp.** is similar in wing pattern to *E. marceli* Brévignon, from the Guianas, but can be distinguished by the following characters: (1) the wings are more opaque, not showing conspicuous dorsal black submarginal ocelli from the

ventral surface; (2) the ocellus in ventral hindwing cell  $Cu_1$  is smaller; (3) the ventral dark bands are narrower; (4) the ventral hindwing thin, dark submarginal line is more undulate; (5) the ventral hindwing dark postdiscal band is placed more distally; (6) the male lacks dorsal abdominal androconial hair pencils, instead having black androconial scales on the 1<sup>st</sup> and 2<sup>nd</sup> tergites; (7) the projection of the dorsal margin of the tegumen above the uncus is elongate and posteriorly tapered; and (8) the lateral arms of the lamella antevaginalis are broader. The relatively large size of the ventral hindwing eyespot in cell  $Cu_1$ , pale grayish ventral ground color, and ventral hindwing postdiscal band that is bent slightly distally in the discal cell, help distinguish the species from other similar congeners.

**MALE (Fig. 1g,h):** FW length 18.0mm – 19.5mm (n=4)

**Head:** Similar to previous species except as follows: third segment of labial palpi about one-fifth of second segment in length; antennae with ca. 40 segments (n=1).

**Thorax:** similar to previous species.

**Legs:** Similar to previous species except as follows: foreleg tibia and femur similar in length, tarsus slightly shorter.

**Abdomen:** Black androconial scales covering 1<sup>st</sup> and 2<sup>nd</sup> tergites, remainder of abdomen brown; eighth tergite and sternite posteriorly less sclerotized, anteriorly sclerotized.

**Male genitalia (Fig. 3c):** Tegumen somewhat rectangular in lateral view, dorsal margin and anterior margin straight, prominent projection posteriorly from dorsal margin above and parallel to uncus, about half length of uncus; uncus without setae, posterior half of uncus narrow, anterior half somewhat subtriangular in dorsal view, ventral margin concave in lateral view, with setae near base, posterior end not hooked, almost same length as tegumen; ventral arms of tegumen merge with anterior margin of tegumen, medially divided, middle section roughly straight, anterior side sclerotized; appendices angulares absent; saccus relatively short and longer than uncus, dorsal arms of saccus combined with ventral arms of tegumen; juxta present; valvae with setae, positioned at approximately 30° angle to horizontal, distal quarter of valva appears somewhat rectangular in lateral view, ventral margin convex, dorsal margin slightly concave, anteriorly tapered, anterior end of costa 'leaf'-shaped; aedeagus almost same length as valvae, anterior one-third of ventral margin slightly concave, open anterodorsally, posteriorly bifid, cornuti absent.

**Wing venation:** Similar to previous species.

**Wing shape:** Similar to previous species except for outer margin of forewing roughly straight.

**Wing pattern:** Dorsal ground color uniformly dark brown, very slightly translucent, just revealing ventral bands and ocelli; ventral forewing ground color grayish brown, veins in distal half of wing darkly scaled; basal, discal, postdiscal and submarginal reddish brown bands, and marginal thin black line, from costa to inner margin, typical of the genus, submarginal line notably narrows anterior of vein  $M_3$ , marginal line narrow throughout, both lines strongly undulate anterior of vein  $M_3$ ; fringe blackish; submarginal ocellus centered in cell  $M_1$  extending posteriorly to mid-cell  $M_2$ , small, somewhat variable in size submarginal ocellus in middle cell  $M_3$ ; ventral hindwing ground color same as forewing; basal, discal, postdiscal, submarginal and marginal bands/lines as on forewing, postdiscal band kinked slightly distally in discal cell, submarginal band narrow in apex and notably expanded around vein  $M_3$ , marginal line parallel to margin; fringe blackish; cells  $R_s$ ,  $M_1$ , and  $Cu_1$  each with ringed, submarginal ocellus similar to forewing ocellus in cell  $M_1$ , ocellus in  $R_s$  small, that in cell  $M_1$  similar to that in forewing cell  $M_1$ , that in cell  $Cu_1$  relatively large, with yellow ring extending into adjacent cells..

**FEMALE (Fig. 1i,j):** FW length 17.3mm – 17.4mm (n=3): Similar to male except as follows: foretarsus divided into five segments; abdomen entirely brown, lacking black scales on basal tergites; forewings broader and more rounded; dorsal ground color paler, more grayish, with translucence more prominent; ocellus present in dorsal hindwing cells  $Cu_1$  and  $M_1$ ; ventral surface ground color paler buff-brown; dark bands more reddish.

**Female genitalia (Fig. 4b):** Lamella antevaginalis sclerotized, projecting posteriorly in ventral view, bottom one-fifth of female genitalia in posterior view sclerotized; basal side of 8<sup>th</sup> abdominal segment sclerotized; ductus bursae membranous, origin of ductus seminalis close to ostium bursae although slightly towards corpus bursae; corpus bursae roughly oval in dorsal view, extending to juncture of fourth and fifth abdominal segment, with two signa.

**HOLOTYPE MALE: Ecuador:** *Napo*: km 49 Tena-Loreto rd., [0°42'51"S,77°44'26"W], 1300 m, (K. Willmott & J. Hall), 31 Aug 1997, (to be deposited in MECN). **PARATYPES: Ecuador:** *Napo*: km 49 Tena-Loreto rd., [0°42'51"S,77°44'26"W], 1300 m, (Willmott, K. R., Hall, J. P. W.), 7-11 Oct 1996, 1♂, (FLMNH); 'Rio Hollin' [=km 49 Tena-Loreto rd.], [0°42'51"S,77°44'26"W], 1350 m, (Trembath, D. A.), 23 Oct 1996, 1♂, (DATR); *Morona-Santiago*: Guarumales/Hidropaute, [2°34'34"S,78°30'46"W], 1730 m, (Willmott, K. R.), 5 Nov 2010, 1♂, [FLMNH-MGCL-146170], (FLMNH); km 10 Guarumales-Méndez rd., 'Sopladora ridge', [2°35'54"S,78°27'23"W], 1650 m, (Willmott, K. R.), 8 Nov 2010, 1♂, [FLMNH-MGCL-146176], 1♂, [FLMNH-MGCL-146177], 1♀, [FLMNH-MGCL-146175], (FLMNH); km 14 Chigüinda-Gualaquiza rd., [3°15'45"S,78°39'4"W], 1300 m, (Willmott, K. R., J. C. R., J. I. R.), 15 Jun 2013, 1♀, [FLMNH-MGCL-157404], (FLMNH); km 19 Macas-Nueva de Octubre rd., Río Abanico, [2°15'18"S,78°12"W], 1600-1800 m, (R. C. Busby), 12 Jan 2015, 1♂, [FLMNH-MGCL-195480], (FLMNH); Yakunk-Cutucú trail, lower ridge, [2°45'40"S,78°9'40"W], 1340 m, (Willmott, K. R.), 3 Dec 2003, 1♀, (FLMNH); Yakunk-Cutucú trail, upper ridge, [2°45'49"S,78°8'40"W], 1570 m, (Willmott, K. R.), 4 Dec 2003, 1♀, (FLMNH); *Zamora-Chinchi*: km 7 Zamora-Loja old rd., Quebrada Chorrillos, [4°1'55"S,79°0'12"W], 1250 m, (Willmott, K. R., Hall, J. P. W.), 16 May 2000, 1♀, [Genitalia vial: SN-15-35], (FLMNH); Zamora, ridge to west, [4°4'30"S,78°58'7"W], 1400-1450 m, (Willmott, K. R., Hall, J. P. W.), 18 May 2000, 1♂, [Genitalia vial: SN-15-36], (FLMNH), 13 Aug 2009, 1♀, [FLMNH-MGCL-145792; Genitalia vial: SN-15-91], (FLMNH). **Peru:**

*Amazonas*: Cordillera del Cóndor, P[uesto de] V[igilancia] 3 (Alfonso Ugarte), [3°55'S,78°26'W], 1000-1200 m, (Lamas, G.), 16 Jul 1994, 2♂, (MUSM); *San Martín*: El Afluente, [5°40'S,77°42'W], 1400 m, (Pintado, J.), Apr 2015, 1♂ (MUSM); *Junin*: 0-1 km E Mina Pichita, [11°5'S,75°25'W], 2000 m, (Lamas, G.), 2 Aug 1988, 1♀, (MUSM); Naranjal, [11°8'S,75°24'W], (Mielke, O. H. H., Casagrande, M. M.), 15-18 Oct 1989, 1♀, (DZUP); *Cuzco*: Cosñipata, Quebrada Quitacalzón, [13°1'S,71°30'W], 1100 m, (Brock, J.), 12 May 2012, 1♀, (MUSM); San Pedro, [13°3'S,71°33'W], 1400 m, (Gibson, L.), 4 Feb 2013, 2♂, (MUSM), (Lamas, G.), 23 Sept 2011, 1♀, (MUSM). **Bolivia:** *La Paz*: San Antonio, [14°35'S,68°23'W], (Garlepp, G.), 1896, 1♂, (ZMHU).

**Etymology.** This Andean butterfly is named after our friend Sebastián Padrón in recognition of his passion in studying Andean butterflies and for his family's warm hospitality in Cuenca, Ecuador. This specific epithet is considered to be a Latinized masculine noun in the genitive case.

