

Notes on the genus *Cyllogenes* Butler, 1868 (Lepidoptera: Nymphalidae: Satyrinae) from India

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Abstract: Based on available information, the two species of the genus *Cyllogenes* hitherto recognized, with three subspecies, have been recorded from mainland India. In this paper, a taxonomic study of the genus *Cyllogenes* was conducted, with descriptions of genitalia structures from Indian material. Using scanning electron microscopy, the morphology of the androconial scales was studied and described in detail for *Cyllogenes suradeva*.

Keywords: androconia, *Cyllogenes*, genitalia, morphology, taxonomy.

INTRODUCTION

Cyllogenes Butler, 1868, a member of the tribe Melanitini, is a small Oriental nymphalid satyrine butterfly genus. *Cyllogenes* was erected as a monotypic genus for its type species *Melanitis suradeva* Moore, [1858] from Darjeeling. In 1887, *Cyllogenes janetae* de Nicéville, 1887 was described by de Nicéville from Bhutan. The third species of the genus, *Cyllogenes woolletti* Riley, 1923 was described from Clarke province, Borneo. In his revisional work on the genus, Smiles (1973) described a new subspecies of *Cyllogenes janetae*, *C. j. fascialata* Smiles, 1973, from Nagaland and Manipur. Simultaneously, he designated lectotypes for *Cyllogenes janetae janetae* and *C. woolletti*. Another species of the genus, *Cyllogenes nigrimaculata* Chou & Qi, 1999, originally described as *Melanitis nigrimaculata*, is confined to Fujian Province, S.E. China. Two further taxa of the genus were described from Vietnam, namely *Cyllogenes milleri* Monastyrskii, 2005 (C. Vietnam) and *C. janetae orientalis* Monastyrskii, 2005 (N. Vietnam). Subsequently, Morita & Uémura (2006) described *Cyllogenes akikoe* from N. Myanmar. Lang & Huang (2012) described *Cyllogenes janetae loba* from S.E. Tibet, and downgraded the status of *C. akikoe* to a subspecies of *C. janetae*. In a recent work on the genus *Cyllogenes* from Myanmar, *C. j. orientalis* was raised to specific status by Uémura *et al.* (2016), and the authors recognized six species, all of them rare and local, distributed in India, Bhutan, Myanmar, S. China, Vietnam and N. Borneo, divided into three species groups: *janetae*-group (*C. janetae*, including four subspecies, *C. j. janetae*, *C. j. fascialata*, *C. j. akikoe*, *C. j. loba*), *suradeva*-group (*C. suradeva*, *C. nigrimaculata*, *C. orientalis*), and *woolletti*-group (*C. woolletti*, *C. milleri*). Among the six species of *Cyllogenes*, only two species, *C. janetae* (*C. j. janetae*, *C. j. fascialata*, *C. j. loba*) and *C. suradeva*, occur in India (Smiles, 1973; Singh & Das, 2016).

In the present paper, a detailed taxonomic treatment of the genus *Cyllogenes* from India is provided along with descriptions

of genitalia structures, an aspect missing for the Indian fauna of *Cyllogenes*. We also studied the structure of the sexual brand on the forewing as well as morphological traits of androconial scales by using scanning electron microscopy, and these are described in this study.

MATERIALS AND METHODS

The specimens examined for this study derive mainly from the historical collections made by Lionel de Nicéville from various locations, along with three specimens of *C. suradeva* from the A. M. Lang collections from the Sikkim-Darjeeling areas, which are kept in the National Zoological Collections, Lepidoptera section, Zoological Survey of India (ZSI), Kolkata, India. Adults were photographed using a Nikon 7000D digital SLR camera. ImageJ (Schneider *et al.*, 2012) software was used to measure wing length from images of museum specimens. The genitalia of selected specimens were dissected and photographed using a Leica M205 C stereomicroscope with Leica Application Suite, after removing extraneous abdominal tissue with 20% KOH. The sex scales (androconia) were studied using Scanning Electron Microscope (Zeiss V5.09 EVO18 Special edition) at 15kV operating acceleration voltage, after coating with gold/palladium in Zeiss Sputter Coater for 15 mins, and we described them following Wakeham-Dawson & Kudrna (2000). For wing venation, we used the terminology of Miller (1970).

TAXONOMIC ACCOUNTS

Family **Nymphalidae** Rafinesque, 1815

Subfamily **Satyrinae** Boisduval, 1833

Tribe **Melanitini** Reuter, 1896

Genus ***Cyllogenes*** Butler, 1868

Cyllogenes Butler, 1868, Ent. mon. Mag. 4: 194.

Type species: *Melanitis suradeva* Moore, [1858]



Figure 1(A–E): *Cyllogenes janetae janetae* de Nicéville, 1887, in ZSI; upperside above, underside below; **A.** ♂, 6043 (Bhutan); **B.** ♂, 6046 (Buxa); **C.** ♂, 6044 (Bhutan); **D.** ♂, 6045 (Buxa); **E.** ♂, 6047 (Buxa). Scale bar: 10 mm.

janetae-group

Diagnosis: This group is represented in India by a single species, *Cyllogenes janetae* de Nicéville, 1887, with three subspecies, *C. j. janetae*, *C. j. fasciata* and *C. j. loba*. The group is diagnosed by the absence of the sex brand on the upperside of forewing, which is present in the *suradeva*- and *woolletti*-groups. Within the group, *C. j. janetae* differs from its related subspecies (*C. j. akikoe* and *C. j. loba*) in having a broad yellow subapical band on the upperside of the forewing, whereas *C. j. akikoe* has a narrow yellow band of nearly equal width throughout, while in *C. j. loba* it is narrow with a tapering end towards the termen. *Cyllogenes j. fasciata* is distinct due to having the broadest forewing subapical band in the group, while on the upperside of the hindwing, *C. j. fasciata* has only a trace of a submarginal yellow band, whereas it is better defined in *C. j. janetae* and *C. j. loba*.

Cyllogenes janetae janetae de Nicéville, 1887 (Figures 1(A–E), 6(A–E), 9, 10)

Type locality: “Bhutan”

Cyllogenes janetae de Nicéville, 1887, Proc. Zool. Soc. Lond. 1887: 453 (Bhutan); Moore, [1893], Lep. Ind. 2: 139 (Bhotan); de Nicéville, 1894, Sikk. Gaz. 1894: 129 (Buxa, Bhutan); Bingham, 1905, Fauna Brit. Ind., Butt. 1: 163 (Bhutan); Fruhstorfer in Seitz, 1911, Macrolepid. World 9: 369 (Bhutan); Antram, 1924, Butt. Ind. 1924: 111 (Bhutan); Evans, 1932, Iden. Ind. Butt. ed. 2: 127 (Bhutan); Talbot, [1949], Fauna Brit. India Butt. 2: 378 (Bhutan); Wynter-Blyth, 1957, Butt. Ind. Region, 1957: 125 (Bhutan); Mani, 1986, Butt. Himalaya 1986: 108 (Bhutan).

Cyllogenes janetae janetae: Smiles, 1973, Entomologist 106: 174, 176 (Sikkim, Bhutan, West Bengal); D’Abrera, 1985, Butt. Orient. 2: 430 (Sikkim, Bhutan, Western Bengal [Bangladesh]); Uémura *et al.*, 2016, Butterflies 71: 31 (Sikkim, Bhutan, Darjeeling).

