Species level taxonomy of the Neotropical hairstreak genus *Porthecla* (Lepidoptera: Lycaenidae: Theclinae: Eumaeini)

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Abstract. The species level taxonomy of *Porthecla* is revised. Six previously described species are recognized: *P. ravus* (Druce 1907); *P. barba* (Druce 1907); *P. dinus* (Hewitson 1867); *P. porthura* (Druce 1907); *P. minyia* (Hewitson 1867); *P. gemma* (Druce 1907), and another six new species are proposed: *P. forasteira* Faynel & Moser **n. sp.**; *P. annette* Faynel & Robbins **n. sp.**; *P. johanna* Faynel & Robbins **n. sp.**; *P. peruensis* Faynel & Moser **n. sp.**; *P. prietoi* Faynel & Busby **n. sp.** and *P. willmotti* Busby, Faynel & Moser **n. sp.** For each *Porthecla* species we present diagnostic characters, images of male and female adults, drawings of male and female genitalia, distribution maps, and notes on habitat and other biological traits. An identification key for males is provided. To stabilize names; lectotypes are designated for *Thecla minyia* Hewitson 1867, and *Thecla gemma* Druce 1907. Wing pattern resemblances between *Porthecla* and other genera are discussed.

Résumé. Les espèces du genre néotropical *Porthecla* (Lepidoptera : Lycaenidae : Theclinae : Eumaeini). Six espèces décrites sont reconnues : *P. ravus* (Druce 1907); *P. barba* (Druce 1907) ; *P. dinus* (Hewitson 1867) ; *P. porthura* (Druce 1907) ; *P. minyia* (Hewitson 1867) ; *P. gemma* (Druce 1907), et six espèces nouvelles sont décrites : *P. forasteira* Faynel & Moser **n. sp.** ; *P. annette* Faynel & Robbins **n. sp.** ; *P. johanna* Faynel & Robbins **n. sp.** ; *P. peruensis* Faynel & Moser **n. sp.** ; *P. prietoi* Faynel & Busby **n. sp.** and *P. willmotti* Busby, Faynel & Moser **n. sp.**. Pour toutes ces espèces, les caractères diagnostiques, les dessins des genitalia mâle et femelle, les photographies des adultes des deux sexes, les cartes de distribution et des remarques sur leur biologie et leur habitat sont donnés. Une clé d'identification pour les mâles est fournie. Des lectotypes sont désignés pour *Thecla minyia* Hewitson 1867, et *Thecla gemma* Druce 1907. Les ressemblances alaires intra et inter spécifiques sont étudiées.

Keywords: *Oenomaus*, *Thepytus,* South-America, lectotypes, wing pattern.

Oenomaus Hübner 1819 and *Porthecla* Robbins 2004 (Lepidoptera: Lycaenidae: Theclinae: Eumaeini) are differentiated from other *Panthiades* Section genera primarily by the absence of an orange-red cubital spot on the ventral surface of the hindwing (Robbins & Duarte 2004). *Oenomaus* and *Porthecla*, however, cannot be distinguished from each other by wing pattern alone (figs. 1–21 for *Porthecla*, Faynel & Moser 2008 for *Oenomaus*), which is probably the main reason why these Neotropical genera were not delimited until recently (Robbins 2004).

Although *Oenomaus* species display a wide range of ventral wing patterns, 85% of the described species have a wing pattern that is very similar to that of *O. atena* (Hewitson 1867) (fig. 1 in Faynel 2008). This suggests that this wing pattern might be a synapomorphy for *Oenomaus*. However, *Thecla melleus* Druce 1907, one of the species with this wing pattern, has been placed both in *Porthecla* (Robbins 2004) and in *Oenomaus* (Faynel 2007) because its genitalic morphology is difficult to interpret. Irrespective, in this paper we show that another species with *O. atena* wing pattern has genitalia that place it definitively in *Porthecla*, so it would appear that the "*atena* wing pattern" is a shared primitive trait.

In contrast to *Oenomaus*, some *Porthecla* species, especially *P. porthura* (Druce 1907), *P. minyia* (Hewitson 1867), and *P. gemma* (Druce 1907), have a large, conspicuous red spot next to the body at the base of the ventral hindwing (figs. 10–21). These species resemble sympatric species in unrelated genera (such as *Atlides inachus* (Cramer 1775), *Janthecla rocena* (Hewitson 1867), *Olynthus ophelia* (Hewitson 1867)), a phenomenon that was recently highlighted in the *Panthiades* Section genus *Thepytus* Robbins,

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2004 (Robbins et al. 2010). While this is fascinating biologically, it is responsible for misidentifications, such as the incorrect records of *P. minyia* from Central America (Godman & Salvin 1887–1901; de la Maza 1987).

A phylogenetic analysis is necessary to study the evolution of ventral wing patterns in *Oenomaus* and *Porthecla* and to determine the correct generic placement for *Thecla melleus*. Unfortunately, the large number of undescribed species in *Oenomaus* and *Porthecla* has hindered such an analysis. For example, *Oenomaus* contained six described species (Robbins 2004), but now consists of 20 species (not including *T. melleus*) (Faynel 2006; Faynel 2008; Faynel & Moser 2008). Similarly, *Porthecla* contained six described species (Robbins 2004, not including *melleus*), but there are just as many undescribed ones.

The purpose of this paper is to treat the species level taxonomy of *Porthecla*, including the description of six new species. We use these results to show that the *O. atena* ventral wing pattern occurs in *Porthecla*, regardless of the generic placement of *T. melleus*. We also document the conspicuous similarity in ventral wing pattern among those sympatric species that look like *P. porthura* and relatives. However, the primary reason for documenting the species level taxonomy of *Porthecla* is that it is another step towards making a phylogenetic analysis of *Porthecla* + *Oenomaus* feasible.

Materials and methods.

This paper is based on 191 male and 99 female pinned specimens of *Porthecla* in the public and private collections listed below. Each species that belongs to *Porthecla* (as characterized in Faynel, 2006) is reviewed. Because a phylogenetic analysis is yet premature, we provisionally order species by similarity of wing pattern and genitalic characters as summarized in the Discussion. Although three of the newly described species are known from less than five specimens each, the variation that we document is more compatible with specific distinctness than with intraspecific variation, as noted in the individual species diagnoses. In addition to the detailed comparisons of wing patterns with other *Porthecla* and *Oenomaus* species in the diagnoses, we discuss similarities with other genera in separate sections on "wing pattern similarities". Adult size is given as forewing length, measured from the wing base to its apex.

Traditional methods were used to dissect genitalia: each abdomen was placed in a 10% KOH solution (potassium hydroxide) for 24 hours at room temperature. After cleaning with water, genitalia were dissected in a glycerin solution under a binocular microscope at 50 power. Genitalic drawings were done with a camera lucida. After dissection, genitalia were stored in plastic microvials with glycerin. More than two hundred comparative pictures of genital structures have been taken with a Nikon Coolpix 5000, using a glycerin suppository (glycerol + gelatin) to fix the genitalia in the desired position, following Faynel & Moser (2008).

Genitalic terms follow those in Klots (1970), as modified for the Eumaeini in Robbins (1991). Wing veins are named following Comstock (1918), and wing cells are named by the veins that border them. Androconial terminology follows Robbins (1991). Otherwise, morphological terms follow Snodgrass (1935).

In addition to a section listing the material examined, we map distributions so that these ranges can be visualized in relation to physical features, such as mountains and river valleys. We sometimes combine distributions of unrelated species on a map with the aim of minimizing the number of maps.

Abbreviations used repeatedly in the text are (FW) forewing, (HW) hindwing, (D) dorsal, (V) ventral and (SD) standard deviation. Brazilian and Peruvian states are noted by their standard two letter abbreviations.

We supplemented our study series with specimens from private collections because many *Porthecla* species are poorly represented in museum collections. Acronyms for public museums follow http://hbs.bishopmuseum.org/codens/codens-inst.html:

BMNH Natural History Museum, London, United Kingdom; CF private collection of Christophe Faynel, Montpellier, France; CP private collection of Carlos Prieto, Cali, Colombia; DZUP Universidade Federal do Paraná, Paraná, Curitiba, Brazil; FSMC Allyn Museum, Florida Museum of Natural History, University of Florida, USA; HD private collection of Hans Dahners, Cali, Colombia; HNHM Hungarian Museum of Natural History, Budapest, Hungary; ICN Instituto de Ciencas Naturales, Universidad Nacional de Colombia, Bogotá; JFL private collection of Jean-François Lecrom, Cali, Colombia; MC private collection of Alfred Moser, São Leopoldo, RS, Brazil; MHNUC Museo de Historia Natural, Universidad de Caldas, Manizales, Colombia; MNHN Muséum d'Histoire naturelle de Paris, Paris, France; MUSM Museo de Historia Natural, Universidad Nacional Mayor de San Marcos, Lima, Perú; MZSP Museu de Zoologia, Universidade de São Paulo, São Paulo, SP, Brazil; PB private collection of Pierre Boyer, Le Puy-Sainte-Réparade, France; PJJ private collection of Pierre et Jacques Jauffret, Santo Antonio do Tauá, Pará, Brazil; RCB private collection of Robert C. Busby, Andover, MA, USA; USNM National Museum of Natural History, Smithsonian Institution, Washington, DC, USA; ZSM Zoologische Staatssammlung, München, Germany.

Results

Porthecla Robbins 2004

Type species: *Thecla porthura* Druce 1907

Diagnosis. *Porthecla* + *Oenomaus* is distinguished by the lack of a ventral hindwing orange cubital spot and by the lamella postvaginalis of the ductus bursae split into two slim posterior pointing processes (Robbins & Duarte 2004). The first character state is unique in the *Panthiades* Section except for a few *Olynthus* species and for *Thepytus thyrea* (Hewitson 1867), where it was a derived state within *Thepytus* in a phylogenetic analysis (Robbins et al. 2010). The second character is a bit problematical. There are spines on the lamella postvaginalis of *Olynthus* Hübner [1819] (Nicolay 1982), but it is not yet clear if they are the same structure and if so, if they are independently evolved. Further, as newly reported below, three *Porthecla* species lack the split lamella postvaginalis.

Porthecla is distinguished from *Oenomaus* by the male genitalia valvae being triangular and not bifurcate in lateral aspect (cf. figures in Faynel 2006). As noted, *Porthecla* cannot be distinguished from the other eumaeine genera based solely on external characters. We do not yet know if *Porthecla* will prove to be monophyletic or paraphyletic in terms of *Oenomaus*, as noted by Robbins & Duarte (2004).

Size. *Porthecla* species are medium sized Eumaeini with forewing lengths ranging from 14.2 mm in *P. annette* **n. sp.** to 19 mm in *P. prietoi* **n. sp.**

Body. Eyes brown or red-brown with short setae, surrounded by white scales (except for *P. dinus* (Hewitson 1867) where the scales are a light brown). Antennal stalk ringed with white at the base and segments marked with white but not completely ringed on most segments. Club incrassate with nudum (orange in color) on the tip and ventral surface. Frons with some red scales, exceptions include *P. forasteira* **n. sp.** and *P. dinus* where it is dark brown and in *P. ravus* and *P. annette* **n. sp.** where it is a russet color. Labial palpi brown with white longitudinal marks (except for *P. dinus* where they are dark brown dorsally and light brown to cream color on ventral side). Thorax and abdomen dorsally blue (except for *P. willmotti* **n. sp.** where it is greenish blue and in some species like *P. porthura, P. minyia,* and *P. gemma* where it has a purplish hue); ventrally beige or brown with hairs on the thorax which can vary from a light grey to a reddish brown depending on the species. Legs brown with white rings.

Dorsal wings. Males of *Porthecla* are brilliant blue with black margins, as is typical of the *Panthiades* Section. Males possess a round or oval brown scent pad at the distal end of the discal cell from veins R_2 to M_2. Females of *Porthecla* are duller blue than males. In contrast, some *Oenomaus* females are entirely brown (Faynel 2008).

Ventral wings. Three prominent traits shared by a majority of *Oenomaus* and *Porthecla* species are (1) an "inclined" white postmedian line from the middle of the ventral forewing costa to vein Cu_2, (2) a basally displaced postmedian spot in ventral hindwing cell Sc+R_1-Rs either black encircled with white or white encircled with black, and (3) no VHW orange-red cubital spot. These characters give *Porthecla* and *Oenomaus* a somewhat homogeneous look. In *P. dinus*, however, the VFW postmedian line is replaced by a distinctive brown patch and the VHW basal spot is brown without white scales (figs. 8, 9). In *P. barba* (Druce 1907), this spot is "replaced" by a short white line (figs. 6, 7). These traits are undoubtedly the reasons why *P. dinus* and *P. barba* were not traditionally grouped with the other *Porthecla* and *Oenomaus* species (e.g., Draudt 1919–1920).

Within each species, males and females of *Porthecla* and *Oenomaus* have almost indistinguishable ventral wing patterns. Because the ventral wing pattern of *Porthecla* tends to vary interspecifically (unlike that of *Oenomaus* in the *atena* species group), it is the best way to associate the sexes.

Some *Porthecla* species have conspicuous orange-red scales on the ventral surface at the base of both wings. These scales are lacking in *P. ravus*, *P. dinus*, *P. barba*, and *P. forasteira* **n. sp.** *Porthecla willmotti* **n. sp.** has a striking additional red patch at the center of VHW cell Sc+R_1-Rs. **Male genitalia** (figs. 23–34). *Porthecla* was originally distinguished from *Oenomaus* by valvae in lateral aspect not bifurcate (Robbins & Duarte 2004). An alternate statement of this character is valvae triangular in lateral aspect. The valvae of *O. melleus* (figure 5 in Faynel 2007) are not clearly triangular nor are they clearly bifurcate, which is the main reason that its generic placement is unresolved. Most *Porthecla* male genitalia also share two additional traits: (1) anterior edge of the vinculum convex in lateral aspect and (2) an internal lateral ridge on the posterior saccus near the base of the valvae. These characters are also present in many *Michaelus* Nicolay 1979 and *Olynthus* (Nicolay 1979; Nicolay 1982), but do not occur in *Oenomaus* except for *O. curiosa* Faynel & Moser 2008, which had been previously treated as an undescribed species of *Porthecla* (Robbins 2004).