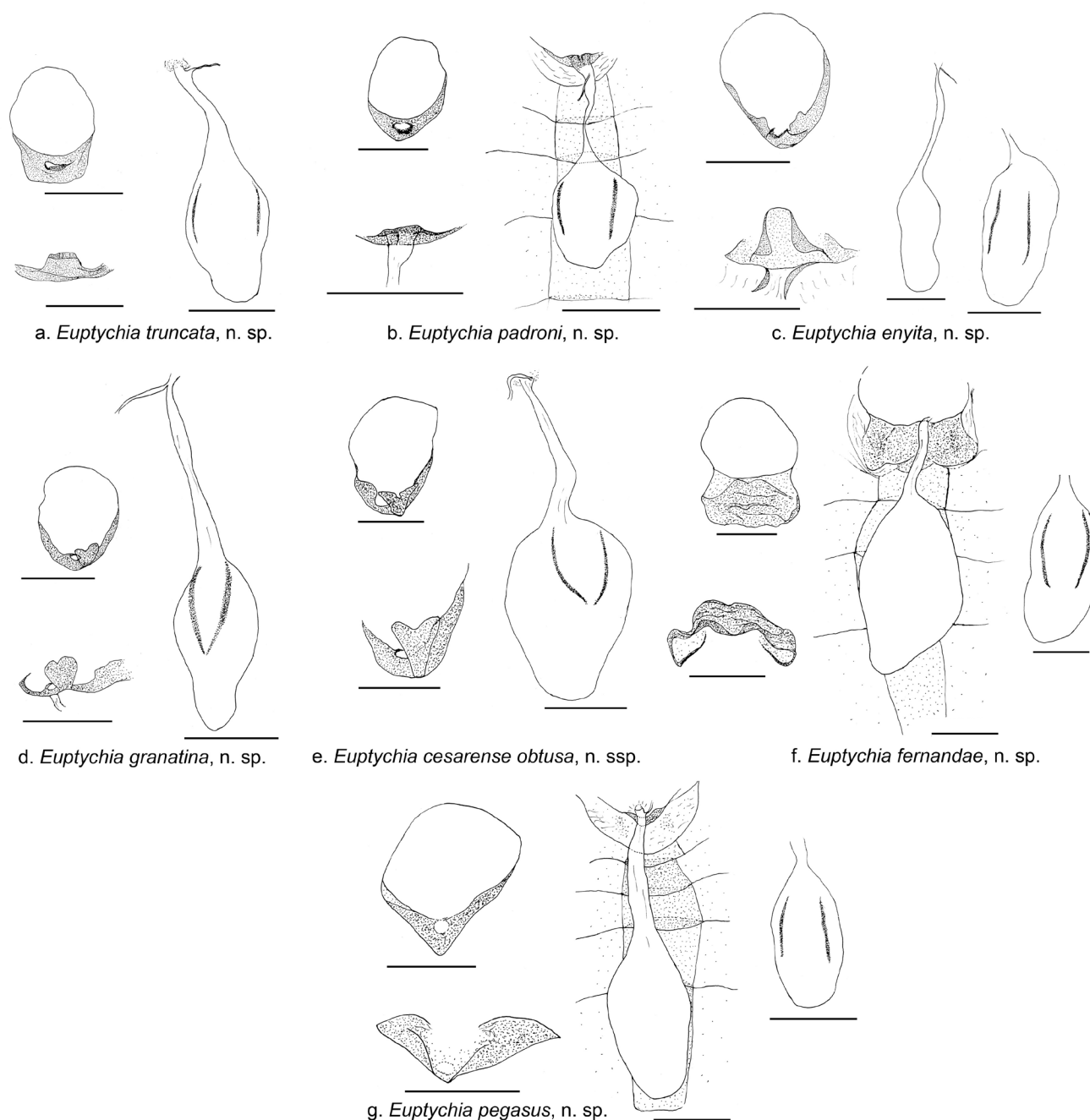
**Distribution (Fig. 5).** Eastern slopes of the Andes from northern Ecuador to Bolivia, but presumably extending at least into southeastern Colombia.

**Biology.** This species is not uncommon in undisturbed cloud forest habitats, where it occurs from 1100-2000 m elevation. In Ecuador, males were found perching in light gaps on prominent ridgetops in tall forest with open understorey (e.g., Fig. 7b), from 3-4 m above the ground in the mid-morning. One male was also found in a hillside light gap at 1400 hrs, possibly perching. Females were found flying along forest edges at roads or rivers, or in the understorey of tall forest, in the middle of the afternoon, and were about as common as males in the field.

*Euptychia enyita* Nakahara, Lamas & Willmott, new species  
(Figs 1k-n; 3d; 4c; 5)

**Diagnosis.** The combination of a brown dorsal surface (in the male) and ventral hindwing submarginal ocelli in cells  $Cu_2$ ,  $M_3$  and  $M_2$ , distinguish *E. enyita* n. sp. from most congeners. *Euptychia enyita* is very similar to *E. enyo* Butler (Fig. 1o,p), but can be distinguished by the following characters: (1) absence of ocellus in ventral forewing cell  $Cu_1$ ; (2) ventral hindwing submarginal band prominently undulate in cells  $M_2$  and  $M_3$ ; (3) two (rather than just one) ventral hindwing marginal lines that are also undulate, not parallel to distal margin; and (4) ocellus present in dorsal hindwing cell  $Cu_2$ . Despite its wing pattern resemblance, the male and female genitalia of *E. enyita* cannot be mistaken with *E. enyo*, and the two appear not to be sister species (SN, unpublished data). Instead, *E. enyita* seems to be a relatively isolated member of a clade containing *Euptychia* species with predominantly white wings (SN, unpublished data), such as *E. mollis* Staudinger, a species among which female specimens of *Euptychia enyita* were found in several museum collections. *Euptychia enyita* can be separated from *E. mollis* by the following characters: (1) ocellus present in dorsal hindwing cell  $Cu_2$ ; (2) uncus slightly longer; (3) valvae in lateral view slender; and (4) lamella antevaginalis in ventral view with posteriorly projecting, 'U'-shaped central plate, and lateral arms broadening towards central plate and terminating with two, pointed, 'tooth'-like projections.

As a taxonomic note, *Euptychia enyo* was described by Butler (1867) based on one or more specimens from "Cuenca",



**Fig. 4.** Female genitalia of *Euptychia* taxa described here (Scale bar = 1mm). Figures show posterior view lamella antevaginalis (top left), ventral view lamella antevaginalis (bottom left), and female genitalia in dorsal view (right); additional figures of corpus bursae are perpendicular to signa. **a)** *Euptychia truncata* **new species** (Genitalia vial SN-14-97); **b)** *Euptychia padroni*, **new species** (Genitalia vial SN-15-35); **c)** *Euptychia enyita*, **new species** (Genitalia vial SN-15-32); **d)** *Euptychia granatina*, **new species** (Genitalia vial SN-14-98); **e)** *Euptychia cesareense obtusa*, **new subspecies** (Genitalia vial SN-14-76); **f)** *Euptychia fernandae*, **new species** (Genitalia vial SN-15-77); **g)** *Euptychia pegasus*, **new species** (Genitalia vial SN-15-16).

Ecuador. As the species does not occur in the high Andes, it was obviously collected at lower elevations, perhaps to the immediate east of Cuenca. The illustration of this species in the original description (1867: pl. 39, fig. 22) clearly shows four ocelli on the VFW and a relatively smooth ventral hindwing submarginal band, consistent with the single female syntype that has been located, in the BMNH, and both characters are not present in the new species that we describe here.

**MALE (Fig. 1k,l):** FW length 17.2mm – 18.4mm (n=5)

**Head:** Similar to other *Euptychia* species except as follows: third segment of labial palpi about one-fifth of second segment in length; antennae with about 36 segments (n=1).

**Thorax:** similar to previous species.

**Legs:** Pale cream, foreleg tibia and femur similar in length, tarsus shorter.

**Abdomen:** Anterior side of eighth tergite more strongly sclerotized in a band along dorsal edge; eighth tergite and sternite posteriorly less sclerotized, anteriorly sclerotized.

**Male genitalia (Fig. 3d):** Tegumen indistinguishable from combined ventral arms of tegumen and dorsal arms of saccus, dorsal margin of tegumen short, anterior margin straight, prominent projection posteriorly from dorsal



margin above uncus, about half length of uncus; uncus relatively thick, without setae, slightly tapered posteriorly, almost same as tegumen in length; ventral arms of tegumen medially divided, middle section roughly straight; appendices angulares present; saccus slightly longer than uncus, dorsal arms of saccus combined with ventral arms of tegumen; juxta present; valvae with setae, positioned at approximately 30° angle to horizontal, distal quarter of valva in lateral view flat dorsally and curved basally, posterior side tapered, anterior side angular, costa fused to dorsal arms of saccus; aedeagus slightly shorter than valvae, open anteriorly, posteriorly bifid, cornuti absent.

**Wing venation:** Similar to other *Euptychia* species except for hindwing humeral vein somewhat developed.

**Wing shape:** forewing triangular, hindwing more rounded, typical of genus.

**Wing pattern:** Dorsal ground color uniformly grayish brown, somewhat translucent, revealing ventral bands and ocelli, forewing apex slightly darker brown, tiny submarginal ocellus in hindwing tornus in cell Cu<sub>2</sub>, sometimes surrounded by diffuse, pale yellow-brown scaling; ventral ground color pale grayish brown, veins in vicinity of ocelli darkly scaled; ventral forewing basal, discal, postdiscal and submarginal reddish brown bands, and marginal thin black line, from costa to inner margin, typical of the genus, submarginal band notably narrower and strongly undulate anterior of vein M<sub>3</sub>, marginal line strongly undulate throughout wing, bordered distally by an additional, paler, thinner, second dark marginal line; fringe blackish; submarginal ocellus centered in cell M<sub>1</sub> extending just into cell M<sub>2</sub>, small, submarginal ocellus in middle of cell M<sub>3</sub>; m<sub>1</sub>-m<sub>2</sub> and r-m<sub>1</sub> at end discal cell prominently marked by reddish scales (somewhat like a forked postdiscal band); ventral hindwing ground color same as forewing; basal, discal, postdiscal, submarginal and two marginal bands/lines as on forewing, submarginal band narrow in apex and notably expanded in cells M<sub>3</sub> and M<sub>2</sub> forming thickened 'M'-shaped markings, marginal lines strongly undulate, fringe blackish; six submarginal ocelli, in cells Rs to Cu<sub>2</sub>, black with white pupil and ringed with yellow except in cells M<sub>3</sub> and M<sub>2</sub> where ocelli appear as dark brown rings (with variable central dark brown spot); reddish brown scaling in cell Cu<sub>2</sub> around and basal of submarginal ocellus.