Materials examined: 1♂: Buxa/ 119-5/ 6046 Coll. Nicév./ 7821-H9 (ZSI); 1♂: Bhutan/ 6043 Coll. Nicév./ 7822-H9 (ZSI); 1♂: Bhutan/ 6044 Coll. Nicév./ 7823-H9 (ZSI); 1♂: Buxa/ 6045 Coll. Nicév./ 7824-H9 (ZSI); 1♂: Buxa/ 6047 Coll. Nicév./ 7825-H9 (ZSI); 1♂: Buxa/ 6048 Coll. Nicév./ 7826-H9 (ZSI).

Description: Forewing length: 39.2-43.7 mm (n=6); Upperside: ground color dark blackish brown with no sex brand, with apical area almost black on forewing. A broad subapical yellow band on upperside of forewing, inwardly curved, towards tornus following outer margin. On vein 2, band has a small tooth-like projection. On upperside of hindwing, a broad and definite yellow band along margin. In female, forewing subapical band comparatively broader than male, and apical area crossed by yellow veins, while in hindwing submarginal band more traceable in female. Underside: thickly irrorated with dark brown striation, with apical and marginal area relatively more yellowish than rest of wing, which is more visible in female. On costal margin, dark irroration is more prominent on both wings. A diffused purple discal band with an inwardly bounded dark line on both wings, extending roughly up to space 4 on forewing and on hindwing towards tornus from costa. A purple diffused apical patch on forewing apex, whereas in female, both discal band and apical patch are absent. A series of five purplish-white spots on each wing, while lower two are comparatively larger. Cilia black on both wings.

Male genitalia: Tegumen broad and stout with broad vinculum; uncus long (1.2 mm) and hooked apex, nearly 2 times as long as tegumen; gnathos absent; valva narrow, smoothly curved and long (1.7 mm), with rounded tip; saccus almost straight, slender and as long as valva; phallus typically straight and long (2.2 mm), suprazonal area about 2 times length of subzonal, a patch of scattered small teeth-like projections on mid-ventral side of suprazone.

Distribution: India (Sikkim to Arunachal Pradesh, through N. West Bengal), Bhutan.

Note: According to Talbot ([1949]), *Cyllogenes janetae* is a very rare species, and presently it is protected under Schedule I (Part-IV) of the Indian Wildlife (Protection) Act, 1972. Smiles (1973) reported *C. j. janetae* from the northern part of Brahmaputra, namely Sikkim, Bhutan and West Bengal. D’Abrera (1985) referred to Western Bengal as Bangladesh, but there are no

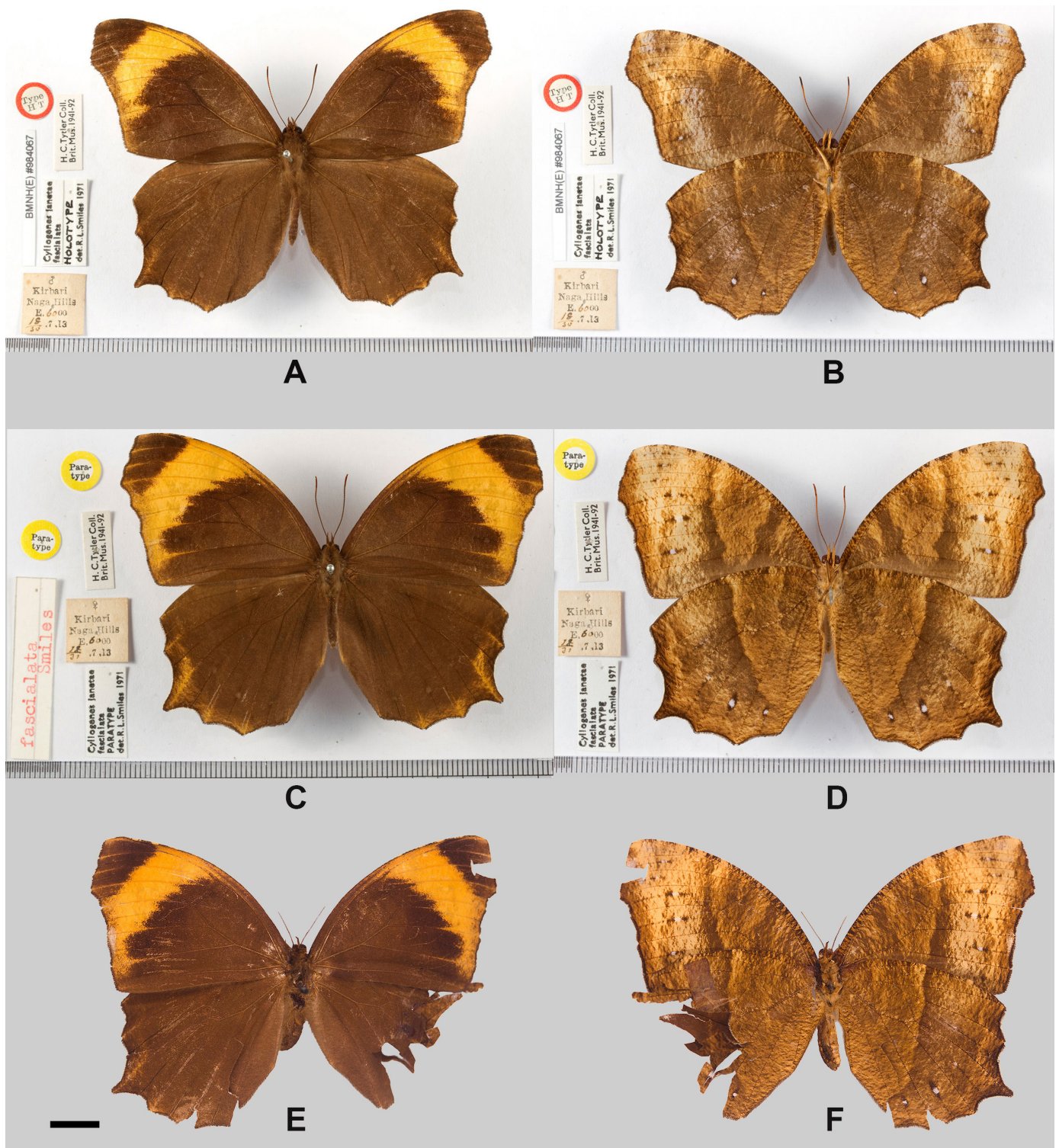


Figure 2(A–F): *Cylogenes janetae fascialata* Smiles, 1973; **A.** Holotype, ♂, BMNH(E) #984067 (Kirbari, Naga Hills), dorsal view © Natural History Museum, London; **B.** *ditto*, ventral view; **C.** Paratype, ♀, (Kirbari, Naga Hills), dorsal view © Natural History Museum, London; **D.** *ditto*, ventral view; **E.** ♀, 7820–H9 (ZSI), dorsal view; **F.** *ditto*, ventral view. Scale bar: 10 mm. (Figure 2A-D source: Anonymous (2020) and Photograph credit: Krushnamegh Kunte).

specific records from Bangladesh (Talbot, [1949]; Smiles, 1973; Larsen, 2004). After a long interval, Borang *et al.* (2008) recorded *C. janetae* from Dihang Dibang Biosphere Reserve, Arunachal Pradesh, and Sbordoni *et al.* (2015) reported it from Mongar (Bhutan) at an elevation of 500-1500m. Most recently, the species was reported at Pange, Talley Valley in western

Arunachal Pradesh (Anonymous, 2020).

