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Date of issue: DECEMBER 2019

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Yaheita Yokoi

Callidiopini beetles (Coleoptera: Cerambycidae) in the collection of Museum Zoologicum Bogoriense, Indonesia

TREUBIA, December 2019, Vol. 46, pp. 1–20.

Callidiopini species in the collection of Museum Zoologicum Bogoriense, Indonesian Institute of Sciences (LIPI) were examined. Three new species of the genus *Ceresium* Newman, 1842, are described, i.e. *C. clytinioides* sp. nov., *C. sugiartoi* sp. nov., both from Kalimantan, and *C. emarginatum* sp. nov. from Papua. One new species of the genus *Examnes* Pascoe, 1869, from Kalimantan, *E. subvermiculatus* sp. nov. is described.

(Yaheita Yokoi, Hiroshi Makihara and Woro A. Noerdjito)

Keywords: Asia, Kalimantan, longhorn beetle, New Guinea, taxonomy

UDC: 595.78.001.03(594.81)

R.I. Vane-Wright

The identity of *Euploea tulliolus goodenoughi* Carpenter, 1942, a crow butterfly (Lepidoptera: Nymphalidae, Danainae) from Papua New Guinea

TREUBIA, December 2019, Vol. 46, pp. 21–34.

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(R.I. Vane-Wright)

Keywords: *tulliolus* species complex, new synonymy, new records, Milne Bay islands, *Euploea leucostictos*

UDC: 595.762(594.31)

Raden Pramesa Narakusumo

Four new species of *Epholcis* Waterhouse (Coleoptera: Scarabaeidae: Melolonthinae: Maechidiini) from the Moluccas, Indonesia

TREUBIA, December 2019, Vol. 46, pp. 35–50.

Here, we provide the first record of the chafer beetle genus *Epholcis* Waterhouse, 1875 from the Moluccas, Indonesia. We describe four new species: *E. acutus* sp. nov., *E. arcuatus* sp. nov., *E. cakalele* sp. nov., and *E. obiensis* sp. nov. A lectotype is designated for *Maechidius moluccanus* Moser, 1920, which is redescribed and transferred to the genus *Epholcis* as *E. moluccanus* (Moser) comb. nov.

(Raden Pramesa Narakusumo and Michael Balke)

Keywords: Coleoptera, *Epholcis*, Maechidiini, Melolonthinae, Moluccas

UDC: 597.82(594.17)

Mediyansyah

A new tree frog of the genus *Kurixalus* Ye, Fei & Dubois, 1999 (Amphibia: Rhacophoridae) from West Kalimantan, Indonesia

TREUBIA, December 2019, Vol. 46, pp. 51–72.

Kurixalus absconditus sp. nov., a new species of tree frog of the genus *Kurixalus,* described from West Kalimantan on the basis of molecular phylogenetic and morphological evidence. The new species can be distinguished from its congeners by a combination of following morphological characters: having smaller body size, more prominent of mandibular symphysis, skin smooth on throat, vomerine odontophores two oblique series touching anterior corner of choanae and widely separated, vomerine teeth thick, buccal cavity narrow and deep, choanae with teardrop shaped, single vocal slit, weakly crenulated dermal fringe on fore- and hindlimbs.

(Mediyansyah, Amir Hamidy, Misbahul Munir and Masafumi Matsui)

Keywords: *Kurixalus absconditus* sp. nov., new species, West Kalimantan

UDC: 594.34.001.03(594.11)

Mulyadi

New records and redescription of *Labidocera rotunda* Mori, 1929 (Copepoda, Calanoida, Pontellidae) from Sebatik Island, North Kalimantan, Indonesia, with notes on its species-group

TREUBIA, December 2019, Vol. 46, pp. 73–84.

During a plankton trip around Sebatik Island, North Kalimantan, a copepod *Labidocera rotunda* Mori, 1929 (Calanoida, Pontellidae) was collected for the first time in Indonesian waters. Both sexes are redescribed and compared to previous descriptions. The geographical distribution of the species confirms that it is of Indo-Pacific origin. There has been a mix-up between *L. rotunda* described by Mori (1929) from Pusan, Korea and *L. bipinnata* from Sagami Bay, described by Tanaka (1936). Fleminger et al. (1982) have argued that the minor difference is based on the presence or absence of cephalic hooks and had synonymized *L. bipinnata* with *L. rotunda*.

(Mulyadi)

Keywords: copepods, Indonesia, *Labidocera rotunda*, new record, Pontellidae

UDC: 595.78:57.01(594.53)

Djunijanti Peggie

Biological aspects of *Papilio peranthus* (Lepidoptera: Papilionidae) as observed at Butterfly Research Facility - LIPI, Cibinong, Indonesia

TREUBIA, December 2019, Vol. 46, pp. 85–102.

Papilio peranthus is endemic to Indonesia, where it occurs on several islands and island groups. This beautiful butterfly is extensively traded, thus efforts to breed this species are very desirable. Captive breeding research was conducted on *P. peranthus* during September 2016 to December 2018. In total, 221 individuals were available for observation. Data on the life cycle of the species, together with observations on females being approached for mating, and female oviposition after mating, are presented. The result demonstrate that *P. peranthus* is not monogamous. Observations on other biological aspects are also reported.

(Djunijanti Peggie)

Keywords: egg-laying, mating, life cycle, *Papilio peranthus*, parent stocks

UDC: 599.41:001.891(594)

Susan M. Tsang

Review - Indonesian flying foxes: research and conservation status update

TREUBIA, December 2019, Vol. 46, pp. 103–113.

