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A REVISION OF THE GENUS *CALLICTITA* BETHUNE-BAKER (LEPIDOPTERA: LYCAENIDAE) FROM THE MOUNTAINS OF NEW GUINEA

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Abstract

A complete revision of the genus *Callictita* is made, based on the examination of material in a number of major museum collections. The status of two previously described taxa is revised. Of the eight species in the genus five are newly described, together with four new subspecies. These are as follows: *Callictita mala, C. jola, C. felgara, C. tifala, C. lara, C. lara kina, C. lara ronda, C. cyara cyabla,* and *C. cyara cyelsa.* The sex brand of the male forewing was found to be the best taxonomic character to discriminate these very closely related montane species. Other characters, including the male genitalia, tend to be intraspecifically variable or are very similar throughout the genus. The small number and great similarity of all *Callictita* species indicates that they have recently speciated. However, their limited distribution, and the absence of any closely related genera, except in Africa, suggests that the genus is of relict status. The phylogeny of *Callictita* is, therefore, difficult to elucidate.

Introduction

The genus *Callictita* contains eight species endemic to the central mountain ranges of the island of New Guinea. It was the subject of a study by Wind and Clench (1947). Eliot (1973) included *Callictita* in the tribe Polyommatini of the subfamily Lycaeninae. The genus is of interest because, as Eliot (p 446) points out, its nearest relatives, *Uranothauma* Butler, 1895 (10 species), especially *U. nubifer* (Trimen, 1895), and *Phylaria cyara* Karsch, 1895 (monotypic), are African endemics. Colour photographs (Nos. 261, 262) of live adults of the latter two genera are included in Watson and Whalley (1975). Those of *Callictita* will be figured in colour in a forthcoming work on New Guinean butterflies (Parsons, in prep.).

Eliot (p 463) suggested that the ancestors of *Callictita* derived from stocks that arrived in New Guinea from Africa, via India and a Melanesian Arc, in the Miocene, or later (about 25 million years before present). These ancestors would have been more widespread at the time but today only survive in Africa as distantly related forms. If it were not for the genitalic differences between *Uranothauma* and *Callictita* Eliot (pp 380-381) may well have considered the taxa to be congeneric. However, he places great emphasis on this fact, even though he admits that they have an important number of other (external) characters in common and that the genitalia of *U. nubifer* also differ considerably from the rest of its genus. He is perplexed by the problem: "So many resemblances in geographically widely separated genera would appear to be beyond the bounds of coincidence or even chance of convergence." He decides, however, that "Such marked genitalic differences seem to rule out the possibility that *Callictita* and *U. nubifer* should

have a close common ancestor." There remains, however, the possibility that *Callictita* should be considered a long isolated relict genus which had its origins in the palaeocontinent of Gondwanaland; rather than having reached New Guinea via S.E. Asia (as undoubtedly many other butterfly genera have done).

All *Callictita* species are remarkable for the uniformity of their facies which, until now, has led to them being confused with, or considered as representing subspecies of *Callictita cyara* Bethune-Baker, 1908. In contrast to the statements above, therefore, the great similarity and small number of *Callictita* species suggests that their speciation has taken place comparatively recently in geological time. Certainly this has been promoted by the isolation of *Callictita* to various disjunct peaks and mountain ranges. This is especially obvious in western New Guinea where three *Callictita* species, which have the most distinctive male genitalia of their genus, are isolated in widely separate mountain ranges. Two of these species occur as westernmost populations that are apparently entirely remote from each other, as well as all other members of their genus. As their close relationships imply, members of *Callictita* are ecologically also very similar. All species are restricted to montane habitats, mainly between 1200-2200 m. Females are rarely encountered; only four are so far known in world collections. However, as Brandt took three of these at apparently the same locality (in Nondugl), and at approximately the same time, it appears that they may congregate at specific foodplants to oviposit. Males commonly fly along open creeks bordered by tall secondary forest. *Callictita* early stages are unknown.

D'Abrera (1978) stated that *Callictita* was in need of revision as there was a significant amount of undetermined material in the British Museum (Natural History). G.E. Tite had begun to classify this, but he only progressed to the point where he had placed a number of new but unpublished names below several series of undescribed taxa. D'Abrera treated the only three previously described taxa as subspecies of *C. cyara*, as had Wind and Clench (1947). However, it is clear from their facies and the morphologies of their male genitalia (Figs. **44, 54**) that *C. cyara albiplaga* Joicey & Talbot, 1916 and *C. cyara arfakiana* Wind & Clench, 1947 are, as D'Abrera postulated, distinct species. Tite had also reached this conclusion during his study.

C. cyara was described from the Owgarra (Auga) River region in the Owen Stanley Mountains of eastern New Guinea. The taxa *albiplaga* and *arfakiana* were described from the Wandammen and Arfak Mountains of western New Guinea, respectively. It was predictable, therefore, that within the vast range of abrupt mountainous topography lying between these two regions, there were more *Callictita* species awaiting discovery. This proved to be true (Fig. **1**). It is interesting to note that *Callictita* apparently does not occur in some of the ranges to the north of the main central divide, especially, for example, the mountains of the Huon Peninsula of central Papua New Guinea. The genus has never been recorded from any of the many offshore islands of the New Guinea mainland. Gressitt (1956) gives an informative account of the general topography and habitat in which *Callictita* can be found, including (p 63) the region in which two of the new taxa described here were found.

The following abbreviations are used in the text for institutions and collections: BMNH, British Museum (Natural History), London, England; ANIC, Australian National Insect Collection, Canberra, Australia; KONE, National Insect Collection, Konedobu, Port Moresby, Papua New Guinea; RML, Rijksmuseum van Natuurlijke Historie, Leiden, Netherlands; BBMH, Bernice P. Bishop Museum, Honolulu, Hawaii, U.S.A.; AME, Allyn Museum of Entomology, Florida State Museum, Sarasota, Florida, U.S.A. Numbers given in the text, as in 12/21.5, refer to the forewing length and wingspan, in millimetres, of a specimen. Where New Guinea is mentioned in the text, this refers to the whole of the mainland, the western half of which is politically part of Indonesia and is now known as Irian Jaya, and the eastern half of which is now part of the independent state of Papua New Guinea, abbreviated here as PNG (see Fig. **1**).

Morphological characters

During examination of most of the available material of *Callictita* it became clear that the external characters of the males (only four females are known), are somewhat variable.

These include the extent of the structurally coloured translucent scales of the forewing upperside (and, therefore, the extent of the dark brown forewing margins), the width of the dark brown margins of the hindwing upperside (some specimens of most species can be completely suffused with dark brown in this region), and the breadth and distribution of the dark brown bands and spots of the underside. The hue of the dark brown scaling also appears to vary between populations to some extent. This feature might have been used to some advantage if it had not become apparent, however, that some fading of certain material had taken place. The size of individuals is also somewhat variable, with the males of all species ranging at least between 12/21.5 and 14/26.

With regard to the male genitalia, it was found that the overall structure is very similar between all species (Fig. **10**: lateral profile) with only the valvae (Figs. **11** to **54**) exhibiting any discernible differences. The valvae of all species are sparsely covered with long setae. Eliot (1973) states that the male genitalia are abnormal, particularly the aedeagus which bears a trough-like 'footstalk' and has the suprazonal portion long and tapered. The uncus is rounded with the brachia of the gnathos V-shaped, distally slightly inflated and finely hooked at their apices. The saccus is absent and the vinculum ring is basally pointed and distally directed below the valvae. Although the valvae of some species are markedly different, most are generally similar to those of *C. cyara*, which taper abruptly to a broadly truncate distal margin, the apex of which is slightly produced and usually bears between two to five teeth. At the base of the dorsal margin of the valva of most species there is a long spine, the general shape, presence or absence of which is of some taxonomic value. The valvae of most species, however, are fairly variable within limits (as can be seen from the figures), so that even these do not provide any really useful morphological characters by which accurate species determinations can be made for certain species groups.

There is, nevertheless, one apparently consistent feature that can be used to group species and thereby to classify them: the sex brand of the male forewing upperside. This secondary sexual character, aberrant for the tribe Polyommatini, consists of a large discal patch on the forewing densely clothed with a mixture of specialised hair scales and short plume scales (Eliot 1973). The scales are arranged in alternating parallel rows of tightly packed rod-like androconial scales between single rows (edge to edge) of normal spatulate scales. All of the scales are structurally coloured mauve but, when viewed from directly above, the sex brand appears jet black due to the density of the scales and their 45-50 degree angle to the wing membrane. The sex brands of all species are best observed under household fluorescent lights, because the mauve scales are far more translucent in ordinary daylight and, therefore, the brands are not so prominently highlighted. The size and shape of the forewing androconial patch varies between species but only very slightly within species, so it is a useful taxonomic character. Some *Callictita* species have similar sex brands so these can be summarised (terminology of wing structure as given by Common and Waterhouse 1981: 14), together with the other characters of the male forewing upperside, for all known members of the genus as follows:

GROUP A (cyara) (one species: Figs. **2**, **3**)

Moderately broad to very broad dark brown margins (dark brown usually also follows inner margin and subbasally encroaches into the translucent mauve area of the wing to form a 'notch'); translucent mauve area of wing not intense, appears dark in most subspecies when viewed from above; sex brand very large, from radius to vein 1A+2A, centred between submedian and median lines of wing, with fairly sharply defined margins.

GROUP B (albiplaga) (two species: Figs. **4** to **6**)

Medium to broad dark brown margins; translucent mauve area of wing fairly shining but not intense, appears dark when viewed from above; sex brand medium to large, from radius to just below vein CuA_2 but normally extends to 1A+2A, centred between subbasal and median lines of wing, very diffuse in appearance (extremely so in *albiplaga*).

GROUP C (mala) (three species: Figs. **7**, **8**)

Narrow to medium dark brown margins; translucent mauve area of wing fairly shining

but not intense; sex brand small to medium sized, from radius to just below vein CuA_2 (but touches 1A+2A in some individuals of one species), centred between subbasal/submedian and median lines of wing, with fairly sharply defined margins.

GROUP D (arfakiana) (two species: Fig. 9)
Medium dark brown margins; translucent mauve area of wing intense, shining; sex brand small and well rounded, from radius to above vein CuA_2, centred between subbasal/submedian and median lines of wing, intensely black when viewed from above, with sharply defined margins.

In this study, the sex brand together with the general shape of the valva of the male, and in some cases the pattern of the underside, have been used in deciding and defining species. In addition, some emphasis has been placed on the geographical positions of populations in relation to each other. Where populations exhibit sufficiently distinctive and consistent differences in other characters, such as the extent and hue of the mauve of the forewing and brown margins of the hindwing, these differences are used to define subspecies; except where there is obvious sympatry of taxa with similar facies, then these have been given specific rank as a matter of course. It may, however, be found necessary in the future to revise the status of some subspecies described here. As all *Callictita* are extremely similar, detailed descriptions of new taxa are unnecessary. They are best described, therefore, in comparison with previously described species. All *Callictita* males conform to the following basic description:

Antenna dark brown, shaft ventrally with white at base of each segment, front of club densely covered with much smaller, nearly black, scales (more often than not this area of scales collapses as the antennae dry and forms a spoon-shaped depression seen in the club of many specimens); head dark brown, white adjacent to eye margins, frons with a white median line; palpi dark brown, ventrally white; thorax dark brown, ventrally with long creamy-white hair scales; abdomen dark brown, laterally segments fringed with white, ventrally paler brown; legs dark brown, ventrally creamy-white, proximal tarsal segments ringed with white. Forewing costa and termen convex; upperside iridescent mauve, termen dark brown, androconial scales form a rounded, approximately central, large or small sex brand; underside white with four broad dark brown bands along terminal, postmedian, submedian and basal lines of wing. Hindwing costa and termen convex, a short (c. 1.5 mm) dark brown tail at tornus from vein CuA_2, tipped with white cilia; upperside with a large or small central area of white, ringed by broad dark brown margins (or wholly dark in some species and with two or three diffuse white tornal spots in *C. cyara cyara*); underside costa and central area white, base, inner margin and termen broadly dark brown, costa with a large dark brown median spot or short band (two in *albiplaga* and *arfakiana*), tornus with two black spots ringed with iridescent pale blue, between veins 1A+2A and CuA_1, sometimes a vestigial spot of mainly iridescent blue between veins CuA_1 and M_3. Cilia of both wings dark brown, prominently white between veins of hindwing, less so on forewing.