In September 2016, during North-East Butterfly Meet, the first author encountered two active individuals of *C. janetae* at Talley Valley, Arunachal Pradesh. The individuals were sighted near a bamboo patch along a hill stream, in subtropical broadleaved evergreen forest.

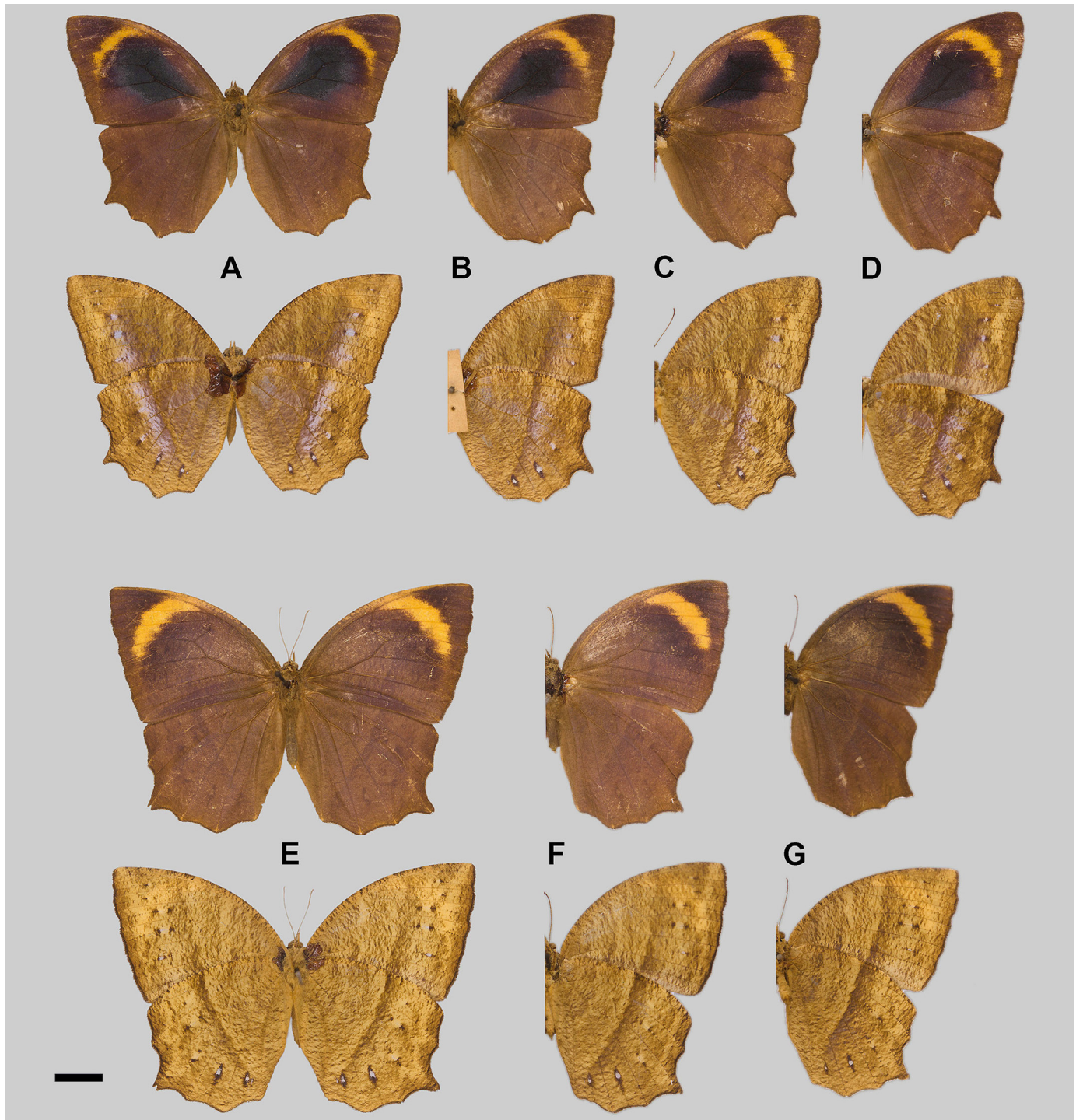


Figure 3(A–G): *Cyllogenes suradeva* (Moore, [1858]) kept in ZSI; upperside above, underside below; **A.** ♂, 6038 (Sikkim); **B.** ♂, 6037 (Sikkim); **C.** ♂, 6039 (Sikkim); **D.** ♂, 7813-H9 (Sikkim); **E.** ♀, 6040 (Sikkim); **F.** ♀, 6042 (Sikkim); **G.** ♀, 6041 (Sikkim). Scale bar: 10 mm.

***Cyllogenes janetae fasciata* Smiles, 1973**
(Figures 2(A–F), 8A, 10)

Type locality: “Kirbari, Naga Hills. E 6000, 18-30.7.13”

Cyllogenes janetae fasciata Smiles, 1973, Entomologist 106: 176 (Nagaland and Manipur); D’Abrera, 1985, Butt. Orient. 2: 430 (Assam (Naga Hills), Manipur); Uémura *et al.*, 2016, Butterflies 71: 31 (Assam, Naga Hills).

Cyllogenes janetae: Elwes, 1891, Proc. Zool. Soc. Lond. 1891: 269 (Naga

Hills); Moore, [1893], Lep. Ind. 2: 139 (Naga Hills); de Nicéville, 1894, Sikk. Gaz. 1894: 129 (Naga Hills); Bingham, 1905, Fauna Brit. Ind., Butt. 1: 163 (Naga Hills); Tytler, 1911, J. Bombay Nat. Hist. Soc. 21(1): 54 (Naga Hills); Fruhstorfer in Seitz, 1911, Macrolepid. World 9: 369 (Naga Hills); Antram, 1924, Butt. Ind. 1924: 111 (Naga Hills); Evans, 1932, Iden. Ind. Butt. (ed. 2): 127 (Assam); Talbot, [1949], Fauna Brit. India Butt. 2: 378 (Assam); Wynter-Blyth, 1957, Butt. Ind. Region, 1957: 125 (Naga Hills); Mani, 1986, Butt. Himalaya 1986: 108 (Assam).

Materials examined: 1♀: No Data/ 7820-H9 (ZSI).