Flying foxes are important ecological keystone species on many archipelagoes, and Indonesia is home to over a third of all flying fox species globally. However, the amount of research on this clade belies their importance to natural systems, particularly as they are increasingly threatened by anthropogenic development and hunting. Here, we provide a review of the literature since the publication of the Old World Fruit Bat Action Plan and categorize research priorities as high, medium, or low based on the number of studies conducted. A majority of the research priorities for Indonesian endemics are categorized as medium or high priority. Low priority ratings were in multiple categories for widespread flying fox species found throughout Southeast Asia, though much of the data were from outside of the Indonesian extent of the species range. These research gaps tend to highlight broader patterns of research biases towards western Indonesia, whereas significant research effort is still needed in eastern Indonesia, particularly for vulnerable island taxa.

(Susan M. Tsang and Sigit Wiantoro)

Keywords: bats, conservation, Pteropodidae, *Pteropus*, threats

Treubia 46: 21–34, December 2019

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THE IDENTITY OF *EUPLOEA TULLIOLUS GOODENOUGHI* CARPENTER, 1942, A CROW BUTTERFLY (LEPIDOPTERA: NYMPHALIDAE, DANAINAE) FROM PAPUA NEW GUINEA

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ABSTRACT

The nominal taxon *Euploea tulliolus goodenoughi* Carpenter, 1942, based on a unique crow butterfly collected on Goodenough Island in 1913, is shown to represent a small, aberrant female of the locally common *Euploea leucostictos eustachius* (Kirby, 1889). This new synonymy invalidates the only previous record of the Purple Crow, *Euploea tulliolus* (Fabricius, 1793), from the islands of Milne Bay Province, Papua New Guinea. However, two female *Euploea tulliolus* collected from islands in the Louisiade Archipelago during 2010 are reported here, constituting the first valid records of the Purple Crow from the Milne Bay islands.

Keywords: *tulliolus* species complex, new synonymy, new records, Milne Bay islands, *Euploea leucostictos*

ABSTRAK

Takson nominal *Euploea tulliolus goodenoughi* Carpenter, 1942, berdasarkan pada satu specimen kupu-kupu unik yang dikoleksi di Pulau Goodenough pada tahun 1913, terlihat mewakili satu betina aneh yang kecil dari *Euploea leucostictos eustachius* (Kirby, 1889) yang umum secara lokal. Sinonimi baru ini menjadikan tidak valid rekaman sebelumnya bagi kupu-kupu *Euploea tulliolus* (Fabricius, 1793) dari pulau-pulau di Provinsi Milne Bay, Papua Nugini. Namun, dua individu betina *Euploea tulliolus* yang dikoleksi dari pulau-pulau di Louisiade Archipelago pada tahun 2010 dilaporkan di sini, yang merupakan rekaman-rekaman valid yang pertama bagi kupu-kupu Purple Crow dari pulau-pulau di Milne Bay.

Kata kunci: kompleks spesies *tulliolus*, sinonimi baru, rekaman-rekaman baru, pulau-pulau di Milne Bay, *Euploea leucostictos*

INTRODUCTION

The crow butterflies of the *Euploea tulliolus* complex represent one of numerous unsatisfactory species-level problems still affecting milkweed butterfly systematics – including the strong possibility that *E. tulliolus* itself comprises two or more biological species (e.g. Edgar et al., 1973; Holloway & Peters, 1976). Even reliable separation of isolated material into the four currently recognized morphospecies of the complex, *E. tulliolus* (Fabricius), *E. hewitsonii* Felder & Felder, *E. stephensii* Felder & Felder, and *E. darchia* (Macleay), as first proposed by Corbet (1942), can be a challenge (Ackery & Vane-Wright, 1984, p. 52). Collections made by John Tennent during 2010–2016 of representative *Euploea* from the islands of Milne Bay Province, Papua New Guinea, have stimulated fresh research on the crow butterflies of this region (Vane-Wright, in prep.; Tennent, in prep.), including resolution of a long-standing curiosity reported here – the identity of *E. tulliolus goodenoughi* Carpenter, 1942 (Figs 1 & 2), first questioned in print by Parsons (1998).

Acronyms and abbreviations

BM	British Museum [Natural History]
fwl	forewing length
MBP	Milne Bay Province, Papua New Guinea
NHMUK	Natural History Museum, London UK

The *Euploea tulliolus* complex

According to Ackery & Vane-Wright (1984), the four members of the *Euploea tulliolus* complex belong to a subclade designated '211.22226' in which they also included *E. gamelia* (Hübner – from Java), *E. martinii* de Nicéville (Sumatra), *E. blossomae* Schaus (Philippines), and *E. cordelia* Martin (Sulawesi). These eight (morpho-)species are united by various features, including a distal anastomosis of forewing veins Sc and R_1. However, this character is not uniquely derived within the Danaini, occurs erratically in some other *Euploea* species, and is not even constant within *E. tulliolus* itself (Ackery & Vane-Wright, 1984, pp. 26, 50, 53).

Members of the *tulliolus* complex (which Corbet 1943 also referred to as subgenus *Calliploea* Butler; type species *Danais darchia* Macleay, 1826), in addition to their (inconstant) subcostal and radial anastomosis, are relatively small in size, lack male forewing androconial organs, generally have a raised greyish-yellow upperside hindwing androconial patch largely restricted to the anterior half of the discal cell (grossly similar to the condition seen in *E. leucostictos* (Gmelin) – a species that occurs from Talaud and Maluku to Fiji), and generally lack a forewing discal cell recurrent veinlet. By their possession of an alar organ in forewing cell CuA_2 (of the type found in *E. core amymone* (Godart): Boppré & Vane-Wright, 1989), male *E. leucostictos* are readily separable from all butterflies belonging to the *tulliolus* complex.