Key to species and subspecies of Callictita males

1. Forewing inner margin brown 2
1a. Forewing inner margin not brown 3
2. Brown hindwing margin upperside tornally with 2 or 3 diffuse, but distinct, white spots and a diffuse pale blue spot between veins CuA_1 and CuA_2. Eastern Highlands Province, PNG, and eastwards ..... *C. cyara cyara*
2a. Brown hindwing margin upperside usually without tornal white or blue spots but, if present, then extremely diffuse. Victor Emanuel Range, Western Province, PNG ..... *C. cyara cyelsa*
3. Sex brand diffuse at margins (Figs. 4 to 6) 4
3a. Sex brand clearly defined at margins (Figs. 7 to 9) 7
4. Sex brand extremely diffuse (Fig. 6). Wandammen Mts; western Irian Jaya ..... *C. albiplaga*

4a. Sex brand fairly prominent (Figs. **4, 5**) 5
5. Sex brand 5.0 mm in height (Fig. **5**). Star Mts; eastern Irian Jaya to Victor Emanuel Range, western PNG ..... *C. lara kina*
5a. Sex brand 4.0 mm in height (Fig. **4**) 6
6. Brown forewing margin upperside narrow (0.75-1.0 mm). Eastern PNG ..... *C. lara lara*
6a. Brown forewing margin upperside moderately broad (2.0 mm). Weyland Mts; western Irian Jaya ..... *C. lara ronda*
7. Hindwing underside with uniformally dark brown margin and inner margin (to wing base), inner edges of which are fairly regular 8
7a. Hindwing underside with non-uniform dark brown margin and inner margin (to wing base), spotted irregularly with white and often with very irregular inner edges 9
8. Sex brand irregular, extends below vein CuA_2 (Fig. **8**). Weyland Mts; western Irian Jaya ..... *C. felgara*
8a. Sex brand well rounded, not extended below vein CuA_2 (Fig. **9**). Victor Emanuel Range, Western Province, PNG ..... *C. tifala*
9. Sex brand large, extends below vein CuA_2 (Fig. **3**). Central highlands area, PNG ..... *C. cyara cyabla*
9a. Sex brand small, not extended below vein CuA_2 (Figs. **7, 9**) 10
10. Hindwing underside with two short brown costal bands on the subbasal and postmedian lines of wing. Arfak Mts; western Irian Jaya ..... *C. arfakiana*
10a. Hindwing with single brown costal spot (or short band) on the median line of wing 11
11. Hindwing upperside white patch heavilly suffused with brown and sometimes completely obscured ..... *C. jola*
11a. Hindwing white patch not suffused with brown ..... *C. mala*

Callictita Bethune-Baker, 1908: 118
Type species: *Callictita cyara* Bethune-Baker, 1908: 119 (by monotypy).

Fruhstorfer, 1923: 891.
Wind & Clench, 1947: 57.
Eliot, 1973: 445.
D'Abrera, 1978 (1977): 379.

Species group A: *cyara* (one species)

The three subspecies of *C. cyara* are best treated sequentially from east to west. This arrangement is similarly followed in the listing of material examined. Some clinal aspects of variation become evident in series arranged in this manner which helps to clarify the overall extent of variation in this species. *C. cyara* is identified, throughout its range, by Group A character states (Figs. **2, 3**) of the forewing described above.

Callictita cyara Bethune-Baker, 1908

(Figs. **2, 10-13, 55-58**)

Callictita cyara Bethune-Baker, 1980: 119, pl. 18, fig. 1 ♂.
Callictita cyara Fruhstorfer, 1923: 891, pl. 145k ♂.
Callictita cyara cyara Wind & Clench, 1947: 58.
Callictita cyara cyara D'Abrera, 1978 (1977): 379, fig. p 378 ♂.

Diagnosis
The mauve area of the male forewing upperside is characterised by reduced mauve scaling (Fig. **2**) so that the dark brown margins are very broad. The mauve area runs closely under the sex brand from vein CuA_1, and there is a distinct 'notch' of dark brown in the subbasal

region of the inner margin. The mauve area does not continue below vein 1A+2A. The hindwing upperside of eastern populations characteristically has a fairly narrow dark brown margin (1.5 mm), narrower than in all other *Callictita* species, but in western populations the margin is 2.0 mm broad. In the tornal region the margin usually has two or three diffuse white spots with a very pale blue spot between veins CuA_1 and CuA_2. The female of this subspecies is unknown.

Material examined - 42 ♂. *Holotype* ♂, OWGARRA, B.N. GUINEA, A.S. Meek. (BMNH Genitalia slide No. R. 1954 N.H.B. 1147); *paratypes* 7 ♂, Angabunga R., affl. of St Joseph R., Brit. N. Guinea, 6000 ft. upwards. Nov. 04-Febr. 05 (A.S. Meek). (Two with BMNH genitalia slide Nos. G.E.T. 1964-11 and G.E.T. 1964-12); 3 ♂, Biagi, Mambare R., 5000 ft., B.N.G. April 06 (A.S. Meek). (One with genitalia vial No. BMNH (v) 1005), in BMNH; 1 ♂, NEW GUINEA, Tapini, Loloipa River Bridge Camp. 2200 ft. 25 Nov. 1957 - 15 Feb. 1958, W.W. Brandt., in ANIC; 1 ♂, N. GUINEA, Matsialavava, 22. vi. 1964, S. & L. Steinhauser., in AME; 9 ♂, NEW GUINEA, Kodama Range, Mt. Kaindi, 4500 ft; (various dates between Nov. 16 1951 and Feb. 15 1952) Collected by Wm. Brandt, Sir Edward Hallstrom., in ANIC; 2 ♂, PAPUA NEW GUINEA, MOROBE PROVINCE, WAU, MT. KAINDI, 1200m, 13-VIII-1963, J. Sedlacek., 1 ♂ with same label data but instead 1460m, 23 AUG. 1963, 2 ♂, PAPUA NEW GUINEA, MOROBE PROVINCE, 4 km S.W. Wau (S. summit Mt. Kaindi) 2000m, 9 Feb. 1975, J. Linsley Gressitt, in BBMH; 1 ♂, Papua New Guinea, Morobe Province, Wau, Jan. 1976 coll. G. Wood; 1 ♂, 26 xii 1970 Wau, NG. (Genitalia vial No. AS 224); 1 ♂, PAPUA NEW GUINEA, Eastern H'lands, Aiyura, 1600m, 25 Dec. 1976, T. Fenner. (Genitalia vial No. KONE MJP 024); 2 ♂, Papua New Guinea, E.H.P. Aiyura, 1600m, 25 Dec. 1976. Coll. T. Fenner., 1 ♂, PAPUA N. GUINEA, Eastern H'lands, Okapa Rd. 1900m, 27 Dec. 1976, T. Fenner., 1 ♂, PAPUA N. GUINEA, Eastern H'lands, lufa Rd., 1890m, 28 Dec. 1976, T. Fenner., 1 ♂, Frigano, EHP. PNG. 26 June 1976, D.P. Sands. 2200m. (Genitalia vial No. KONE MJP 023); 2 ♂, PAPUA NEW GUINEA, Chimbu Prov., Kerowagi area abt. 2000m, Mar. 1978 per P. Clark. (One with genitalia vial No. KONE MJP 025), in KONE; 5 ♂, BRIT. N. GUINEA, 26. ii. 1933., in AME.

Comments

The assertion by Wind and Clench (1947: 59), that Bethune-Baker erroneously sexed his type series of *cyara* as males is incorrect: the holotype is indeed a male, so that their claim to be describing the male for the first time is also incorrect. All of the specimens, detailed above, from south-eastern PNG, between Biagi and Mt. Kaindi (Fig. 1) are typically *cyara* in appearance (Figs. **55, 56**). Although specimens of *cyara cyara* from further north west in the Chimbu and Eastern Highlands Provinces (all in KONE, see above), are very similar to those of the eastern-most populations (Figs. **57, 58**), the mauve area of the forewing of these specimens is slightly more extensive distally, and the dark brown hindwing margins are broader (2.0 mm), so that the white central area of the hindwing is more reduced. The dark brown of the costal area of the hindwing upperside often extends down to vein M_1, and the white (and blue) spots of the tornal region are very suffused and almost absent. Although these differences are consistent I consider them to be too slight to merit a separate subspecific name for the populations in the Eastern Highlands and Chimbu Province area. Of the data given above, only Matsialavava and Frigano are not shown on the map in figure 1. These are, however, respectively a coffee plantation 5 to 6 miles outside of Tapini, at a higher elevation (S. Steinhauser pers. comm.), and a village near Lufa (T. Fenner pers. comm.). As explained in the comments section of the following subspecies, it is very likely that the *cyara cyara* specimens labelled as coming from the Kerowagi area were, in fact, probably collected in the Lufa region.

Callictita cyara cyabla new subspecies

(Figs. **14-19, 59-66**)

Diagnosis

The mauve area of the male forewing upperside is more extensive and somewhat brighter than that of *cyara cyara*. Tornally it does not run closely under the sex brand but follows a smooth curve between it and the margin, and there is no distinct 'notch' of dark brown in the subbasal region of the mauve. The mauve continues below vein 1A+2A along the inner margin. The dark brown marginal band of the hindwing upperside is distinctly broader than that of *cyara cyara*, ranging from 2.5-3.0 mm in width, and there is a corresponding broadening of the brown markings underside. The central white patch of the hindwing upperside is of a slightly more creamy white than that of *cyara cyara*.

The female (Figs. **61, 62**) is similar to the male but lacks the forewing sex brand and has only a suffusion of mauve scales subbasally so that the brown bands of the underside show through by transparency. The brown marking of the underside are paler but slightly more extensive than those of the male.

Types - 20 ♂, 2 ♀. *Holotype* ♂ (ANIC Type Reg. No. 2378), NEW GUINEA, Nondugl (Central Highlands) 5500 ft. November 22 1950. Collected by Wm. Brandt, E.J.L. Hallstrom.; *allotype* ♀ with same label data but October 20; *paratypes* 5 ♂, 1 ♀ with same label data but ♂ respectively with October 2, October 3, October 21 (genitalia vial No. ANIC MJP 078), November 5, November 10 (genitalia vial No. ANIC MJP 077), and ♀ November 20, all in ANIC; 2 ♂, Papua N. Guinea, West. Highl. Prov., Hagen Ra. abt. 2000 m, 29.9. 1977 Coll. T. Fenner. (Genitalia vial No. KONE MJP 026); 3 ♂, Papua N. Guinea, West. Highl. Prov., Hagen Ra. 2300 m, 7 Oct. 1977 B. Thistleton, in KONE; 3 ♂, NEW GUINEA, Western Highlands, Kandep, 8000-8500 ft. 23.12.1962, W.W. Brandt. (One with genitalia vial No. ANIC MJP 079), in ANIC; 3 ♂, PAPUA NEW GUINEA, SOUTHERN HIGHLANDS PROVINCE, DIMIFA VILLAGE, VIA MENDI, 10-10-1958, J.L. Gressitt. (One with genitalia vial No. BBMH MJP 003), in BBMH; 2 ♂, Papua New Guinea, South. Highl. Prov., Pori Vall., 1750 m, 8th. Nov. 1979, Coll. R. Campbell. (One with genitalia vial No. KONE MJP 014), in KONE; 1 ♂, PAPUA NEW GUINEA, SOUTHERN HIGHLANDS PROVINCE, BETEGE (20 km N.W. of Koroba), 1650m, 24-IX-1963, R. Straatman., in BBMH.