Male eighth abdominal tergum. In *Porthecla*, the tergum is rectangular with a slightly concave posterior edge and an anterior border that is slightly indented medially. In some *Oenomaus* species, this tergum is greatly modified in shape (Faynel 2008).

Female genitalia (figs. 35–43). The female genitalia of *Porthecla* and *Oenomaus* do not seem to be distinguishable. In both, the ductus seminalis arises on the left side of the corpus bursae, and the lamellae postvaginalis has two posterior pointing spines except for *P. barba*, *P. ravus*, and *P. annette* **n. sp.** All *Porthecla* have two signa bearing a central thorn-like spine located near the center of the corpus bursae except for *P. minyia* and *P. gemma*, where the signa are closer to the cervix bursae. Some *Oenomaus* lack signa (Faynel 2006; Faynel 2008).

Key to males

1. With a white median line on VFW **2**
– Without a white median line on VFW ..... *P. dinus*
2. With a basal spot (black or white) on VHW cell Sc+R_1-Rs **3**
– With a basal line on VHW cell Sc+R_1-Rs ..... *P. barba*
3. With bright red basal scales ventrally **4**
– Without bright red basal scales ventrally **10**
4. With a basal white spot on VHW cell Sc+R_1-Rs .... *P. annette* **n. sp.**
– With a basal black spot on VHW cell Sc+R_1- **5**
5. With a large patch of red scales in the center of VHW cell Sc+R_1-Rs ..... *P. willmotti* **n. sp.**
– Without red scales or with only a few in the center of VHW cell Sc+R_1-Rs **6**
6. With two white marks on the distal side of the red basal scales on the VFW ..... *P. minyia*
– Without two white marks on the distal side of the red basal scales on the VFW **7**
7. With a white triangular patch at the midpoint of the costal margin on VFW ..... *P. peruensis* **n. sp.**
– Without a white triangular patch at the midpoint of the costal margin on VFW **8**
8. With white scales on both the posterior and distal sides of the VHW black spot **9**
– With white scales on only the distal side of the VHW black spot **10**
9. With a large basal black spot on ventral hindwing cell Sc+R_1-Rs ..... *P. porthura*
– With a small basal black spot on ventral hindwing cell Sc+R_1-Rs ..... *P. gemma*
10. With broad black apex and outer margin on the DFW and a greenish blue hue in the basal half ... *P. prietoi* **n. sp.**

– With narrower black apex and outer margin on the DFW and a blue hue in the basal portion ..... *P. johanna* **n. sp.**

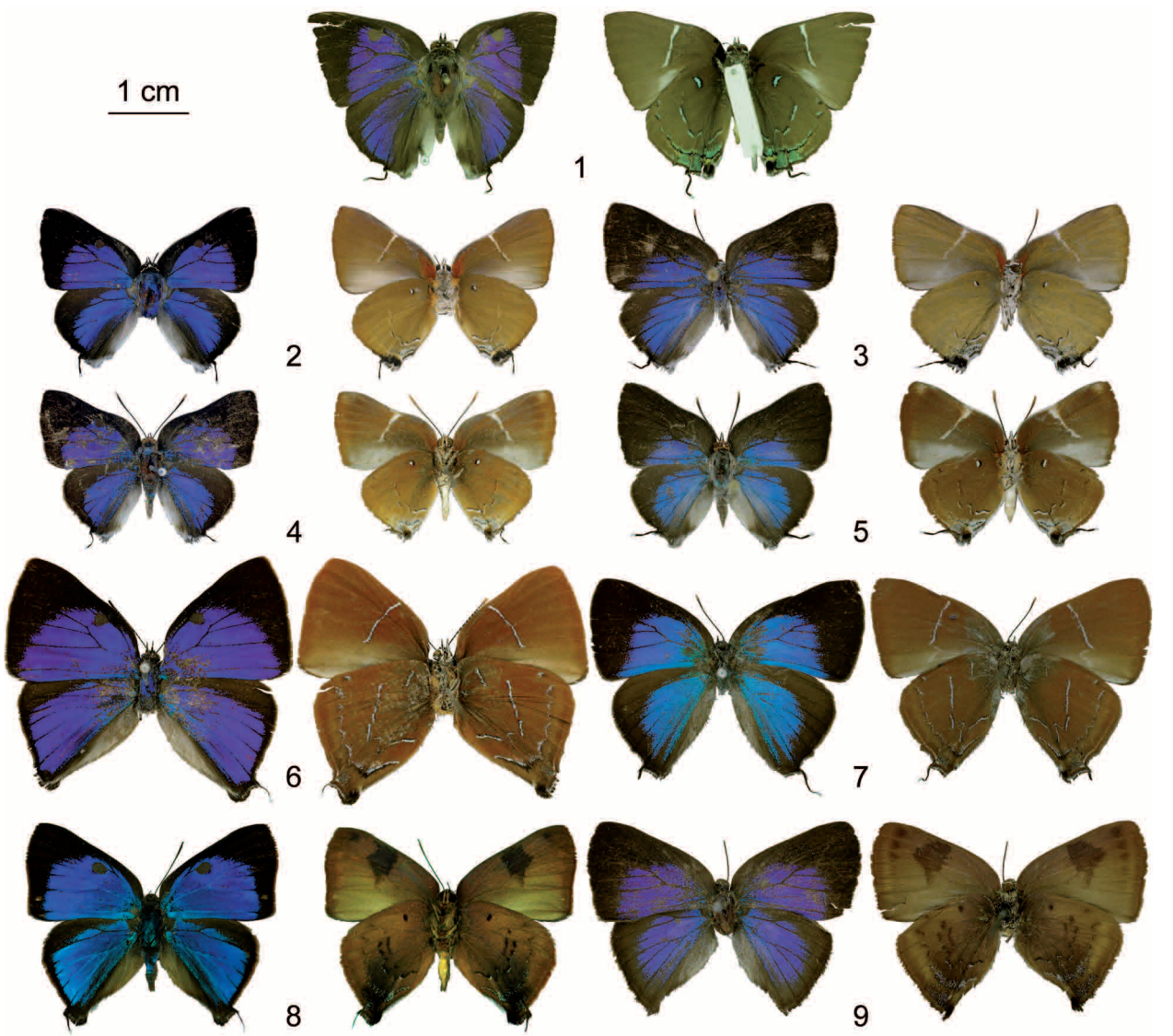
10. With russet ground color ventrally ..... *P. ravus*

– Without russet ground color ventrally .. *P. forasteira* **n. sp.**

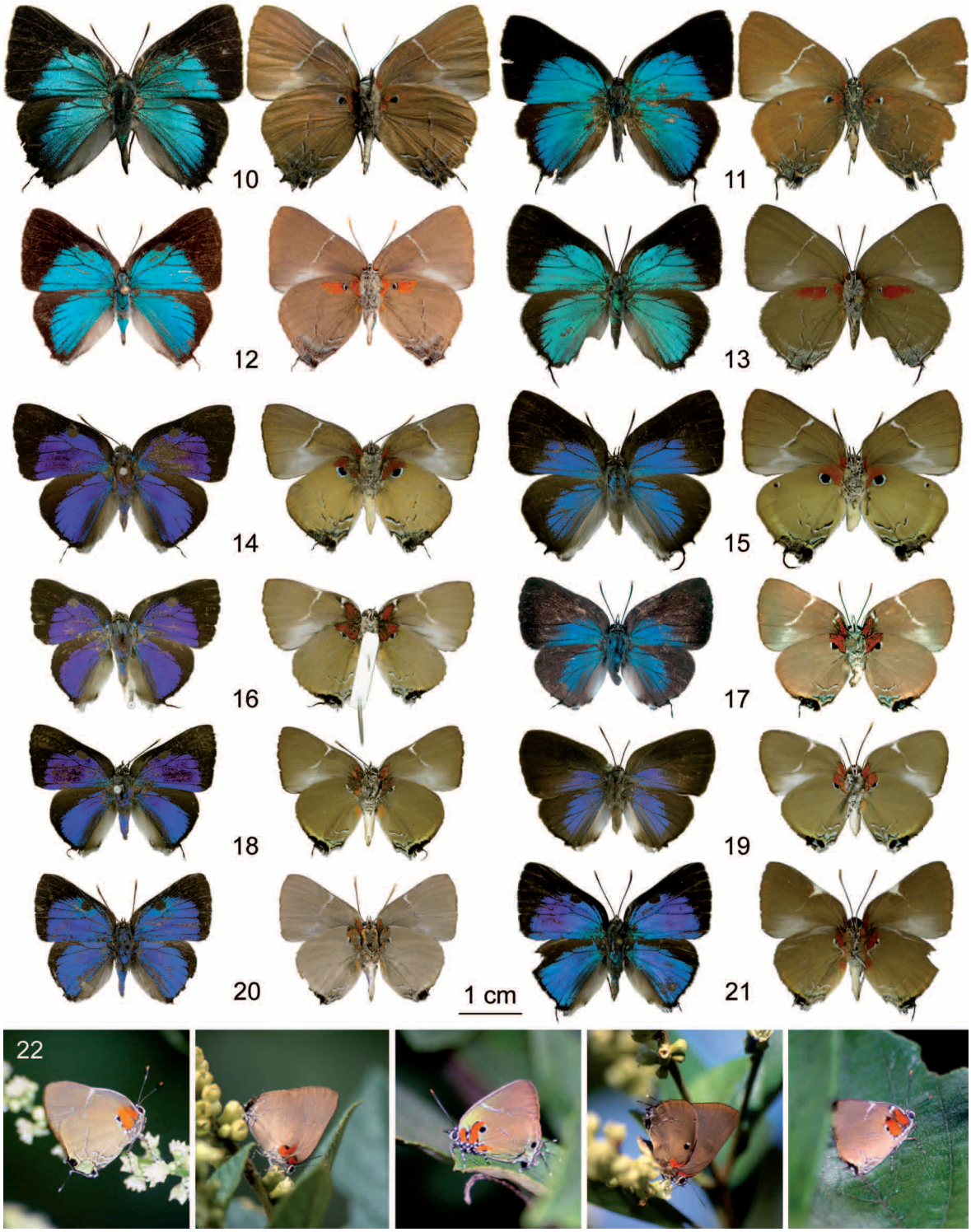
Porthecla forasteira Faynel & Moser, n. sp. (Figs 1, 23, 48)

Type material. **Holotype** ♂ (fig. 1): **French Guiana**, "Cayenne. [//] Hewitson Coll. [//] 79–69 [//] Thecla. [//] atena. 4." (white, rectangular, printed with handwritten data), "gen. prep. CF n°200" (white, rectangular, printed) (BMNH). The geographical coordinates of Cayenne are 4° 91.5' N - 52° 33.8' W. **Paratypes**: **French Guiana**. 1 ♂: Galion, 15.III.1993, Jean-Yves Gallard leg., coll. CF n°455, gen. prep. CF n°190 (CF). **Peru**. 1 ♂: Ucayali, Santa Sofia, near Pucallpa, 150 m, IX.2005, gen. prep. CF n°260 (MC 051). **Bolivia**. 2 ♂: Chapare, G. Lachavane leg., gen. prep. JFL n°352 (JFL); *ditto*, gen. prep. JFL n°353 (JFL).

Diagnosis and comments. *Porthecla forasteira* **n. sp.** is a medium sized species with a ventral wing pattern similar to that in the *atena* group of the genus *Oenomaus* (Faynel 2008), but the valvae of the male genitalia are triangular and not bifurcate in lateral aspect. The genitalia are very similar in structure to other *Porthecla* species, especially *P. ravus*.

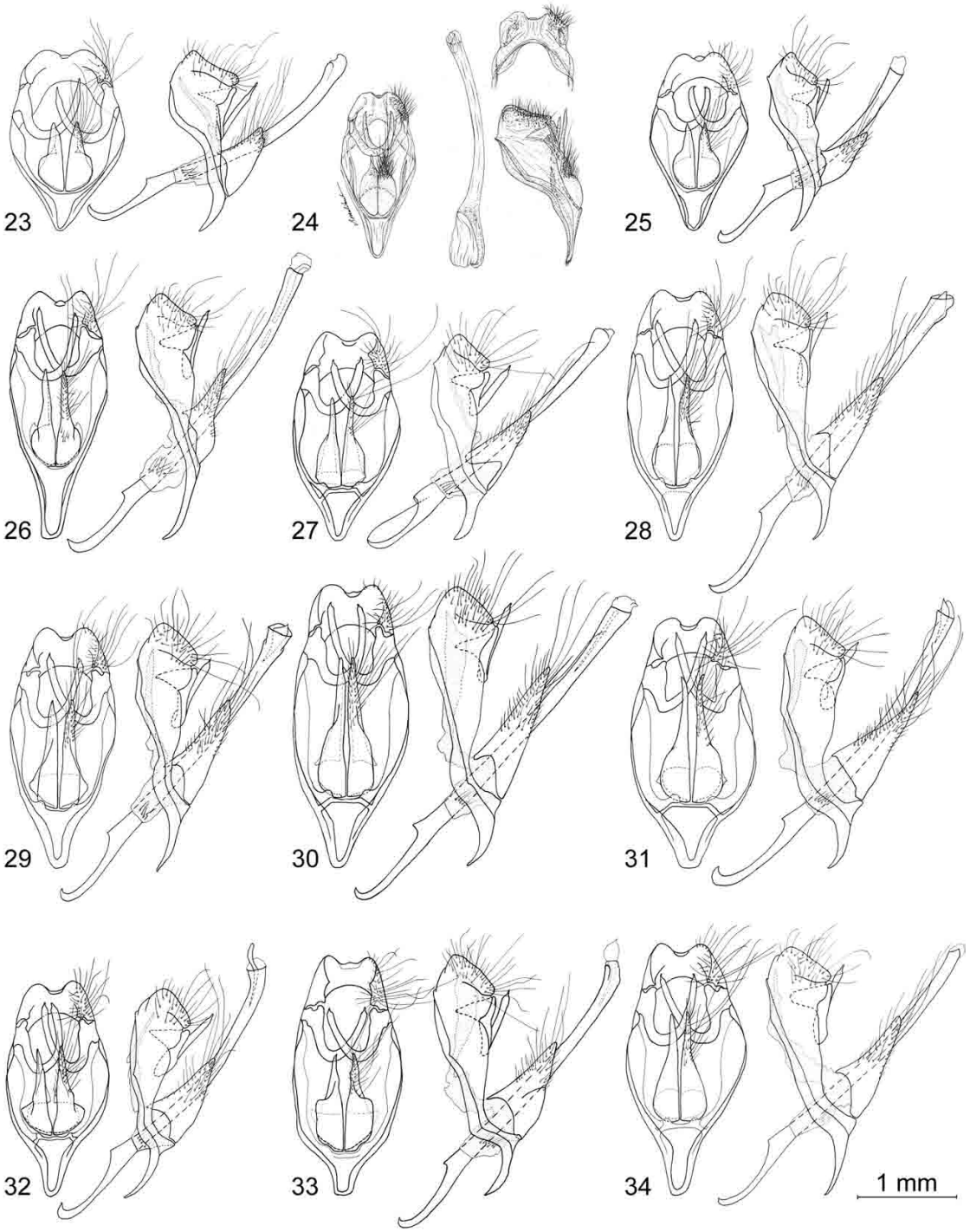


Figures 1–9
Porthecla species: adults (dorsal surface at left, ventral surface at right). **1,** ♂ *P. forasteira* (holotype, French Guiana); **2,** ♂ *P. annette* **n. sp.** (holotype, Panama); **3,** ♀ *P. annette* **n. sp.** (Colombia); **4,** ♂ *P. ravus* (syntype, Brazil); **5,** ♀ *P. ravus* (Brazil); **6,** ♂ *P. barba* (Colombia); **7,** ♀ *P. barba* (holotype, Colombia); **8,** ♂ *P. dinus* (Brazil); **9,** ♀ *P. dinus* (lectotype, Brazil).