As pointed out by Corbet (1942), one of the challenges of the complex lies in the geographical overlaps (and non-overlaps) between pairs of the morphospecies, and the significance we may attach to this. Table 1 indicates the principal areas where the four morphospecies occur, and notably where they are believed to coexist. Superscripts relate to notes at the foot of the table.

From Table 1 it is evident that, having discounted Corbet's (1942) claim regarding the Sula Islands, and despite continuing work since, it remains the case that there are only two, albeit extensive areas where two, but never more than two members of the *E. tulliolus* complex coexist: New Guinea, including the islands of Milne Bay (Parsons, 1998), and Australia (Common & Waterhouse, 1981; Braby, 2000). In both areas *E. tulliolus* has the Sc/R_1 anastomosis.

Table 1. General distribution matrix for the four morphospecies of the *E. tulliolus* complex (see text for explanation)

region\morphospecies	*E. hewitsonii*	*E. tulliolus*	*E. stephensii*	*E. darchia*
Taiwan		●		
Philippines[1]		●		
Borneo		●		
Indo-China*		●		
Malay Peninsula*		●		
Sumatra*		●		
Java*		●		
W Lesser Sundas		●		
Sulawesi	●			
Sula Islands[2]	●			
E Lesser Sundas[3]				●
Australia[4]		●		●
N & C Maluku			●	
Bismarcks			●	
New Guinea		●	●	
Islands of MBP[5]		●	●	
Vanuatu[6]		●		
Solomons*[7]		●		
Fiji		●		

*Areas where anastomosis of veins Sc and R_1 is rare, or does not occur (Ackery & Vane-Wright, 1984, p. 53).

[1]That only the *E. tulliolus* morphospecies is known from the entire Philippines is confirmed by Treadaway & Schroeder (2012).

[2]Despite Corbet's (1942) comment that 'two forms' occur together in the Sula Islands, the presence of *E. stephensii* on Sula was questioned by Ackery & Vane-Wright (1984: 133) and discounted (without comment) by Vane-Wright & de Jong (2003).

[3]This area is taken to include Timor to Aru and the Banda Sea. Ackery & Vane-Wright (1984: 140) indicated uncertainty regarding to which morphospecies the *tulliolus* complex representative found on Wetar belongs; Rawlins (2007, p. 49) included it in *E. darchia* as an endemic subspecies, without comment, and this is accepted here.

[4]Queensland is the accepted type locality for *Papilio tulliolus* Fabricius, 1793 (Edwards et al., 2001).

[5]The first authentic records for *E. tulliolus* from MBP islands are documented in this paper. The presence of both *E. tulliolus* and *E. stephensii* on Kwaraiwa Island is also demonstrated (see Discussion).

[6]Confirmed for the whole of Vanuatu by Tennent (2009). Morphospecies *tulliolus* is also the only member of the complex found in Santa Cruz, New Caledonia and parts of the Central Pacific (Tennent 2006).

[7]Confirmed for the whole of the Solomons by Tennent (2002). Carpenter's (1953) tentative record of *E. stephensii* from Shortland is discounted (Ackery & Vane-Wright, 1984; Tennent 2002). D'Abrera (1990, p. 188) treated the Solomons population as a separate, endemic species, *E. pyres* Godman & Salvin which, although he offered no argumentation for this status, could well be correct.

MATERIALS AND METHODS

Critical comparisons

Based on the compilations of Carpenter (1953) and Ackery & Vane-Wright (1984), together with information from the recent fieldwork of John Tennent, 13 species of *Euploea* are currently known to be represented on the islands of MBP (Vane-Wright, in prep.). Nine of these have a forewing recurrent veinlet (Ackery & Vane-Wright, 1984, p. 49): *Euploea sylvester* (Fabricius), *E. boisduvalii* Lucas, *E. algea* (Godart) (currently includes *E. irene* Fruhstorfer as a subspecies, but this may be distinct – Vane-Wright, in prep.), *E. eurianassa* Hewitson, *E. alcathoe* (Godart), *E. treitschkei* Boisduval, *E. modesta* Butler, *E. wallacei* Felder & Felder, and *E. batesii* Felder & Felder. These were all included by Ackery & Vane-Wright (1984, p. 48) within *Euploea* sub-clade ".3". The other four species lack the veinlet, and were all included by Ackery & Vane-Wright (*loc. cit.*) in their sub-clade ".222": *E. phaenareta* (Schaller), *E. tulliolus*, *E. stephensii* and *E. leucostictos*. Examination of the holotype of Carpenter's *E. tulliolus goodenoughi* (below) confirms that it lacks a recurrent veinlet.

Parsons (1998, p. 512) made several pertinent points: "Ssp. *goodenoughi* is, to date, known by only its holotype female … Because of its lack of a mauve sheen the specimen possibly represents an aberrant dwarf female form of *Euploea leucostictos* … *Euploea stephensii jamesi* is very similar to *tulliolus* … [but its] upperside [also] lacks the strong purple sheen present on that of *tulliolus*." Consequently, while all 13 species have been taken into account, the focus here is comparison of Carpenter's unique holotype (Figs 1 & 2) with the local species of 'sub-clade .3' known from the area. Of these, *E. phaenareta*, the largest of all *Euploea* (fwl rarely if ever less than 45 mm) is discounted on size alone.