**FEMALE (Fig. 1m,n):** 17.4mm – 18.2mm (n=2): Similar to male except as follows: female foretarsus divided into five segments; forewing broader and more rounded; dorsal surface grayish white, becoming brown in distal third of forewing and marginal area of hindwing, dark reddish brown discal, postdiscal and submarginal bands as on ventral surface, tiny submarginal ocellus in cell Cu<sub>2</sub>, a larger black ocellus with yellow ring in cell Cu<sub>1</sub>, a black ocellus with rufous ring in cell M<sub>1</sub>.

**Female genitalia (Fig. 4c):** Lamella antevaginalis sclerotized, with posteriorly projecting, 'U'-shaped central plate, and lateral arms broadening towards central plate and terminating with two, pointed, 'tooth'-like projections, basal side of 8<sup>th</sup> abdominal segment sclerotized; intersegmental membrane between seventh and eighth abdominal segment tightly attached to anterior edge of lamella antevaginalis, folded, two sclerotized regions present; ductus bursae membranous, origin of ductus seminalis close to ostium bursae; corpus bursae roughly oval in dorsal view, extending to third abdominal segment, with two signa.

**HOLOTYPE MALE: Ecuador: Napo:** Río Napo, Puerto Napo-Ahuano rd., Chichicorrumi, [1°4'11"S, 77°37'45"W], 450m, (K. Willmott & J. Hall), 9 Jul 1993, (to be deposited in MECN). **PARATYPES: Ecuador: Napo:** Campana Cocha, E. Puerto Misahuallí, 335m, (Ecuador Exp. 1982), 2 Jun 1982, 1♀, (USNM); km 14 Tena-Puyo rd., Apuya, [1°6'18"S, 77°46'42"W], 600m, (Willmott, K. R., Hall, J. P. W.), 4 May 1994, 1♂, (FLMNH) (Warren-Gash, H.), 22 Aug 2010, 2♂, 2♀, (HAWA), (Nakahara, S.), 17-21 Jul 2014, 2♂, 2♀, (FLMNH); Puerto Misahuallí, [1°1'36"S, 77°40'W], 335m, (Francia, H. E.), 2 Jun 1982, 1♀, (USNM); Río Sinde, km 12 Tena-Puyo rd., Finca San Carlo, [1°5'18"S, 77°47'24"W], 600m, (Willmott, K. R., Hall, J. P. W.), 8 Sep 1996, 1♂, (FLMNH); Tena-Puyo rd., El Capricho, [1°11'14"S, 77°49'53"W], 850m, (Warren-Gash, H.), 13 Sep 2011, 1♀, (HAWA); **Pastaza:** Río Bobonaza, Sarayacu, [1°44'S, 77°29'W], 1♂, (AMNH); **Morona-Santiago:** E of Misión de Bomboiza, [3°26'6"S, 78°30'18"W], 950-1300m, (Busby, R. C.), 18 Sep 2014, 1♀, [FLMNH-MGCL-195389; Genitalia vial: SN-15-32], (FLMNH); forest ridge nr. Yaupi, [2°51'15"S, 77°56'48"W], 400m, (Aldaz, R.), 18 Jun 2009, 1♂, [FLMNH-MGCL-152451], (FLMNH); km 14 Chigiñinda-Gualaquiza rd., [3°15'45"S, 78°39'4"W], 1300m, (Willmott, K. R., J. C. R., J. I. R.), 14 Jun 2013, 1♂, [FLMNH-MGCL-157403; Genitalia vial: SN-15-31], (FLMNH); km 2 Santiago-Puerto Morona rd., [3°28'S, 78°0'W],

350-500m, (Busby, R. C., Ahrenholz, D. H.), 8 Jan 2015, 1♂, [FLMNH-MGCL-195460], 1♂, [FLMNH-MGCL-195461], (FLMNH); km 2 Santiago-Puerto Morona rd., [3°2'8"S, 78°0'W], 450-500m, (Hall, J. P. W., Willmott, K. R.), 4, 9 Aug 2015, 1♂, [FLMNH-MGCL-195727], (FLMNH); Río Waiwaim, Taisha, [2°22'36"S, 77°30'W], (Hall, J. P. W.), 1-4 Jun 1994, 1♂, [FLMNH-MGCL-191765], (FLMNH). **Peru: Loreto:** Z[ona] R[eservada] de Sierra del Divisor, 4.5 km SSE Ana María/Río "Trapiche" [sic], Tapiche], [7°3'22.71"S, 74°6'51.56"W], 190m, (Espinoza, C.), 20-22 Feb 2009, 1♂, (MUSM); **Amazonas:** 0-5 km E La Peca, [5°37'S, 78°26'W], 1100-1400m, (Lamas, G.), 23 Sept 1999, 1♀, (MUSM); Quebrada Cuija, [5°54'S, 77°58'W], 1500m, (Robbins, R., Lamas, G.), 7 Nov 1998, 1♂, (USNM); **San Martín:** Santa Sofia, Quebrada Matador, [6°8'S, 75°43'W], 120m, (Tafur, A.), 6 Mar 2010, 1♀, (MUSM); Tarapoto-Yurimaguas, km 18, [6°27'S, 76°17'W], 1250m, (Robbins, R. K., et al.), 16 Nov 1998, 3♂, (USNM), 18 Nov 1998, 2♂, (USNM), (Robbins, R. K., et al.), 17 Nov 1998, 1♂, (USNM), (Robbins, R. K.), 16 Nov 1998, 1♂, (USNM); **Huánuco:** NW de Puente Cayumba, [9°29'S, 75°57'W], 870m, (Emmel, T. C.), 2 Jun 1999, 1♀, (MUSM); Tingo María, [9°18'S, 76°0'W], 700m, (Brower, A. V. Z.), Dec 1996, 1♀, (AMNH); **Madre de Dios:** Parque Manu, Pakitza, [11°55'48"S, 71°15'18"W], 340m, (Robbins, R. K.), 11 Oct 1991, 1♂, 1♀, (MUSM). **Bolivia: Santa Cruz:** Río Yapacani, [15°59'S, 64°30'W], Aug 1913, 1♀, (CMNH); Yungas, [17°24'23"S, 64°38'33"W], Aug 1913, 1♀, (CMNH).

**Etymology.** This specific epithet is coined in recognition of the resemblance of this species to *E. enyo*. This specific epithet is considered to be a Latinized feminine noun in apposition.

**Distribution (Fig. 5).** Eastern foothills of the Andes from Ecuador to southern Peru.

**Biology.** This species is uncommon and occurs in primary rain forest from 120 m to 1500 m, although most localities are in the lowlands. In Ecuador, the majority of the localities where the authors have observed this species are ridge tops, where males typically perch in light gaps or sunflecks from 1-3 m above the ground (e.g., Fig. 7a). Males may perch together in small groups, along with *E. enyo*, and they fly with a slow, skipping flight around light gaps before returning to their perching leaf. We have not observed the female in the field, where it appears to be rarer than the male.

***Euptychia granatina* Nakahara, Le Crom & Hall, new species**  
(Figs 1q-t; 3e; 4d; 6)

**Diagnosis.** *Euptychia granatina* n. sp. is most similar to *E. cesarensis* Pulido, Andrade, Peña & Lamas, 2011 with which it is partially sympatric, and it can be distinguished by the following characters: (1) smaller adult size; (2) broader, straighter dark ventral bands; (3) ventral forewing post median area marked prominently with reddish shading, extending unbroken from cell Cu<sub>2</sub> to ocellus in cell M<sub>1</sub>, with no orange scaling at basal edge of band in cell Cu<sub>1</sub>; (4) VFW with vein R<sub>4+5</sub> not lined with dark scales connecting dark reddish postdiscal band to junction of veins R<sub>4</sub> and R<sub>5</sub> (in contrast to *E. cesarensis*, in which these dark scales seem to be consistently present, even if variable among subspecies); (5) male genitalia with anterior margin of tegumen flattened; (6) male genitalia with projection from posterior end of dorsal margin of tegumen slightly shorter than uncus (projection comparatively shorter in *E. cesarensis*); and (7) female genitalia with 'heart'-shaped portion of lamella antevaginalis shorter. The ventral hindwing tornal ocellus and broad, reddish, straight dark ventral bands help distinguish this species from most other *Euptychia* species.

**MALE (Fig. 1q,r):** FW length 15.5mm – 17.5mm (n=3)

**Head:** Similar to previous species except as follows: third segment of labial palpi ventrally about one-third of second segment in length; antennae with ca. 34 segments (n=1).

**Thorax:** similar to previous species.

**Legs:** Dark brown except mid- and hindleg with scattered pale brown scales on tibia and tarsus, becoming more uniform ventrally, terminal tarsal segments dark brown, foreleg tibia and femur almost same length, tarsus shorter.

**Abdomen:** Eighth tergite and sternite developed similar to those of seventh abdominal segment, apparently uniformly sclerotized.

**Male genitalia (Fig. 3e):** Tegumen evenly broadening anteriorly in lateral view, dorsal margin of tegumen almost straight with a slight indentation posteriorly, anterior margin straight, ventral margin convex posteriorly, long, narrow, straight projection from posterior end of dorsal margin present, about three-quarters length of uncus; uncus tapered towards end and hooked downwards, posterior one-third slightly hooked upwards, uncus almost same as tegumen in length; ventral arms of tegumen fused to anterior margin of tegumen and medially divided, middle section roughly straight; appendices angulares absent; subscaphium present, somewhat 'm'-shaped in ventral view, not fused with combined ventral arms of tegumen and dorsal arms of saccus; saccus relatively short, similar in length to scaphium, dorsal arms of saccus combined with ventral arms of tegumen; juxta present; valvae with setae, positioned at approximately 30° angle to horizontal, distal half of valva narrow, hooked upwards at tip and tapered in lateral view, basal half somewhat rectangular in lateral view, ventral margin convex; aedeagus similar in length to valvae plus saccus, middle section slightly curved, anterior one-third slightly curved, open anterodorsally.