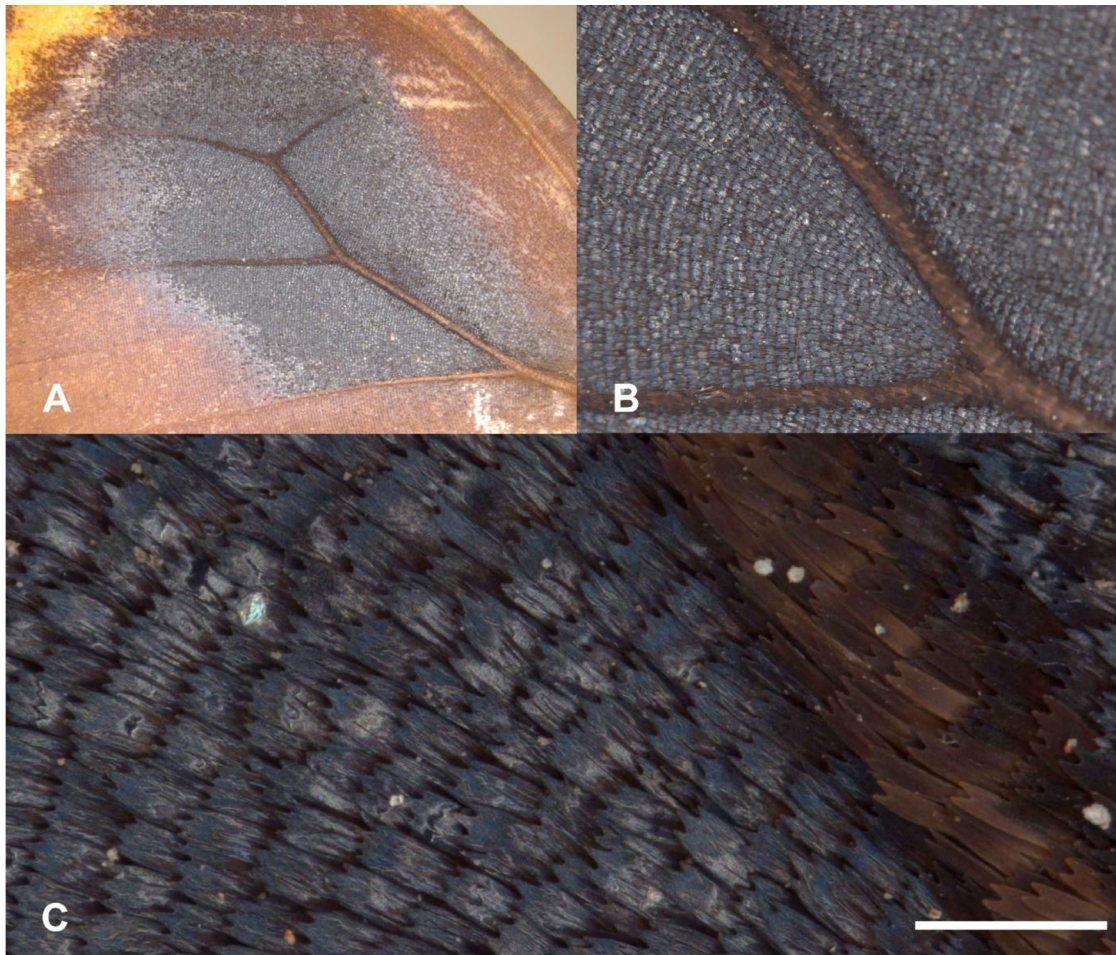


Figure 4(A–C): Microscopic characteristics of male sex brand of *Cyllogenes suradeva* (Moore, [1858]); A. Forewing androconia patch; B. Patch scales; C. Details of androconia scales; scale bar: 200 μ m.

Description: Forewing length: 43.78 mm (n=1); morphologically, *C. j. fascialata* is very closely allied to *C. j. janetae*. In male, subapical yellow band on upperside of forewing is very broad, and in female, apical band is comparatively broader than male, with yellow veins at apical area. Submarginal band on upper hindwing scarcely visible, being more visible in female. Underside as in nominate subspecies, in which female is relatively paler (especially apical area of forewing) than male. Dark discal line on underside is prominent in female, without an obscure purple discal band.

Female genitalia: Papilla analis nearly oval, covered with hair-like scales on surface; apophysis posterioris slender and short; ductus bursae almost straight, and about 3.8 mm long; corpus bursae evenly slender proximally while gradually swollen on distal with two signum lobes, each lobe about 1 mm in length with nearly 22-23 rows of teeth like projection.

Distribution: India (Nagaland and Manipur).

Note: *Cyllogenes janetae fascialata* was described based on old collections from Nagaland and Manipur, in the Natural History Museum, London, UK. The holotype is from Tytler's collection, and is labeled "H.T. Type/♂ Kirbari, Naga Hills, E. 6000, 18-30.7.13./H. C. Tytler Coll., Brit. Mus. 1941-92./ *Cyllogenes janetae fascialata* Holotype, det. R. L. Smiles 1971", and there are additional paratypes. The oldest specimen within the type series was collected by Doherty and labeled "1♀, Naga Hills, 5,500-7,000 ft., Aug. 1889, W. Doherty, Elwes Coll., 1902-85". Smiles (1973) considered the Brahmaputra river as a barrier

for the two subspecies of *C. janetae*, the northern population being *C. j. janetae* and the southern *C. j. fascialata*. *Cyllogenes janetae* is protected under Schedule I (Part-IV) of the Indian Wildlife (Protection) Act, 1972 (Anonymous, 1997), without specifying the subspecies, so, *C. j. fascialata* is considered a protected subspecies under Schedule I (Part-IV).

Cyllogenes janetae loba Lang & Huang, 2012

Type locality: "China: Tibet: 80k, Medog"

Cyllogenes janetae loba Lang & Huang, 2012, Atalanta 43(3/4): 509-511 (80K and Hanmi, Medog); Uémura *et al.*, 2016, Butterflies 71: 32 (Medog, Tibet); Singh & Das, 2016, Butt. Atlas Arunachal Pradesh, India: 340 (Dibang Valley).

Description: (after Lang & Huang, 2012): Forewing length: 41-45 mm; morphologically, *C. j. loba* is similar to *C. j. akikoa*. On upperside, ground color is dark chocolate brown. Yellowish subapical band on upperside of forewing is narrow, evenly bent inwards and tapers towards termen. On upperside of hindwing, submarginal band is faintly present. In female, subapical band is broader than in male and continuing towards tornus, and submarginal band is more visible. On underside, markings are as in nominate subspecies.

Male genitalia: (after Lang & Huang, 2012): "Tegumen normal in shape. Uncus with apex hooked. Gnathos absent. Saccus rather long and slender. Valva simply built, narrowly extending forwards with its basal half rather wide. Aedeagus almost straight; its middle area weakly spinose".