Figures 10–22
Porthecla species: adults (dorsal surface at left, ventral surface at right). **10,** ♂ *P. prietoi* **n. sp.** (holotype, Colombia); **11,** ♀ *P. prietoi* **n. sp.** (Colombia); **12,** ♂ *willmotti* (holotype, Ecuador); **13,** ♀ *P. willmotti* **n. sp.** (Peru); **14,** ♂ *P. porthura* (holotype, Colombia); **15,** ♀ *P. porthura* (Panama); **16,** ♂ *P. minyia* (lectotype, Brazil); **17,** ♀ *P. minyia* (French Guiana); **18,** ♂ *P. gemma* (lectotype, Ecuador); **19,** ♀ *P. gemma* (Colombia); **20,** ♂ *P. johanna* **n. sp.** (holotype, Ecuador); **21,** ♂ *P. peruensis* **n. sp.** (holotype, Peru); **22,** comparison between *P. minyia* and other unrelated species having a similar underside wing pattern. From left to right: *Janthecla rocena*, *Olynthus ophelia*, *Atlides inachus*, *Olynthus narbal*, *Porthecla minyia* in nature (French Guiana, photographs by Stephane Brûlé).

Although *Porthecla forasteira* has a wing pattern similar to that of *Oenomaus melleus* and *O. curiosa*, it can be distinguished from both by wing pattern and genitalia. *Oenomaus melleus* is differentiated from *P. forasteira* **n. sp.** by a marginal black spot in cell Cu_1-Cu_2 and by the extension of its HW postmedian line anteriorly into cell Rs-M_1. *Oenomaus curiosa* differs from



Figures 23–34
Male genitalia: ventral view with penis removed at left (setae only drawn on right side), left lateral view with penis in place at right. **23,** *Porthecla forasteira* **n. sp.**; **24,** *P. annette*; **n. sp. 25,** *P. ravus*; **26,** *P. barba*; **27,** *P. dinus*; **28,** *P. prieto;*. **29,** *P. willmotti* **n. sp.**; **30,** *P. porthura*; **31,** *P. minyia*; **32,** *P. gemma*; **33,** *P. johanna* **n. sp.**; **34,** *P. peruensis* **n. sp.**

P. forasteira **n. sp.** by the reduced extent of the dorsal blue and by differences in the male genitalia including the shape of the vinculum, the gnathos, and the penis. However, the ventral wing pattern of *P. forasteira* **n. sp.** is so similar to that of many *Oenomaus* species that we do not think that the female will be recognizable by wing pattern alone.

Description Male. FW length: 15.9 mm (SD = 1.02, N = 3).

Dorsal wing surface. FW basally blue with a broad black apex and outer margin. Narrow black costal margin with blue scales between the subcostal and radius veins. A large round scent pad is located at the distal end of the discal cell, spanning an area from vein R_2 to M_2. Blue scales surround the brown androconia except for the anterior side. HW blue scales form a crescent shaped area which is limited anteriorly by a broad black costal margin and posteriorly by a wide anal margin which extends to vein 2A. Anal margin light grey and covered with long setae. Long black tail, tipped with white, at the end of vein Cu_2.

Ventral wing surface. FW white median band extending diagonally downward from the middle of the costa to vein Cu_1. HW white basal spot encircled with black in cell $Sc+R_1$-Rs. White postmedian line bordered basally with black scales, extends anteriorly into cell M_1-M_2. Anal angle broadly covered with light green scales. Black anal lobe.

Genitalia ♂ (fig. 23). Five genital preparations were examined. Similar to *P. ravus* but with smaller valvae. Valvae with rounded anterior base and elongated posterior ends in ventral view, triangular in lateral view. Penis slightly curved with small teeth at its end, located dorsally. No cornutus.

Female. Unknown.

Etymology. The name *forasteira* is derived from the Portuguese language and means stranger or foreigner. It is proposed as an indeclinable feminine noun in apposition.

Distribution, ecology, and behavior. *Porthecla forasteira* **n. sp.** is a rare, lowland species recorded from Peru, Bolivia, and French Guiana (fig. 48).

Porthecla annette Faynel & Robbins, n. sp. (Figs 2, 3, 24, 35, 44)

Type material. **Holotype** ♂ (fig. 2): **Panama**, Canal Zone, Cocoli, 8° 58.4' N - 79° 35.4' W, 16.VI.1968, G. B. Small, Genitalia No. RKR 1992:20 (USNM). **Paratypes**: **Panama**. 3 ♂: Canal Zone, Cocoli, 12.IV.1968, G. B. Small, Genitalia No. RKR 2009:24) (USNM x2); Canal Zone, Los Riós, 14.XI.1968, H. L. King (USNM). 6 ♀: Canal Zone, Cocoli, 14.IV.1968, G. B. Small (USNM); *ditto*, gen. prep. CF n°338 (USNM); Canal Zone, Paraiso, 22.VI.1977, G. B. Small (USNM); Canal Zone, Gamboa, 16.XI.1978, R. K. Robbins, *in copula* (♂ lost) 1440 hours (USNM); Canal Zone, Gamboa, 7.II.1979, R. K. Robbins, landed 4 ft high at 1400 hours, gen. prep. CF n°334 (USNM); Veraguas, gen. prep. CF n°318 (MNHN n° H-448).

Other material examined.**Colombia**. 2 ♀: Tolima, Cunday, 4°04'N, 74°42'W, 800 m, 22.VIII.1993, leg. C. Callaghan, gen. prep. CF n°335 (USNM, fig. 3); no locality, gen. prep. JFL n°341 (JFL).

Diagnosis and comments. The name *Thecla ravus* was proposed for populations in the Amazon Basin. Populations from Panama and central Colombia (Rio Magdalena Valley), which were previously undocumented, contain individuals that have a ventral ground color that is yellow-beige (not russet as in *P. ravus*); a uniform color at the apex of the VFW (without white scales as in *P. ravus*); reddish rusty scales near the base of VFW (lacking or less rusty in *P. ravus*); male genitalia valvae that taper more sharply in ventral aspect and that are shorter than those in *P. ravus*; and the posterior edge of the lamella postvaginalis of the ductus copulatrix straight (without the short spines of *P. ravus*). Most importantly, these distinguishing traits show little variation geographically, which is the reason why we recognize *P. annette* **n. sp.** as a species that is biologically distinct from *P. ravus*.

Description. **Male**. Length of FW: 14.2 mm (SD = 0.42, N = 5).

Dorsal wing surface. Indistinguishable from *P. ravus* (below).

Ventral wing surface. Similar to *P. ravus* except for the three elements cited in the diagnosis.

Genitalia ♂ (fig. 24). Two genital preparation were examined. Vinculum slightly convex laterally. Compared to the other *Porthecla* species the saccus is shorter and pointed and the valvae are shorter with an oval anterior base and small pointed posterior ends in ventral view. Penis slightly curved in lateral view without a cornutus.

Female (fig. 3). Length of FW: 15 mm (SD = 0.75, N = 2).

Dorsal wing surface. A reduced area of less intense blue on both wings in comparison to the male.

Ventral wing surface. Indistinguishable from the male.

Genitalia ♀ (fig. 35). Five genital preparations were examined. Ductus bursae short, with a central constriction near the cervix bursae in ventral view; dorsally curved in lateral view. Lamella postvaginalis straight at the end without a spike. Two signa on the corpus bursae each bearing a central thorn-like spine.

Etymology. *Porthecla annette* **n. sp.** is named for Dr. Annette Aiello, a scientist at the Smithsonian Tropical Research Institute, who has contributed immensely to the knowledge of the Central American insect fauna through her rearing of all kinds of insects. The name is a feminine noun in apposition.

Distribution, ecology, and behavior. Panama and central Colombia (fig. 44) at elevations under 1000 m. Robbins collected a pair in copula at 1440 hours in Gamboa, Canal Zone, Panama, but the male escaped.

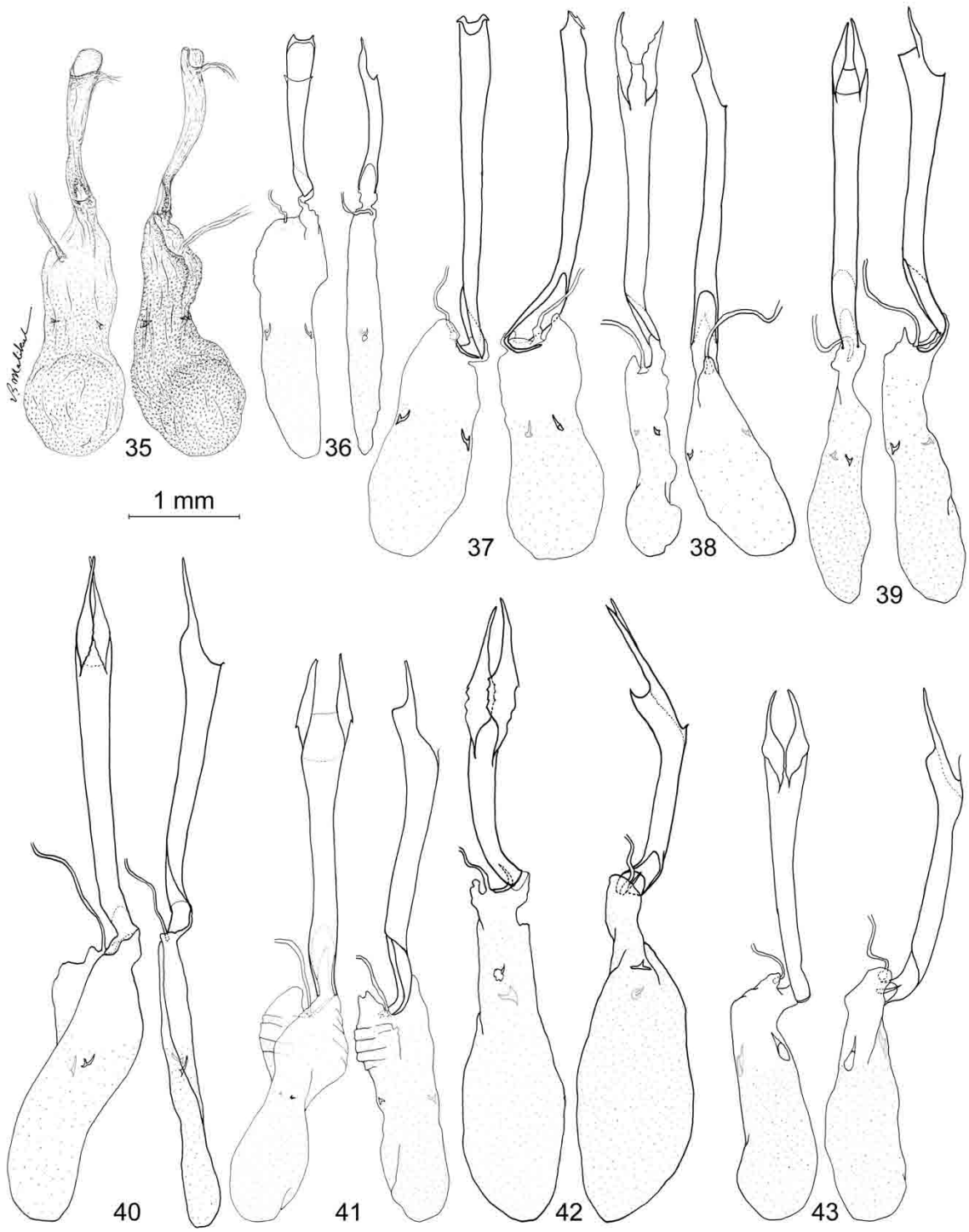
Porthecla ravus (Druce 1907) (Figs 4, 5, 25, 36, 44)

Thecla ravus Druce 1907.
Porthecla ravus (Druce 1907); Robbins, 2004, n°872.