**Wing venation:** Similar to immediately preceding species.

**Wing shape:** Forewing outer margin almost straight, slightly angled inwards; hindwing slightly elongate at tornus.

**Wing pattern:** Dorsal ground color uniformly dark brown and opaque, ventral surface submarginal ocelli barely visible; ventral ground color medium brown, veins in vicinity of ocelli darkly scaled; basal, discal, postdiscal and submarginal reddish brown bands and marginal thin black line, from costa to inner margin, present as in other *Euptychia*, relatively straight, broad and even in width, submarginal band gradually broadening towards middle of wing, marginal line slightly undulate in anterior half of wing; fringe blackish; submarginal ocellus centered in cell  $M_1$ , extending just into cell  $M_2$ ;  $m_1$ - $m_2$  and  $r$ - $m_1$  at end of discal cell prominently marked by reddish scales close and parallel to basal edge of postdiscal band; indistinct, brown scaling between postdiscal and submarginal band from cell  $Cu_2$  to apical ocellus; ventral hindwing ground color same as forewing; basal, discal, postdiscal, submarginal and marginal bands/lines as on forewing except postdiscal band slightly more undulate, fringe blackish; four submarginal ocelli, in cells  $R_s$  to  $Cu_2$ , black with white pupil and ringed with yellow, then thin reddish circle, comprising a small ocellus in cell  $R_s$ , similar, larger ocelli in cells  $M_1$  and  $Cu_1$ , smaller ocellus in cell  $Cu_2$ , placed in middle of submarginal band; indistinct brownish submarginal scaling in cells  $M_3$  and  $M_2$ .

**FEMALE (Fig. 1s,t):** FW length 15.0mm – 17.5mm (n=7): Similar to male except as follows: female foretarsus divided into five segments; forewing rounder; dorsal ground color paler and more translucent, distinct ocelli present in dorsal forewing cell  $M_1$ , and in dorsal hindwing cells  $M_1$  and  $Cu_1$ , with (in some specimens) a tiny ocellus in cell  $Cu_2$ ; ventral ground color paler, transverse bands notably more reddish.

**Female genitalia (Fig. 4d):** Lamella antevaginalis sclerotized, projecting posteriorly in ventral view, with a central, somewhat 'heart'-shaped plate in ventral view connected at base to thin but dorsally broadening sclerotized band, basal side of 8th abdominal segment sclerotized; ductus bursae membranous, origin of ductus seminalis close to ostium bursae; corpus bursae 'pear'-shaped in dorsal view, extending to third abdominal segment, with two signa fused posteriorly.

**HOLOTYPE MALE:** Ecuador: *Morona-Santiago*: km 14 Limón-Gualaquiza rd., [3°26'S, 78°28'12"W], 1500 m, (Busby, R. C.), 22 Sep 2014, 1♂, [FLMNH-MGCL-195380], (to be deposited in MECN). **PARATYPES:** **Colombia:** *Cundinamarca*: 'Bogotá', [4°35'N, 74°4'W], 1♀, (USNM). **Ecuador:** *Sucumbios*: Cerro Lumbaqui Norte, [0°1'42'N, 77°19'W], 900 m, (Hall, J. P. W.), 24, 26, 27 Feb 2001, 1♀, (FLMNH); *Napo*: Baeza-Lago Agrio rd., Río Salado, [0°11'30'S, 77°42'W], 1400 m, (Willmott, K. R., Hall, J. P. W.), 3 Mar 1995, 1♀, (FLMNH); km 10 El Chaco-El Reventador rd.,

[0°16'30"S, 77°45'36"W], 1800-1950 m, (Ahrenholz, D. H.), 3 Jan 2015, 1♂, [FLMNH-MGCL-195425], (FLMNH); km 14 Tena-Puyo rd., Apuya, [1°6'18"S, 77°46'42"W], 600 m, (Nakahara, S.), 17-21 Jul 2014, 2♀, (one female dissected, Genitalia vial SN-14-98) (FLMNH); *Tungurahua*: Río Negro, 1500 m, (Nicolay, S. S.), 10 Nov 1984, 1♂, (USNM); *Pastaza*: 10.5 km SW Palora, [1°45'20"S, 78°14'49"W], 1000 m, (Hall, J. P. W., Willmott, K. R., J. C. R., J. I. R.), 2 Aug 2015, 1♀, [FLMNH-MGCL-195706], (FLMNH); 13 km E Diez de Agosto, Condor Mirador, [1°27'58"S, 77°47'58"W], 1150 m, (Boyer, P.), 19-20 Jan 2012, 1♀, (PIBO); km 11 Mera-Río Anzu rd., [1°25'15"S, 78°3'8"W], 1200 m, (Hall, J. P. W., Willmott, K. R., J. C. R., J. I. R.), 31 Jul 2015, 1♀, [FLMNH-MGCL-195705], 1♀, [FLMNH-MGCL-195704], (FLMNH); km 25 Puyo-Tena rd., [1°19'42"S, 77°56'W], 950 m, (Willmott, K. R., Hall, J. P. W.), 23 Aug 1993, 1♀, (FLMNH); nr. San José, km 25 Puyo-Tena rd., Río Llandia, [1°19'59"S, 77°55'52"W], 1000 m, (Warren-Gash, H.), 25 Aug 2010, 3♂, 1♀, (HAWA), Sep 2011, 2♀, (HAWA); nr. San José, km 25 Puyo-Tena rd., Río Llandia, [1°19'59"S, 77°55'52"W], 1010 m, (Trembath, D. A., Neild, A.), 25 Aug 2010, 1♀, (DATR); Puyo, [1°28'S, 77°59'W], (JEPE); *Morona-Santiago*: 2 km N San Isidro, [2°11'54"S, 78°9'24"W], 1250 m, (Hall, J. P. W., Willmott, K. R., J. C. R., J. I. R.), 13 Aug 2015, 1♀, [FLMNH-MGCL-195707], (FLMNH); km 2 Méndez-Guarumales rd. [2°42'09"S, 78°19'54"W], 500 m, (Nakahara, S.), 16 Jun 2014, 1♀, (FLMNH); km 14 Chigüinda-Gualaquiza rd., [3°15'45"S, 78°39'4"W], 1300 m, (Willmott, K. R., J. C. R., J. I. R.), 16 Jun 2013, 1♀, [FLMNH-MGCL-157405]; Genitalia vial SN-15-178], (FLMNH); *Zamora-Chinchipe*: Cabañas Ecológicas Copalinga, Río Bombuscaro, [4°5'26"S, 78°57'31"W], 1000 m, (Whelan, C.), 6 Dec 2008, 1♀, [FLMNH-MGCL-115944], (FLMNH); km 11.5 Los Encuentros-Zarza, La Libertad, [3°47'54"S, 78°36'26"W], 1250 m, (Willmott, K. R., Hall, J. P. W.), 6, 8 Aug 2009, 1♂, [FLMNH-MGCL-145802], 1♂, [FLMNH-MGCL-145803]; Genitalia vial: SN-14-105], (FLMNH).

**Etymology.** The specific epithet is a feminine Latin adjective meaning dark red, as in garnet, in reference to the rather bright red-brown ventral bands in the female of this species.

**Distribution (Fig. 6).** This species is known from the east Andean slopes in southeastern Colombia to southern Ecuador, and it presumably occurs in extreme northern Peru, at least in the Cordillera del Cóndor.

**Biology.** Most localities for *E. granatina* n. sp. are in cloud forest habitats from 900-1500 m, although it occurs as low as 500 m and as high as 1800-1950 m, and it appears to often replace *E. cesarensis* at lower elevations. All the information known for males suggests that their rarity is due partly to the restricted ridge top microhabitats where they have mostly been recorded, and partly due to their high flight while perching. For example, JH collected several males between 6 m and 7 m above the ground from 1245-1300 hrs at a forest edge on a ridge top. The male from km 10 El Chaco-El Reventador rd. (Ecuador) was collected perching on a hilltop in cloud at 1312 hrs at 3 m above the ground. Females are much more commonly encountered in the field than males, and they may be observed flying along forest edges at roadsides and riversides throughout the day. SN encountered several female individuals at two sites in eastern Ecuador flying around colonies of *Selaginella* (Lycopodiophyta, Selaginellaceae), the most commonly recorded hostplant for *Euptychia*.

*Euptychia cesarensis obtusa* Nakahara, new subspecies  
(Figs 2a-d; 3f; 4e; 6)

**Diagnosis.** *Euptychia cesarensis obtusa* n. ssp. can be distinguished from the nominate race by its more strongly undulating submarginal bands on both ventral wings, in addition to the usually plainer gray ventral ground color (more yellowish