Hale Carpenter's record of *E. tulliolus* from Goodenough Island

Carpenter (1953, p. 112) stated of *Euploea tulliolus goodenoughi* that "Only the type female is known." According to Parsons (1998, p. 512) this remained the case, and there appear to have been no further records since. Ackery & Vane-Wright (1984, p. 155) listed *E. t. goodenoughi* from numerous Fijian islands, but this was a *lapsus calami* for the well-known *E. tulliolus forsteri* Felder & Felder (type locality Fiji; Tennent 2006). The holotype of *E. tulliolus goodenoughi* Carpenter (Figs 1, 2), now in NHMUK, bears the five following labels (verbatim – with each label separated here by double solidus; each line per label by a single solidus; the first label is printed with black-edges, in typical Walter Rothschild collection style): "Goodenough Isl., / 2500—4000 ft. / March—May 1913. / A. S. Meek. // [handwritten] Property of Tring. Mus. / Holotype Euploea / tulliolus sbsp. nov. / goodenoughi / Carpenter. 1942 MS. // [printed] Rothschild / Bequest / B.M. 1939-1 //

Figures 1, 2. Holotype of *Euploea* (*Calliploea*) *tulliolus goodenoughi* Carpenter, 1942 [fwl 34 mm]. [This is a small and somewhat aberrant female of *Euploea leucostictos eustachius* – see Results.]

[printed] Holotype // [handwritten] goodenoughi / Carpenter 1942 / Proc. R. ent. Soc. Lond. / (B) 11: 134." Alfred Meek, one of Rothschild's most able collectors, is known to have visited Goodenough during 1913 (Parsons, 1998, p. 640), and there is no reason to doubt the provenance of this specimen.

Critical characters

Seven critical characters, in part drawn from the argumentation scheme of Ackery & Vane-Wright (1984) and the wing pattern character matrix of Carpenter (1953), are proposed for practical separation of female *Euploea tulliolus, E. stephensii* and *E. leucostictos* within the MBP islands fauna, with special reference to the holotype of *E. t. goodenoughi.* Comparison with other *Euploea* taxa, notably *E. stephensii* and *E. leucostictos*, has been based on *Euploea* material from the islands of MBP kindly made available by John Tennent, as well as numerous other specimens in NHMUK. (Note: cubital wing vein nomenclature follows Smith & Vane-Wright, 2001, not Ackery & Vane-Wright, 1984.)

1. Anastomosis of forewing veins Sc and R_1: present or absent.
2. Extent of separation by dark scales of forewing upperside pale submarginal spots in cells R_5 and M_1: almost limited to scaling on vein M_1 or wider.
3. Expression of underside marginal pale spots ('admarginals' of Carpenter, 1942, 1953) on both wings: extensive or almost obsolete.
4. Expression on underside forewing cell CuA_1 of a large subquadrate greyish postdiscal spot confluent with the whitish submarginal spot in the same cell: present or absent.
5. Extent of nacreous area of female forewing underside in cell CuA_2: almost reaching wing margin or not.
6. Length of basal section of hindwing vein Rs (to origin of upper discocelluar cross vein, *r-m*) compared with basal section of the cubitus (to separation of CuA_1 and CuA_2): relatively long or short.
7. Postdiscal spot in underside forewing cell M_3: present or absent.

RESULTS

Evaluation of the holotype of *E. tullilous goodenoughi* with respect to the seven critical characters listed above give the following results:

1. Forewing veins Sc and R_1 do not anastomose (Fig. 3), running parallel but clearly separate. Although not constant, an anastomosis (Fig. 4) of these two veins is an apomorphy of *E. tulliolus* sensu stricto (type locality Queensland, Australia), including those populations found in mainland New Guinea currently treated as subspecies *E. t. dudgeonis* (Grose Smith, 1894). A similar anastomosis occurs in *E. stephensii.* No such anastomosis is known to occur in *E. leucostictos eustachius* (Kirby) – although the two veins can run close together in some specimens, as they do (even more closely) in *E. tulliolus* that do not show complete anastomosis.

2. Forewing upperside with pale submarginal spot in cell R_5 separated from pale submarginal in M_1 by dark scales extending over the wing membrane in cell M_1 in addition to those covering vein M_1, such that the two spots are clearly separated (Fig. 1). This wide separation is a constant feature of *E. leucostictos eustachius* (Figs 5 & 7). In contrast, on the forewing upperside of regional *E. tulliolus* these two submarginal spots (the proximal margins of which are typically tinged with violet) are separated by little more than the dark scales of vein M_1, so that the two spots appear almost confluent (Figs 10 & 12). *E. stephensii* is variable, but the great majority exhibit the wider separation seen in *E. leucostictos*.

3. Marginal pale spots (‘admarginals’ of Carpenter, 1942, 1953) on underside of both wings almost entirely lacking (Fig. 2). *E. tulliolus* often has a complete array of these spots on both wings, and although reduction can occur, invariably there are at least some marginal spots (Figs 4, 11 & 13). *E. leucostictos eustachius* is very variable in this regard, but specimens with totally black underside margins, completely lacking marginals (cf. *goodenoughi* holotype, Fig. 2) are frequent (Figs 6 & 8). Marginals are often well expressed in *E. stephensii*.