Type material. Druce (1907(3): 582, pl. 33, f. 12) described *Thecla ravus* from an unstated number of males collected by Alfred Russell Wallace in "Amazonas" (Brazil) between 1848 and 1852. One syntype male was found in BMNH (fig. 4). It is in good condition, with the following labels: (1) "Type" (white encircled with red, circular, printed); (2) "Amazon" (blue, circular, handwritten); (3) "T. ravus [//] type H. H. Druce" (white, rectangular, handwritten); (4) "B.M. TYPE [//] No. Rh. 646" (white, rectangular, printed). A lectotype designation is unnecessary because identification is not an issue.

Material examined. **Colombia**. 3 ♂: Remolinos, Meta, 25.III.1997, leg. J.F. Le Crom, gen. prep. Le Crom n°338 (JFL); *ditto*, 5.I.1995, gen. prep. Le Crom n°339 (JFL); El

Remanso Gominia, 1.I.1992, gen. prep. Le Crom n°340 (JFL). **Ecuador**. ♀: Capricho, Napo, 700-800 m, XII.2003, Euclides Aldaz Leg. (PB). **French Guiana**. 3 ♂: Route de Kaw, PK 7, 17.VI.2001, 9H30 sur *Cordia schomburgkii*, gen. prep. CF n°116 (CF); Collection C. Bar, Ex Oberthür Coll., Brit. Mus. 1927-3. (BMNH x2). 3 ♀: Route de Kaw, PK 8,



Figures 35–43
Female genitalia: ventral view at left, left lateral view at right. **35,** *Porthecla annette* **n. sp.**; **36,** *P. ravus*; **37,** *P. barba*; **38,** *P. dinus*; **39,** *P. prietoi* **n. sp.**; **40,** *P. porthura*; **41,** *P. willmotti* **n. sp.**; **42,** *P. minyia*; **43,** *P. gemma*.

3.I.1998, J.Y. Gallard leg., gen. prep. CF n°117 (CF); Nouveau Chantier, Collection Le Moult, JJC (BMNH); Cayenne, gen. prep. W.D.F. n°2332, Collection Wm Schaus (USNM). **Brazil**. 31 ♂: Bahia, Felder coll., BMNH(E)#266031 (without abdomen); Cuiabá, Matto Grosso, ex coll. Hamilton Druce, 1919 (MNHN); Matto Grosso, Diamantino, 350-400 m, Alto Rio Arinos, 17.II.1991, Leg. E. Furtado, gen. prep. CF n°339 (USNM); *ditto*, 6.X.1990 (USNM); Distrito Federal, Parque do Gama, 1,000 m, 20.VI.1972, Keith Brown, gen. prep. RKR n°1992: 23 (USNM); *ditto*, 17.VI.1972, gen. prep. RKR n°1992: 23 (USNM); Route de Vigie, Pará, 13.X. (CF); *ditto*, 18.VIII., ADN vouncher n°02 (CF); Reserva Particular "Sonho Azul", PA 140 – Km 15 – 68786, Santo Antonio do Tauá, Pará, 5.III.2002, sur *Cordia schomburgkii*, Pierre Jauffret leg., gen. prep. CF n° 135 (PJJ); *ditto*, 7.VIII.2002 (PJJ x2); *ditto*, 15.XI.2002 (PJJ); *ditto*, 6.VIII.2003, gen. prep. CF n° 136 (PJJ); Pará, km 715 Cuiabá-Santarém Road, 14.VII.1978, leg. Callaghan, gen. prep. CF n°336 (USNM); Sumaré, Rio de Janeiro, 29.IV.1969, S.S. Nicolay (USNM); RJ, Rio de Janeiro, 8.IV.1934 (DZUP); RJ, Morro Dona Marta, 27.IV.1938, P. Gagarin leg. (DZUP); *ditto*, 31.VII.1938 (DZUP); *ditto*, 30.IX.1938 (DZUP); *ditto*, 13.XII.1938 (DZUP); *ditto*, 27.IV.1940 (DZUP x3); RJ, Mundo Novo, Rio de Janeiro, 5.V.1940, P. Gagarin leg. (DZUP); PA, Itaituba, Rio Tapajóz, Strympl leg. (DZUP x2); PA, Santarém, VII.1923 (DZUP); AM, Maués, XI.1929 (DZUP); MG, Divinópolis, 6.-18.XII.1972, A. Moser leg. (MC 201); MT, Diamantino, Alto Rio Arinos, 350 m, 7-13.XI.1996, Furtado & Moser leg. (MC 086); PA, Sto. Antônio de Tauá, I.2003, P. Jauffret leg. (MC 202). – **17** ♀: Route de Vigie, Pará, 24.XI, gen. prep. CF n°360 (CF, fig. 5); *ditto*, 22.II., sur *Cordia schomburgkii* (CF); MG, Diamantino, 350-400 m, Alto Rio Arinos, 4.I.1992, Leg. E. Furtado, gen. prep. CF n°337 (USNM); MG, Diamantino, 350-400 m, Alto Rio Arinos, 27.X.1991, Leg. E. Furtado (USNM); MG, Diamantino, 350-400 m, Alto Rio Arinos, 6.V.1990, Leg. E. Furtado (USNM); MG, Diamantino, 350-400 m, Alto Rio Arinos, 10.VII.1991, Leg. E. Furtado (USNM); MG, Diamantino, 350-400 m, Alto Rio Arinos, 4.I.1992, Leg. E. Furtado (USNM); MG, Diamantino, 350-400 m, Alto Rio Arinos, 4.I.1992, E. Furtado leg. (USNM); RJ, Morro Dona Marta, 10.V.1937, P. Gagarin leg. (DZUP); *ditto*, 23.II.1939 (DZUP); *ditto*, 27.IV.1940 (DZUP); RJ, Mundo Novo, Rio de Janeiro, 5.V.1940, P. Gagarin leg. (DZUP); AM, Teffé, 4-6.XII.1987, Mielke & Casagrande leg. (DZUP); MT, Diamantino, Alto Rio Arinos, 350 m, 7-13.XI.1996, Furtado & Moser leg. (MC 087); MT, Diamantino, Alto Rio Arinos, 5.IV.2000, E. Furtado leg. (MC 203); ES, Cariacica, VI.1912, B. Pohl leg. (MZSP); SP, Poloni, 12.III.1983 (MZSP).

Literature record. *«Thecla» ravus* K485, 22.VIII.1965 (KB) *in:* Brown & Mielke 1967, *J. Lep. Soc.* **21** (3): 152.

Diagnosis. Characterized ventrally by a uniform brown ground color with an overlay of russet colored scales (figs. 4, 5). The ground color scales are lighter brown than those in *P. barba*. The overlay scales are darker than the more yellowish scales in *P. annette* **n. sp.**

Description. **Male**. Small species in the genus, FW length: 14.5 mm (SD = 0.52, N = 5). Other notable aspects are (1) a small white patch located at the VFW apex (most visible on fresh specimens), (2) a russet frons, and (3) FW costa covered with white scales.

Genitalia ♂ (fig. 25). Ten genital preparations were examined. All are indistinguishable. Compared to other *Porthecla* species the following characters are notable: (1) the genitalia is somewhat shorter and wider at the midsection in ventral view, (2) the tips of the gnathos is more hook shaped (not pointed), (3) the saccus is shorter and sharply tapered anteriorly, and (4) the valvae are shorter with a rounded anterior base and regularly pointed posterior ends in ventral view. Vinculum concave in lateral view. Penis slightly curved without a cornutus.

Female (fig. 5). Length of FW: 13.6 mm (SD = 0.63, N = 3).

Dorsal wing surface. Greatly reduced area of blue on FW. Less intense color than in the male without the purple hue.

Ventral wing surface. Indistinguishable from the male.

Genitalia ♀ (fig. 36). Four genital preparations were examined. Ductus bursae short, narrow near the cervix bursae and thickening gradually toward the lamella in ventral view; dorsally curved in lateral view. Lamella postvaginalis rounded at the end with two short distal spikes, not split as in many of the other *Porthecla* species. Two signa on the corpus bursae each bearing a central thorn-like spine.

Distribution, ecology, and behavior. Amazon Basin and southern Brazil (fig. 44). Adults fly year-round at elevations under 1000 m and are often seen feeding on *Cordia schomburgkii* A.L. De Candolle 1845 in French Guiana and Pará, Brazil.

Other illustrations. Draudt (1919: 150, row i). D'Abrera (1995: 1153).

Porthecla barba (Druce 1907) (Figs 6, 7, 26, 37, 46)

Thecla barba Druce 1907.
= *Parrhasius nicanoriana* Salazar 2000.
= *Parrhasius nicandriana* Salazar 2000 (missp.).
Porthecla barba (Druce 1907); Robbins 2004, n°865.

Type material. Druce (1907: 575, pl. 32, fig. 3) based his description on a female collected by Wheeler on the Rio Minero, Muzo, Colombia at 2500 feet, but wrongly identified it as a male, presumably because of its bright blue dorsal color. It is not known if the type series contained more than one specimen, but there is only one female in the BMNH (fig. 7) and it matches the original description. It is in relatively good condition (missing the right antenna). It has the following labels: (1) "Rio Minero, [//] Muzo, Colombia, [//] 2500 ft. [//] Wheeler." (white, rectangular, printed); (2) "Godman-Salvin [//] Coll. 1911.–93." (white, rectangular, printed); (3) "Type" (white encircled with red, circular, printed); (4) "T. barba ♂ [//] type H. H. Druce." (white, rectangular, handwritten); (5) "♂" (white, rectangular, printed); (6) "B.M. TYPE [//] No. Rh. 569" (white, rectangular, printed with handwritten data); (7) "BMNH(E)#266474" (white, rectangular, printed); (8) "B.M.(N.H.) Rhopalocera Slide No. 3493" (white, rectangular, printed with handwritten data); (9) "Holotype ♂ Thecla barba Druce. London, VI. 21. Zs. Bálint, 2000" (red, rectangular, printed with handwritten data). Its genitalia were dissected by K. Johnson (Faynel has an unpublished drawing from Johnson), but the genitalia microvial (B.M. n°3493) is empty. In lieu of evidence to the contrary, we presume that it is the holotype.

Material examined. **Colombia**. 23 ♂: Caldas, cerro Sancancio, 2300 m, 6.XI.1995, J. Salazar leg. (holotype *P. nicanoriana* deposited in MHNUC); "Hochcordill[ere], arindela ? Hew., G. Zikan, b[ei] Zipaqu[irá] Rob.", gen. prep. RKR n° 2002: 4 (ZSM, fig. 6); Valle, Rio Aguacatal, S. Antonio, 2200 m,

20.VIII.2004 (HNHM); *ditto*, 20.V.2003 (HNHM x3); Cali, Pance, El Treno, 1930 m, C. Prieto leg., 8.IX.2008, gen. prep. CF n° 308 (CF); Valle, Aguacatal, S. Antonio, 2200 m, 20.V.2003 (HD); *ditto*, 2.IX.2004 (HD); *ditto*, 18.IX.2004 (HD); *ditto*, 5.VIII.2006 (HD); *ditto*, 12.VIII.2006 (HD); *ditto*, 27.IX.2006 (HD x 4); Valle, Cali, Pance, cerro El Trueno, 1930 m, 25.VIII.2008, C. Prieto leg., m1012 (CP); *ditto*, 06.X.2008, m1060 (CP); *ditto*, 30.IX.2008, m1043 & m1044 (CP); *ditto*, 25.VIII.2008, m1013 & m1014 (CP); *ditto*, 07.IX.2008, m1028 (CP). **Ecuador**. 3 ♂: Pichincha Province, 5 km Nanegal-Garcia Moreno Road, 27.XII.2006, 1375-1700 m (RCB); *ditto*, 29.V.2007 (RCB); *ditto*, 25.V.2008, gen. prep. CF n° 331 (RCB). 4 ♀: Pichincha Province, 5 km Nanegal-Garcia Moreno Road, 25.V.2007, 1375-1700 m (RCB); *ditto*, 27.V.2007 (RCB); *ditto*, 25.V.2008 (RCB); *ditto*, 24.V.2008, gen. prep. CF n° 332 (RCB).

Diagnosis. *Porthecla barba* is placed in *Oenomaus* + *Porthecla* because it lacks a VHW orange-red cubital spot. It shares a russet overcast to the ventral wings and a non-split lamella postvaginalis with *P. ravus*. Its male genitalia valvae are not bifurcate in lateral aspect (fig. 26). For these reasons, we confirm its placement in *Porthecla*. It differs from all other *Porthecla* species by a VHW basal white line from vein Sc+R_1 to R_s instead of a black or white spot.

Description. **Male** (fig. 6). Length of FW: 18.4 mm (SD = 0.62, N = 3).

Dorsal wing surface. FW deep blue except for well-defined black costal and distal margins, wider at the apex than the tornus. The extent of the blue is greater than that of the female or of the males of *P. willmotti* **n. sp.** and *P. prietoi* **n. sp.** The rounded distal edge of the blue is similar to that of *P. dinus.* Androconia small, dark grey and round with blue scales surrounding all but the anterior side. HW deep blue with broad black costal margin and very narrow distal margin. Extent of the blue much greater than in the female.

Ventral wing surface. Same pattern as the female with a ground color slightly more luminous.

Genitalia ♂ (fig. 26). Three genital preparations were examined; they are indistinguishable. The male genitalia were figured by Salazar (2000: 85, fig. 2) in lateral view. Vinculum less convex in lateral view than the other *Porthecla* species. Saccus longer than the other species, without any reinforcement under the valvae. Valvae with an oval base and elongated pointed ends ventrally, and triangularly shaped laterally. Penis long, thin and almost straight with one cornutus at its end.

Female. Length of FW: 17.5 mm (SD = 0.30, N = 2).

Genitalia ♀ (fig. 37). One genital preparation was examined. Ductus bursae ventrally straight, much larger posteriorly and upturned near the cervix bursae; laterally curved. Lamella postvaginalis almost flat in ventral view and not split into two long spikes as in most other *Porthecla* species. Two signa on the corpus bursae each bearing a central thorn-like spine.