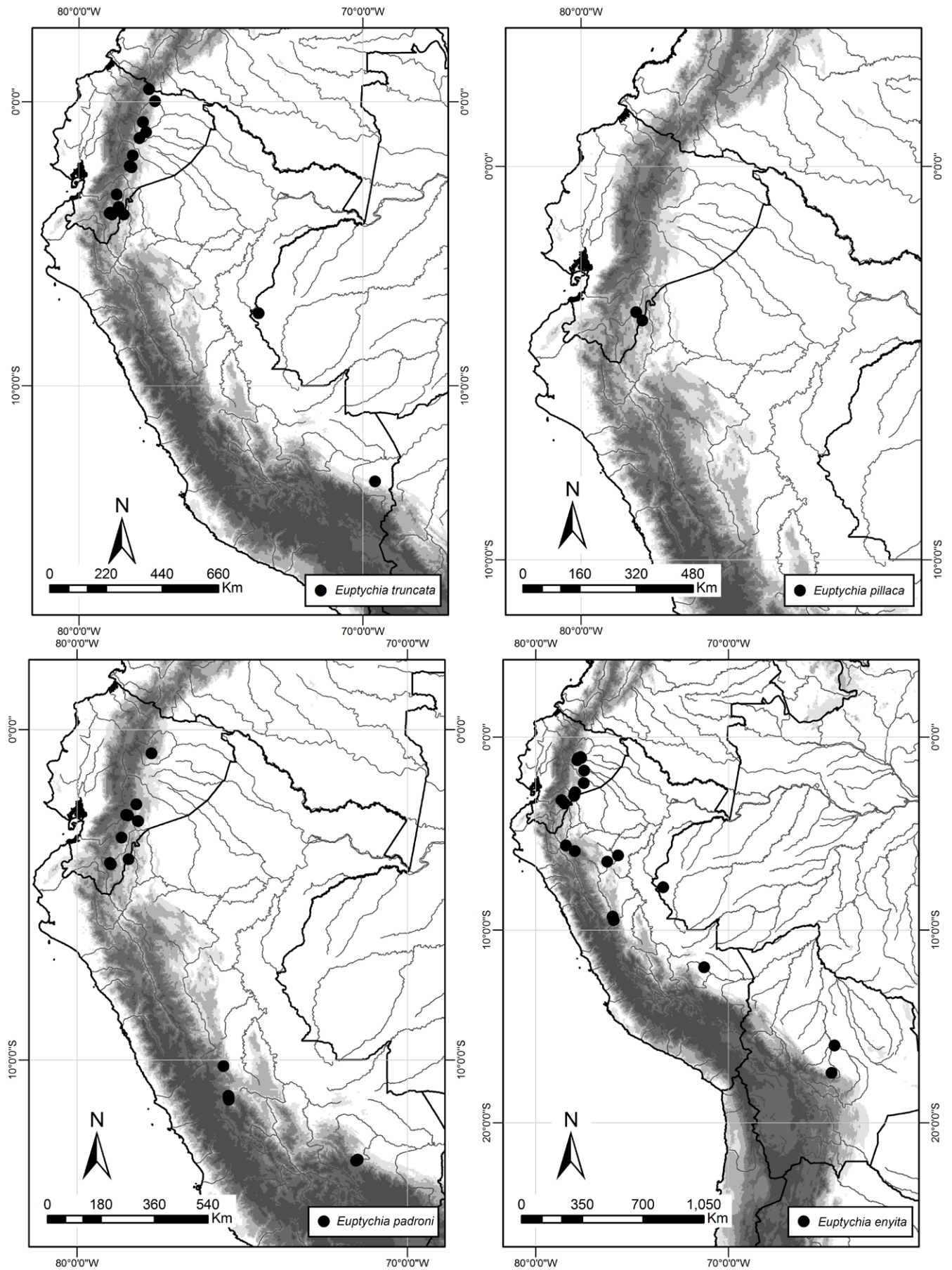


Fig. 5. Distribution map of new *Euptychia* taxa described here: *Euptychia truncata*, *E. pillaca*, *E. padroni*, *E. enyita*.

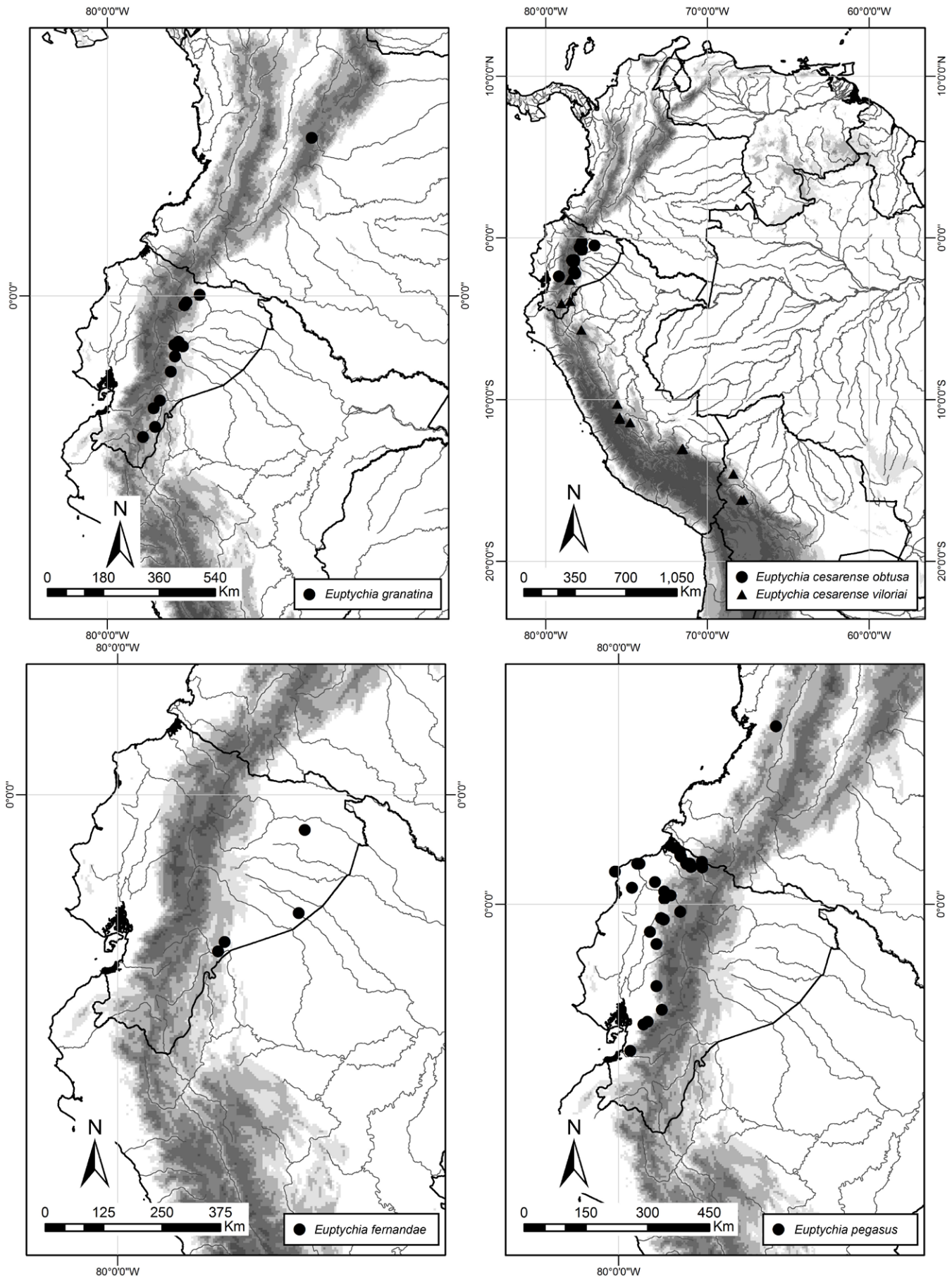


Fig. 6. Distribution map of new *Euptychia* taxa described here: *Euptychia granatina*, *E. cesareense obtusa*, *E. fernandae*, *E. pegasus*.

in *E. c. cesarensis*) and brown, rather than rufous brown, ventral dark transverse lines. This new subspecies can be distinguished from *E. c. viloriai* by lacking the dorsal hindwing ocellus in cell  $Cu_2$  and by lacking strong silvery white scaling in the posterior half of the ventral hindwing.

**MALE (Fig. 2a,b):** FW length 19.8mm (n=1)

**Head:** Similar to *E. granatina* n. sp. except as follows: antennae with ca. 35 segments (n=1).

**Thorax:** similar to *E. granatina* n. sp.

**Legs:** Foreleg tarsus, tibia and femur similar in length.

**Abdomen:** Similar to *E. granatina* n. sp.

**Male genitalia (Fig. 3f):** Similar to *E. granatina* n. sp. except as follows: Dorsal margin of tegumen slightly convex; projection from posterior end of dorsal margin of tegumen slightly shorter compared to uncus.

**Wing venation:** Similar to *E. granatina* n. sp.

**Wing shape:** Similar to *E. granatina* n. sp.

**Wing pattern:** Similar to *E. granatina* n. sp. except as follows: ventral bands narrower, slightly undulated and darker, less rufous brown; ventral hindwing postdiscal band curved distally posterior to vein  $Cu_2$ ; ventral forewing dark submarginal scaling from inner margin extending anteriorly and broken at vein  $M_3$ , rather than continuous to apical ocellus, with slight orange scaling at basal edge of band in cell  $Cu_1$ ; postdiscal band on ventral forewing more conspicuously forked near costa, distal branch appears connected with dark scaling along vein  $R_3$ - $R_4$  to junction  $R_5$  and  $R_4$

**FEMALE (Fig. 2c,d):** FW length 18.3mm – 20.6mm (n=4): Similar to male except as follows: female foretarsus divided into five segments; forewing broader and more rounded; ocelli present in dorsal hindwing cells  $M_1$  and  $Cu_1$ ; ventral bands somewhat reddish; ventral ground color paler.

**Female genitalia (Fig. 4e):** Similar to previous species except as follows: posteriorly projecting 'heart'-shaped plate in middle of lamella antevaginalis more elongate.