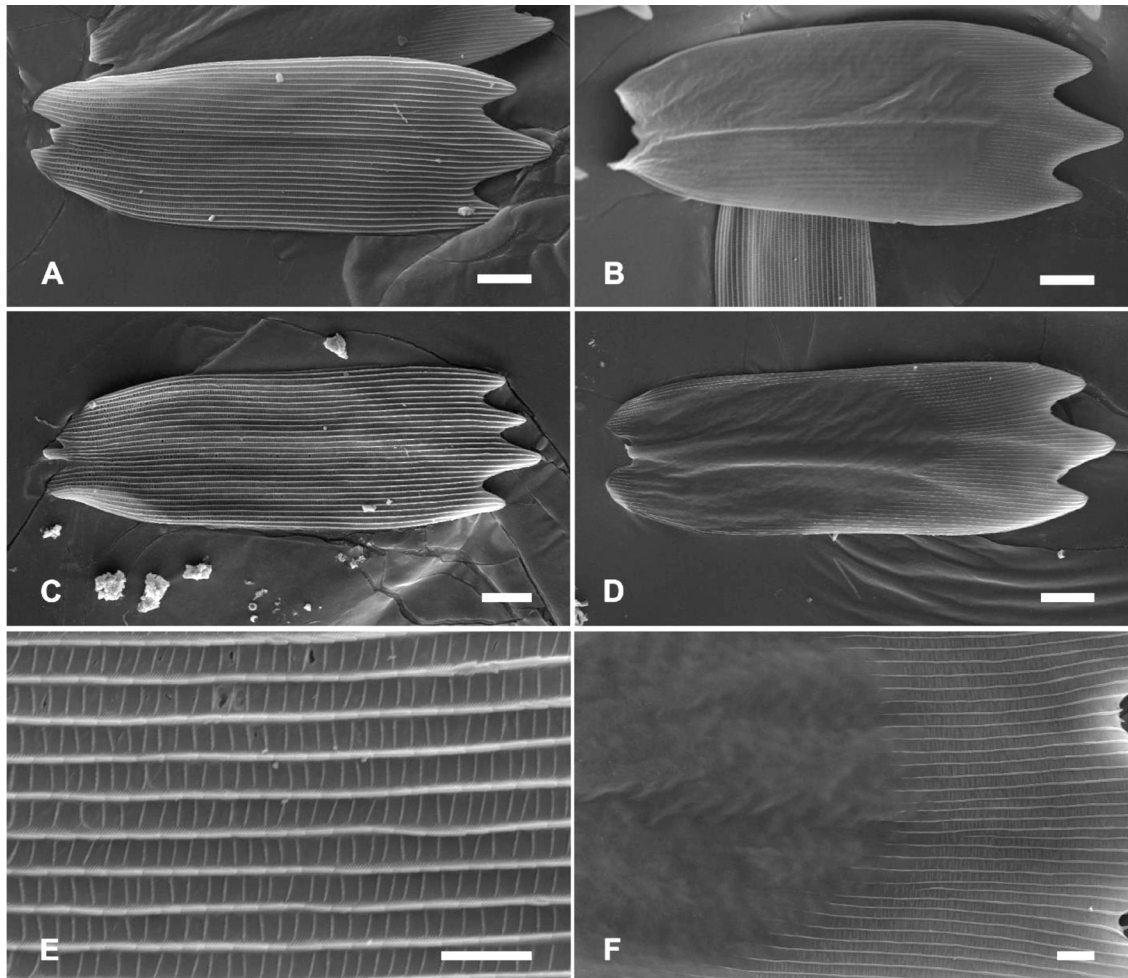


Figure 5(A–F): Microscopic characteristics of androconial scales of *Cyllogenes suradeva* (Moore, [1858]); **A.** Ventral view of androconial scale; **C.** Ventral view of androconial scale with quadridentate tip; **B&D.** Dorsal view of androconial scale; **E.** External and internal structures of androconial scales, (with magnification 10.00K x); **F.** Dorsal view with magnification 4.00K x. Scale bar: **A–D:** 20µm, **E–F:** 5µm.

Distribution: S.E. Tibet (Medog), N.E. India (Dibang Valley, Arunachal Pradesh).

Note: According to Lang & Huang (2012) and Uémura *et al.* (2016), *Cyllogenes janetae loba* is only known from its type locality, but Singh & Das (2016) reported an individual of *C. j. loba* from Dibang valley, Arunachal Pradesh, N.E. India. Interestingly, the individual recorded in Dibang valley shows some distinguishing characters from true *C. j. loba*, as it has a zigzag subapical yellow band that becomes diffuse towards the termen, whereas *C. j. loba* has a smoothly curved yellow band. Also, the study of Singh & Das (2016) claimed that *C. j. janetae* and *C. j. loba* fly in the same geographical region, i.e. Arunachal Pradesh. Thus, assuming that typical *C. j. loba* occurs in the same geographical region, the individual discussed above might not represent *C. j. loba*, but could be a variation of *C. j. janetae* or perhaps a new species, with further study needed to clarify its status.

suradeva-group

Diagnosis: By having an oval sex brand on the upper forewing, the *suradeva*-group can be easily separated from the other two

groups, the *janetae*-group (no sex brand) and *woolletti*-group (a broad sex brand on discal area). Within the group, *C. suradeva* is distinguished from its congeners due to having an almost straight forewing margin. Furthermore, *Cyllogenes suradeva* can be distinguished from the similar species *C. nigrimaculata* in having a narrow subapical yellow band on the upperside of the forewing, which is absent in the latter, and from *C. orientalis* in a broad subapical band.

Cyllogenes suradeva (Moore, [1858]) (Figures 3(A–G), 4(A–C), 5(A–F), 7(A–E), 8B, 11)

Type locality: “Darjeeling” (northern West Bengal, India)

Melanitis suradeva Moore in Horsfield & Moore, [1858], Cat. Spec. lep. Ins. Mus. East India Coy (1): 225 (Darjeeling); Staudinger in Staudinger & Schatz, [1887], Exot. Schmett. I (15): 223.

Cylo suradeva: Moore, 1865, Proc. Zool. Soc. Lond. 1865: 770 (Bengal).

Cyllogenes suradeva: Butler, 1868, Catal. Satyr. Brit. Mus. 1863: 6 (Darjeeling, Northern India); Marshall & de Nicéville, 1883, Butt. Ind. 1: 260 (Sikkim); Elwes, 1888, Trans. Ent. Soc. Lond. 1888: 330 (Sikkim, Singla, Bhutan); Moore, [1893], Lep. Ind. 2: 138-139 (Sikkim); de Nicéville, 1894, Sikk. Gaz. 1894: 129 (Singla); Bingham, 1905, Fauna Brit. Ind., Butt. 1: 163 (Sikkim); Fruhstorfer in Seitz, 1911.