4. Underside forewing cell CuA_1 with a large subquadrate greyish postdiscal spot confluent with the whitish submarginal spot in the same cell (Figs 2, 3) – an aberrant feature of the *goodenoughi* holotype found occasionally in *E. leucostictos eustachius* (e.g. Fig. 8), but never in *E. tulliolus* – which always has only a very small, rounded, pale violet postdiscal spot in this cell (Figs 4, 11 & 13). This feature reliably differentiates both *E. tulliolus* and typical *E. leucostictos* from *E. stephensii*, the last never having an underside postdiscal spot of any sort in forewing CuA_1.

5. Nacreous area of female forewing underside in cell CuA_2 (Fig. 2) extensive and silvery. This is the normal condition in *E. leucostictos eustachius* (Figs 6 & 8), in slight contrast to the distally less extensive nacreous area of female *E. tulliolus* (Figs 11 & 13). *E. stephensii* appears intermediate, but more work on this is required (Vane-Wright in prep.).

6. Length of basal section of hindwing vein Rs measured in relation to basal section of cubitus (CuA) relatively short in comparison to *E. tulliolus*. In *E. leucostictos* this difference, with the latter length divided by the former (b/a – see Fig. 9), gives a ratio of >1.25. The corresponding ratio for both *E. tulliolus* and *E. stephensii* is <1.2. The value obtained for the holotype of *goodenoughi* is 1.33. *E. phaenareta* (Fig. 9) is comparable to *E. leucostictos*.

7. Underside forewing cell M_3 with a postdiscal spot (Figs 2, 3). Carpenter (1942, p. 135) drew attention to this feature of the *goodenoughi* holotype, stating "I have not seen a discal 3 in any other specimen of the *tulliolus* complex." Although not frequent, an underside forewing "discal 3" (= postdiscal spot in cell M_3) is quite often found in *E. leucostictos eustachius* (e.g. Fig. 6), but it was not observed in any of the *E. tulliolus* or *E. stephensii* specimens examined in preparation of this account.

Until now the only record for *E. tulliolus* – the Purple Crow – from the islands of Milne Bay Province (MBP), Papua New Guinea, has been the holotype of *Euploea tulliolus goodenoughi*. The features of this specimen reported above demonstrate that Carpenter's taxon is "an aberrant female form of *E. leucostictos*", as correctly speculated by Parsons (1998, p. 512). This gives the following new synonymy:

Euploea leucostictos eustachius (Kirby, 1889)

Papilio leucostictos Gmelin, 1790, p. 2289. Lectotype female, Indonesia, [Ambon] (National Museum of Ireland, Dublin) [examined], designated Vane-Wright 1975, p. 41 (see also Corbet, 1947, p. 228, pl. 4, fig. 1).

Lemnas [sic] *mutabilis nemertes* Hübner, [1807], pl. 26, figs 3, 4; manuscript text, Hemming 1937b, pp. 102–104. Indonesia [Ambon "Insel Amboina"; original material lost]. [Year of publication of pl. 26: Hemming 1937a: p. 401.] (See Kirby, 1869, p. 359; Corbet, 1947, p. 229.)

Salpinx eustachius Kirby, 1889, p. 158. Three male syntypes, Papua New Guinea, Louisiade Archipelago, Rossel, 18.x.1888, *B. Thomson* (NHMUK) [examined].

Euploea (*Calliploea*) *tullilous goodenoughi* Carpenter, 1942, p. 134. Holotype female, Papua New Guinea, d'Entrecasteaux Islands, Goodenough Island, 2500–4000 ft, iii–v 1913, *A.S. Meek* (NHMUK) [examined]. **Syn. Nov.**

Note: Application of the name *Salpinx eustachius* Kirby as a subspecies of *E. leucostictos* from Rossel and Goodenough and elsewhere in the Milne Bay islands follows the provisional arrangement of Parsons (1998, p. 510), based on D'Abrera (1977). Data for the two female *eustachius* illustrated in Figs 5–8: Louisiade Archipelago, Papua New Guinea, Milne Bay Province. 5 & 6 – north coast Sudest Island, Anaethe village, 11° 26' 11" S / 150° 26' 03" E, SL–20 m, 1.iv.2012, John Tennent; 7 & 8 – north east Basilaki Island, Gigia village area, 10° 35' 79" S / 151° 01' 61" E, SL–20 m, 3.ix.2010, John Tennent.