**HOLOTYPE FEMALE:** Ecuador: *Tungurahua*: Río Machay, [1°23'20"S, 78°16'49"W], 1700 m, (Hall, J. P. W.), 19-20 Aug 1993, (to be deposited in MECN). **PARATYPES:** Ecuador: 'Río Hollin' [=km 49 Tena-Loreto rd.], [0°42'51"S, 77°44'26"W], 1350 m, (Trembath, D. A.), 22 Apr 1998, 1♀, (DATR); *Tungurahua*: 10 km S Río Negro, Las Estancias, [1°27'36"S, 78°13'14"W], 1850 m, (Boyer, P.), 20 Aug 2011, 1♀, (PIBO); ca. km 8 Baños-Puyo rd., sendero El Placer-Reserva Cerro Candelaria, [1°24'32"S, 78°18'36"W], 1500 m, (Radford, J.), 17 Agosto 2008, 1♀, (JARA); La Esperanza, [1°22'53"S, 78°21'12"W], 2200 m, (Lafébre, R. de), Apr 1971, 1♀, [FLMNH-MGCL-209292], (FLMNH); Machay, [1°23'20"S, 78°16'49"W], 1550-1700 m, (Boyer, P.), 18 Nov 1996, 1♀, (PIBO); Río Blanco, [1°22'59"S, 78°21'W], "1000 m", (Velástegui, S. E.), 7 Aug 1966, 1♀, (MUSM); Río Machay, [1°23'20"S, 78°16'49"W], 1700 m, (Hall, J. P. W.), 4-5 Jul 1993, 1♂, [Genitalia vial: KW-09-02], 1♀, [FLMNH-MGCL-209295; Genitalia vial: SN-14-76], (FLMNH); same data as HT, 1♀, (FLMNH); Río Negro, [1°27'S, 78°18'54"W], (JEPE). **OTHER SPECIMENS EXAMINED:** Ecuador: *Napo*: 2 km ESE Cosanga, Las Caucheras track, [0°35'12"S, 77°52'47"W], 2120 m, (Warren-Gash, H.), 22 Aug 2010, 1♀, (HAWA); km 10 El Chaco-El Reventador rd., [0°16'30"S, 77°45'36"W], 1800-1950 m, (Ahrenholz, D. H.), 3 Jan 2015, 1♀, [FLMNH-MGCL-195426], (FLMNH); "Río Coca" [erroneous], [0°28'S, 76°58'W], 300 m, (Lafébre R. de), Jul 1971, 1♀, [FLMNH-MGCL-209294; Genitalia vial SN-15-75], 1♀, [FLMNH-MGCL-209293], (FLMNH); *Tungurahua*: nr. Río Negro, Colonia Azuay, [1°22'11"S, 78°12'21"W], (JEPE); Reserva Cerro Candelaria, Fundación Ecominga, [1°25'30"S, 78°17'59"W], 2200 m, (Radford, J.), 21 Agosto 2008, (JARA).

**Etymology.** The subspecific epithet is derived from the feminine Latin adjective 'obtusa', meaning plain, in reference to the rather more dull coloration of this subspecies in comparison with the nominate race and *E. c. viloriai*.

**Distribution (Fig. 6).** This taxon is so far known only from the eastern slopes of the Andes in central (*Tungurahua*) and northern (*Napo*) Ecuador. The nominate subspecies is

known only from the Serranía de Perijá (Pulido *et al.*, 2011) and Serranía de los Yariguíes (Huertas & Fagua, 2011) in northern Colombia, although it is very likely to be found in the Venezuelan side of the Sierra de Perijá, whence it has so far not been reported (Angel Viloría, pers. comm.). It is also likely to be found elsewhere along the slope of the Andes south of the Department of Santander, although we are not aware of records between Santander (Colombia) and Napo (Ecuador). Since central Ecuadorian specimens represent a different subspecies of *E. cesarensis*, it would be most interesting to examine populations from intervening areas from where we currently have no records. *Euptychia cesarensis viloriai* Andrade, Pulido, Peña & Lamas, 2011, is known from northern to southern Peru (Cuzco); specimens phenotypically similar in some respects to typical *E. c. viloriai* occur in southern Ecuador, and their taxonomic status is under study.

**Biology.** This species occurs at some of the highest altitudes for the genus, from 1350-2200 m, in cloud forest. The great majority of known specimens are females, as in *E. granatina* n. sp., and it seems likely that the male may typically exhibit similarly high perching behavior. According to David Ahrenholz (pers. comm.), the female from km 10 El Chaco-El Reventador rd. was encountered on a hilltop in cloud at 1326 hrs at 1 m above the ground. Jamie Radford (pers. comm.) collected three individuals at Cerro Candelaria, two near streams with one at a landslide area and the other in an area of pasture and disturbed forest, and one inside primary forest.

*Euptychia fernandae* Nakahara & Willmott, new species  
(Figs 2e-h; 3g; 4f; 6)

**Diagnosis.** *Euptychia fernandae* n. sp. is apparently closely related to *E. mollina* Hübner (SN, unpublished data), with which it may be confused, although it can be distinguished by the following characters: (1) forewing more rounded at apex; (2) dorsal forewing white area extending further anteriorly, to end of discal cell; (3) ventral marginal bands on both wings smoother (less undulating); (4) ventral hindwing submarginal band much broader in cells  $M_3$  and  $M_2$  than in apex and tornus (slightly broader and much more jagged in *E. mollina*); (5) distal quarter of valvae tapered; and (6) lamella antevaginalis a broad, wrinkled, plate with undulating ridges.

This species is somewhat similar in ventral wing pattern, and related, to *E. enyo*, but can be distinguished by the following characters: (1) ground color of dorsal and ventral surface white; (2) uncus short and rounded at the posterior end; (3) distal quarter of valvae tapered; (4) posterior end of saccus not extending under valvae forming a plate; (5) lamella antevaginalis much broader, wrinkled, narrower in ventral view and deeper in posterior view.

**MALE (Fig. 2e,f):** FW length 18.3mm (n=1)

**Head:** Similar to previous species, except as follows: antennae 33 segments (n=1).

**Thorax:** Dorsally and ventrally covered with whitish scales and long creamy-white hair-like scales.

**Legs:** Mid- and hindleg femur white ventrally, brown dorsally, tibia and tarsus brown, otherwise similar to previous species except as follows: foreleg tibia and femur almost same in length, tarsus slightly shorter.



**Fig. 7.** Habitats of *Euptychia* in Ecuador. **a)** The ridge 2 km E of Santiago, seen from Río Santiago, where males of both *E. enyo* and *E. enyita* **n. sp.** were found perching. *Euptychia fernandae* **n. sp.** was recorded c. 8 km W of this ridge at Río Yapapas; **b)** Descending the ‘Sopladora ridge’, near Guarumales, where males of *E. padroni* **n. sp.**, *E. meta* Weymer, 1911, and *E. cesarense* were found perching.

**Abdomen:** Similar to *E. enyita* **n. sp.** except as follows: sclerotized region of anterior side of eighth abdominal segment somewhat prominent.

**Male genitalia (Fig. 3g):** Tegumen ventral arms and saccus dorsal arms fused indistinguishably, dorsal margin of tegumen short, anterior margin straight and sclerotized, remainder of tegumen appears as a branched off portion of vinculum with two convex regions in lateral view, uncus attached to posterior end, prominent projection from anterior side of dorsal margin of tegumen, somewhat like a roof over tegumen and uncus, subtriangular in dorsal view; uncus relatively thick and short, with setae mainly towards base, curved and pointing downwards; ventral arms of tegumen medially divided, middle section roughly straight; appendices angulares absent; saccus slightly longer than uncus in length, dorsal arms of saccus combined with ventral arms of tegumen; juxta present; valvae with setae, positioned at approximately 30° angle to horizontal, distal quarter somewhat like a horn whereas remainder somewhat rectangular in lateral view, distal quarter of valva dorsal margin with small notches, curving upwards with a projection at end, roughly flattened towards base, basal three-quarters of ventral margin convex, curved upwards towards end in lateral view; aedeagus slightly shorter than valvae, curved in lateral view, anterior end of ventral margin curved upwards, open anterodorsally, posteriorly bifid, cornuti absent.

**Wing venation:** Forewing recurrent vein present; forewing Cu with basal thickening absent; hindwing humeral vein not developed.

**Wing shape:** Similar to female of *E. enyita* **n. sp.** except as follows: forewing outer margin roughly straight.

**Wing pattern:** Dorsal surface ground color white; forewing with distal region of discal cell and cell Cu<sub>2</sub>, distal one-third of cell Cu<sub>1</sub>, distal half of cell M<sub>3</sub>, most of cells M<sub>1</sub>, R<sub>5</sub>, R<sub>4</sub>, R<sub>3</sub>, R<sub>2</sub>, and R<sub>1</sub> brown; submarginal band and marginal band present on both wings; black submarginal ocelli in dorsal hindwing cells M<sub>1</sub> and Cu<sub>1</sub>; ventral surface ground color white, ventral hindwing area distal to submarginal ocelli creamy-white; dark brown, even basal, discal, postdiscal, submarginal and marginal bands/lines on both wings, marginal line not undulating, forewing submarginal band slightly more undulate in anterior half of wing, hindwing submarginal band notably thickening in cells M<sub>3</sub> and M<sub>2</sub>; submarginal ocelli in cells M<sub>3</sub>, M<sub>2</sub> and M<sub>1</sub> (forewing) and all cells from Cu<sub>2</sub> to R<sub>5</sub> on hindwing, ocelli consisting of black spot ringed with yellow than dark brown, with white pupil, except for dark brown ring and pupil (variable) only in cells M<sub>3</sub> and M<sub>2</sub> (both wings) and R<sub>5</sub> (forewing); gray shading prominent around ocelli of both wings.

**FEMALE (Fig. 2g,h):** FW length 17.7mm (n=1): Similar to male except as follows: female foretarsus divided into five segments; forewing more rounded, outer margin convex.

**Female genitalia (Fig. 4f):** Lamella antevaginalis sclerotized, a vertically broad, wrinkled, plate with undulating ridges, basal side of 8th abdominal segment sclerotized; intersegmental membrane between seventh and eighth abdominal segment tightly attached to anterior edge of lamella antevaginalis, folded, two sclerotized regions present; ductus bursae membranous, origin of ductus seminalis presumably close to ostium bursae but not clearly visible; corpus bursae roughly oval in dorsal view, extending to third abdominal segment, with two signa.