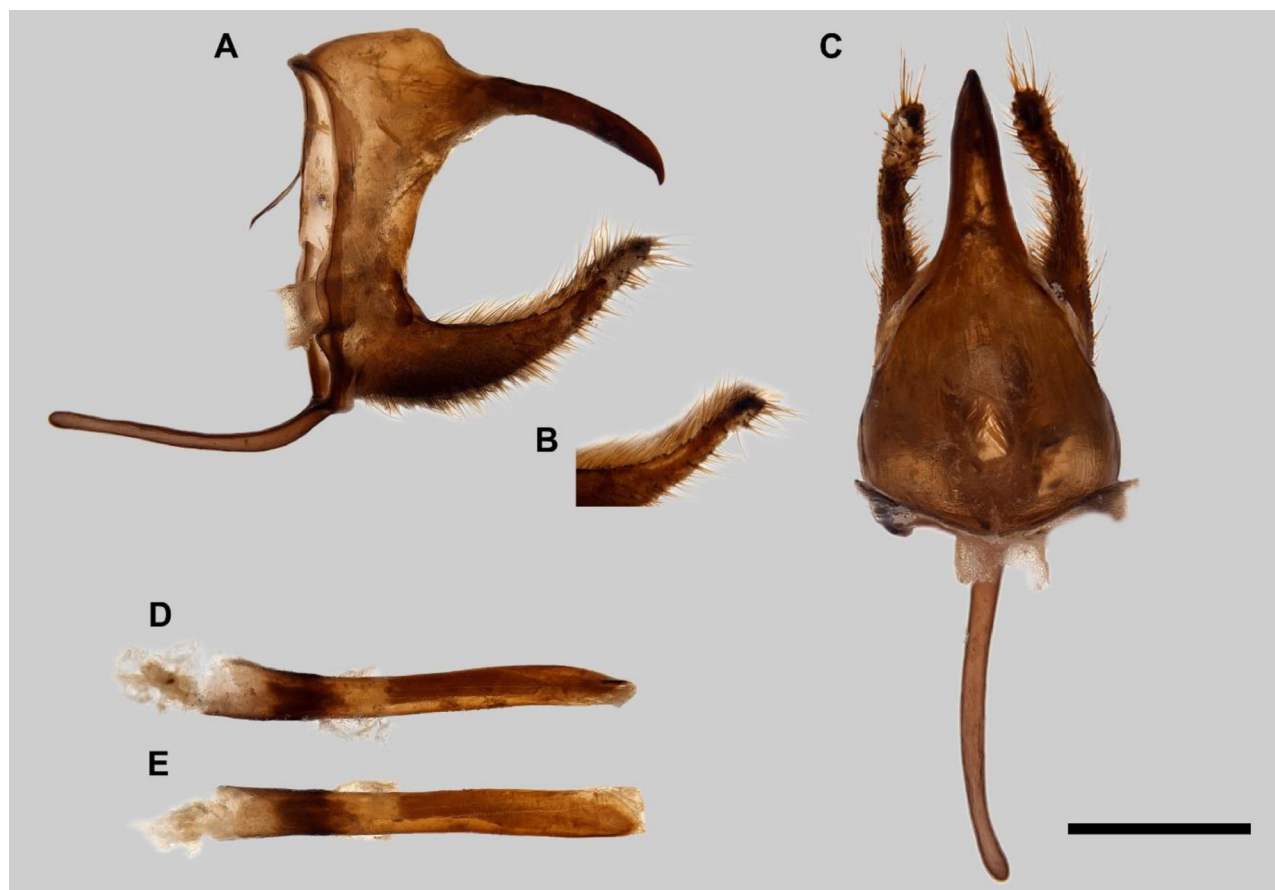


Figure 6(A–E): Male genitalia of *Cyllogenes janetae janetae* de Nicéville, 1887; **A.** Genitalia in lateral view; **B.** Tip of the valva in lateral view; **C.** Genitalia in dorsal view; **D.** Phallus in lateral view; **E.** Phallus in dorsal view. Scale bar: 1 mm.

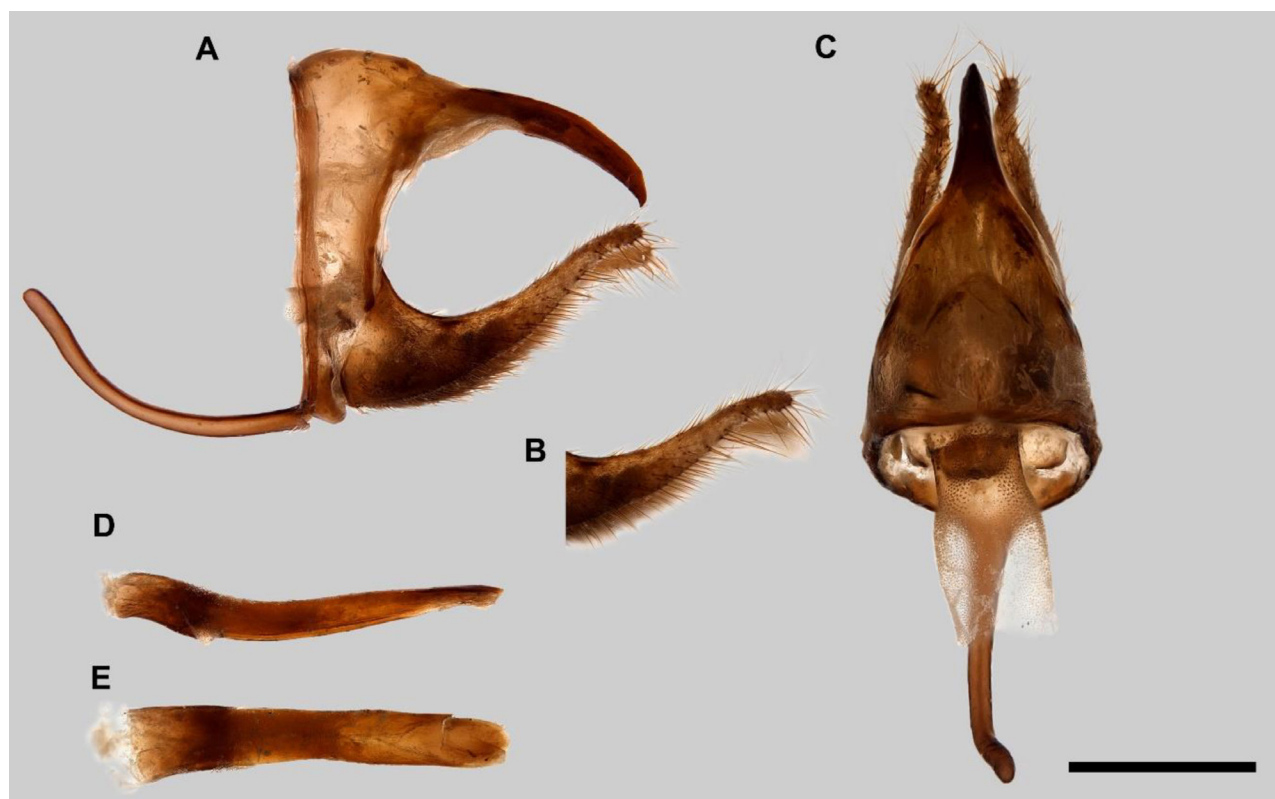


Figure 7(A–E): Male genitalia of *Cyllogenes suradeva* (Moore, [1858]); **A.** Genitalia in lateral view; **B.** Tip of the valva in lateral view; **C.** Genitalia in dorsal view; **D.** Phallus in lateral view; **E.** Phallus in dorsal view. Scale bar: 1 mm.