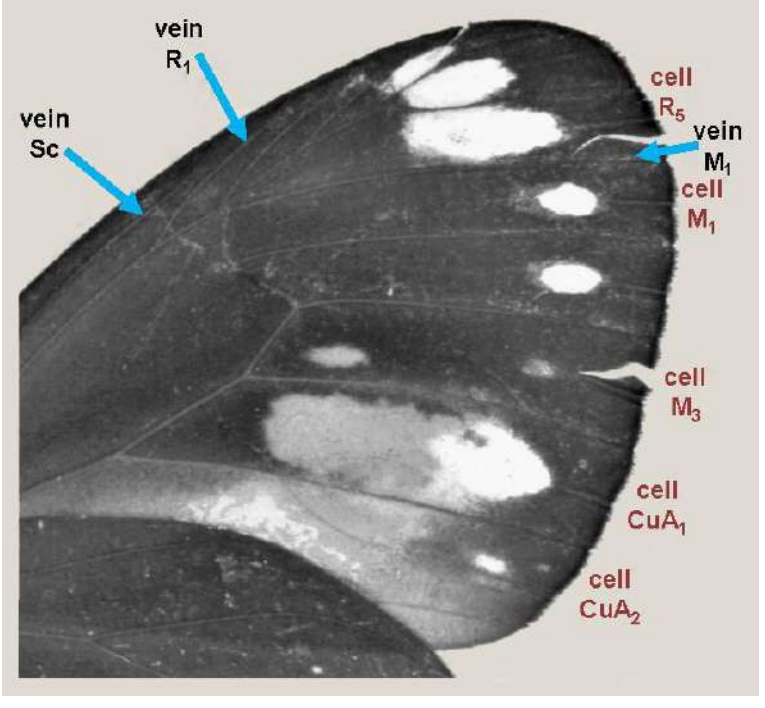


Figure 3. Underside left forewing of holotype of *Euploea* (*Calliploea*) *tulliolus goodenoughi* (greyscale).

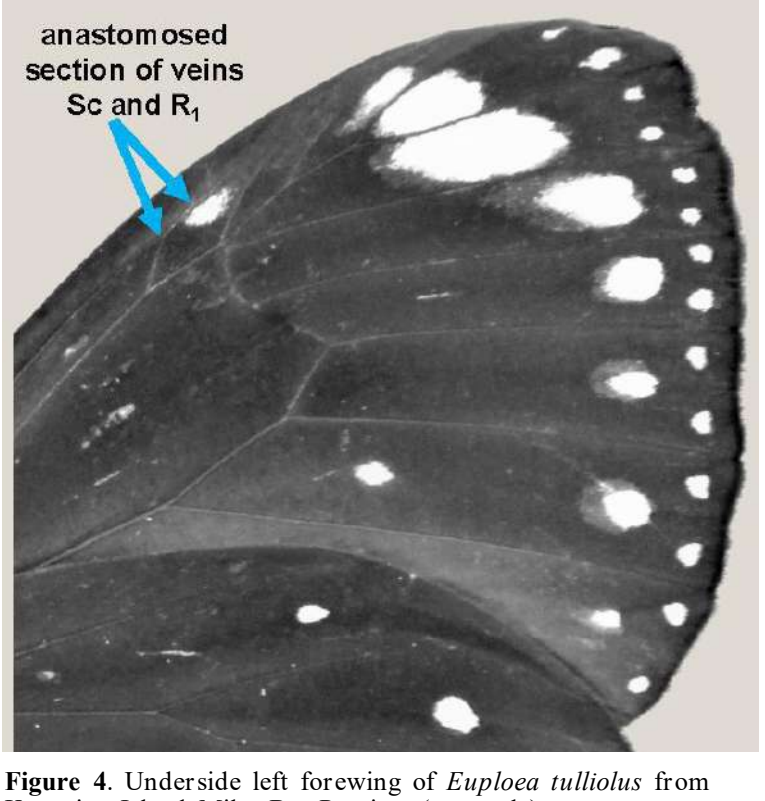
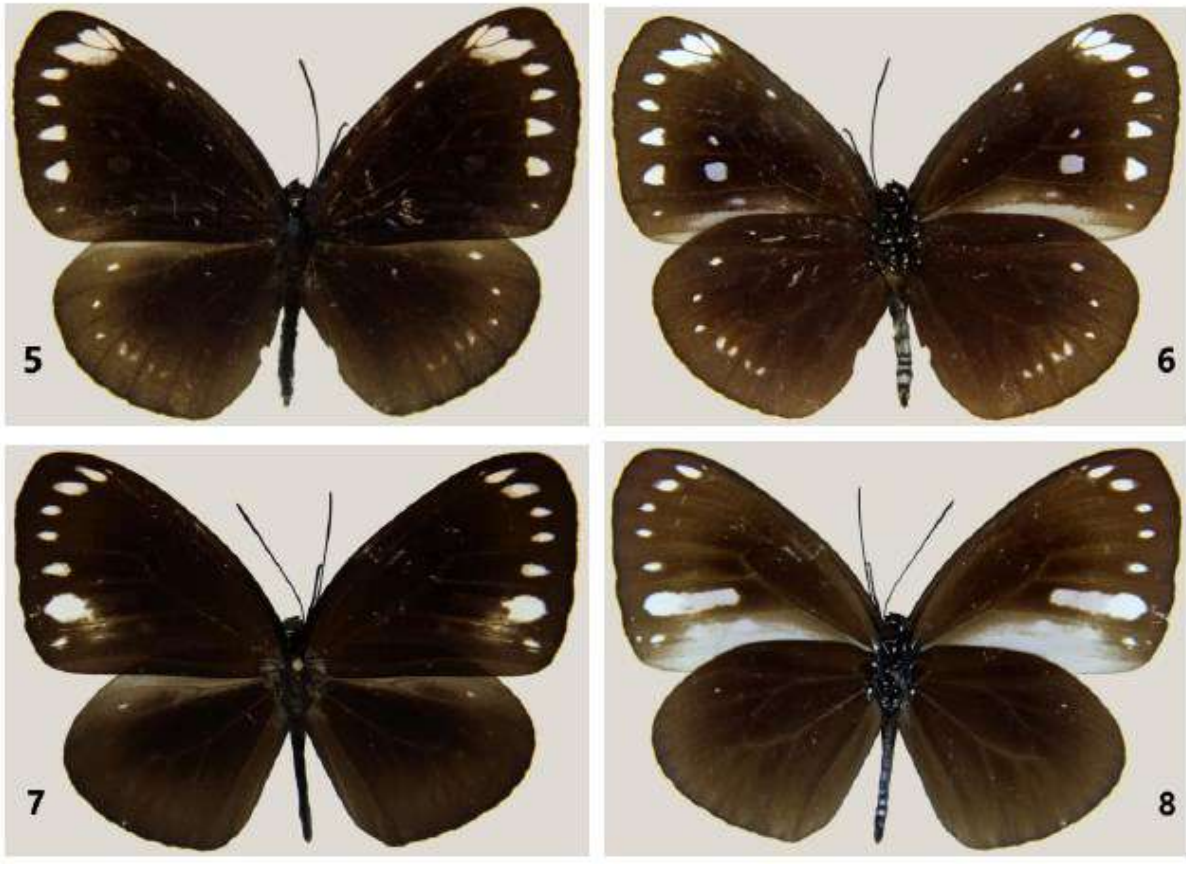