Comments

The holotype male (Figs. **59, 60**), and most of the other males of the series from Nondugl (Chimbu Province, PNG), show little of the central white patch of the hindwing upperside because this is heavily suffused with dark brown scales in most specimens. An even darker specimen, which completely lacks any white on its hindwing upperside, is the paratype male with the above mentioned Hagen Range data (Figs. **65, 66**). This specimen is also so heavily marked on the underside that it probably represents an aberration of *cyabla*. Although the suffused hindwing upperside is a feature of the Nondugl population, there are certain specimens which have the clear white of those from elsewhere. For example, one of the Nondugl males (with genitalia label: ANIC MJP 078), closely resembles a male from Kandep (with genitalia label: ANIC MJP 079).

The abrupt transition from *cyara* to *cyabla* takes place over a distance of little more than about 10 km between Kerowagi and Nondugl in the Chimbu Province (PNG). However, the two specimens of *cyara* with label data that state they are from the "Kerowagi area" are more likely, in fact, to have originated in the Lufa area (Eastern Highlands Province, PNG). They were received by the Insect Farming and Trading Agency before being sent for placement in the Konedobu Collection, and the accuracy of their particular data is questionable. In appearance they are exactly like the Okapa/Aiyura (Eastern Highlands Province) specimens which would mean that a distance of at least 60 km in fact separates *cyara* from *cyabla*, according to present records.

Callictita cyara cyelsa new subspecies

(Figs. **3, 20-22, 67-70**)

Diagnosis

The mauve area of the forewing upperside is of the same general shape as that of *cyara cyara* (not reaching the inner margin below vein 1A+2A and with the subbasal 'notch'). The mauve scaling of *cyelsa* is, however, paler and more transluscent. It is even more restricted distally and is only slightly wider than the sex brand. In some specimens (e.g. the holotype Fig. **67**), the sex brand is notably broader than in the two preceding subspecies. The central white patch of the hindwing upperside is generally larger than that of western populations of *cyabla* and is usually characterised by a well defined zigzagged inner edge to the dark brown margin which is usually somewhat narrower than that of *cyabla* and averages 2.0 mm in width. The female of this subspecies is unknown.

Types - 15 ♂. *Holotype* ♂, PAPUA NEW GUINEA, WEST SEPIK PROVINCE, TIFALMIN, 1400m, 21-8-1963, R. Straatman.; *paratypes* 3 ♂ with same label data but one with 20-8-1963 (genitalia vial No. BBMH MJP 010), and one with 1450m (genitalia vial No. BBMH MJP 011); 3 ♂, with same label data but Telefomin (replaces Tifalmin), two with 1600m and 1700m respectively, both 5-VIII-1963, the other with 1600m, 15-8-1963; 1 ♂, with same label data but Feramin (replaces Tifalmin), 1450m, 30-VIII-1963, in BBMH; 1 ♂, NEW GUINEA, Telefomin (Feramin) 4700 ft. 2 May - 18 June, 1959, W.W. Brandt., in ANIC; 5 ♂, Mandated New Guinea, Tifalmin, Straatman, with the following dates or altitudes: two 21 Aug. 1963, one 2 Aug. 1963, 1400m, two 20 Maart 1963, of which one has 1400m (genitalia vial No. RML MJP 017); 1 ♂, Mandated New Guinea, Telefomin (Sol R.), 15 Aug. 1963, 1300m, Straatm., in RML.

Comments

In appearance *cyelsa* represents a slight reversion to that of *cyara cyara*, especially in the character states of its forewing upperside. Its hindwing upperside is, however, more like that of *cyabla*. Some specimens of *cyelsa* also exhibit a slight indication of the tornal spots of the *cyara* hindwing upperside, especially the very pale blue spot. The single specimen of *cyelsa* collected by Brandt at Feramin exhibits a somewhat suffused hindwing upperside which resembles the same feature in the Nondugl population of *cyabla* males. To date *cyelsa* is known only from the immediate area around Telefomin in the West Sepik Province (PNG).

It should be mentioned here that there are two specimens that resemble *cyara cyara* in the BBMH from the Sibil Valley of the Star Mountains in Irian Jaya (i.e. approximately 100 km west of the westernmost locality of *C. cyara* in PNG, the Telefomin area subspecies *cyelsa*). These are closest in appearance (Figs. **71, 72**), especially in the hindwing upperside, to *cyara cyara* from the Aiyura area in the Eastern Highlands Province of PNG. The specimens, however, have the *cyabla*-like character state of the mauve scaling of the forewing extending along the inner margin. They also lack the subbasal dark brown 'notch.' These specimens either represent an additional subspecies of *cyara* or a distinct species. They will require a name at one of these levels when more material from this population becomes available. The valva of the male genitalia (with its acutely curved apex of the distal margin which bears longer, more widely spaced teeth than in *cyara*: Fig. **23**), suggests that the Sibil Valley specimens warrant species rank.

Species group B: *albiplaga* (two species)

Several points of confusion were introduced in the short study of *Callictita* by Wind and Clench (1947), most of them referring to the *albiplaga* species group. This was partly due to the fact that the authors (as they admitted) did not see specimens of this taxon. For example, they were obviously not aware of the differences in the uppersides of *cyara* and *albiplaga*, and they state that *albiplaga* differs from *arfakiana* in (amongst other features) the single, isolated, dark brown spot on the hindwing costa underside (rather than two, as in *arfakiana*). However, *albiplaga* can, in fact, have the dark brown subbasal 'spot' (band) well separated from the dark brown basal region of the wing, which gives it a somewhat *arfakiana*-like appearance. Certainly *arfakiana* is not always smaller than *cyara* or *albiplaga* as Wind and Clench state. D'Abrera (1978), in error, probably following

Jordan (1930), stated that *albiplaga* was from Edie Creek, a locality that is very near to Mt. Kaindi in the Morobe Province of PNG (Fig. 1).

Again, the best approach to describing material that belongs to the *albiplaga* species group is in a geographical sequence (running east to west) as, in common with *cyara*, certain very similar aspects of clinal variation become evident. Members of this species group can be identified by their possession of the Group B character states (Figs. 4 to 6) of their forewing upperside as outlined above.

Callictita lara new species

This appears to be the most widespread species of its genus. Its presently known range is from Mt. Kaindi in the Morobe Province of PNG as far westwards as the Weyland Mountains of Irian Jaya. There are three distinctive subspecies of *C. lara* as follows:

Callictita lara lara new subspecies

(Figs. 4, 24-31, 73-82)

Diagnosis

The mauve area of the forewing upperside is fairly bright. It is extensive so that the dark brown margin varies between only 0.75-1.0 mm wide. The sex brand (Fig. 4), is diffuse but is fairly well defined at its margins. The dark brown margin of the hindwing upperside is variable in width but is always broad (2.0-5.0 mm, measured tornally). This narrows the central white patch to a medium sized or quite small spot. The female (Figs. 75, 76, 81, 82) is similar to the male but differs from it in the same way as in *cyabla.*

Types - 56 ♂, 2 ♀. *Holotype* ♂ (ANIC Type Reg. No. 2379), NEW GUINEA, Kodama Range, Mt. Kaindi, 4500 ft. Nov. 25 1951. Collected by Wm. Brandt, Sir Edward Hallstrom., in ANIC; *allotype* ♀, Edie Creek, Westside of Herzog Mts., 6100 ft., early 1928 (A.F. Eichhorn).; *paratypes* 5 ♂, with same label data (one with genitalia vial No. BMNH (v) 1007 and three with BMNH slide Nos. G.E.T. 1964-27, 32, 33), in BMNH; 8 ♂ with same label data as holotype but various dates between Nov. 27 1951 and Febr. 4 1952, in ANIC; 2 ♂, NEW GUINEA: NE: Wau, 1200m, 14.VIII - 8.IX.1961, Malaise Trap, J. Sedlacek, Coll. Bishop Museum.; 1 ♂, PAPUA NEW GUINEA, MOROBE PROVINCE, WAU, MT. KAINDI, NAMI CREEK, 1670m, 22 Aug. 1963, J. Sedlacek.; 1 ♂, PAPUA NEW GUINEA, MOROBE PROVINCE, WAU, MT. KAINDI, KUNAI CREEK, 1250m, 2 - 13-IX-1966, G.H. Sedlacek. (Genitalia vial No. BBMH MJP 004); 2 ♂ with same label data but 1460m, 23 AUG. 1963, J. Sedlacek.; 1 ♂, PAPUA NEW GUINEA, MOROBE PROVINCE, WAU, MT. KAINDI, 1200-1500m, VII-1961, G.H. Sedlacek.; 1 ♂ with same label data but 1200m, 25-VII-1961 and Malaise Trap.; 1 ♂, PAPUA NEW GUINEA, MOROBE PROVINCE, WAU, MT. KAINDI, 1200m, 11-VIII-1961, J. Sedlacek.; 4 ♂ with same label data but 3 with 13-VIII-1963 and one with 2000m, 10-XI-1974, J.L. Gressitt., in BBMH; 2 ♂, PAPUA N. GUINEA, Wau, Mt. Kaindi, Nami Ck., 1480m, 4 Apr. 1977, coll. T. Fenner. (One with genitalia vial No. KONE MJP 019); 1 ♂, PAPUA NEW GUINEA, Mt. Kaindi, Kunai Ck., 9.v.1974, S. & T. Fenner. (Genitalia vial No. KONE MJP 018); 2 ♂, Papua New Guinea, Morobe Province, Wau, Jan. 1976, coll. G. Wood., in KONE; 4 ♂, BRIT. N. GUINEA, Wau (various dates: two with 29.i., one 15.ii., one 16.ii.) 1933.; 1 ♂, N. GUINEA: PAPUA, WAU, 1400m, 12-iii-1970, R. Straatman.; 1 ♂, N. Guinea, Wau, 1200m, prim. forest, ii. 1968, Ch. Monier., in AME; 1 ♂, Buntibasa dist., N. Guinea, Krakte Mts, 4,000-5000', June 1932. (F. Shaw Meyer). (BMNH slide No. G.E.T. 1964-28)., in BMNH; 4 ♂, Papua New Guinea, E.H.P., Aiyura, 25 Dec. 1976, Coll. T. Fenner. (One with genitalia vial No. KONE MJP 022); 1 ♂, Frigano. EHP. PNG. 24 April 1976. D.P. Sands. 2200m; 2 ♂, Papua New Guinea, Simbu Province, Karimui BN58, January 1980 per M. Parsons.; 2 ♂, Papua N. Guinea, East. Highl. Distr. Goroka area, leg. R. straatman., in KONE; 7 ♂, 1 ♀, NEW GUINEA, Nondugl (Central Highlands), 5500 ft. (various dates between November 10 1950 and December 10 1950). Collected by Wm. Brandt, E.J.L. Hallstrom. (Two with genitalia vial Nos. ANIC MJP

080 and 081); 1 ♂, NEW GUINEA, Western Highlands, Jimi River, 4700 ft. 16.7 - 21.9.1961, W.W. Brandt. (Genitalia vial No. ANIC MJP 083), in KONE.

Comments

The female chosen here to be the *lara lara* allotype was figured by D'Abrera (1978) as *C. cyara albiplaga*. This specimen (from Edie Creek on Mt. Kaindi - Fig. 1), and five paratype males with the same data, were incorrectly stated to be *C. albiplaga* by Jordan (1930). Wind and Clench (1947) noted this error but themselves incorrectly assumed that these specimens represented *C. cyara cyara*. They also referred to *C. cyara cyara* a series of 18 specimens which are supposedly in the Museum of Comparative Zoology, Cornell University, U.S.A. but which, according to J. Liebherr (pers. comm.), cannot now be found. These were collected by Herbert Stevens on Mt. Misim (6000 feet) Morobe District, eastern New Guinea, Jan. - March, 1933. Mt. Misim is about 15 km N.E. of Mt. Kaindi. the specimens almost certainly represent *lara lara*.