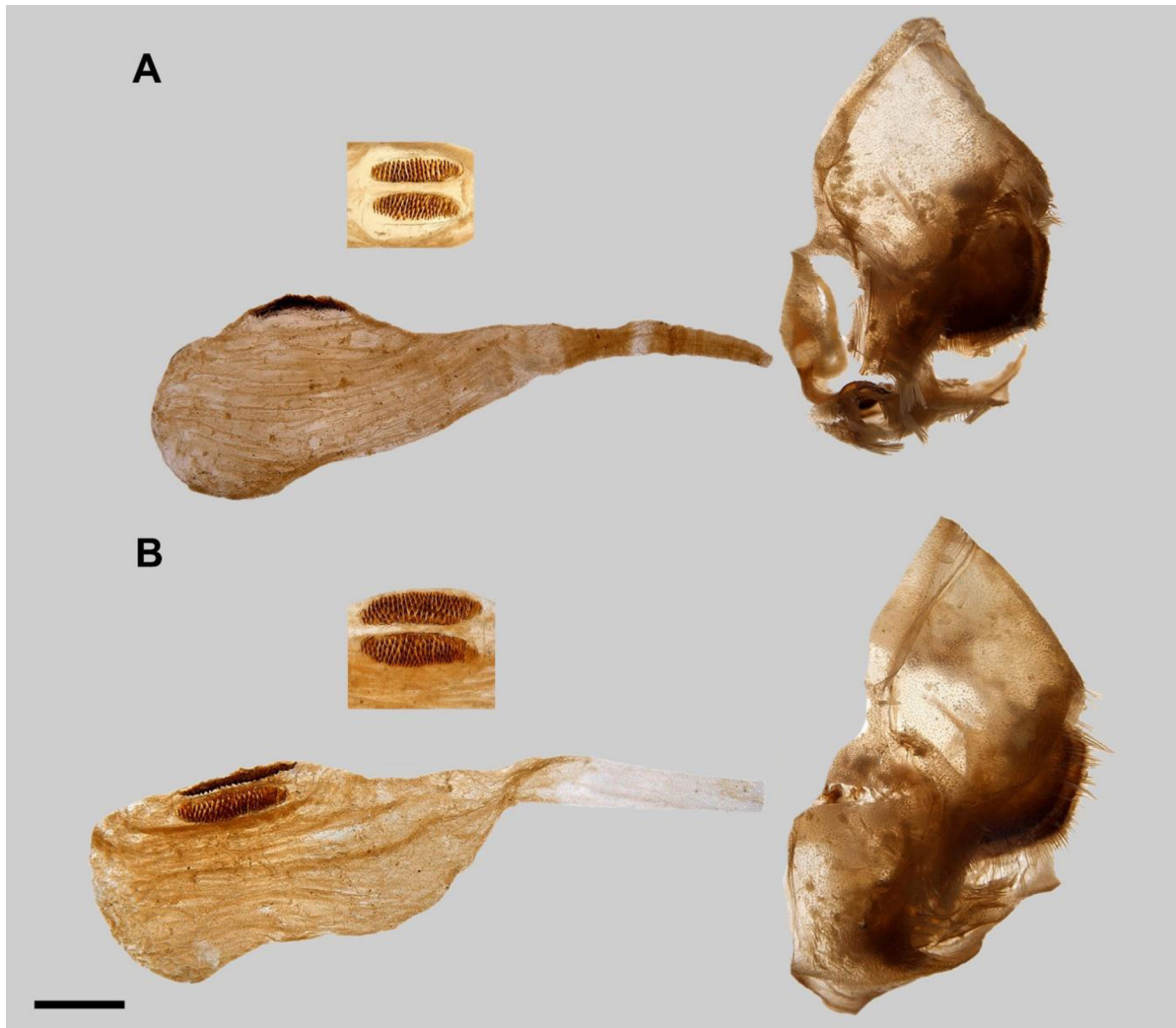


Figure 8: Female genitalia of *Cyllogenes* (inset, signum), ductus bursae separated from 8th segment: **A.** *Cyllogenes janetae fascialata* Smiles, 1973; **B.** *Cyllogenes suradeva* (Moore, [1858]). Scale bar: 1 mm.



Figure 9: *Cyllogenes janetae janetae* de Nicéville, 1887 from Talley Valley, Arunachal Pradesh, India.

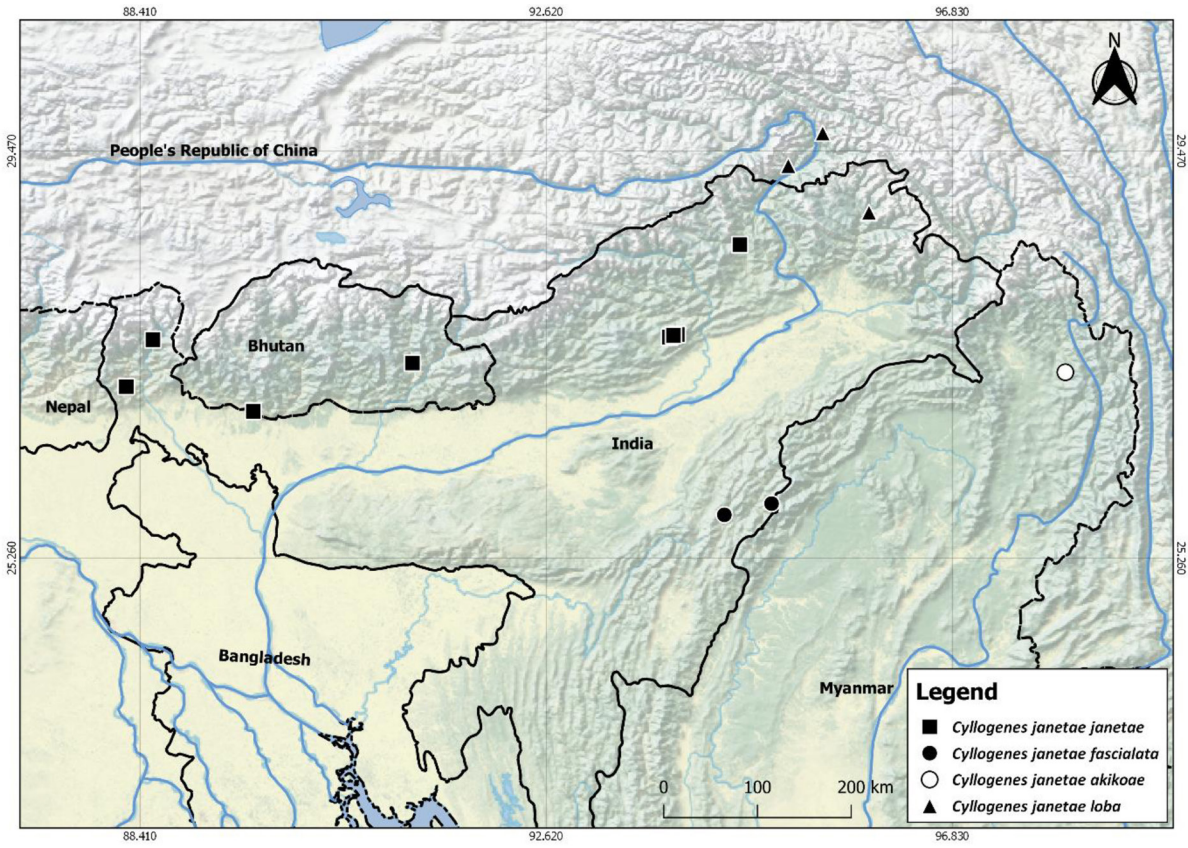


Figure 10: Map showing distribution records of *Cyllogenes janetae* de Nicéville, 1887.