Figure 4. Underside left forewing of *Euploea tulliolus* from Kwaraiwa Island, Milne Bay Province (greyscale).



Figures 5–8. Two small females of *Euploea leucostictos eustachius* from the Louisiade Archipelago: **5** (upperside), **6** (underside) Sudest Island [fwl 30 mm]; **7** (upperside), **8** (underside) Basilaki Island [fwl 36 mm]. [For full data, see text.]

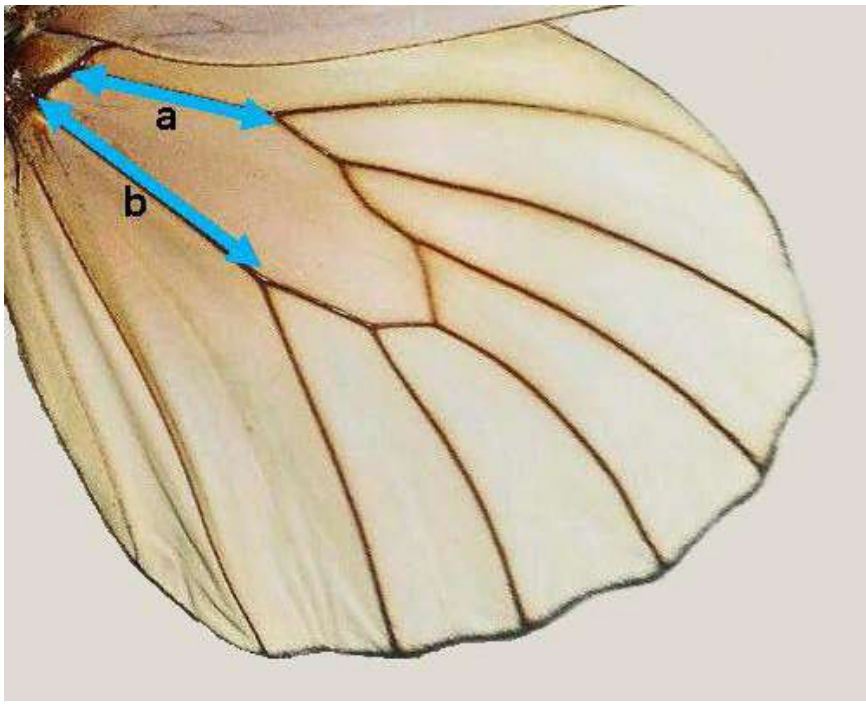


Figure 9. Hindwing upperside of female *Euploea phaenareta unibrunnea* f. 'browni' [New Britain]. (a): basal section of vein Rs; (b) basal section of vein CuA. [length b / length a = *ca* 1.37. See text.]

DISCUSSION

Hale Carpenter (and evidently George Talbot, mentioned in Carpenter's original description) was probably deceived as to the true identity of Meek's specimen by its size (forewing length 34 mm). A good alternative common name for *Euploea tulliolus* is the Dwarf Crow – for a *Euploea* it is a small butterfly, rarely exceeding a forewing length of 35 mm. However, what is not widely appreciated is how much the supposedly far larger *E. leucostictos eustachius* varies in size – while many individuals approach 45 mm forewing length, specimens of both sexes at only 30 mm (Fig. 5), or even less, are not uncommon.

Two authentic *Euploea tulliolus* from the Milne Bay Islands

Having shown that the only previous record of *Euploea tulliolus* from the islands of Milne Bay Province is based on a species-level misidentification, one might conclude that *E. tulliolus* does not, after all, occur on any of the MBP islands. But this is not the case – among the *Euploea* material obtained by John Tennent, there are two females from the Louisiade Archipelago which, based on the seven criteria presented above, can be identified with confidence as representatives of this species – even though they lack a strong violet 'wash' or sheen to the wings regarded as typical of the species. *E. tulliolus* females are often

less iridescent than males, and the wings of these females do have a violet sheen, albeit not pronounced.