Distribution, ecology, and behavior. Known only from northern Colombia, western Colombia, and western Ecuador (fig. 46) at elevations ranging from 1375 to 2300 m. The presumed holotype from the Rio Minero was supposedly collected at 760 m elevation, which is inconsistent with modern records. We suspect that the presumed holotype was actually collected at a higher elevation in the mountains around Muzo. Adults fly year-round. In Ecuador, Busby found females feeding on flowers at 1021 hours and 1043 hours and recorded a male perching 4 m above the ground at 1100 hours (vouchers RCB). In Colombia, Prieto (pers. comm.) found this species "hilltopping" 2.5–4 m above the ground at the top of solitary "Guajaba " trees with males of *P. prietoi* **n. sp.** and *Atlides atys* (Cramer 1779). This behaviour was most apparent after 1230 hours.

Wing pattern similarities. The VHW white basal line and white postmedian line in *P. barba* are similar to other species in the *Panthiades* section, such as *Thepytus arindela* (Hewitson 1874) and *Parrhasius selika* (Hewitson 1874), and to species in unrelated genera, such as *Theclopsis aurina* Robbins 2002. Salazar (2000) described *P. nicanoriana* (a synonym of *P. barba*) and put it in the genus *Parrhasius* Hübner [1819] because "su anverso recuerda a *P. selika*". A male of *T. aurina* in the BMNH was curated as *P. barba*. However, *P. barba* can be distinguished from these unrelated species by the lack of a VHW orange-red cubital spot.

Other illustrations. Draudt (1919: 754, fig. p. 149, row a); D'Abrera (1995: 1130, female, not male); Salazar (2000: 84, fig. 1).

Porthecla dinus (Hewitson 1867) (Figs 8, 9, 27, 38, 45)

Thecla dinus Hewitson 1867.
Radissima dinus (Hewitson 1867); Johnson 1992.
Porthecla dinus (Hewitson 1867); Robbins 2004, n°864.

Type material. Hewitson (1867: (1) 114, (2) pl. 43, figs. 174, 175) described this species from at least one Brazilian female in Boisduval's collection. Johnson (1992: 176) designated a female lectotype that matches the original figures very well; it is also the only specimen of this species in BMNH. This type (fig. 9) is in relatively good condition except that the right forewing is broken at the tornus, the right antenna is missing, and the left antenna is broken. It has the following labels: (1) "Dinus B. N. V. Brew." (white, rectangular, handwritten); (2) "Ex Musæo D^r Boisduval" (white, rectangular, printed); (3) "Ex Oberthür Coll. Brit. Mus. 1927–3." (white, rectangular, printed); (4) "Dinus brasil" (white, rectangular, handwritten); (5) "thecla Dinus Hew. pl. 43 fig. 174. 175." (white, rectangular, handwritten); (6) "B.M. TYPE No. Rh. 616" (white, rectangular, printed with handwritten data); (7) "Type" (white encircled with red, circular, printed); (8) "Genitalia by K. Johnson. IX' 83" (white, rectangular, handwritten); (9) "BMNH(E)#266632" (white, rectangular, printed); (10) "LECTOTYPE ♀ Thecla dinus Hewitson. Zs. Bálint, 2000. London, VI. 28" (red, rectangular, printed with handwritten data). The genitalia were dissected and illustrated (a stylized depiction in Johnson 1992: 229, fig. 93). The genitalia of the lectotype (B.M. n°1573) are in very bad condition with the lamella postvaginalis broken and the corpus bursae lost.

Material examined. **Brazil**. 4 ♂: SC, São Bento do Sul, Serra Rio Natal, 600 m, IV.2001, Moser & Rank leg., gen. prep. CF n° 292 (MC 084, fig. 8); PR, Pien, Trigolandia, 900 m, III.2005, A. Moser leg. (MC 172); SC, São Bento do Sul, A. Baumann leg., ex. Coll. Gagarin, DZ 15.979, gen. prep. CF n° 313 (DZUP); RJ, Muny, Nova Friburgo, 1000 m, 23.I.1983, O.-C. Mielke leg., DZ 3567 (USNM). – **8** ♀: SP, Campos de Jordão, 1600–1800 m, 9.XI.1997, A. Moser leg., gen. prep. CF n° 291 (MC 085); SC, São Bento do Sul, Serra do Rio Natal, 600 m, 18-22.III.2000, Moser & Rank leg. (MC 173); SC,

São Bento do Sul, Serra do Rio Natal, 600 m, 6-9.IV.2000, Moser & Rank leg. (MC 174); MG, Conceição dos Ouros, Rio Sapucaí, 800 m, 16-22.IV.2004, Moser & Almeida leg. (MC 175); SP, Umuarama, 1800 m, 8-15.III.1937, Gagarin leg., DZ 15.986, gen. prep. CF n° 314 (DZUP); SP, Umuarama, 1800 m, 8-15.IV.1937, Gagarin leg., DZ 16.106 (DZUP); SP, Umuarama, 1800 m, 3-15.II.1937, Gagarin leg., DZ 16.113 (DZUP); SC, São Bento do Sul, 15.II.1975, DZ 3566, Ex. Coll. Gagarin, gen. prep. RKR n° 1992: 2 (USNM).

Diagnosis. Ventral forewing with a large, conspicuous "trapezoidal" brown postmedian patch. The shape of this brown patch is unique among the Eumaeini (fig. 8) and may be the reason that Draudt (1919-1920) isolated it in the *Thecla dinus* group.

Description. **Male** (fig. 8). Length of FW: 16.7 mm (N = 1).

Dorsal wing surface. Bright blue from base to medial areas with well-defined black costal and distal margins. Blue scales present in FW cell Sc-R_1. Brown rounded FW androconia completely surrounded by blue. The HW is extensively blue. The anterior edge of the blue scales forms a straight border with the black costal margin and extends almost to the outer margin. This pattern is similar to that of *P. barba*, but is unlike the more rounded blue edge found in most of the other *Porthecla* species. Some HW veins stand out from the blue background with their even brighter blue-cyan coloration.

Ventral wing surface. Same pattern as the female but there is a greater contrast between the ground color and the brown patch.

Genitalia ♂ (fig. 27). Two genital preparations were indistinguishable and typical of *Porthecla*. There is no cornutus at the end of the penis.

Female. Length of FW: 15.6 mm (SD = 1.25, N = 2). The primary addition to the descriptions in Hewitson (1867) and Johnson (1992) is that both sexes have tails.

Genitalia ♀ (fig. 38). Four genital preparations were examined. Ductus bursae straight, much larger posteriorly and twisted near the cervix bursae. Lamella postvaginalis bearing two plates with wavy internal border and regularly pointed end spikes. Two signa on the corpus bursae each bearing a central thorn-like spine.

Distribution, ecology, and behavior. This species is restricted to fragmented montane habitats (600 to 1800 m) in southeastern Brazil from RJ to SC (fig. 45). Recently collected specimens have been found either on flowers or on leaves at the forest edge. Collection data shows that adults fly throughout the Brazilian summer from September to April.

Wing pattern similarities. The dark band at the end of the VHW discal cell in *P. dinus* is similar to that in *Thepytus epytus* (Godman & Salvin 1887) and *T. thyrea* (Hewitson 1867), but the latter two also have a similar band on the VFW unlike *P. dinus*.

Other illustrations. Draudt (1919: 762, fig. p. 150, row f).

Porthecla prietoi Faynel & Busby, n. sp. (Figs 10, 11, 28, 39, 47)

Type material. **Holotype** ♂ (fig. 10): **Colombia**, Valle, Cali, Los Andes, Faro, 3° 25' 22" N. 76° 35' 05" W, 1750 m, 2.X.2005, Carlos Prieto leg., m679, gen. prep. CF n° 306. The holotype will be deposited in ICN.**Paratypes: Colombia**. 28 ♂: Valle, Cali, San Antonio, 2100 m, 7.VIII.2004, m185 (CP); Valle, Cali, Los Andes, Faro, 1750 m, 30.IX.2005, m673 (CP); *ditto*, 02.X.2005, m679 (CP); Valle, Cali, Pance, El Trueno, 1930 m, 07.IX.2008, m1029 (CP); *ditto*, 30.IX.2008, m1045 (CP); Valle, Rio Aguacatal, S. Antonio, 2200 m, 13.V.2004 (HNHM x3); Valle, Cali, El Faro, 1700 m, XI-X-VII-III.2005 (HD x8); *ditto*, VI-VII-VII-X-XII.2006 (HD x9); Valle, Aguacatal, San Antonio, 2200 m, V.2004 (HD x2); Valle, El Faro, 1700 m, 13.VII.2005, ex coll. HD #9771 (CF). – **5** ♀: Valle, Cali, Alto Aguacatal, Brisas, 1970 m, 20.VIII.2005, gen. prep. CF n° 307, m523 (CP); Valle del Cauca, Cali, 1000 m, 18.VIII.1962, ex coll Pierre Kieffer, gen. prep. CF n° 309 (PB, fig. 11); Valle, Cali, El Faro, 1750 m, VII-X.2005 and IV.2006 (HD x3). **Ecuador**. 2 ♂: Pichincha Province, 5 km Nanegal-Garcia Moreno Road, 1375–1700 m, 25.V.2007, gen. prep. CF n° 333 (RCB); *ditto*, 25.V.2008 (RCB).

Diagnosis and comments. *Porthecla prietoi* **n. sp.** may be closely related to *P. willmotti* **n. sp.** because both are large species, both have the same pattern of blue dorsally, and both have orange-red scales in VHW cell Sc+R_1-Rs; albeit only a few scales in *P. prietoi* **n. sp.** (figs. 10, 11). Further, Colombian specimens have fewer red scales in VHW cell Sc+R_1-Rs on the distal side of the basal black spot than those from Ecuador. However, this variation is minor compared to the difference between *P. prietoi* **n. sp.** and *P. willmotti* **n. sp.** (the latter has a large flame-shaped red patch in this cell) and does not provide support for conspecificity. The ventral wing pattern of *P. prietoi* **n. sp.** is also similar to that of *P. porthura* (figs. 14, 15). However, the black basal spot in *P. prietoi* **n. sp.** is smaller than in *P. porthura*, it lacks white scales on the basal side of the spot, and has a brown ventral ground color with less of a yellowish hue.

Description. **Male**. Length of FW: 19 mm (SD = 0.29, N = 3).

Dorsal wing surface. FW bright basal blue area with large black costal and distal margins, broader at the apex than at the tornus. The dorsal blue on the FW is more limited in *P. prietoi* **n. sp.** as the blue scales angle straight down from the androconia to the inner margin, while in *P. porthura*, the blue extends further out distally into cells M_3-Cu_1 and Cu_1-Cu_2 before turning downward to the inner margin. The dorsal color of *P. prietoi* **n. sp.** is blue with a greenish shade; in contrast to the deeper blue of *P. porthura.* Scent pad brown, round, surrounded by blue scales except on the anterior half. Reduced area of blue on the HW with a broad black apex. Area between vein 3A and the inner margin grey and pubescent. Black tail, tipped with white, at apex of HW vein Cu_2. Small blue-white spot at anal lobe.

Ventral wing surface. FW typical of *Porthecla* with a white median line crossing the wing from veins Sc to Cu_2. The ventral ground color of *P. prietoi* **n. sp.** is light brown, while *P. porthura* has a yellowish hue. Fringe also light brown except along HW anal margin and anal angle where it is white. The basal section of the HW has a small patch of red scales near the body and a small basal black spot in cell Sc+R_1-Rs which is bordered on the distal side by white scales. In contrast, *P. porthura* has a much more extensive patch of red at the base and a much larger black spot which is bordered on both the distal and posterior sides by a semicircle of white scales. Other HW characters include a dashed, white postmedian line inwardly edged in black; anal angle spotted with blue and black scales; black anal lobe, enhanced anteriorly by white-yellow scales; and no submarginal black spot in cell Cu_1-Cu_2, as found in *P. porthura*.

Genitalia ♂ (fig. 28). Two genital preparations were indistinguishable and similar to those of *P. porthura*. Vinculum narrow and elongated in ventral view, and convex on the

opposite side of the valvae in lateral view. Saccus ventrally short, narrow and pointed; reinforced near the valvae; and, not in alignment with the vinculum in lateral view. Valvae with an oval base and elongated pointed ends ventrally, and triangularly shaped laterally. Penis with the posterior part slightly curved ventrally in lateral view and with a terminal cornutus.

Female. (fig. 11). Length of FW: 19 mm (N = 1).

Dorsal wing surface. Blue area similar to the male but not as bright.

Ventral wing surface. Similar to the male.

Genitalia ♀ (fig. 39). Two genital preparations were similar. Ductus bursae long and straight in ventral view, curved near the cervix bursae in lateral view. Lamella postvaginalis constituted of two almond-shaped sclerite plates with regularly pointed ends but without wavy internal borders. Two signa on the corpus bursae each bearing a central thorn-like spine.

Etymology. *Porthecla prietoi* **n. sp.** is named for our colleague Carlos Prieto, a Colombian lepidopterist studying Lycaenidae. Carlos caught the first known specimens. The name is a masculine noun in the genitive case.

Other illustrations. Prieto & Dahners (2006: 187, fig. 8 as *Porthecla porthura*).

Distribution, habitat, and behavior. *Porthecla prietoi* **n. sp.** have been found in western Colombia and western Ecuador (fig. 47). Adults fly year-round at elevations from 1000 to 2200 m. Male "hilltopping behavior" occurs from 1200 to 1400 hours on the top of small "Guajaba" trees 2–4 m above the ground (Prieto, pers. comm.). Males of *P. prietoi* **n. sp.** and *P. barba* fly together and may land on the same trees. Busby found two males in Ecuador of *P. prietoi* **n. sp.** – one feeding on flowers at 1106 hours and the other perching along a ridge top 5 m above the ground at 1200 hours (vouchers in RCB).