From the long series of *C. lara lara* studied it is clear that it is a somewhat variable subspecies, particularly in the size of the central white patch of the hindwing upperside. The extent of the male forewing sex brand is also slightly variable. In some specimens the brand barely extends below vein CuA_2, whereas in others the brand continues to almost touch vein 1A+2A. However, the subspecies typically has a sex brand that is intermediate between these two extremes.

Some east-west clinal variation is noticeable in populations of *lara lara*. For example, males from the Aiyura (Eastern Highlands Province, PNG) and Nondugl (Chimbu Province, PNG) areas (Fig. 1), have slightly broader (1.5 mm) dark brown forewing margins than those of the Mt. Kaindi population (0.75 mm) and the sex brand is moderately more diffuse in appearance at its margins. Nondugl specimens tend to have more consistently narrower dark brown hindwing margins upperside (2.5 mm) with, therefore, a corresponding increase in the size of the central white patch and a narrowing of the dark brown markings of the underside.

Callictita lara kina, new subspecies

(Figs. 5, 32-39, 83-89)

Diagnosis

The mauve area of the forewing upperside appears slightly darker and more translucent than that of *lara lara* and the dark brown margin is consistently as broad (1.5 mm) as that of the westernmost populations of *lara*. The sex brand (Fig. 5) is slightly larger and appears even more diffuse at its margins than that of *lara*. The dark brown margin of the hindwing upperside is extremely variable. The margin width can be 2.5 mm or the central white patch can be completely absent. The female of this subspecies is unknown.

Types - 31 ♂. *Holotype* ♂ (ANIC Type Reg. No. 2380), NEW GUINEA, Telefomin (Feramin) 4700 ft. 2 May - 18 June, 1959, W.W. Brandt.; *paratypes* 2 ♂ with same label data, in ANIC; 1 ♂, PAPUA NEW GUINEA, WEST SEPIK PROVINCE, FERAMIN, 1450 m, 30-VIII-1963, R. Straatman.; 2 ♂ with same label data but respectively 1350m and 1400m, 26-VIII-1963; 2 ♂ with same label data but Telefomin (replaces Feramin) and respectively 1600m, 10-VIII-1963 and 1600m, 5-VIII-1963; 7 ♂, with same label data but Tifalmin (replaces Feramin), and various dates between 4-8-1963 and 21-8-1963; 1 ♂, PAPUA NEW GUINEA, SOUTHERN HIGHLANDS PROVINCE, BETEGE, (20 km N.W. of KOROBA), 1650m, 24-IX-1963, R. Straatman. (Genitalia vial No. BBMH MJP 013); 1 ♂, NETH. NEW GUINEA, STAR MTS: SIBIL VALLEY, 1250m, 19-XI-1961, L. Quate. (Genitalia vial No. BBMH MJP 007); 2 ♂ with same label data but 3-IX-1961, (genitalia vial Nos. BBMH MJP 006 and 008, in BBMH; 1 ♂, Mandated New Guinea, Tifalmin, 1400m, 21 Aug. 1963, Straatman.; 2 ♂ with same label data but 20 Maart 1963, (one with genitalia vial No. RML MJP 015), in RML; 7 ♂, Papua New Guinea, South. Highl. Prov. Pori Vall. 1750m, Nov. 1979, coll. R. Campbell. (Three with genitalia vial Nos. KONE MJP 015, 016 and 017); 2 ♂, Tari area, South. Highl. Dist.

Papua, 29.VII.1971, coll T. Fenner, in KONE.

Comments

From the long series of *kina* studied it is clear that the subspecies is very variable in the extent of dark brown scaling of its hindwing upperside. Tari area (includes Pori, Southern Highlands Province, PNG), specimens do not have the heavy suffusion of the central white patch of the hindwing upperside (Fig. 88) that is a predominant feature in specimens from the Telefomin area (West Sepik Province, PNG) (Fig. 83) and Sibil Valley area (Star Mts; eastern Irian Jaya). Nevertheless, Tari area specimens have a consistently more diffuse margin to the central white patch of the hindwing upperside than the majority of *lara lara* specimens studied. The Telefomin area and Sibil Valley specimens of *kina* exhibit a complete range in their appearance, from specimens with wholly dark hindwing uppersides, through those with somewhat suffused hindwings (which resemble, therefore, Nondugl specimens of *cyabla*), to the clear white centred hindwing of *kina* from the Tari area.

Callictita lara ronda, new subspecies

(Figs. **40-43, 90, 91**)

Diagnosis

The mauve area of the forewing upperside is similar in hue to that of *kina*. It is, however, more reduced than in that subspecies, so that the dark brown margin is very broad (2.0 mm). The sex brand is slightly smaller and less diffuse at its margins than that of *kina*, especially in the series from the type locality. The dark brown margin of the hindwing upperside is somewhat variable in width (2.5-4.0 mm), but the central white patch is not suffused with dark brown so that the hindwing upperside most closely resembles that of the Tari area populations of *kina*. The female of this subspecies is unknown.

Types - 19 ♂. *Holotype* ♂, Neth. Ind.-Amer. New Guinea Exp., Lower Mist Camp, 1450m, 31.I.1939, L. J. Toxopeus leg. (Genitalia vial No. RML MJP 025); *paratypes* 7 ♂ with same label data as holotype but one with 1500m, and all with various dates between 31-I-1939 and 3-III-1939; 1 ♂ with same label data but Rattan Camp (replaces Lower Mist Camp). (Genitalia vial No. RML MJP 018), in RML; 4 ♂, NETH NEW GUINEA, WISSEL LAKES REGION, OBANO to URAPURE, 10-VIII-1955. (One with genitalia vial No. BBMH MJP 009), in BBMH; 5 ♂, 55. 21. Menoo River, 2500-5000 ft., Weyland Mts., Dutch N. Guinea. Nov. & Dec. 1920. C., F., & J. Pratt. (One with genitalia vial No. BMNH (v) 1011, two with BMNH genitalia slide Nos. G.E.T. 1964-17 and 18); 1 ♂ with same label data but Dec. '20 - Jan. '21, in BMNH.

Comments

In its appearance *ronda* represents a slight reversion to the Tari area subspecies *kina*. The distinctive valva of the male genitalia of *ronda* from the type locality in the Snow Mountains of Irian Jaya (with its very pronounced, acutely curved apex of the distal margin which bears long, well defined teeth), implies that it may warrant the rank of a full species. In this case the remainder of the type series of *ronda* (from the Wissel Lakes and Weyland Mountains region, Irian Jaya, may be best referred to *kina*. At present, however, the geographical data, and the clinal nature of the change in the appearance of *C. lara* (from *kina* to *ronda*, moving westwards), do not support this possibility. Therefore, the somewhat distinctive valva of *ronda* from its type locality in the Snow Mountains is, at present, assumed to be a feature of that particular population. The four paratype males (BBMH) with Obano to Urapure (etc.) data were probably collected by Gressitt (1956: 63) who details the "Obano to Ugapuga (Urapura)" area, the route of which crossed two passes at 2080 and 1820 m altitude.

Callictita albiplaga Joicey & Talbot, 1916 **stat. nov.**

(Figs. **6, 44, 92-93**)

Callictita cyara albiplaga Joicey & Talbot, 1916: 80, pl. 7, fig. 5 ♂.
Callictita cyara albiplaga Seitz, 1927: 1114. pl. 147b ♂.
Callictita cyara albiplaga Wind & Clench, 1947: 59.
Callictita cyara albiplaga D'Abrera, 1978 (1977): 379. (Fig. p. 378 ♀ is not *albiplaga*, as stated, but that of *lara lara*).

Diagnosis
The mauve area of the forewing upperside is similar in hue and extent to that of *lara lara*. The sex brand (Fig. **6**) is, however, the most distinctive of all *Callictita* species in that it is extremely diffuse and is hardly visible as the androconial scales are very sparsely distributed. The dark brown margin of the hindwing upperside shows little variation. It is fairly broad (2.5 mm) and most closely resembles that of specimens of *lara kina* from the Tari area (PNG). *C. albiplaga* has two features that are more distinctive than any of the above mentioned taxa. Its hindwing underside (Fig. **93**), like that of *arfakiana*, has two (not one) costal spots (or bands). The valva of its male genitalia (Fig. **44**), instead of having a simple undulating distal margin, has very large, widely-spaced teeth. Also, the dorsal spine at the base of the valva is broad and vestigial, not long and thin. The female of this species is unknown.

Material examined - Holotype ♂ and 6 ♂ *paratypes* Wandammen Mts., 3-4000 ft. D. N. Guinea. Nov. 1914. A.C. & F. Pratt. (One with genitalia vial No. BMNH (v) 1312, two with BMNH genitalia slide Nos. G.E.T. 1964-19 and 20), in BMNH.

Comments
In the degree of differences that *albiplaga* shows from the other members of its genus, it can certainly be classed as a distinctive species. The two most important features of the species were not mentioned in the original description. These are, firstly that the androconial scales of the forewing (Fig. **6**) are very diffuse, giving *albiplaga* an even more indistinct outline of the sex brand than in *C. lara*. Secondly, the valva of the male genitalia (Fig. **44**) is very distinct. It can be postulated, therefore, that *albiplaga* has evolved its distinctive features by isolation in the rather disjunct Wandammen Mountains of western New Guinea. For example, the nearest known population of *Callictita lara* occurs about 120 km to the east southeast in the Weyland Mountains.

Species group C: mala (three species)

This species group is defined as possessing Group C characters (Figs. **7, 8**) of the male forewing upperside. It is a somewhat arbitrary grouping, as the characters of the forewing upperside are arguably somewhat intermediate between those of groups B and D.

Callictita mala, new species

(Figs. **7, 45, 94, 95**)

Diagnosis
The mauve area of the forewing upperside is similar in its extent and hue to that of *lara lara*, so that the dark brown margin is only 1.0 mm wide. The sex brand (Fig. **7**) is quite small and well defined at its margins. The dark brown margins of the hindwing upperside are apparently not variable and measure 2.5 mm in width. In this feature and the general pattern of its underside *mala* closely resembles the Nondugl area specimens of *lara lara*. The female of this species is unknown.

Types - 9 ♂. *Holotype* ♂, Biagi, Mambare R., 5000 ft., B.N.G., Feb. 06. (A.S. Meek).; 8 ♂ *paratypes* with same label data but one dated Jan. 06 and two Mrch. 06 (one with genitalia vial No. BMNH (v) 1010, two with BMNH slide Nos. G.E.T. 1964-21 and 22), in BMNH.

Comments

Although the type series is limited and *mala* is so far only recorded from Biagi in the Northern Province of PNG, it appears to be a much less variable species than, for example, *C. lara*. The characters of the forewing upperside of *mala* are very similar to the following species, with which it is sympatric at Biagi. However, the consistent differences in the facies of the two species (especially in the extent of the dark brown of the hindwings), clearly shows that they belong to separate taxa.

Callictita jola, new species

(Figs. **46-49, 96-101**)

Diagnosis

The mauve area of the forewing upperside resembles that of *mala* but the hue is slightly darker in most specimens and the dark brown margin is slightly narrower (between 0.5-0.75 mm wide). The sex brand is somewhat variable in size, but it is smaller and more diffuse at its margins than in *mala*. The dark brown margin of the hindwing upperside is very broad (3.5 mm). In this respect it resembles the hindwing margins of some of the more heavily marked specimens of *lara lara* from Mt. Kaindi. The central white patch of the hindwing upperside is, however, always heavily suffused with dark brown scales so that, in some specimens, it is obscure, or even completely absent. The female of this species is unknown.