**HOLOTYPE MALE: Ecuador: Orellana:** Río Tiputini, via Auca, Estación Científica Yasuní, [0°40'27"S,76°23'49"W], 220-250 m, (Willmott, J. C. R., J. I. R.), 5 Jul 2014, [FLMNH-MGCL-195197; Genitalia vial: SN-15-1], (to be deposited in MECN). **PARATYPES: Ecuador: Orellana:** Río Tiputini, via Auca, Estación Científica Yasuní, [0°40'27"S,76°23'49"W], 1♀, (QCAZ); Est[ación] Cient[ífica] Yasuní, [0°40'S,76°24'W], 250 m, (Lamas, G.), 2 Dec 2004, 1♀, (MUSM), 23 Nov 2005, 1♀, (MUSM), 24 Nov 2005, 1♀, (MUSM); *Pastaza:* Yutsuntsa, [2°21'4"S,76°27'14"W], 190-250 m, (Nakahara, S.), 12 Jul 2015, 1♀, [Genitalia vial: SN-15-74], (FLMNH); *Morona-Santiago:* Río Yapapas, [3°0'42"S,78°3'51"W], 390 m, (Hall, J. P. W., Willmott, K. R., J. C. R., J. I. R.), 7 Aug 2015, 1♀, [FLMNH-MGCL-195701], 1♂, [FLMNH-MGCL-195700], (FLMNH); Yaupi-Yaapi trail, [2°49'58"S,77°56'28"W], 320-340 m, (Gallice, G.), 15 Jun 2009, 1♀, [FLMNH-MGCL-152446], (FLMNH).

**Etymology.** This specific epithet is dedicated to our friend María Fernanda Checa, in recognition of collecting the oldest specimen for this species, for her extensive research on Ecuadorian butterflies and in particular those of Yasuní National Park (the type locality for this species), and for supporting our work in many ways. This specific epithet is considered to be a Latinized feminine noun in the genitive case.

**Distribution (Fig. 6).** This species is so far known only from the Amazon basin in extreme eastern to southeastern Ecuador. In the MUSM there are two female specimens from PERU, Amazonas, Cordillera del Cóndor, labelled as "*Euptychia* sp. n. 2", in addition to 3 females from PERU, Amazonas, Durand, 400m, 05°14'S, 78°22'W, May 2015 (J. Pintado), that may represent a subspecies of *E. fernandae* **n. sp.** based on the similarity between their genitalia. The specimens are similar to those from Ecuador except for being slightly paler, but study of male specimens would be preferable before drawing any firm conclusions, and thus the taxonomic status of these Peruvian specimens is not discussed further here.

**Biology.** This species is very rare in collections, probably due to the fact that all known specimens are from relatively undisturbed rain forest in more inaccessible parts of Amazonian Ecuador, below 400 m in elevation. The species appears to be rare in the field judging from the sampled number of specimens. Julia Robinson Willmott (pers. comm.) collected the holotype in Ecuador at 1300 hrs flying 0.5 m above the ground along a

ridge top trail in primary forest, in understorey near to a light gap. KW collected a male and a female flying from 1-2 m above the ground at the edge of a large (20 m) grassy clearing by a stream, surrounded by forest, at 1300 hrs. In flight, the large size and white coloration produced a strong resemblance to several species of *Pareuptychia* Forster that were commonly seen flying at that site. SN collected a single female around 1500 hrs, weakly flying about 1 m above the ground and subsequently settling on low vegetation along a narrow trail between the two Achuar communities of Yutsunsa and Makusar.

***Euptychia pegasus* Nakahara & Hall, new species**  
(Figs 2i-l; 3h; 4g; 6)

**Diagnosis.** *Euptychia pegasus* n. sp. is apparently closely related to *Euptychia mollis* Staudinger (SN, unpublished data), to which it is also very similar. It may be distinguished by the following characters: (1) larger size, with male forewing typically greater than 20 mm; (2) thin ventral discal and postdiscal dark bands, typically narrower than 1 mm in width; (3) contrasting color between ventral hindwing postdiscal and submarginal lines, with the former typically reddish brown and the latter typically gray-brown; (4) double gray-brown lunules of submarginal line in cells  $Cu_1-M_3$  and  $M_3-M_2$  more similar in size to one another in each cell, rather than that nearer vein  $M_3$  being larger (as in *E. mollis*). *Euptychia pegasus* n. sp. and *E. mollis* are sympatric in western Ecuador in wet rainforest in the far north of the country, with the former ranging much further south and west into more seasonal, moist forests. Mitochondrial COI DNA barcodes also support their specific separation (SN, unpublished data).

**MALE (Fig. 2i,j):** FW length 20 mm (n=1)

**Head:** Similar to previous species, except as follows: antennae 35-37 segments (n=2).

**Thorax:** Dorsally covered with brown scales and long, white hair-like scales, ventrally covered with whitish scales and long creamy-white hair-like scales.

**Legs:** Similar to previous species except as follows: mid- and hindleg femur white ventrally, brown dorsally, tibia and tarsus brown; foreleg tibia and femur almost same in length, tarsus slightly shorter.

**Abdomen:** Dorsally and laterally brown, speckled with white scales, white ventrally.

**Male genitalia (Fig. 3h):** Tegumen broad with ventral arms and saccus dorsal arms fused indistinguishably, dorsal margin of tegumen short, anterior margin straight and sclerotized, very small projection from posterior side of dorsal margin of tegumen above uncus; uncus relatively short, with setae at dorsal base, straight; ventral arms of tegumen medially divided, middle section roughly straight; appendices angulares absent; saccus slightly shorter than uncus in length, broad; juxta present; valvae with setae, positioned at approximately 30° angle to horizontal, distally attenuated and forming a short, narrow projection slightly upturned at tip, otherwise rather even in width throughout; aedeagus shorter than valvae, decurved slightly in middle then curved upwards at distal tip in lateral view, anterior end of ventral margin curved upwards, open anterodorsally, cornuti absent.

**Wing venation:** Forewing recurrent vein present; forewing Cu with basal thickening absent; hindwing humeral vein not developed.

**Wing shape:** Similar to *E. mollis*, forewing approximately triangular, hindwing rounded.

**Wing pattern:** Dorsal surface ground color pale whitish gray, fading gradually in postdiscal area into gray-brown; wings somewhat translucent, showing ventral darker brown discal, postdiscal and submarginal bands within whitish gray area, in addition to black central areas of ventral subapical ocelli and ventral thin, jagged submarginal line, latter becoming less distinct from tornus to disappear in apex. Hindwing ground color slightly grayish white,

similarly translucent and showing all darker ventral markings indistinctly, except for strongly marked, central black pupil in submarginal ocellus in  $Cu_2-Cu_1$ , black ocellus in  $M_2-M_1$ , thin, jagged dark brown submarginal line and thin, dark brown marginal line, both of which disappearing into white ground colour in tornus and into black marginal shading in apex. Ventral surface ground color white; forewing with reddish brown costal stripe at base, dark gray-brown basal 'smudged' line around Cubital vein, reddish brown discal band, reddish brown postdiscal band slightly forked at costa with thin line extending along disco-cellulars, reddish brown submarginal band which is straight posterior of vein  $Cu_1$  and thinner, more jagged anterior of vein  $Cu_1$ , two thin, jagged gray-brown marginal lines and a gray-brown margin; three subapical ocelli in cells  $Cu_1-M_1$ , central pale blue spot in middle of black circles with broad, pale yellow ring, surrounded by diffuse dark gray-brown shading which turns reddish brown in  $M_1-R_2$ ; hindwing with blackish stripe at wing base, reddish brown basal and discal bands, reddish brown postdiscal band kinked slightly distally anterior of discal cell; series of 6 submarginal ocelli from anterior half  $2A-Cu_2$  to  $M_1-R_s$ , similar to forewing, large in cells  $Cu_2-Cu_1$  and  $M_2-M_1$ , smaller (with broader yellow rings) in cells  $Cu_1-M_2$ , and smallest in  $2A-Cu_2$  and  $M_1-R_s$ , ocelli surrounded by dark gray diffuse shading basally, turning reddish brown in tornus; gray-brown submarginal line, strongly undulate forming double lunules in cells  $Cu_2-M_1$ , lunules in cells  $Cu_1-M_2$  slightly larger by vein  $M_3$ ; two thin, strongly undulate marginal lines (undulating in opposite direction to submarginal line), inner line darker and better defined, margin gray-brown.

**FEMALE (Fig. 2k,l):** FW length 19 mm (n=1): Similar to male except as follows: female foretarsus divided into five segments; forewing more rounded, outer margin convex, dorsal forewing pale area white instead of whitish gray, more sharply defined where transitioning to darker apical half of wing, dark ventral bands and lines appearing as darkly scaled rather than just visible through wing; dorsal hindwing with dark marginal scaling stronger, submarginal and marginal lines visible to tornus.

**Female genitalia (Fig. 4g):** Lamella antevaginalis a sclerotized, continuous band, indented to form a somewhat triangular plate at ostium bursae; basal side of 8th abdominal segment sclerotized; intersegmental membrane between seventh and eighth abdominal segments tightly attached to anterior edge of lamella antevaginalis, folded, two sclerotized regions present; ductus bursae membranous, origin of ductus seminalis presumably close to ostium bursae but not clearly visible; corpus bursae roughly oval in dorsal view, extending to third abdominal segment, with two signa.