Porthecla willmotti Busby, Faynel & Moser, n. sp. (Figs 12, 13, 29, 41, 47)

Type material. **Holotype** ♂ (fig. 12): **Ecuador,** Zamora Chinchipe, 3.5km El Tambo-San Juan del Oro Rd, 3° 57.2' S - 79° 03.6' W, 1900 m, 12.IX.2008, Robert C. Busby leg., gen. prep. CF n° 329 (USNM). **Paratypes: Ecuador**. 2 ♂: Zamora-Chinchipe Province, 3.5 km El Tambo-San Juan del Oro Road, 11.X.2007, 1900 m (RCB); *ditto*, 18.IX.2008 (RCB). – **1** ♀: Morona Santiago Province, 14 km W of Macas, 1600 m, 27.IX.1998, Rio Abanico, gen. prep. CF n° 330 (RCB). **Peru**. 2 ♂: Huánuco, Tingo María, VIII-IX.2007, Tony Reategui leg., gen. prep. CF n° 279 (CF); Amazonas, Environs de Molinopampa, XI.2000, Benigno Calderon leg., gen. prep. CF n° 310 (PB). 2 ♀: Amazonas, Rodrigues de Mendoza, 1500–2000 m, XI.1998, A. Moser leg., gen. prep. CF n° 312 (MC 094, fig. 13); Huánuco, Puerto Inca, X.2010, Tony Reategui leg. (CF).

Diagnosis. *Porthecla willmotti* **n. sp.** is a large species with a distinctive patch of red scales in VHW cell $Sc+R_1$-Rs. This patch resembles a horizontal flame and is located on the distal side of the basal black spot. Besides this characteristic red patch, the other reasons for considering *P. willmotti* **n. sp.** a species biologically distinct from *P. prietoi* **n. sp.** are (1) more extensive blue-green on the dorsal surface of both wings, (2) ventral ground color a lighter shade of brown, (3) larger anterior part of the male genitalia valvae in ventral view, and (4) smaller signa in the female genitalia corpus bursae. These traits barely vary in the type series.

Description Male. Length of FW: 18.2 mm (SD = 0.20, N = 2).

Dorsal wing surface. FW bright greenish blue with black costal margin and very broad black distal margin, which is wider at the apex than at the tornus. Androconia dark grey, round, and surrounded by black scales anteriorly and greenish blue scales posteriorly. Greenish blue scales extend just beyond the distal side of the androconia into cell M_3-Cu_1 before angling down to the inner margin in a straight line. HW bright greenish blue in the basal two-thirds with broad black costal and distal margins, widest at the apex and narrower at the anal angle. Area between vein 3A and the inner margin grey and pubescent. A black tail tipped with white extends beyond the end of vein Cu_2. Anal lobe with pale blue and white scales in the center.

Ventral wing surface. Ground color light brown with a red patch located in the basal part of the costal cell on both wings. These patches are more restricted than in *P. porthura*. Fringe light brown except along the HW anal lobe where it is darker and the anal margin where it becomes white. FW typical of *Porthecla* with a white median line cutting diagonally across the wing from the middle of the costal margin to vein Cu_2. HW characters include a black basal spot not directly adjoining the basal red and bordered by white scales distally, a large patch of red scales centered in the middle of cell $Sc+R_1$-Rs; a white postmedian line, dashed, with black scales basally; anal angle heavily covered with white, blue, and black scales; and a black anal lobe with a band of white scales above. We find minor variation in the expanse of the "red flame" and in the curvature of the VFW white postmedian line, however, we believe these differences represent intraspecific variation.

Genitalia ♂ (fig. 29). Three genital preparations were done; they are similar to those of *P. prietoi* **n. sp.** and *P. porthura*. Vinculum narrow and elongated in ventral view, and convex on the opposite side of the valvae in lateral view. Saccus ventrally short and pointed, reinforced by a ridge at the posterior end near the valvae. Anterior part of valvae with a larger base than in *P. prietoi* **n. sp.**, elongated pointed ends ventrally, and a triangular shape laterally. Penis straight with a terminal cornutus.

Female. (fig. 13). Length of FW: 18.1 mm (SD = 0.09, N = 2).

Dorsal wing surface. Very similar to the male in both the greenish blue color and its extent. *Ventral wing surface*. Indistinguishable from the male.

Genitalia ♀ (fig. 41). Two genital preparations were done; they are similar. Ductus bursae long and straight in ventral view, and curved near the cervix bursae in lateral view. Lamella postvaginalis constituted of two triangular sclerite plates with thicker pointed ends than in *P. prietoi* **n. sp.** or *P. porthura*. Two signa on the corpus bursae each bearing a central thorn-like spine. The spines are smaller than in other *Porthecla* species.

Etymology. This beautiful butterfly with its flame red patch is named for our good friend and colleague Keith Willmott, who coincidently has flame red hair. Keith has spent years studying the butterflies of Ecuador and was the first to discover Ecuadorian males of *Porthecla willmotti* **n. sp.** The name is a masculine noun in the genitive case.

Distribution, ecology, and behavior. *Porthecla willmotti* **n. sp.** occurs in eastern Ecuador and eastern Peru (fig. 47). Adults have been encountered from August to November at

elevations from 1500 to 2000 m, but insufficient collecting at other times of year may account for the limited flight period which has been recorded thus far. Males perch on ridge tops 12 m or more above the ground between 1330 and 1500 hours (specific records for the type locality are 1340, 1357, 1447, and 1458 hours, vouchers in RCB and USNM).

Porthecla porthura (Druce 1907) (Figs 14, 15, 30, 40, 45)

Thecla porthura Druce 1907.
Porthecla porthura (Druce 1907); Robbins 2004, n°867.

Type material. Druce (1907(3): 581-582, pl. 33, f. 10) based his description of *Thecla porthura* on a male collected by Wheeler in Colombia. It is not known if the type series contained more than one specimen, but one male from Wheeler is extant in the BMNH, and we presume it to be the holotype (fig. 14). This specimen is in relatively good condition but is missing the right antenna. It has the following labels: (1) "Bogota, [//] Colombia. [//] Wheeler." (white, rectangular, printed); (2) "Godman-Salvin [//] Coll. 1911.–93." (white, rectangular, printed); (3) "Type" (white encircled with red, circular, printed); (4) "T. porthura [//] type H. H. Druce." (white, rectangular, handwritten); (5) "B.M. TYPE No. Rh. 640" (white, rectangular, printed with handwritten data); (6) "BMNH(E)#31313" (white, rectangular, printed); (7) "Prep. gen. CF n°293" (white, rectangular, printed).

Material examined. **Honduras**. 1 ♂: El Dorado, Rio Paulaya, 16.IV.1987, T.H. Hubbell (USNM). **Panama**. 12 ♂: Colon, Piña, 200 m, 27.I.1973 (FSMC); Colon, Piña, 100 m, 10.IX.1971, H.L. King, gen. prep. S.S. Nicolay n°L698 (USNM); Colon, Piña, 100 m, 28.III.1971, H.L. King (USNM); Colon, Piña, 9°17'N, 80°03'W, IV.1971, leg. G.B. Small (USNM); Colon, Piña, 100 m, 24.IV.1971, H.L. King (USNM); Colon, Piña, 200 m, 14.II.1971, H.L. King (USNM); Canal Zone, Cocoli, 11.I.1975, leg. S.S. Nicolay (USNM); Canal Zone, Gatun, 18.IV.1970, G.B. Small (USNM); Canal Zone, Gatun, 23.V.1971, leg. G.B. Small (USNM); Canal Zone, Gatun, 9°17'N, 79°57'W, 23.V.1971, leg. G.B. Small (USNM); Canal Zone, Gatun, 350', 1.IV.1971, G.B. Small, gen. prep. S.S. Nicolay n°L631 (USNM); Panama Prov., 6 mi N. El Llano, 1300', 26.XII.1974, coll. G.B. Small (USNM). **13** ♀: Colon, Piña, 200 m, 21.IV.1970 (FSMC); Colon, Piña, 100 m, 8.III.1971, H.L. King, gen. prep. CF n°349 (USNM, fig. 15); Colon, Piña, 100 m, 10.IV.1971, H.L. King, gen. prep. S.S. Nicolay n°L699 (USNM); Colon, Piña, 200 m, 11.III.1973, H.L. King (USNM); Colon, Piña, 200 m, 19.II.1973, H.L. King (USNM); Canal Zone, Gamboa, 7.II.1979, Leg. R. Robbins (USNM); Canal Zone, Gatun, 28.II.1970 (USNM); Canal Zone, Gatun, 11.III.1973, G.B. Small (USNM); Canal Zone, Gatun, 9°17'N, 79°57'W, 18.IV.1970, leg. G.B. Small (USNM); Canal Zone, Gatun, 9°17'N, 79°57'W, 18.IV.1970, leg. G.B. Small (USNM); Canal Zone, Gatun, 14.VI.1971, G.B. Small (USNM); Canal Zone, Gatun, II.1973, G.B. Small (USNM); Darien, Serrania de Pirre, Cana, 1150 m, 24.I.1984, Leg. G.B. Small (USNM). **Colombia**. 2 ♀: Micay, VIII.1896, Ex. Coll. Dognin 1921, J.J. Joicey Coll., B.M. 1929-435 (BMNH); Victoria, 800 m, Caldas, 26.VI.1960, G.B. Small (USNM). **Ecuador**. 3 ♀: Pichincha Province, 23 km Pacto-Guayavillas Road, 900 m, 22.V.2004 (RCB); Pichincha Province, 20 km Pacto-Guayavillas Road, 900 m, 25.IX.2008 (RCB); La Chima, Rio de las Juntas, pr. Bahahoyo, Prov. Los Rios, VI-VII.1893, M. de Mathan, Ex Oberthür Coll., Brit. Mus. 1927-3 (BMNH).

Diagnosis. Basal black spot on VHW large (diameter > 1 mm), round, bordered basally and distally by a semicircle of white scales, and bordered anteriorly by the large red basal patch.

Description. **Male**. Large species, length of FW: 17.7 mm (SD = 0.49, N = 3).

Genitalia ♂ (fig. 30). Three genital preparations are indistinguishable. Anterior part of the valvae narrow at the base with elongated posterior pointed ends in ventral view. Penis straight with one cornutus at its end.

Female (fig. 15). Length of FW: 17.3 mm (SD = 0.82, N = 4).

Dorsal wing surface. Reduced area of blue on both wings with less intense color than in the male. *Ventral wing surface*. Indistinguishable from the male.

Genitalia ♀ (fig. 40). Two genital preparations were examined. Ductus bursae long, narrow and slightly curved near the cervix bursae. Lamella postvaginalis constituted of two almond-shaped plates with wavy internal borders and regularly pointed posterior ends. Two signa on the corpus bursae each bearing a central thorn-like spine.

Distribution, ecology, and behavior. From Central America (Honduras) to western Ecuador (fig. 45) in forest up to 1150 m elevation. Adults fly year-round.

Wing pattern similarities. See under *P. minyia*.

Other illustrations. Draudt (1919: 150, row h). D'Abrera (1995: 1151).

Porthecla minyia (Hewitson 1867) (Figs 16, 17, 31, 42, 46)

Thecla minyia Hewitson 1867.
Olynthus minyia (Hewitson 1867); D'Abrera 2001.
Porthecla minyia (Hewitson 1867); Robbins 2004, n°869.

Type material. Hewitson (1867: 1: 91, 2: pl. 38, fig. 115, 116) described this species from at least one Amazonian male. There is a male fitting this description in the BMNH. We designate it a lectotype because the intraspecific variation that we document below is extensive. The lectotype (fig. 16) has the following labels: (1) "Thecla [//] Type [//] minyia [//] Hew." (white encircled with red, circular, printed with handwritten data); (2) "Amazon [//] Hewitson Coll. [//] 79–69. [//] Thecla. [//] minyia. 3." (white, rectangular, printed with handwritten data); (3) "B.M. TYPE [//] No. Rh. 639" (white, rectangular, printed with handwritten data); (4) "BMNH(E)#31315" (white, rectangular, printed); (5) "Prep. gen. CF n°295" (white, rectangular, printed); (6) "Lectotype ♂ *Thecla minyia* Hewitson" (white, rectangular, printed). It has no antennae and the left hindwing tail is broken.

Material examined. **Venezuela**. 2 ♂: El Dorado, Bolivar, Sta Elena, km 19, 100 m, 23.XI.1997 (PB); El Dorado, Bolivar, Sta Elena, km 67, 150 m, 28.X.1997 (PB). **Peru**. 11 ♂: LO, Iquitos, Stuart leg., 93 (BMNH); AM, Amazon, VIII.1932, Coll. Fournier (MNHN); *ditto*, III.1932 (MNHN); *ditto*, IX.1932 (MNHN); LO, Contaya, Rio Ucayali, 200-650 m, VIII. 2005 (MC 092); LO, Iquitos, 100 m, X.2006, Michael Büche leg. (CF); MD, 50km WSW Pto. Maldonado, 12°45'S 69°35'W, 250 m, IX-XI.1992, Carlos Tello E. leg. (USNM); MD, Parque Manu, Pakitza, 11°55'48"S 71°15'18"W, 340 m, 15.X.1991, Leg. G. Lamas, RKR Genitalia No. 1992:

42♂ (USNM); MD, Rio La Torre, Tambopata Res., 300 m, 3.X.1986, Leg. S. S. Nicolay (USNM); MD, 30 Km. S. W. Pto. Maldonado, 300 m, 27.X.1983, Leg. S. S. Nicolay (USNM); *ditto*, 15.X.1983, RKR Genitalia No. 1992: 22♂ (USNM). **Ecuador**. 1 ♂: Napo Province, 12 km Tena-Puyo Road (Finca San Carlo), 26.IX.2007, 600 m, D. H. Ahrenholz (RCB). 2 ♀: Napo Province, 14 km S. of Tena (Apuya), 25.IX.1997, 600 m (RCB); Pastaza Province, 32 km S of Puyo, 24-27.X.1994, 1000 m (RCB). **Brazil**. 10 ♂: MG, Cristalino Lodge, Will Carter, 19.X.2004; PA, Route de Vigie, 27.IX (CF); *ditto*, 4. IX. (CF); PA, Alça Viaria, Pk 26, 21.IX (CF); PA, L. Amazons, H.W. Bates, Godman-Salvin Coll. 1911.–93. (BMNH) (x2); Tapajos, Amazons, H. W. Bates, Godman-Salvin Coll. 1911.–93 (BMNH); Můjo, IX.1922, ved Santarem, Böy, Modt 20/12 1922 af, H. Böy Santarem, Coll. C.S. Larsen, Faaborg, Coll. Fournier (MNHN); RO, Jaru, 9.VIII.1976, Leg. Callaghan (USNM); RO, vic. Caucalandia, 10°32'S, 62°48'W, 160-350 m, 12.X.1991, Leg. J. MacDonald (USNM). **French Guiana**. 2 ♂: Bas Maroni, Coll. Fournier, gen. prep. CF n° 123 (MNHN); Route de Kaw – PK 16, 21.XII.2006, sur *C. schomburgkii*, E. Poirier leg. (CF: DNA sample n° 141). 4 ♀: Montagne des Chevaux, 22.II.1999, J.Y. Gallard leg., gen. prep. CF n° 126 (CF, fig. 17); Route de Kaw – PK 16, 13.VIII.2004, S. Brûlé leg. (CF); Kaw – PK 37, 8.I.2000, M Duranton leg. (CF); Route de Kaw, PK 37, 24.IX.1999, J. Cerda leg. (CF). **Guyana**. 2 ♂: Essequibo R., Moraballi Creek, 7.X.1929, Oxf. Univ. Exped., B.M. 1929-485 (BMNH); Parish, Ex. Grose-Smith, 1910, Coll. Fournier (MNHN). **2** ♀: Parish, Ex. Grose-Smith, 1910, Coll. Fournier (MNHN); Trop F Res, Middle Demerara R, 200-400', 31.I.-12.II.2001, 5"9.32'N 58"41.98'W, Leg. S. Fratello et al. (USNM).