Types - 15 ♂. *Holotype* ♂ (ANIC Type Reg. No. 2381), NEW GUINEA, Tapini, Loloipa River, Bridge Camp, 2200 ft. 25 Nov. 1957 - 15 Feb. 1958, W.W. Brandt.; *paratypes* 1 ♂ with same label data, in ANIC; 3 ♂ PAPUA NEW GUINEA, Tapini area, Giva Ck., 6,VII.1974, 1000m, coll. T. Fenner. (Genitalia vial Nos. KONE MJP 020 and 021); 1 ♂, Papua N. Guinea, Central Province, Fane area, Bebele Ck., 1300m, 23.7.76., in KONE; 1 ♂, Papua: Mondo, 3000 ft. ii. 1934. L.E. Cheesman. B.M. 1934-321.; 2 ♂ with same label data but additionally River Augara (one with genitalia vial No. BMNH (v) 1008, one with BMNH slide No. G.E.T. 1964-23); 2 ♂, Owgarra, north of head of Aroa R., end of May 03. (A.S. Meek). (One with BMNH genitalia slide No. G.E.T. 1964-24); 1 ♂, Aroa R., Brit. N. Guin., 4-5600 ft. May 1905 (A.S. Meek).; 3 ♂, Biagi, Mambare R., 5000 ft., B.N.G., April 06. (A.S. Meek). (One with genitalia vial No. BMNH (v) 1009, two with BMNH slide Nos. G.E.T. 1964-25 and 26), in BMNH.

Comments

The geographical position of *jola* and the markings on both sides of its hindwings suggest that it may eventually be better placed as a further subspecies of *lara*. Like *lara kina* it is characterised by a heavily suffused hindwing upperside. The generally distinct appearance of *jola*, and especially its smaller sex brand, suggest, however, that it merits the full species status that it is given here.

Callictita felgara new species

(Figs. **8, 50, 51, 102, 103**)

Diagnosis

The mauve area of the forewing upperside is of about the same extent as that of westernmost *lara lara* with a dark brown margin of 1.0 mm, increasing to 1.77 mm at

the apex. The hue of the mauve is very similar to that of *mala*. The sex brand of *felgara* (Fig. 8), unlike that in *mala* or *jola*, extends to meet vein 1A+2A but is otherwise well rounded and well defined at its margins. The dark brown margin of the hindwing upperside is fairly broad (2.0-2.5 mm) and the central white patch is well rounded. The holotype (Fig. **102**) has, however, a white hindwing patch that is somewhat more angular than is usual, and this is lightly suffused with dark brown scales. The subbasal brown markings of the underside of both wings are characteristically broad and smoothly outlined. The valva of the male genitalia (Figs. **50, 51**) is very distinctive. The produced apex of the distal margin (which in all of the preceding taxa is somewhat narrow) is extremely broad and is regularly serrated with widely spaced teeth (not with closely arranged, somewhat irregular teeth as in all other *Callictita* species). The distal margin is short and U-shaped and the dorsal spine at the base of the valva is even more vestigial than that of *albiplaga*. The female of this species is unknown.

Types - 10 ♂. *Holotype* ♂, 55. 21. Menoo River, 3500-5000 ft., Weyland Mts., Dutch N. Guinea, Dec. '20 - Jan. '21. C., F., & J. Pratt.; *paratypes* 4 ♂ with same label data but one with Nov. & Dec. 1920 (this with genitalia vial No. BMNH (v) 1006, two with BMNH genitalia slide Nos. G.E.T. 1964-13 and 14), in BMNH; 1 ♂, NETH. NEW GUINEA, ENAVOTALI, 6000', 9-VII-1962, H. Clissold.; 2 ♂, NETH. NEW GUINEA, WISSEL LAKES REGION, OBANO to URAPURE, 10-VIII-1955. (One with genitalia vial No. BBMH MJP 012), in BBMH; 1 ♂, Neth. Ind.-American New Guinea Exped., Ibele Camp 1938, 2200m, 2 xii, L.J. Toxopeus. (Genitalia vial No. RML MJP 019); 1 ♂, W. Nw. Guinea, Wisselmeeren, 20-IX-1938, J.P.K. van Eechoud. (Genitalia vial No. RML MJP 020), in RML.

Comments

The valva of the male genitalia of *felgara* (Figs. **50, 51**), in common with the valvae of *albiplaga* and *arfakiana*, is extremely distinct. Like the latter two species, its morphology (detailed above), can be used to separate *felgara* from all the remaining *Callictita* species as their valvae have broadly truncate, more or less irregularly undulating, distal margins, whereas the valva of *felgara* is narrowly U-shaped distally. In its dark brown markings underside, (especially those of the hindwing: Fig. **103**), *felgara* closely resembles the first described species of the *arfakiana* group (below). The two species differ in all other features, however, so whether this character was derived from an ancestor common to both is uncertain. The two paratype males (BBMH) with Obano to Urapure (etc.) data were probably collected by Gressitt (1956: 63) who details the "Obano to Ugapuga (Urapura)" area, the route of which crossed two passes at 2080 and 1800 m altitude.

Species group D: *arfakiana* (two species)

This species group is defined as possessing Group D character states (Fig. **9**) of the male forewing. Its two members have facies that make them the most distinctive of all known *Callictita* species.

Callictita tifala, new species

(Figs. **52, 53, 104-109**)

Diagnosis

The mauve area of the forewing upperside is intense and brightly iridescent with a fairly broad dark brown margin (usually 1.75-2.0 mm, but as little as 1.25 mm in one male paratype). The sex brand is more sharply defined and intense than any of the preceding taxa. The dark brown margin of the hindwing upperside is fairly variable in width but is always broad (2.5-3.5 mm). The central white patch can, therefore, be fairly large or small. In two paratypes it is lightly suffused with dark brown scales (Fig. **106**). The white patch, distally, has a fairly regularly serrate margin where the white scales follow the veins for a short distance. Underside the pattern of dark brown markings closely resembles

that of *felgara*. The subbasal/inner marginal line of the hindwing is notably broad and smoothly outlined and not mottled with white as in the majority of other species. This is the largest species of its genus, males usually measuring 15/28. The female of this species is unknown.

Types - 17 ♂. *Holotype* ♂ (ANIC Type Reg. No. 2382), NEW GUINEA, Telefomin (Feramin), 4700 ft. 2 May - 18 June, 1959, W.W. Brandt., in ANIC; *paratypes* 1 ♂, PAPUA NEW GUINEA, WEST SEPIK PROVINCE, FERAMIN, 1350m, 26-VIII-1963, R. Straatman.; 1 ♂ with same label data but 1450m, 30-VIII-1963; 1 ♂ with same label data but TELEFOMIN (replaces Feramin), 1700m, 5-VIII-1963; 8 ♂ with same label data but TIFALMIN (replaces Feramin), 1400m, and with dates between 18 and 22-8-1963, in BBMH; 1 ♂, Mandated New Guinea, Telefomin (Sol river), 15 Aug. 1963, 1600m, Straatm.; 1 ♂, Mandated New Guinea, Tifalmin, 20 Aug. 1963, 1400m, Straatm. (Genitalia vial No. RML MJP 016), in RML; 1 ♂, Papua New Guinea, Southern Highl. Prov., Obai Tangi, 45 km from Tari, 29th May 1979, R. Campbell.; 2 ♂, Papua New Guinea, South. Highl. Prov., Pori Vall. 1750m, 8th Nov. 1979, coll. R. Campbell. (One with genitalia vial No. KONE MJP 013), in KONE.

Comments

From a study of the type series of *tifala* it is clear that this is the largest species of its genus. The largest specimens of other species are equal in size to smaller specimens of *tifala* but the species can measure 15/28 and is generally of this much larger size. Although it is one of the most distinctive *Callictita* species the valva of the male genitalia (Figs. **52, 53**) does not differ greatly from those of *cyara* or *lara*, for example.

Callictita arfakiana Wind & Clench, 1947 **stat. nov.**

(Figs. **9, 54, 110, 111**)

Callictita cyara arfakiana Wind & Clench, 1947: 60.
Callictita cyara arfakiana D'Abrera, 1978 (1977): 379, fig. p 378 ♂.
Callictita arfakiana Eliot, 1973: 488, fig. 89 ♂ genitalia.

According to Wind and Clench (1947) the holotype male, labelled Mt. Siwi, Arfak, Dutch New Guinea, 800 meters, May 4, 1928 (Dr. E. Mayr)., and a paratype male with the same label data but dated April-June, 1928, are in the American Museum of Natural History.

Diagnosis

The mauve area of the forewing upperside is intense and brightly iridescent. It shows little variation in extent and the narrow dark brown margin measures approximately 0.75 mm wide. The sex brand (Fig. **9**), like that of *tifala*, is sharply defined and intense, but it is slightly more extended proximally. The dark brown margin of the hindwing upperside is broad (2.5 mm), so that the central white patch is small and well rounded. Like *albiplaga* the hindwing underside bears two (not the usual one) costal spots (bands). The valva of the male genitalia (Fig. **54**) is very distinctive. Unlike any other *Callictita* species it is highly modified and ribbon-like. The distal margin is extremely tapered and the dorsal spine at the base of the valva, like that of *albiplaga*, is vestigial. The female of this species is unknown.

Material examined - 48 ♂, Mt. Siwi, Arfak, 800m., 4 May 1928 (Dr. E. Mayr). (One with genitalia vial No. BMNH (v) 1313, six with BMNH genitalia slide Nos. G.E.T. 1964-15, 16, 29, 30, 31 and 1969-37. GEN. S.J.M.).

Comments

I have not seen the two type males of *arfakiana* but the series of 48 males of this species in the BMNH bears the same label data. All of the specimens are very alike, so *arfakiana* appears to vary little, at least at the type locality.

As Wind and Clench (1947) point out, *arfakiana* is a fairly small species (12/23). Unfortunately they apparently did not study its male genitalia or they would have realized just how distinctive its valva is, compared to those of *cyara* and *albiplaga;* the only other taxa known at that time. The valva of *arfakiana* (Fig. 54) is extremely modified. Unlike all other *Callictita* species, which have expanded, truncate distal margins to their valvae, *arfakiana* has a tapered, ribbon-like distal margin to its valva. It is the westernmost species of its genus and occupies a very isolated position in the Arfak Mountains of Irian Jaya. It is probably for this reason that it has evolved its distinctive characters.

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References

Bethune-Baker, G.T. 1908. Descriptions of butterflies of the Division Rhopalocera from Africa and from New. Guinea. *Proc. Zool. Soc. Lond.* 1908, 110-126, 2 pls.

Common, I.F.B. and D.F. Waterhouse. 1981. *Butterflies of Australia.* Second Edition. Angus & Robertson, Sydney. 682 pp.

D'Abrera, B. 1978 (1977). *Butterflies of the Australian Region.* Second Edition. Lansdowne Editions, Melbourne. 415 pp.

Eliot, J.N. 1973. The higher classification of the Lycaenidae (Lepidoptera): a tentative arrangement. *Bull. Br. Mus. nat. Hist. (Ent).* 28: 373-505, 162 figs., 6 pls.

Fruhstorfer, H. 1923. *In* Seitz, A. *Macrolepidoptera of the World.* 9: The Indo-Australian Rhopalocera (1908-1927). F. Lehmann Verlag, Berlin. 1197 pp., 177 pls.

Gressitt, J.L. 1956. Entomological investigations in New Guinea mountains. *Proc. Hawaiian Ent. Soc.* 16: 47-69, 10 figs.

Joicey, J.J. and G. Talbot. 1916. New Lepidoptera from Dutch New Guinea. *Ann. Mag. nat. Hist.* 17: 68-90, 4 pls.

Jordan, K. 1930. Butterflies of the Herzog Mts., eastern New Guinea. *Proc. Ent. Soc. Lond.* (*Ser. A.*). 5: 56-60, 3 pls.