**HOLOTYPE MALE: Ecuador: Carchi:** Lita, ridge east of Río Baboso, [0°53'15"N,78°26'18"W], 600-800 m, (Willmott, K. R., J. C. R., J. I. R., Aldaz, R.), 21 July 2014, [FLMNH-MGCL-195203] (to be deposited in MECN). **PARATYPES: Colombia: Valle del Cauca:** Calima Dam, [3°52'47"N,76°33'55"W], 912 m, (Sullivan, J. B.), 6 Feb 1987, 1♀, [FLMNH-MGCL-191529], (FLMNH). **Ecuador: Carchi:** Chical 'primera cordillera', [0°55'43"N,78°10'41"W], 1430 m, (Aldaz, R.), 30 Sep 2010, 1♀, [FLMNH-MGCL-146172], (FLMNH); km 16 La Carolina-Las Juntas rd., Finca San Francisco, [0°48'12"N,78°10'15"W], 1300 m, (Willmott, K. R., Hall, J. P. W.), 13,16 Jul 2011, 1♂, [FLMNH-MGCL-151191], 1♂, [FLMNH-MGCL-151192], 1♂, [FLMNH-MGCL-151193], 1♀, [FLMNH-MGCL-151194], 1♀, [FLMNH-MGCL-151195], 1♀, [FLMNH-MGCL-151196], 1♀, [FLMNH-MGCL-151197], 1♂, [FLMNH-MGCL-151190], (FLMNH), (Willmott, K. R.), 16 Nov 2010, 1♀, [FLMNH-MGCL-146174], (FLMNH), 17 Nov 2010, 1♀, [FLMNH-MGCL-146182], 1♀, [FLMNH-MGCL-146183], (FLMNH); Lita, ridge east of Río Baboso, [0°53'15"N,78°26'18"W], 600-800 m, (Willmott, K.R., J.C.R., J.I.R., Aldaz, R.), 21 Jul 2014, 1♂, [FLMNH-MGCL-195204], 1♂, [FLMNH-MGCL-195202], 1♀, [FLMNH-MGCL-195205], (FLMNH), 2♂, 2♀, (MECN); Lita, ridge east of Río Baboso, [0°53'15"N,78°26'18"W], 850 m, (Willmott, K. R.), 5 May 2000, 1♂, (FLMNH); Lita, Río Baboso, [0°53'30"N,78°26'48"W], 700 m, (Willmott, K. R., Hall, J. P. W.), 06 Jul 1994, 2♂, (FLMNH); NW Lita, trail above Río Baboso nr. jct. with Río Mira, [0°53'5"N,78°27'9"W], 570 m, (Willmott, K.R., J.C.R., J.I.R.), 14 Jul 2014, 1♀, [FLMNH-MGCL-195200], (FLMNH); **Esmeraldas:** km 10 San Lorenzo-Lita rd., Estación Experimental 'La Chiquita', [1°13'49"N,78°45'57"W], 50 m, (Willmott, K. R., Hall, J. P. W.), 7 May 2000, 1♂, (FLMNH); km 15 Lita-San Lorenzo rd., [0°53'52"N,78°31'29"W], 800 m, (Willmott, K. R., Hall, J. P. W.), 2 Mar 2001, 1♀, (FLMNH); km 18.5 San Mateo-Pto. Libre rd., Zapata, [0°53'6"N,79°32'25"W], 500 m, (Willmott, K. R., Hall, J. P. W.), 24 Jul 2011, 1♂, [FLMNH-MGCL-151199], 1♀, [FLMNH-MGCL-152514], 1♂, [FLMNH-MGCL-151198], 1♀, [FLMNH-MGCL-151200], (FLMNH), 2♂, (MECN), 5,6 Mar 2001, 1♀, (FLMNH); km 44 Lita-San Lorenzo rd., La Punta,

[1°3'55"N,78°39'W], 300 m, (Willmott, K. R., Hall, J. P. W.), 21-22 Jun 1994, 1♀, (FLMNH); Lita-San Lorenzo rd., NE San Francisco, ridge N La Ceiba, [1°7'57"N,78°39'32"W], 250 m, (Willmott, K. R., Aldaz, R.), 5 Jul 2015, 1♂, [FLMNH-MGCL-195702], (FLMNH); Quingüe, [0°42'47"N,80°4'24"W], 270 m, (Willmott, K. R., Hall, J. P. W.), 28 Jul 2011, 1♂, [FLMNH-MGCL-152517], 1♂, [FLMNH-MGCL-152515], 1♂, [FLMNH-MGCL-152516], 1♀, [FLMNH-MGCL-152519], 1♀, [FLMNH-MGCL-152518], (FLMNH), 5♂, 2♀, (MECN); Reserva Río Canandé, [0°29'N,79°12'4"W], 400 m, (Levy, E.), 2011, (QCAZ); *Imbabura*: ca. 6 km E Lita, Cachaco, Finca Fénix, [0°48'58"N,78°24'22"W], 750 m, (Willmott, K.R., J.C.R., J.I.R.), 19 Jul 2014, 1♂, [FLMNH-MGCL-195201], (FLMNH); *Los Ríos*: Río Palenque, [0°36'12"S,79°18'36"W], 200 m, (Pliske, T. E.), 11 Dec 1971, 1♀, [FLMNH-MGCL-191535], 1♀, [FLMNH-MGCL-191534], (FLMNH); *Pichincha*: km 20 Pacto-Guayabillas rd., [0°11'36"N,78°51'30"W], 900 m, (Willmott, K. R., Hall, J. P. W.), 7, 8 Aug 2011, 1♂, [FLMNH-MGCL-152520], (FLMNH), 1♂, (MECN); km 5 Nanegal-García Moreno rd., Palmito Pamba, [0°9'52"S,78°39'W], 1500 m, (Willmott, K. R., Hall, J. P. W.), 11 Mar 2001, 1♀, (FLMNH); Reserva Mangaloma, [0°7'15"N,78°59'37"W], 700-815 m, (Willmott, K. R., J. C. R., J. I. R.), 10 Jul 2015, 1♀, [FLMNH-MGCL-195703], (FLMNH); Río Tanti, [0°20'S,79°0'30"W], 750 m, (Hall, J. P. W.), 16 Sep 1993, 1♀, [FLMNH-MGCL-191533], (FLMNH); Santo Domingo, Tinalandia, [0°18'S,79°4'W], 760 m, (Milner, P. F.), 1-5 Apr 1985, 1♀, [FLMNH-MGCL-191530], (FLMNH); Tinalandia, Río Tanti, [0°20'S,79°0'30"W], 750-800 m, (Willmott, K. R., Hall, J. P. W.), 8-14 May 1994, 1♀, (FLMNH); Tinalandia, [0°18'S,79°4'W], (Olson, E. C.), 25 Jun 1983, 1♂, [FLMNH-MGCL-191518], (FLMNH); Tinalandia, 12 km E of Sto. Domingo, [0°18'S,79°4'W], (Otis, G.), 6-11 May 1990, 1♀, [FLMNH-MGCL-191761]; Genitalia vial SN-14-71], (FLMNH); Tinalandia, 12 km E of Sto Domingo, [0°18'S,79°4'W], 730-850 m, (Otis, G.), 13 May 1988, 1♂, [FLMNH-MGCL-191759]; Genitalia vial SN-14-37], 1♀, [FLMNH-MGCL-191760]; Genitalia vial SN-15-16], 1♂, [FLMNH-MGCL-191758]; Genitalia vial SN-14-16], (FLMNH); Tinalandia, 12 km E of Sto Domingo, [0°18'S,79°4'W], 750-850 m, (Austin, G. T.), 13 May 1988, 1♀, [FLMNH-MGCL-191524], 1♀, [FLMNH-MGCL-191523], 1♀, [FLMNH-MGCL-191526], 1♀, [FLMNH-MGCL-191521], 1♀, [FLMNH-MGCL-191522], 1♀, [FLMNH-MGCL-191525], 1♀, [FLMNH-MGCL-191520], (FLMNH); Tinalandia, 12 km E of Sto Domingo, [0°18'S,79°4'W], 850 m, (Austin, G. T.), 13 May 1988, 1♀, [FLMNH-MGCL-191527], (FLMNH), (Emmel, T. C.), 25 Jun 1983, 1♀, [FLMNH-MGCL-191532], (FLMNH); Toachi River, Tinalandia, [0°18'S,79°4'W], 1000 m, (Harris, L. C.), 13 May 1988, 1♀, [FLMNH-MGCL-191528], (FLMNH); Toachi River, Tinalandia, [0°18'S,79°4'W], 700 m, (Maris, L. & C.), 21-23 Jul 1986, 1♀, [FLMNH-MGCL-191530], (FLMNH); *Cotopaxi*: Estero Tilinche, Latacunga-Quevedo rd., El Copal, [0°52'S,79°10'W], 900 m, (Willmott, K. R.), 7 Aug 1996, 1♀, (FLMNH); *Bolívar*: Balzapamba, [1°47'S,79°10'W], 850 m, 29 Oct 1939, 1♀, [FLMNH-MGCL-191536], (FLMNH); *Cañar*: nr. La Troncal, Manta Real, [2°33'36"S,79°21'36"W], 500 m, (Willmott, K. R.), 14 Aug 1996, 1♀, (FLMNH); Río Angas, nr. Huigra, Angas, [2°18'S,79°3'W], (Lafebre R. de), Jul 1974, 1♂, [FLMNH-MGCL-191519], (FLMNH); *El Oro*: Río San Jacinto, nr El Paraiso, km 76 Naranjal-Machala rd., [3°11'35"S,79°44'20"W], 130 m, (Willmott, K. R., Hall, J. P. W.), 19 May 2008, 1♀, [FLMNH-MGCL-118426], (FLMNH). **OTHER EXAMINED SPECIMENS: Ecuador: Esmeraldas:** Estación Científica Bilsa, [0°21'33"N,79°42'2"W], 600 m, (Young, A.), Jul 1999, (current collection unknown); km 12.5 Lita-San Lorenzo rd., Río Chuchuví, [0°52'51"N,78°30'54"W], 800-900 m, (Christie, J., McLoughlin, E., Ryan, F., Zakrisson, A.), 19-22 Jul 2002, (current collection unknown).

**Etymology.** This species is named for the Greek mythological creature Pegasus, a winged, white horse, in reference to this being the largest known white *Euptychia*. This specific epithet is considered to be a Latinized masculine noun in apposition.

**Distribution (Fig. 6).** This species is known from a single record from western Colombia, and from virtually all of western Ecuador, from Carchi south to Cañar.

**Biology.** This species is often abundant in nature, and may locally be the most common euptychiine, occurring from sea level to 1500 m in a variety of habitats, from lower montane cloud forest to very wet lowland rainforest, and seasonal moist

forests. The species is found in both secondary and primary forest, and individuals are most often encountered in sunny areas within the forest, such as light gaps and sunflecks, both along streams and on ridgetops. Individuals fly throughout the day, from 0830 hrs to at least 1500 hrs, from near the ground to at least 8 m in the midstorey. Distinct perching behavior has not been observed, in contrast to some other *Euptychia*; instead, males seem to ceaselessly fly within the forest, perhaps patrolling territories.

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