Diagnosis and comments. *Porthecla minyia* has a small broken white line adjoining the red basal patch on the VFW. Some black scales are found on the distal side of this line especially along the anterior portion. In addition, the black basal spot on VHW cell Sc+R_1-Rs is bordered by white scales only on its distal side, unlike the white scales in *P. gemma* which surround both the distal and posterior sides.

There has been considerable confusion between *P. gemma* and *P. minyia*, and the two are often misplaced in museum collections. In addition, D'Abrera (1995: 1150) wrote that *P. gemma* "is probably a race of *minyia*". However, these species are sympatric in Ecuador, Peru and Brazil. Further, the characters that differentiate them are consistent throughout their ranges with no indication of hybridization. Lastly, *P. gemma* is smaller in size on average than *P. minyia* and has a more oblate scent pad.

Description. **Male**. Length of FW: 16.2 mm (SD = 0.78, N = 8).

Genitalia ♂ (fig. 31). Four genital preparations were indistinguishable and typical of *Porthecla*. Valvae with elongated pointed ends. Penis long with one cornutus at its end.

Female (fig. 17). Length of FW: 15.1 mm (N = 1).

Dorsal wing surface. Drab blue color on both wings less extended than in the male.

Ventral wing surface. Indistinguishable from the male.

Genitalia ♀ (fig. 42). Ductus bursae short, slightly curved near the cervix bursae in both ventral and lateral view. Lamella postvaginalis constituted of two big plates with wavy borders and a regularly pointed end. The lamella postvaginalis forms an angle of 45° with the ductus. Two signa on the corpus bursae each bearing a central thorn-like spine.

Distribution, ecology, and behavior. Amazon Basin and the Guianas (fig. 46). Of the 34 specimens examined, the vast majority were collected between the months of August and December at elevations ranging from 100 to 1000 m. Adults have been found feeding in the morning on *Cordia schomburgkii* in French Guiana and Pará, Brazil.

Wing pattern similarities. Females of *P. minyia* have been confused with those of *Janthecla rocena*. Godman & Salvin (1887–1901: 49) referred to two females lent by Dr. Staudinger from Panama, Chiriquí but noted that the male phenotype of *P. minyia* differs from these females by having "two additional white spots margined with black beyond the red base of the primaries". Accordingly, the description does not refer to *P. minyia*, but is a good description of female *J. rocena*. These two species were also confused in de la Maza (1987), as noted in Robbins (1991). *Janthecla rocena* is easily distinguished from *P. minyia* by a "broken" VFW postmedian line (complete in *P. minyia*).

More generally, *P. minyia*, *P. gemma*, and *P. porthura* have ventral wing patterns that are strikingly similar to those of *Atlides inachus*, *Janthecla rocena*, *Olynthus ophelia*, and *Olynthus narbal* (Stoll 1790) (fig. 22). Further, the species with this wing pattern are oftentimes sympatric in wet lowland forest.

Other illustrations. Draudt (1919: 150, row h). D'Abrera (1995: 1151). Lewis (1973: pl. 68, f. 42).

Porthecla gemma (Druce 1907) (Figs 18, 19, 32, 43, 45)

Thecla gemma Druce 1907.

Porthecla gemma (Druce 1907); Robbins 2004, n°868.

Type material. Druce (1907(3): 581, pl. 33, f. 9) described this species from at least one male found by H. Whitely on the Rio Napo, Ecuador. We designate a male lectotype that fits this description except that the VFW basal black spot present in cell Sc+R_1-Rs is missing in the original figure 9. We designate a lectotype because we describe two very similar species with which this name might be confused. The lectotype (fig. 18) has the following labels: (1) "R. Napo, Ecuador. Whitely." (white, rectangular, printed); (2) "Type" (white encircled with red, circular, printed); (3) "T. gemma [//] type H. H. Druce." (white, rectangular, handwritten); (4) "Godman-Salvin [//] Coll. 1911.–93." (white, rectangular, printed); (5) "B.M. TYPE [//] No. Rh. 638" (white, rectangular, printed with handwritten data); (6) "BMNH(E)#31314" (white, rectangular, printed); (7) "Prep. gen. CF n° 294" (white, rectangular, printed); (8) "Lectotype ♂ *Thecla gemma* Druce" (white, rectangular, printed).

Material examined. **Venezuela**. 1 ♀: T. F. Amaz., Cerro de la Neblina, Basecamp, 140 m, 5.II.1985, W.E. Steiner collector (USNM). **Colombia**. 3 ♂: Villavicencio, Meta, 1800 feet, 24.I.1980, C. Callaghan leg., genitalia RKR n° 1992: 24 (USNM); Montanita, Caqueta, 350 m, 24.I.1971, S.S. & S. Nicolay, genitalia Nicolay n° L425 (USNM); Amazonas, Leticia 14.XII.1980, C.J. Callaghan leg. (USNM). 3 ♀: Bogota, Rothschild Bequest B.M. 1939-1. (BMNH); Bogota, Colombia, Rothschild Bequest B.M. 1939-1. (BMNH); U. Putumayo, S.E. Colombia, TO 13.XII.1931, Coll. Fournier (MNHN, fig. 19). **Ecuador**. 2 ♂: Pastaza Province, 37 km Puyo-Arajuno Road, 20.IX.2005, 850 m (RCB); Napo Province, 14 km Tena-Puyo Road (Apuya), 13.IX.2005, 600 m (RCB). – **3** ♀: Pastaza

Province, 32 km S of Puyo, 16-18.X.1995, 1000 m (RCB); Morona-Santiago Province, 26 km Santiago-Puerto Morona Road, 17.IX.2005, 650 m, I. Aldas (RCB); Oriente, Napo, Puerto Napo, 500 m, 4.XI.2003, F. Piñas leg., Coll. F. Piñas. **Peru**. 19 ♂: LO, Contaya, Rio Ucayali, 200-650 m, VIII.2005, gen. prep. CF n° 301 (MC 088); *ditto*, (MC 176); *ditto*, (MC 177); *ditto*, (MC 178); LO, Iquitos, 100 m, X.2005, Michael Büche leg., gen. prep. CF n° 298 (CF) ; *ditto*, gen. prep. CF n° 299 (CF); *ditto*, gen. prep. CF n° 300 (CF); *ditto*, X.2006 (CF); *ditto*, XI.2007 (CF); LO, Contamana, Rio Ucayali, X.2007 (CF); LO, Iquitos, Amazon, TO 19.VIII.1932, Coll. Fournier, drawer 422 (MNHN) ; *ditto*, 19. IX. 1932 (MNHN); MD, Boca, Rio la Torre, 300 m, 31.X.1988, G. Lamas leg., gen. prep. R. Robbins n° 49 (MUSM); MD, Tambopata Resarch Center, 300 m, 28.IX.2003, C. Peña leg. (MUSM); SM, Juanjui, 400 m, IX.2002 (MC 171) ; SM, Tarapoto, I.1940, Ex. Coll. Gagarin, DZ 15.993 (DZUP); MD, Tambopata Res., 300 m, 20.X.1983, C. V. Covell Jr. (USNM); MD, 50Km WSW Pto. Maldonado, 12°45'S, 69°35'W, 250 m, IX-XI 1992, Carlos Tello E. leg. (USNM); LO, Puerto Almendra, Rio Nanay, 03°50'S, 73°23'W, 120 m, 3.IX.1995, R. Robbins leg. (USNM). 14 ♀: LO, Água Blanca, 130 m, 20.IX.2003, J.J.Ramirez leg. (MUSM) ; LO, Contaya, Rio Ucayali, 200-650 m, VIII. 2005, gen. prep. CF n° 302 (MC 089); *ditto* (MC 179); LO, Iquitos, 100 m, XI. 2007 (CF); MD, Rio La Torre, Tambopata Res., 6.X.1986, 300 m, S.S. Nicolay leg., (USNM) ; *ditto*, 30.IX.1986 (USNM); *ditto*, 2.X.1986 (USNM); MD, 50Km WSW Pto. Maldonado, 12°45'S, 69°35'W, 250 m, IX-XI 1992, Carlos Tello E. leg. (USNM); MD, Parque Manu, Pakitza, 11°55'48"S, 71°15'18"W, 340 m, 5.X.1991, R. Robbins leg. (USNM); *ditto*, 20.X.1991, O. Mielke leg., genitalia RKR n°1993: 144 (USNM); MD, Tambopata Reserve, 12°50'S, 69°47'W, 300 m, 27.X.1991, O. Mielke leg. (USNM); LO, Rio Sucusari, Explornapo-ACEER, 03°14'S, 72°55'W, 9.IX.1995, 140 m, D. Harvey leg. (USNM); LO, Castaña, 0°48.22'S, 75°14.40'W, 21.X.1993, 150 m, R. Robbins leg. (USNM); LO, Arcadia, 0°59.37'S, 75°18.55'W, 5.XI.1993, 150 m, G. Lamas leg. (USNM). **Bolivia**. 2 ♂: Chapare, G. lachavane leg. (JFL x2). 1 ♀: Chapare, G. lachavane leg. (JFL). **Brazil**. 2 ♂: Můjo, IX.1922, ved Santarem, Böy, Modt 20/12 1922 af, H. Böy Santarem, Coll. C.S. Larsen, Faaborg, Coll. Fournier (MNHN); MT, Diamantino, Alto Rio Arinos, 31.I.1993, Furtado & Moser leg., gen. prep. CF n° 303 (MC 090). **Unknown Locality**. 2 ♂: Ex. Grose Smith, 1910., J.J. Joicey Coll., B.M. 1929-435 (BMNH); Jepelaen, 6-3 ?, Coll. Fournier, drawer 422 (MNHN).

Diagnosis and comments. *Porthecla gemma* lacks white scales adjoining the red basal patch on the VFW which makes it distinct from *P. minyia*. Also, as noted in the discussion of *P. minyia*, *P. gemma* has white scales on both the distal and posterior sides of the black basal spot on VHW cell $Sc+R_1$-Rs. This character is also useful in distinguishing *P. gemma* from two other species with similar wing patterns, *P. peruensis* **n. sp.** and *P. johanna* **n. sp.** Another character found in *P. gemma* which may prove useful in future phylogenic studies is the round patch of orange scales on the basal part of the VHW anal margin. This trait is shared with *P. minyia, P. peruensis* **n. sp.** and *P. johanna* **n. sp.**, but is not found in the other species of *Porthecla*. In the original description, Druce refered to this mark as a red blotch at the base of the VHW abdominal margin. However, based on the material we examined, we conclude that it has more of an orange hue.

Description. **Male**. Length of FW: 14.6 mm (SD = 0.51, N = 6).

Genitalia ♂ (fig. 32). Seven genital preparations were done. All are indistinguishable and typical of *Porthecla*. The valvae have a larger base than its congeners. Penis with one cornutus at its end.

Female (fig. 19). Length of FW: 13.9 mm (SD = 0.84, N = 4).

Dorsal wing surface. Drab blue color on both wings but much less extended than in the male.

Ventral wing surface. Indistinguishable from the male.

Genitalia ♀ (fig. 43). Two genital preparations were done. They are similar. Ductus bursae long, straight ventrally but curved near the cervix bursae in lateral view. Lamella postvaginalis constituted of two plates with wavy internal borders and a regularly pointed end. Two signa on the corpus bursae each bearing a central thorn-like spine. These spines are bigger than in other *Porthecla* species.

Distribution, ecology, and behavior. *Porthecla gemma* occurs in the Amazon Basin and Guianas (fig. 45). Adults fly year-round and have been recorded at elevations ranging from 100 to 1000 m.

Wing pattern similarities. See under *P. minyia*.

Other illustrations. Draudt (1919: 764-175, fig. p. 150, row k; fig. p. 151, row a). D'Abrera (1995: 1150).

Porthecla johanna Faynel & Robbins, n. sp. (Figs 20, 33, 48)

Type material. **Holotype** ♂ (fig. 20): **Ecuador**, Apuya, 600 m, km 20, Tena-Puyo, Napo Province, 1° 09.6' S - 77° 78.5' W, 12-14.II.1995, collected by J. P. W. Hall & K. R. Willmott, gen. prep. CF n° 348 (USNM). **Paratype**: **Peru** 1 ♂: Madre de Dios, Parque Manu, Pakitza, 12° 07' S - 70° 58' W, 400 m, 11.IX.1989, leg. R. Robbins, genitalia RKR n° 1992: 41 (USNM).