Parsons, M.J. (In prep.) *Butterflies of Papua New Guinea.*

Toxopeus, L.J. 1940. Nederlandsch-Indisch Amerikaansche Expeditie naar Nederlandsch (3e Archbold-Expeditie naar Nieuw Guinea 1938-'39). Lijst van verzamelstations. *Treubia.* 17: 271-275, 1 fig.

Watson, A. and P.E.S. Walley. 1975. *The Dictionary of Butterflies and Moths in Color.* Exeter Books, New York. 296 pp., 405 pls.

Wind, R.G. and H.K. Clench. 1947. The genus *Callictita* (Lepidoptera, Lycaenidae). *Psyche.* 54: 57-61.

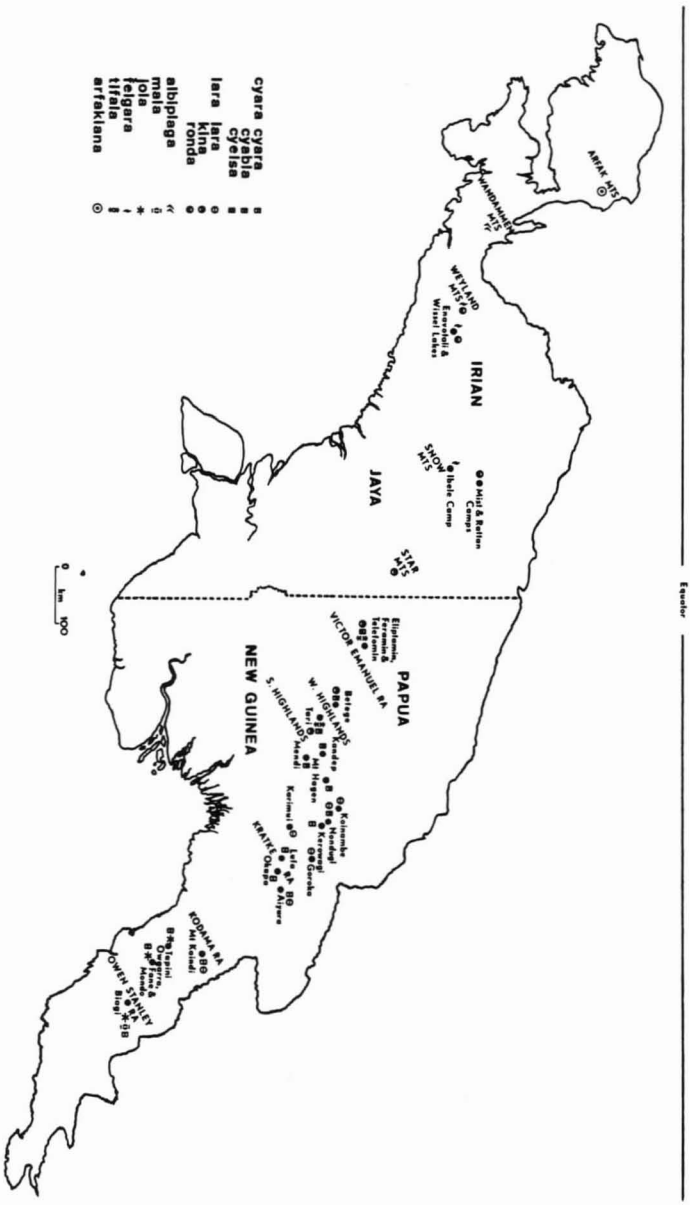
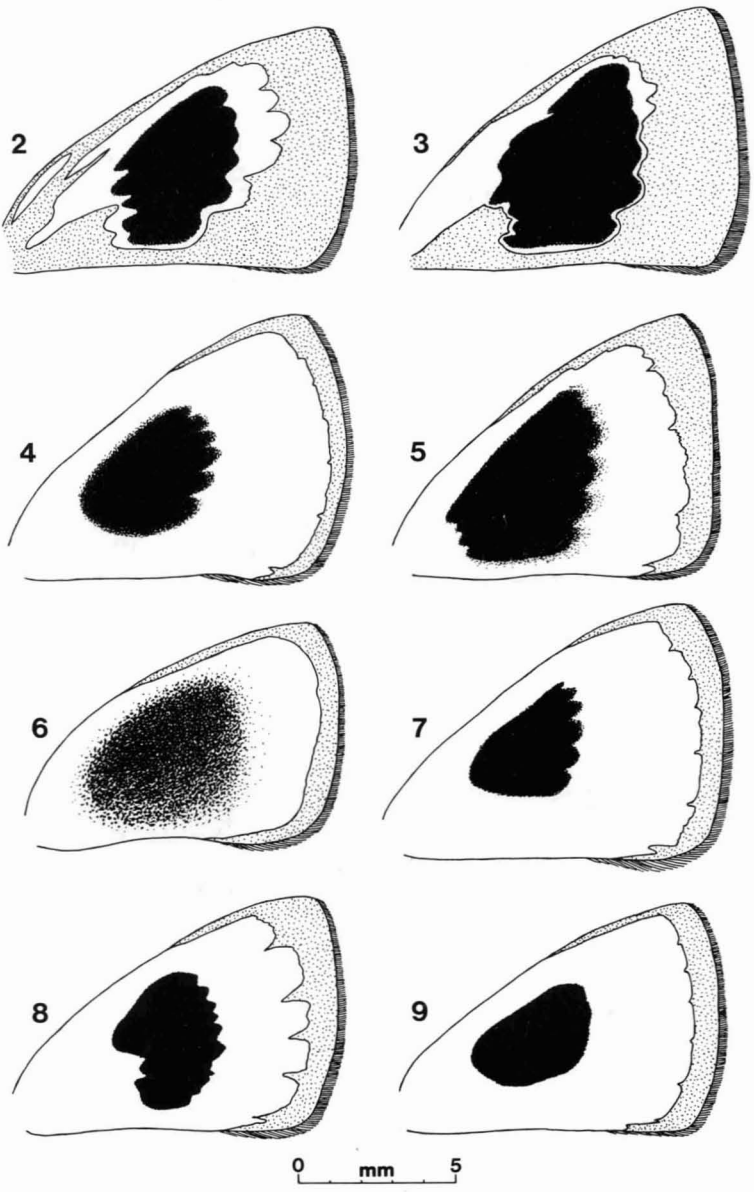


Figure 1. Map of mainland New Guinea (part of Irian Jaya and Papua New Guinea), showing distribution of known locations and mountain ranges where *Callictita* occur.



Figures 2-9. Forewings of *Callictita* males showing extent of mauve areas and sex brands: 2. *cyara cyara.* 3. *cyara cyelsa,* n. ssp. 4. *lara lara,* n. ssp. 5. *lara kina,* n. ssp. 6. *albiplaga.* 7. *mala,* n. sp. 8. *felgara,* n. sp. 9. *arfakiana.*

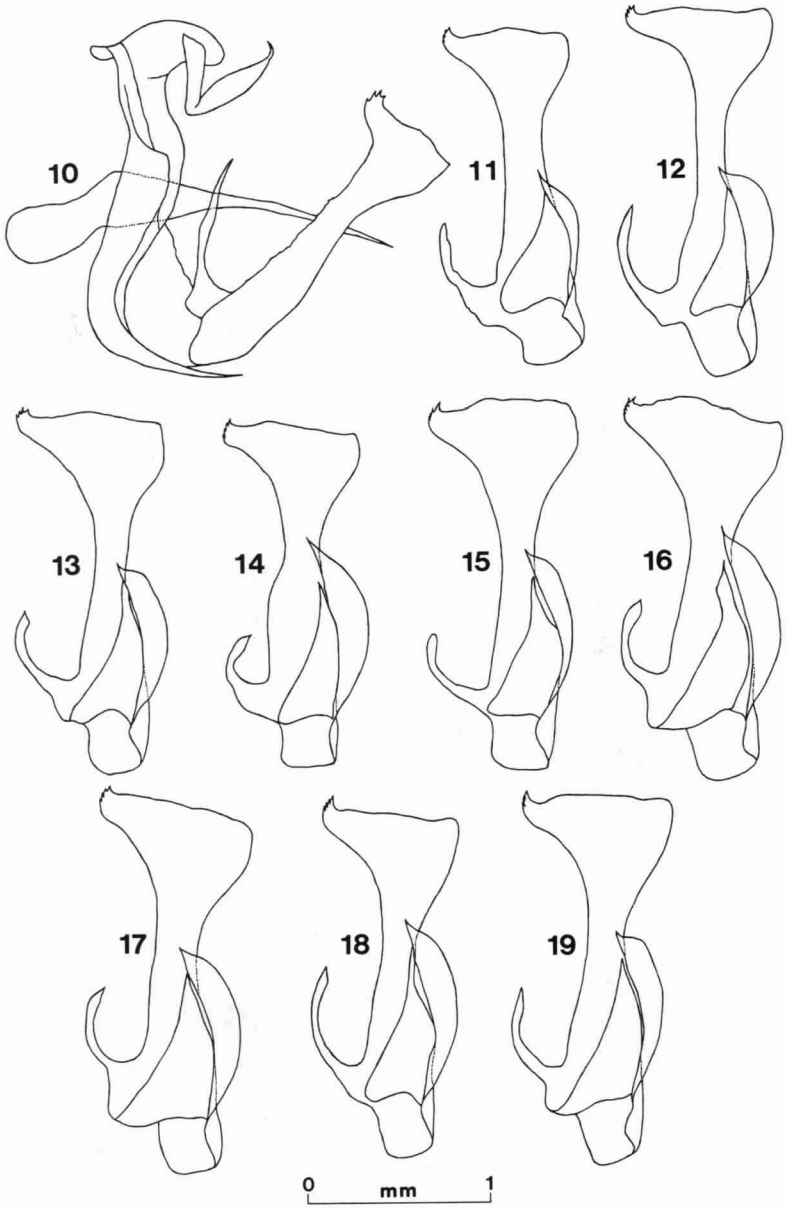
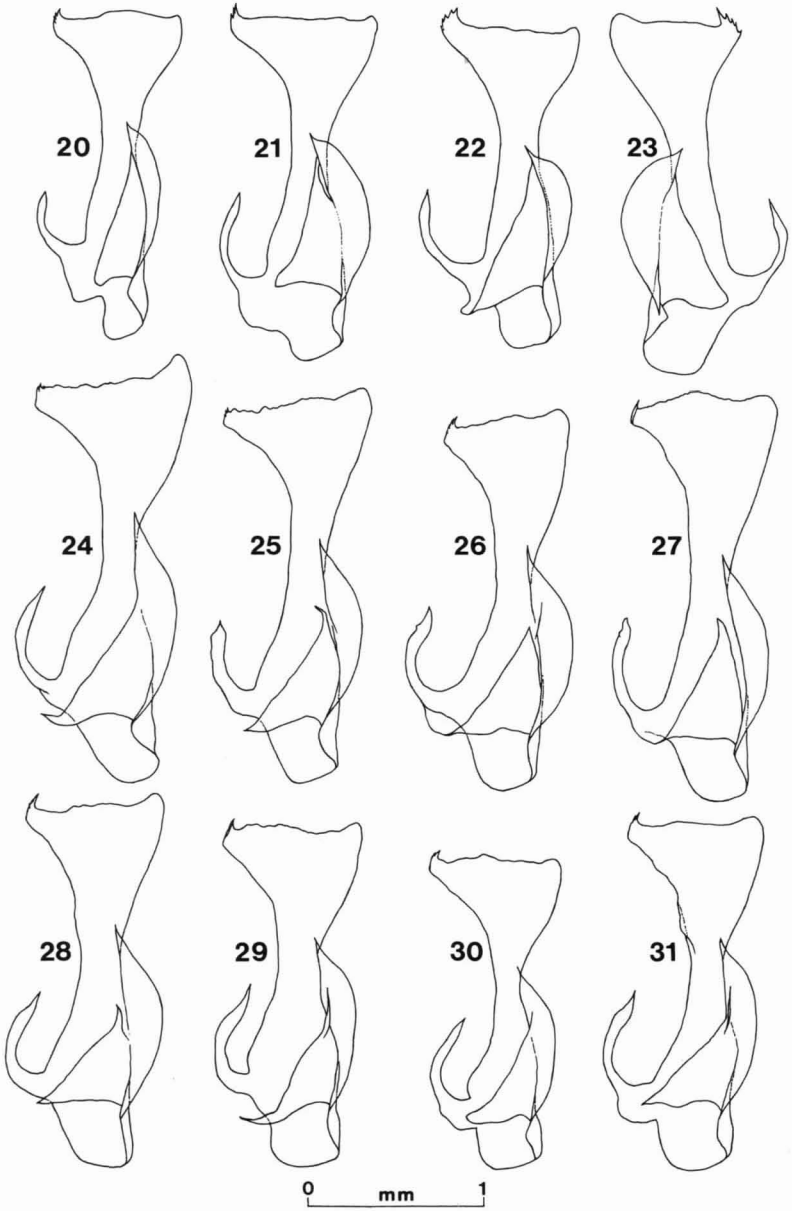
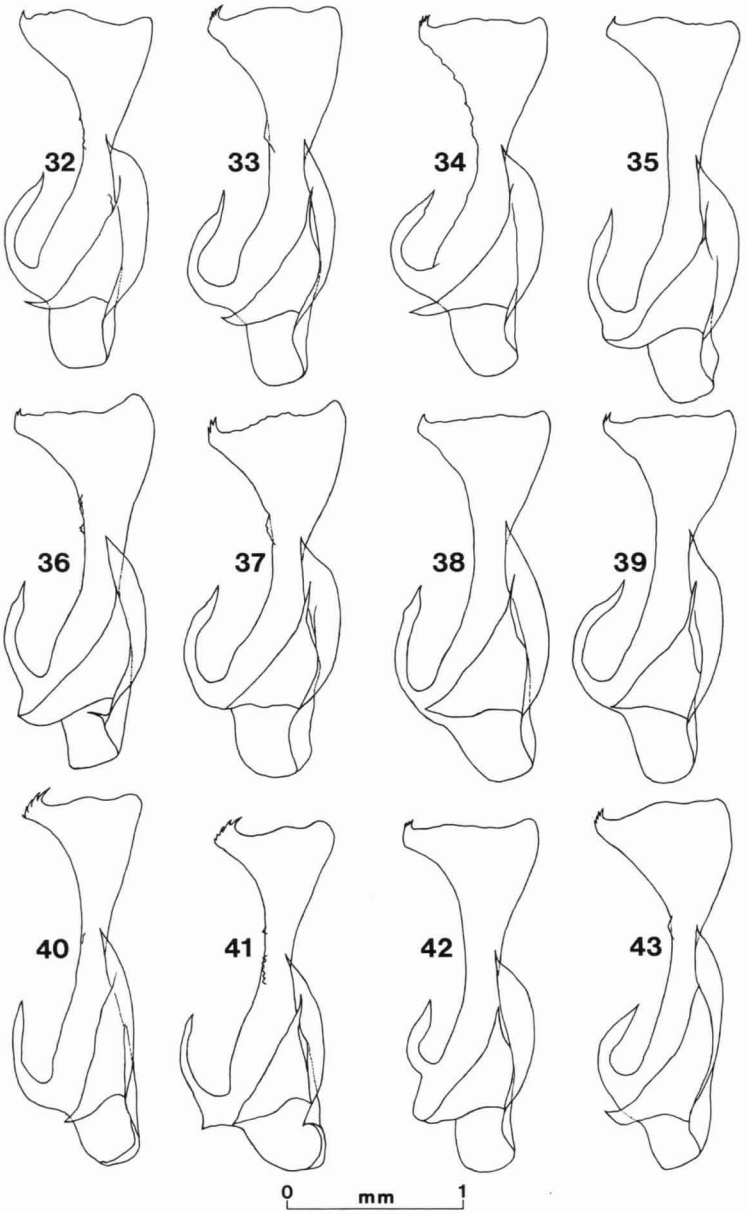