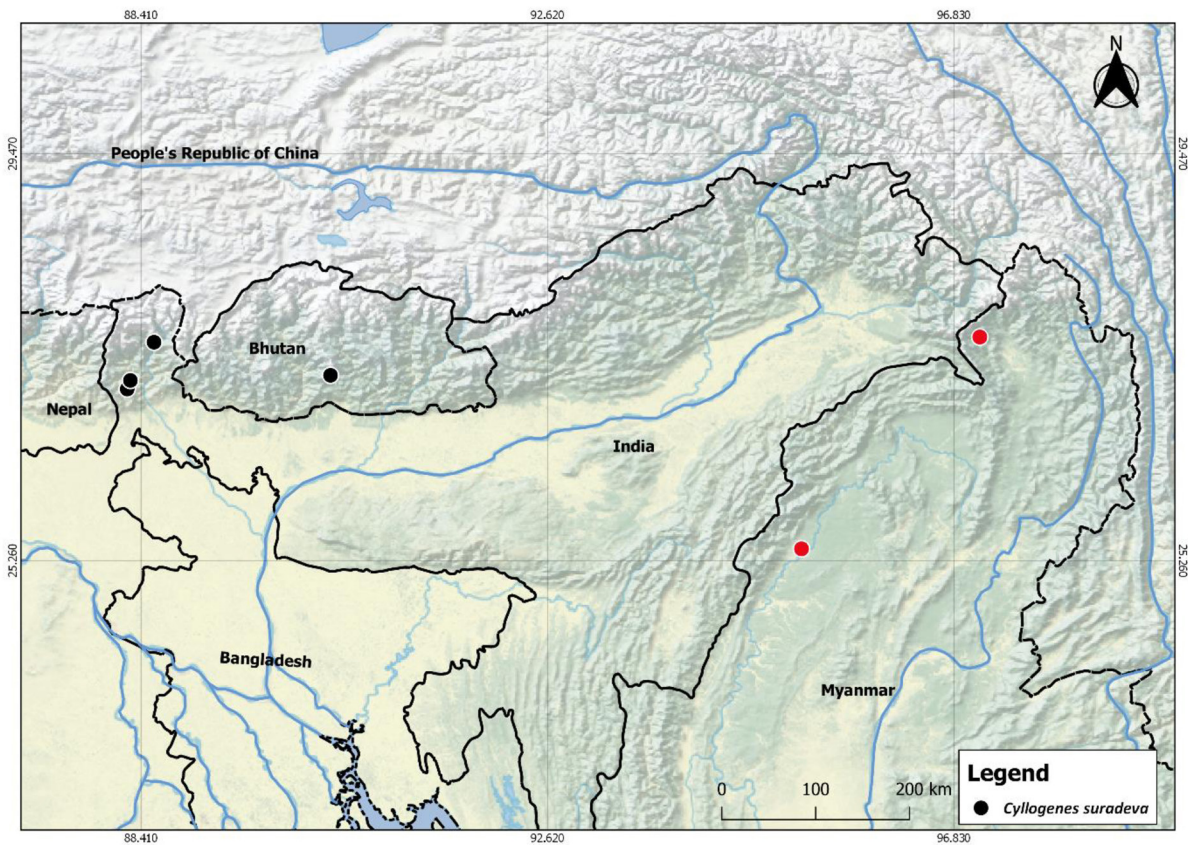


Figure 11: Map showing distribution records of *Cyllogenes suradeva* (Moore, [1858]) (red dots indicate records of *C. suradeva* from Myanmar discussed in the text).

Macrolepid. World 9: 369 (Sikkim); Antram, 1924, Butt. Ind. 1924: 111 (Sikkim); Evans, 1932, Iden. Ind. Butt. ed. 2: 127 (Sikkim-Bhutan); Talbot, [1949], Fauna Brit. India Butt. 2: 378 (Sikkim and Bhutan); Wynter-Blyth, 1957, Butt. Ind. Region, 1957: 125 (Sikkim and Bhutan); Smiles, 1973, Entomologist 106: 176 (North India (northern Bengal) and Sikkim, Bhutan); Mani, 1986, Butt. Himalaya 1986: 108 (East Himalaya); D'Abbrera, 1985, Butt. Orient. 2: 430 (Northern India, Sikkim, Bhutan); Shizuya *et al.*, 2005, Butterflies 39: 30 (Sagaing, Myanmar); Uémura *et al.*, 2016, Butterflies, 71: 31 (N.E. Kachin & Sagaing, Myanmar).

Materials examined: 1♂: Darjeeling/ Ind. Mus. Lang Colln/ 7810-H9 (ZSI); 1♂: Sikkim/ Ind. Mus. Lang Colln/ 7813-H9 (ZSI); 1♂: Sikkim, May/6037 Coll. Nicév./ 7814-H9 (ZSI); 1♂: Sikkim/ 6038 Coll. Nicév./ 7815-H9 (ZSI); 1♂: Sikkim/ 6039 Coll. Nicév./ 7816-H9 (ZSI); 1♀: Sikkim, June 1883/ 6040 Coll. Nicév./ 7817-H9 (ZSI); 1♀: Sikkim/ 119-5/ 6041 Coll. Nicév./ 7818-H9 (ZSI); 1♀: Sikkim/ 6042 Coll. Nicév./ 7819-H9 (ZSI); 1♂: No data/ 7811-H9 (ZSI); 1♂: No data/ 7812-H9 (ZSI).

Description: Forewing length: 35.7-39.1 mm (male, n=7; female, n=3); Upperside: dark brown with a faint purple tinge. On forewing, a prominent oval sex brand in male from vein 2 to vein 5, through lower half of cell, where brand is surrounded by purple scales. Best beyond brand, forewing has a narrow yellow band, extending from vein 7 towards vein 3, while female has a broader one. Although both sexes have some diffused yellow scaling at costal margin outside band, apical area of forewing has comparatively dark purple scaling in male compared to female. Remainder of hindwing is uniform with purple tinge. Underside: relatively less irroration on yellowish background, where ground color is much paler in female, irroration more prominent on both wings at costa. In male, a diffused purplish discal band with an inward diffused dark line, whereas it is more prominent in female, without discal band. On underside, each wing has a series of five purplish-white spots, with lateral black scaling, while tornus spot on hindwing is coalesced with a minute spot just below it. Cilia dark brown.

Male genitalia: Tegumen gradually widened dorsally and regular in shape (broad and stout in *C. j. janetae*); vinculum comparatively broad; uncus long, about 2 times length of tegumen, and weakly bent downward, with hooked apex; gnathos absent; valva comparatively long (1.7 mm), slender with slightly ventral curved rounded tip and relatively broad base; saccus as long as valva, slender and smoothly curved (almost straight in *C. j. janetae* and *C. j. loba*); phallus long (2 mm) and slightly curved, suprazonal area about 3 times length of subzonal (*C. j. janetae* and *C. j. loba* weakly spinose in middle area).

Female genitalia: Papilla analis nearly rectangular, covered with hairs on surface (nearly oval in *C. j. fasciata*); apophysis posterioris slender and short; ductus bursae almost straight, about 3.3 mm in length; corpus bursae almost rectangular in shape (bulging distally in *C. j. fasciata*) with two signum lobes, each lobe about 1.3 mm in length with nearly 28 rows of teeth-like projections.

Androconia (Table 1): Androconia form a dark oval brand around vein 2 to vein 5 on upperside of forewing, through lower half of cell, brand medially divided by median and discoidal veins. Sexual scales (androconia) slightly larger and more densely packed than other wing scales. Androconia have elongated lamina, average 190.89 µm long, tridentate at apex (sometime quadridentate). Androconia are comparatively wider than other scales, with average values of 65.40 µm in width, with 29-34 longitudinal axes on dorsal side while ventral side has almost twice as many, except central part of scale smooth and unmarked, whereas a number of longitudinal ridges are arranged obliquely across each axis of scale. Cross ribs are regular and parallel, ladder-like rungs without any flutes along both sides of axis.

Table 1. Morphological characteristics of androconia scales in *Cyllogenes suradeva* (Moore, [1858]).

Species	No. of androconia	Mean±SD			No. of Axis
		Length (L) (µm)	Breadth (B) (µm)	Ratio (L/B)	
<i>C. suradeva</i>	7	190.89±10.46	65.40±2.93	2.92±0.14	31.71±1.80

Distribution: India (Sikkim, northern West Bengal), Bhutan and N. Myanmar.

Note: According to Smiles (1973), *Cyllogenes suradeva* is distributed in Sikkim, N. West Bengal and Bhutan. Recently, Shizuya *et al.* (2005) recorded a pair of *C. suradeva* from Sagaing, Myanmar, and following this, another pair of *C. suradeva* was recorded from N. Putao, N.E. Kachin by Uémura *et al.* (2016) (red dots in Fig. 11). Interestingly, these two pairs of *Cyllogenes* from northern Myanmar have a broad subapical band in both sexes, reaching the termen as in *C. janetae*, while typical *C. suradeva* bears a narrow one. The purple tinge on the upperside of the wings of both sexes is relatively darker than in typical *C. suradeva*. Along with the distance from the type locality (Darjeeling) of *C. suradeva*, these characters suggest these specimens could possibly represent a distinct subspecies of *C. suradeva*, and further study is needed to clarify the status.

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