Diagnosis and comments. *Porthecla johanna* **n. sp.** is a medium size species with a wing pattern similar to *P. gemma* and *P. peruensis* **n. sp.** The characters that distinguish male *P. johanna* **n. sp.** from these two species are (1) dorsal blue area more extensive, especially on the FW where blue scales almost completely surround the scent pad, (2) the ventral basal orange-red patch has scattered black scales, particularly on the distal side and along the costa, and (3) shape of the male genitalia valvae and saccus in ventral view is different (fig. 33). In addition, the lack of a triangularly shaped patch on the VFW white median line near the costa in *P. johanna* **n. sp.** further differentiates it from *P. peruensis* **n. sp.**, and the limitation of white scales to just the distal side of the basal black spot on VHW cell $Sc+R_1$-Rs is another character which can be used to separate *P. johanna* **n. sp.** from *P. gemma* **n. sp.**

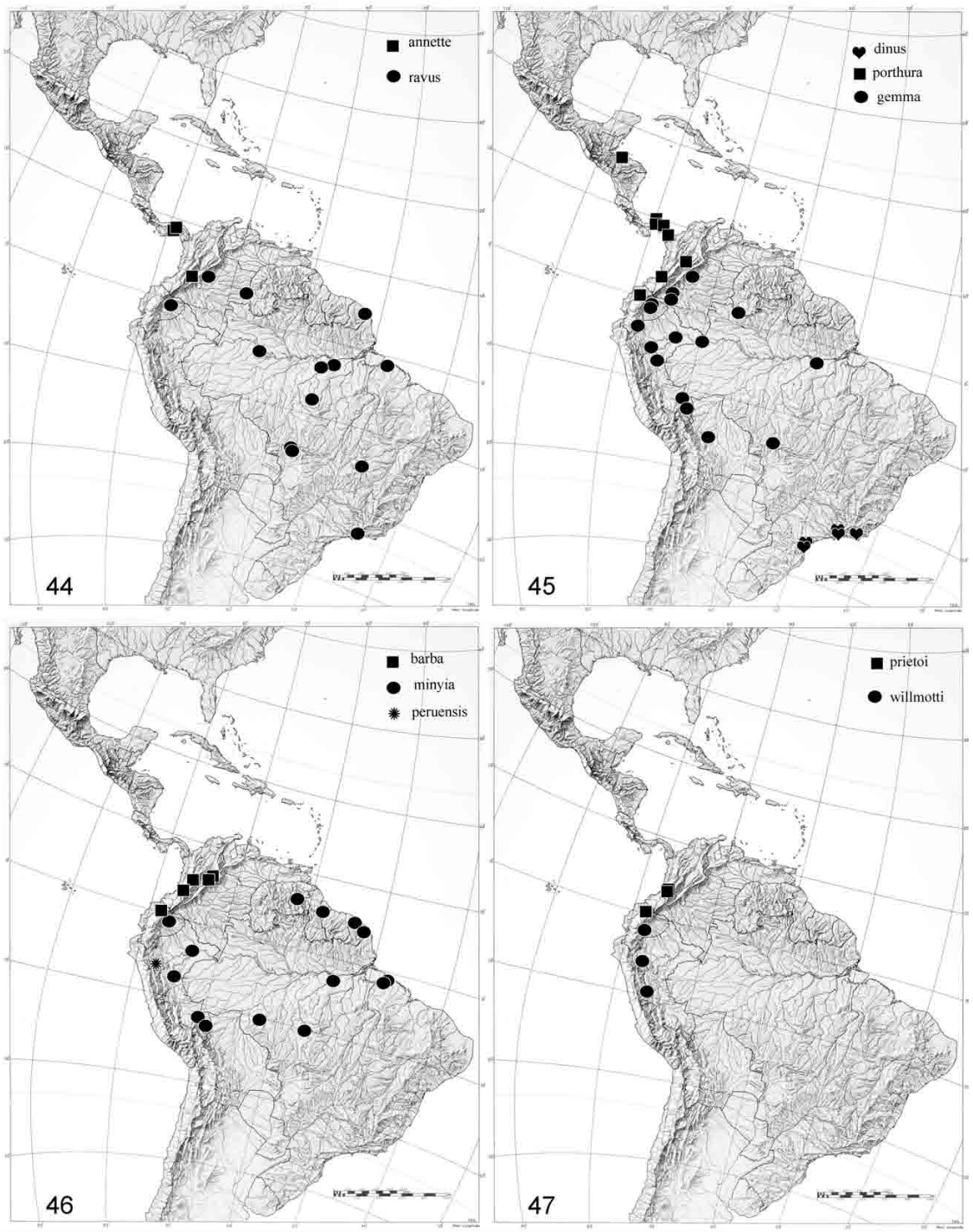
Even though *P. johanna* **n. sp.** is known from only two specimens, we describe it as a distinct species because it is sympatric with *P. gemma* and because the wing pattern and genitalic characters that differentiate it from *P. gemma* do not intergrade. It is also distinct from the montane and allopatric *P. peruensis*.

Description. **Male**. Length of FW: 15.5 mm (N = 1).

Dorsal wing surface. FW bright basal blue area without a purple hue. Narrow black costal and distal margins. Androconia round, brown, and surrounded by blue scales except on the anterior side. HW broadly blue except along the costal margin and posteriorly to vein 2A. While neither of the types has tails

which are visible, we believe this absence is due to the bad condition of the two specimens and that this species most certainly has tails which like the rest of the *Porthecla* species are found at the terminal end of vein Cu_2.

Ventral wing surface. Same pattern and coloration as *P. gemma* except that white scales occur only on the distal side of the black basal spot located on VHW cell $Sc+R_1$-Rs. In *P. gemma*, they occur on both distal and posterior sides.



Figures 44–47
Distributions. **44,** *Porthecla annette* **n. sp.**, *P. ravus*; **45,** *P. dinus*, *P. porthura*, *P. gemma*; **46,** *P. barba*, *P. minyia*, *P. peruensis* **n. sp.**; **47,** *P. prietoi* **n. sp.**, *P. willmotti* **n. sp.**

Genitalia ♂ (fig. 33). Two genital preparations were done; they are similar but look quite different from those of *P. gemma* and *P. peruensis* **n. sp.** In *P. peruensis* **n. sp.**, the valvae are regularly thinner from the base to the end. In *P. gemma*, the base is oblate and enlarged, while in *P. johanna* **n. sp.**, the base is more rectangular with an angled distal border which is well developed. Also, *P. johanna* **n. sp.** has a shorter saccus and a strongly convex vinculum in lateral view in contrast to both *P. peruensis* **n. sp.** and *P. gemma*. The penis of *P. johanna* **n. sp.** is slightly curved at its end as in *P. gemma* with a cornutus on the terminal part.

Female. Unknown or unrecognized.

Etymology. Along with Bob Dylan, we have visions of Johanna. It is a feminine noun in apposition.

Distribution, ecology, and behavior. *Porthecla johanna* **n. sp.** is known from Peru and Ecuador in wet lowland forest at 400–600 m elevation (fig. 48). The Peruvian male was discovered on low vegetation near a stream at the transition between the dry and wet seasons and was misidentified as the sympatric *P. gemma* in Robbins et al. (1996).

Porthecla peruensis Faynel & Moser, n. sp. (Figs 21, 34, 46)

Type material. **Holotype** ♂ (fig. 21): **Peru**, Amazonas, Rodrigues de Mendoza, 6° 28.2' S - 77° 23.0' W, 1500–2000 m, IX.2004, MC 091. The holotype will be deposited in MUSM.

Diagnosis. Wing pattern similar to *P. gemma,* but different in the following respects: (1) more extensive blue on the dorsal surface of both wings, (2) the VFW postmedian line expands into a triangularly shaped white patch near the costa, and (3) white scales only on the distal side of the black basal spot on VHW cell Sc+R_1-Rs as in *P. minyia*.

It is possible that *P. peruensis* **n. sp.** is an ecotypic variant of *P. gemma* or *P. johanna* **n. sp.** However, the lack of variation in the characters that differentiate *P. gemma* and *P. johanna* **n. sp.** argues against this possibility. Further, we have no evidence so far as to which of the two species *P. peruensis* **n. sp.** is more closely related.

Description. **Male**. Slighty larger than *P. gemma,* length of FW: 15.9 mm (N = 1).

Dorsal wing surface. FW bright basal blue area with narrower black costal and distal margins than in *P. gemma*. Blue scales in cells Sc-R_1, R_3-M_1 and M_1-M_2 contrary to *P. gemma*. Androconia round and brown, surrounded by blue scales except on the anterior half. Large blue area covering much of the HW from base to termen except along the costal margin and distally to vein 2A. The anterior edge of the blue scales forms a straight border with the black costal margin and extends almost to the outer margin unlike the more rounded blue edge found in *P. gemma* and *P. johanna* **n. sp.** Long and thin black tail, tipped with white, at apex of HW vein Cu_2.

Ventral wing surface. Same pattern and coloration as *P. gemma* except for the white triangle on the FW costal margin and the lack of white scales on the posterior side of the black basal spot on the HW. In *P. gemma*, the basal HW white scales are found on both the distal and posterior sides of the black spot.

Genitalia ♂ (fig. 34). Similar to *P. gemma* except for the valvae which are very different and much more like those found in *P. prietoi* **n. sp.** In *P. peruensis* **n. sp.**, the valvae are regularly thinner from the base to the end while in *P. gemma*, the base is enlarged and the terminal part is less elongated. The penis is straighter than in *P. gemma*.

Female. Unknown.

Etymology. The name *peruensis* **n. sp.** is derived from the country type locality; it is proposed as a noun in the genitive case.

Distribution, ecology, and behavior. *Porthecla peruensis* **n. sp.** is known only from northern Peru, Amazonas, near Mendoza (the official name is Rodrigues de Mendoza), on the east side of the Andes (fig. 46). It appears to be a montane species (> 1500 m) in contrast to *P. gemma* and *P. johanna* **n. sp.**, each of which is recorded only under 1000 m elevation.

Discussion

Porthecla was originally distinguished from *Oenomaus* by non-bifurcate valvae in lateral aspect (Robbins & Duarte 2004). Robbins & Duarte (2004) and Faynel (2007) interpreted the shape of the valvae of *P. melleus* differently, for which reason Faynel (2007) transferred it to *Oenomaus*. Another species with a somewhat ambiguous valvae shape is *Oenomaus curiosa* (Faynel & Moser 2008). We are yet uncertain about the generic placement of *O. melleus* and *O. curiosa*, which will have to await a phylogenetic analysis. In this paper, all *Porthecla* species have a triangular valvae shape in lateral aspect as well as the diagnostic characters of *Porthecla* + *Oenomaus*.

Figure 48
Distributions. *Porthecla johanna* **n. sp.**, *P. forasteira* **n. sp.**

A number of characters documented in this paper are likely to be phylogenetically informative in *Porthecla*. The ventral wing pattern of *P. forasteira* **n. sp.** is similar to that of *O. atena* and many other *Oenomaus* species, but all other *Porthecla* have a modified ventral wing pattern. In *P. ravus*, *P. annette* **n. sp.**, and *P. barba,* the ventral wings have an overlay of russet (yellow in *P. annette* **n. sp.**) scales and the lamella postvaginalis is not split. A ridge on the ventral surface of the saccus at the posterior end and a mostly black VHW basal spot co-occur in *P. dinus, P. prietoi* **n. sp.**, *P. willmotti* **n. sp.**, *P. porthura, P. minyia, P. gemma, P. peruensis* **n. sp.**, and *P. johanna* **n. sp.** All these species except for *P. dinus* also have a red spot at the base of the VHW and one cornutus on the vesica of the penis. Red scales distal of the VHW basal spot are unique to *P. prietoi* **n. sp.** and *P. willmotti* **n. sp.**, as is their large size. Finally, a dusty orange patch of scales at the base of VHW cell 3A-inner margin and VHW anal angle black at the margin with a submarginal orange band are restricted to *P. gemma, P. minyia, P. johanna* **n. sp.**, and *P. peruensis* **n. sp.**, although the latter trait sometimes occurs in *P. porthura*. These characters are the foundation for the order in which species are treated in this paper. Inference of relationships, however, requires phylogenetic analysis.

We noted that the ventral wing patterns of many *Porthecla* species superficially resemble those of sympatric species in other genera. These kinds of resemblances occur widely among hairstreaks, as recently documented in *Thepytus* (Robbins et al. 2010). However, the "red-eye" ventral wing pattern of *P. porthura, P. gemma, P. minyia*, and relatives (a conspicuous red spot next to the body) is especially visually striking in nature (fig. 22). Further, it is so similar to "red-eye" ventral wing patterns in other genera (fig. 22) that misidentifications, especially of females because they lack androconia, are frequent, as documented in the species accounts. Lastly, we suspect from the character information in the previous paragraph that the "red-eye" ventral wing pattern evolved once in *Porthecla*. Again, a phylogenetic analysis will be needed to verify this hypothesis.

The adaptive advantage of a "red-eye" ventral wing pattern is unclear. On the one hand, Robbins (1981) found that Eumaeini with orange-red cubital spots at the anal angle show a higher incidence of unsuccessful attacks directed to the anal angle from visually hunting predators than those Eumaeini lacking these spots. This result suggests that the orange-red cubital spots "attract" attacks. On the other hand, red coloration in insects is often noted to "communicate" aposematism (Cott 1940, Edmunds 1974). For example, troidine swallowtails (Papilionidae) often have red spots on the body. Finally, those *Porthecla* and those species in other genera with a "red-eye" ventral wing pattern next to the body tend to lack an orange-red cubital spot (see fig. 22 in nature). The way that this wing pattern affects the attack of visually hunting predators, for now, is a matter of conjecture.

Lastly, it is possible that the number of species in *Porthecla* will increase. There are a few other specimens that likely belong in *Porthecla* and that may or may not represent distinct species. For example, there is a male of *P. minyia* from Peru that has a somewhat different dorsal blue pattern, but examination of its genitalia were inconclusive. Also, there are two females from Peru and Ecuador that do not appear to belong to any of the known species; however, we hesitate to describe a *Porthecla* species on the basis of a female when the synapomorphies that characterize the genus occur in the male.

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