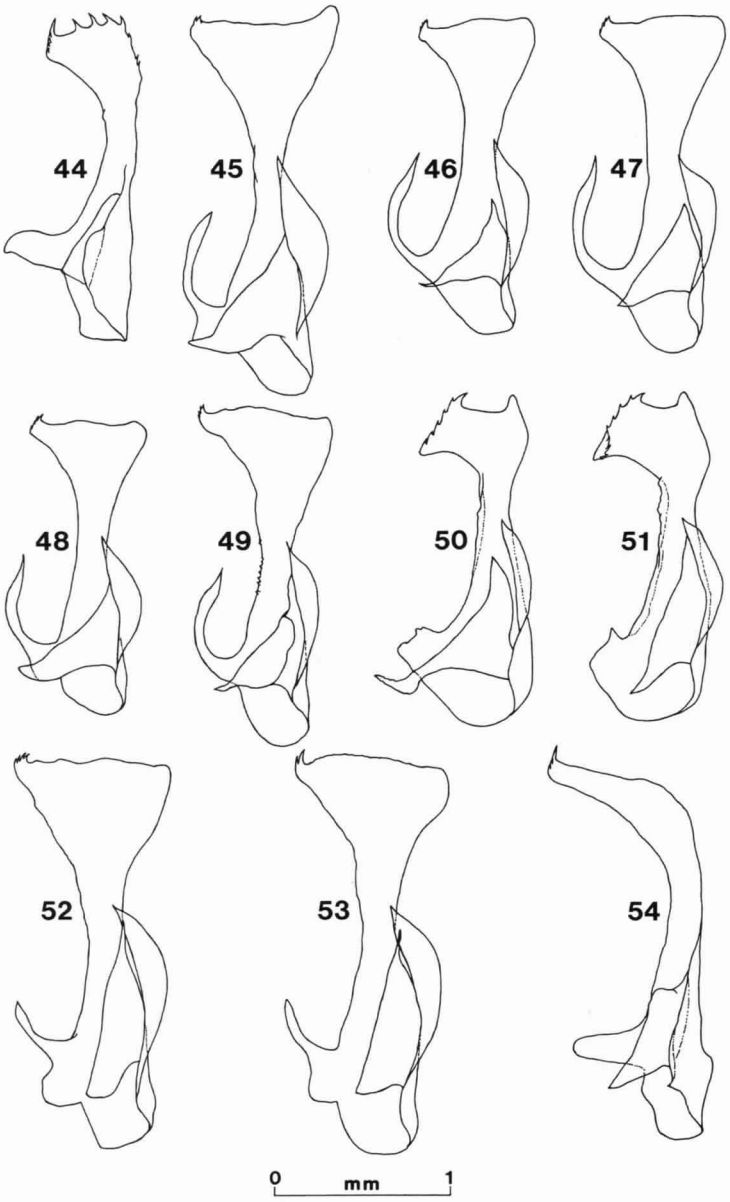
Figure 10. *Callictita cyara cyara* male genitalia, lateral aspect.
Figures 11-19. Right valvae of *Callictita* males: 11-13 *cyara cyara.* 14-19, *cyara cyabla,* n. ssp.



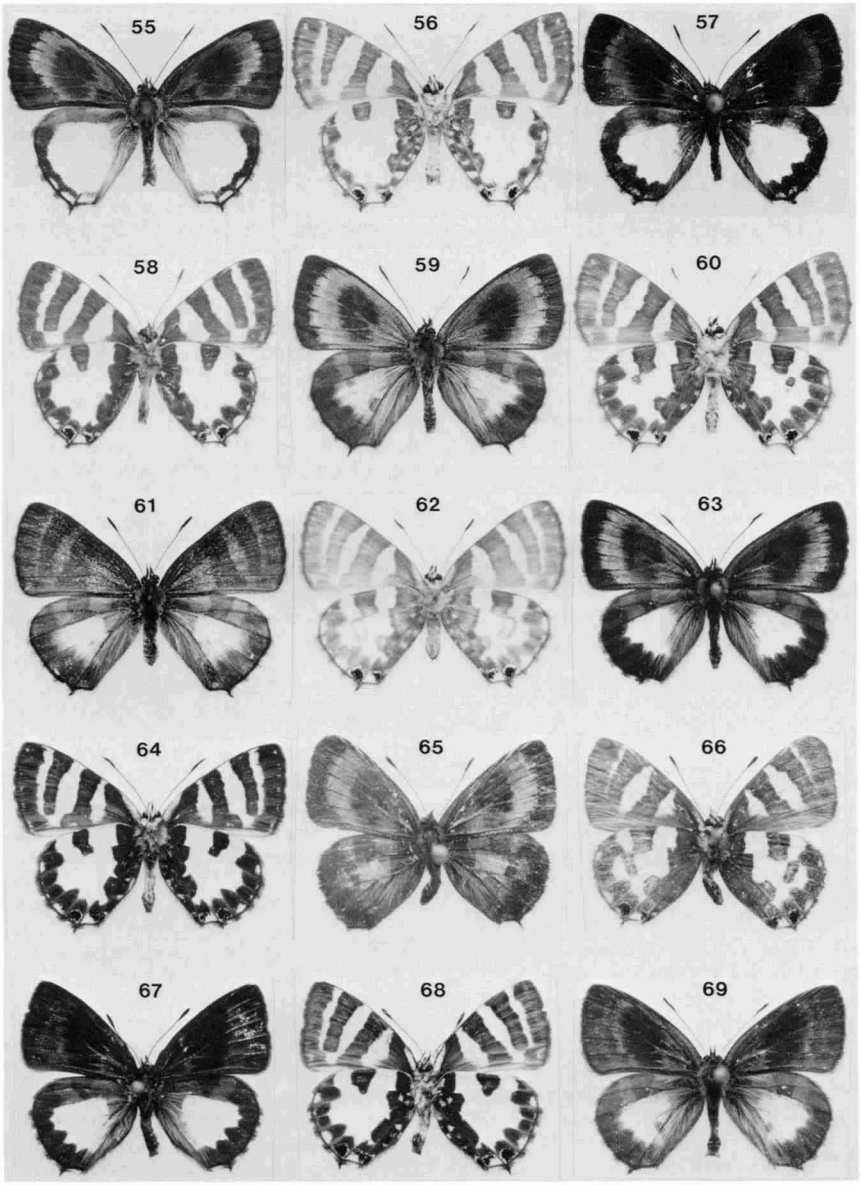
Figures 20-31. Right valvae and one left valva of *Callictita* males: **20-22,** *cyara cyelsa,* n. ssp. **23,** species (right valva). **24-31,** *lara lara,* n. ssp.