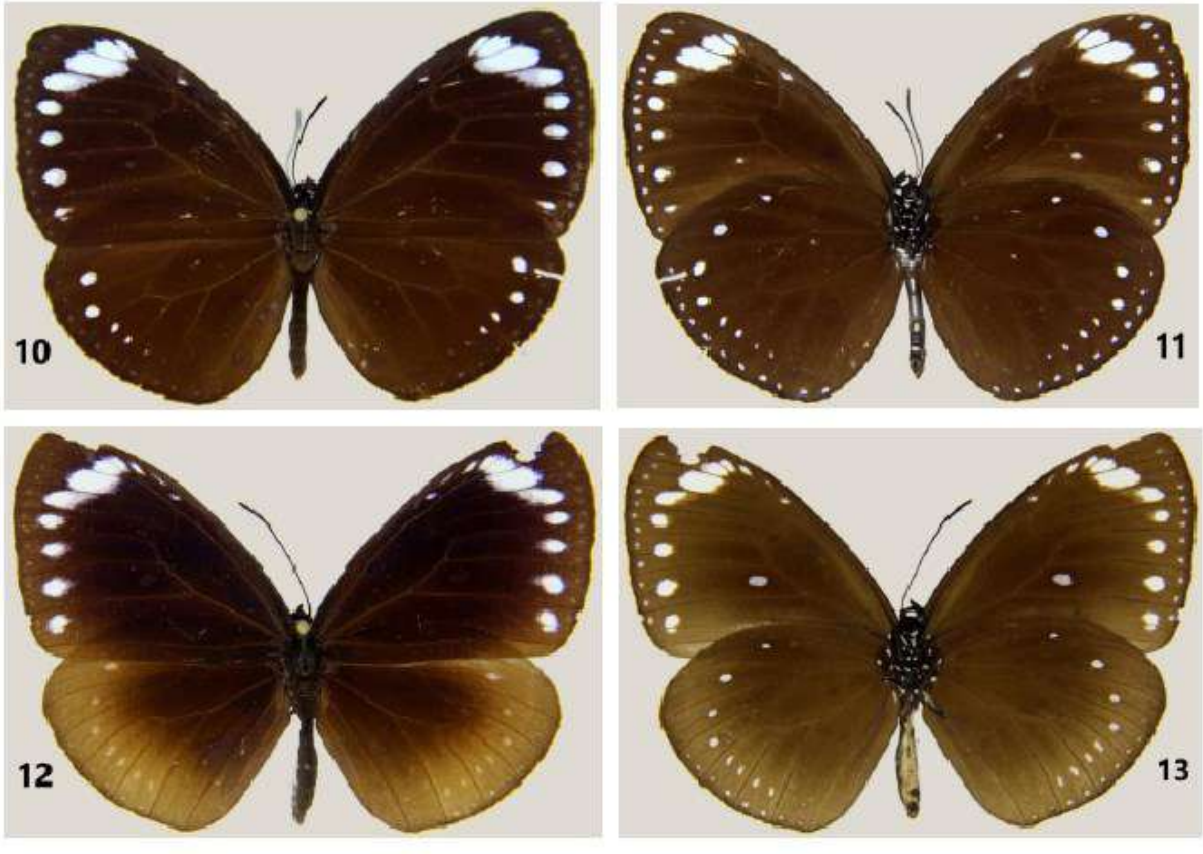
Euploea tulliolus (Fabricius, 1793)

Papilio tulliolus Fabricius, 1793, p. 41. Male syntype(s), [Australia, Queensland] (whereabouts unknown, stated by Fabricius to be in collection of William Jones) [original figure in *Jones Icones*, vol. 2(2) pl. 67, examined] (see Edwards et al., 2001, p. 321).

The two specimens (Figs 10–13) bear the following data, respectively: Papua New Guinea, Milne Bay Province, Engineer group (Louisiades), Kwaraiwa (=Watts) Island, 10° 37.34S / 151°16.91E, SL–90 m, 31.vii.2010, John Tennent; and Papua New Guinea, Milne Bay Province, eastern Louisiades, Deboyne group, Panapompom Island (north coast), 10° 45.27S / 152°20.88E, SL–80 m, 16.xi.2010, John Tennent. Now deposited in NHMUK, these specimens constitute the first authentic published records of *E. tulliolus* from the islands of Milne Bay Province. More material would be required to make any meaningful conclusion regarding subspecies, but they could belong to the Papua New Guinea mainland race *E. tulliolus dudgeonis*, as recognised by Parsons (1998).

However, Chris Müller has pointed out to me that a number of endemic butterfly subspecies are currently recognized from the Louisiades (e.g. *Ornithoptera priamus caelestis* (Rothschild, 1898), *Pachliopta polydorus aignanus* (Rothschild, 1898), *Taenaris catops mylaecha* (Westwood, 1851), *Taenaris artemis melanops* (Grose Smith, 1897), *Pantoporia venilia louisa* Eliot, 1969). So, the possibility of subspecific (phenotypic) distinction for these newly recorded *Euploea tulliolus* should not be ruled out. The two females are actually themselves quite divergent, the Watts specimen being darker than that from Panapompom – so it is conceivable that two or even more subspecies of the Dwarf Crow are to be found within the numerous islands and island groups of MBP.

In this context it is worth noting that Watts (Engineer Group) and Panapompom (Deboynes) are located about 110 km apart within the 160 km Louisiade Archipelago. These islands lie, respectively, some 170 and 300 km south-east of the d'Entrecasteaux Islands, the group that includes Goodenough. Thus, on present evidence, it is quite likely that *E. tulliolus* does not occur in the d'Entrecasteaux group. *E. stephensii* is widespread throughout the MBP islands. John Tennent's material demonstrates that *E. tulliolus* is sympatric with *E. stephensii jamesi* (Butler) on Kwaraiwa Island.



Figures 10–13. Female *Euploea tulliolus* from the Louisiade Archipelago: **9** (upperside), **10** (underside), Kwaraiwa (= Watts) Island [fwl 32 mm]; **11** (upperside), **12** (underside)**,** Panapompom Island [fwl 31.5 mm]. [For full data, see text.]

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