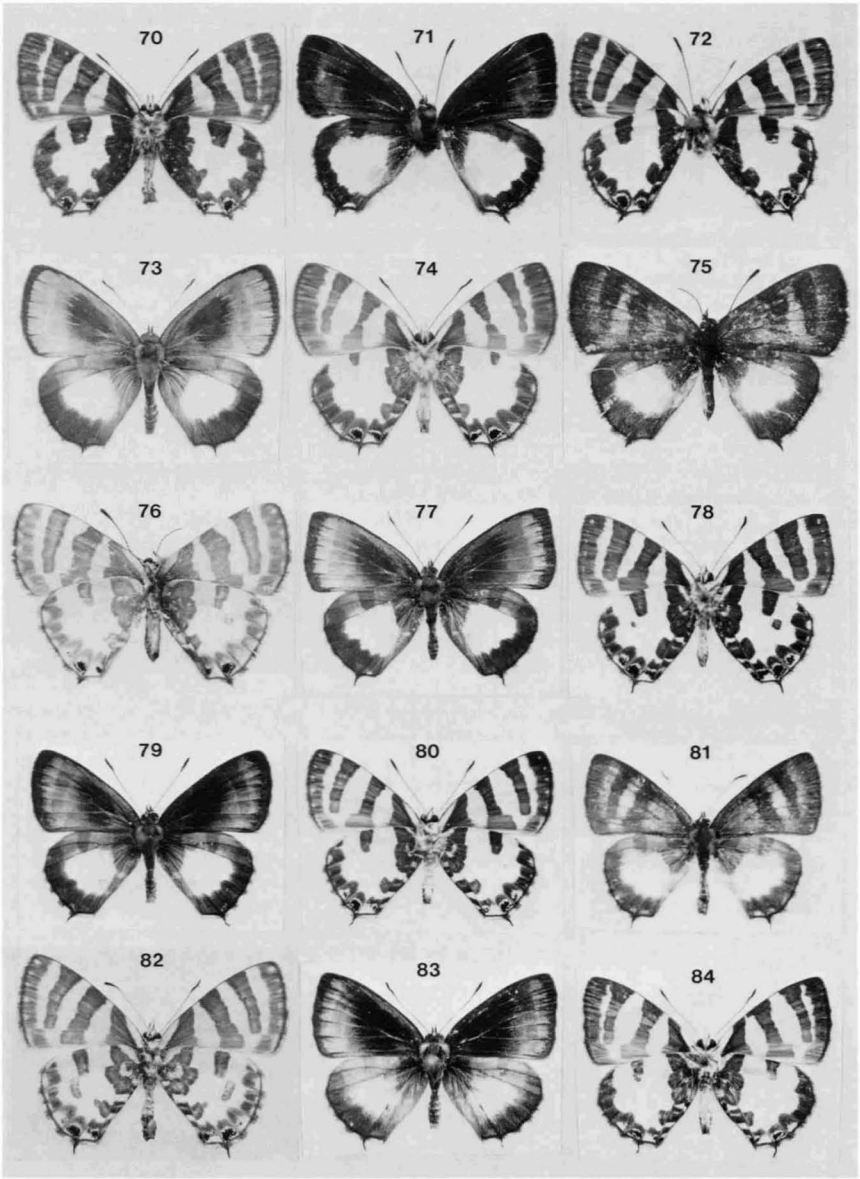
Figures 32-43. Right valvae of *Callictita* males: 32-39, *lara kina*, n. ssp. 40-43, *lara ronda*, n. ssp.



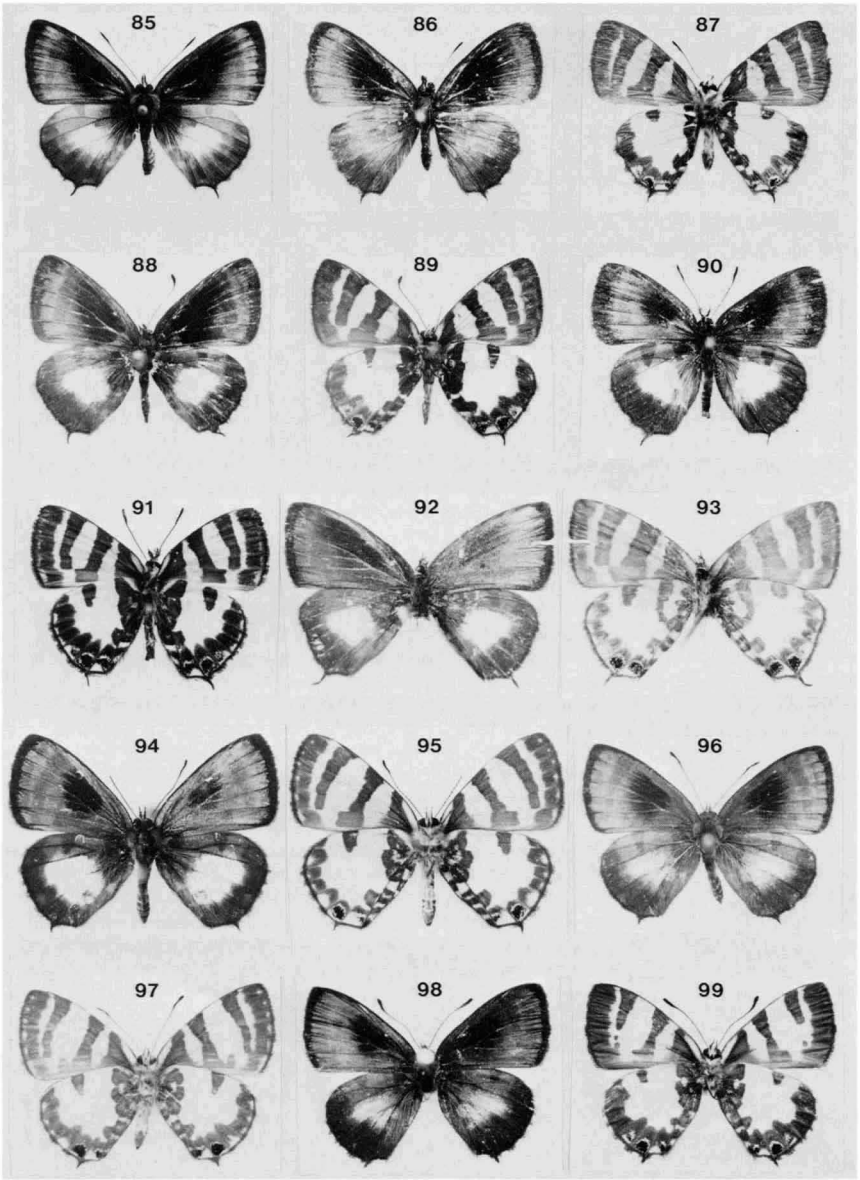
Figures 44-54. Right valvae of *Callictita* males: 44, *albiplaga*. 45, *mala*, n. sp. 46-49, *jola*, n. sp. 50-51, *felgara*, n. sp. 52-53, *tifala*, n. sp. 54, *arfakiana*.



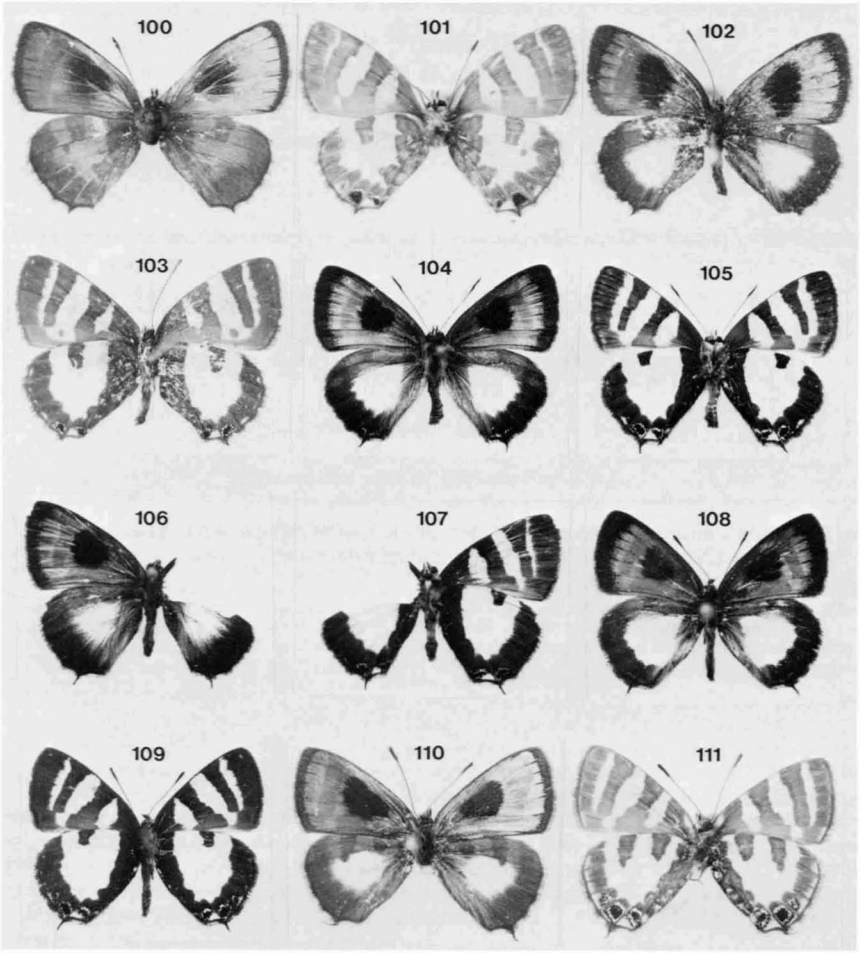
Figures **55-69.** *Callictita* species: **55-56,** *cyara cyara* ♂, Mt. Kaindi ANIC. **57-58,** *cyara cyara* ♂, Okapa Rd. KONE. **59-60,** *cyara cyabla,* n. ssp. ♂ holotype, Nondugl ANIC. **61-62,** *cyara cyabla,* n. ssp. ♀ allotype, Nondugl ANIC. **63-64,** *cyara cyabla,* n. ssp. ♂ paratype, Kandep ANIC. **65-66,** *cyara cyabla,* n. ssp. ♂ paratype, Hagen Ra. KONE. **67-68,** *cyara cyelsa,* n. ssp. ♂ holotype, Tifalmin BBMH. **69,** *cyara cyelsa,* n. ssp. ♂ paratype, Feramin ANIC. All figures (except **69** - underside, Fig. **70,** on next plate) show, respectively, the upperside and underside of each specimen.



Figures **70-84.** *Callictita* species: **70,** *cyara cyelsa,* n. ssp. ♂ paratype, Feramin ANIC. **71-72,** species ♂, Star Mts. BBMH. **73-74,** *lara lara,* n. ssp. ♂ holotype, Mt. Kaindi ANIC. **75-76,** *lara lara,* n. ssp. ♀ allotype, Edie Creek BMNH. **77-78,** *lara lara,* n. ssp. ♂ paratype, Nondugl ANIC. **79-80,** *lara lara,* n. ssp. ♂ paratype, Nondugl ANIC. **81-82,** *lara lara,* ♀ paratype, Nondugl ANIC. **83-84,** *lara kina,* n. ssp. ♂ holotype, Feramin ANIC. All figures (except **70** - upperside, Fig. **69,** on preceding plate) show, respectively the upperside and underside of each specimen.



Figures **85-99.** *Callictita* species; **85,** *lara kina,* n. ssp. ♂ paratype, Feramin ANIC. **86-87,** *lara kina,* n. ssp. ♂ paratype, Tifalmin RML. **88-89,** *lara kina,* n. ssp. ♂ paratype, Pori Vall. (near Tari) KONE. **90-91,** *lara ronda,* n. ssp. ♂ holotype, Lower Mist Camp RML. **92-93,** *albiplaga* ♂ paratype, Wandammen Mts. BMNH. **94-95,** *mala,* n. sp. ♂ holotype, Biagi BMNH. **96-97,** *jola,* n. sp. ♂ holotype, Tapini ANIC. **98-99,** *jola,* n. sp. ♂ paratype, Tapini KONE. All figures (except **85** - only upperside of specimen) show, respectively, the upperside and underside of each specimen.



Figures **100-111.** *Callictita* species: **100-101,** *jola,* n. sp. ♂ paratype, Biagi BMNH. **102-103,** *felgara,* n. sp. ♂ holotype, Menoo River, Weyland Mts. BMNH. **104-105,** *tifala,* n. sp. ♂ holotype, Feramin ANIC. **106-107,** *tifala,* n. sp. ♂ paratype, Telefomin RML. **108-109,** *tifala,* n. sp. ♂ paratype, Pori Vall. (near Tari) KONE. **110-111,** *arfakiana* ♂, Mt. Siwi, Arfak Mts. BMNH. All figures show, respectively, the upperside and underside of each specimen.

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