

ON THE BUTTERFLY FAUNA OF ANDAMAN AND NICOBAR
ISLANDS (INDIA). II. PIERIDAE

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INTRODUCTION

The present account is a continuation of the first part which deals with family Papilionidae (*vide* Arora & Nandi, 1980), and based on the material collected by the various parties of Zoological Survey of India as well as on the material already present in the old National Zoological Collections in the Department (abbreviated in the text as N. Z. C), the details of which have been given in the above-mentioned paper.

The present paper incorporates 20 species with 27 subspecies distributed over 11 genera under two subfamilies, viz., Pierinae (*Leptosia*, 1 sp. ; *Cepora*, 2 spp. ; *Anapheis*, 1 sp. ; *Appias*, 4 spp. ; *Saletara*, 1 sp. ; *Ixias*, 1 sp. ; *Hebomoia*, 1 sp. ; and *Valeria*, 1 sp.) and Coliadinae (*Catopsilia*, 3 spp. ; *Gandaca*, 1 sp. ; and *Eurema*, 4 spp.). Of these, only three species viz., *Anapheis aurota aurota* (Fabr.), *Appias libythea olferna* Swinhoe and *Eurema brigitta rubella* (Wallace), all from Nicobars, have been reported as stragglers to these areas since these have neither been collected recently nor represented in N. Z. C. However, *Cepora nerissa dapha* (Moore) also reported as a straggler to Great Nicobar as been collected more often and is represented here by one example each of male and female.

The studies also throw light on the detailed distribution of the Pierid-fauna of these areas ; confirm the occurrence of *Appias paulina galathea* (Felder) in South Andamans, which was hitherto without any authenticated record of this species ; and record for the first time the distribution of *Ixias pyrene andamana* Moore and *Catopsilia florella gnoma* (Fabr.), from Car Nicobar.

The nomenclature and classification has been mainly followed after Talbot (1939).

SYSTEMATIC ACCOUNT

1. Subfamily PIERINAE

The subfamily Pierinae, represented by 12 species with 15 subspecies distributed over eight genera from Andaman and Nicobar Islands, is

characterised by the hind wing having a well developed precostal vein which is curved towards distal end and the labial palpi being always hairy.

The Andaman & Nicobar genera belonging to this subfamily can be differentiated by the following key (as adapted from Talbot, *loc. cit.*).

1. Fore wing with veins R ₄ -R ₆ coincident ...	...	2
— Fore wing with veins R ₄ -R ₆ separate; vein M ₁ from upper angle of cell. ...	<i>Valeria</i> Horsfield	
2. Fore wing with vein R ₃ absent. Hind wing with veins M ₁ -M ₂ close at base. ...	<i>Leptosia</i> Hübner	
— Fore wing with vein R ₃ present, stalked with R ₄₊₅. ...	...	3
3. Fore wing with vein R ₁ anastomosing with Sc. ...	<i>Anapheis</i> Hübner	
— Fore wing with vein R ₁ free. ...	...	4
4. Fore wing with vein M ₁ stalked with the stem of R ₄₊₅ and R ₃. ...	...	5
— Fore wing with vein M ₁ below cell angle and arising at junction of discocellulars. ...	<i>Hebomoia</i> Hübner	
5. Male with hair-pencils on abdomen. ...	...	6
— Male without hair pencils on Abdomen. ...	...	7
6. Male with a single tuft of hair arising between 7th-8th abdominal segment. ...	<i>Appias</i> Hübner	
— Male with two hair-tufts. ...	<i>Saletara</i> Distant	
7. Wings white. Fore wing with vein M ₁ nearly from middle of the stem between cell angle and the fork. ...	<i>Cepora</i> Billberg	
— Wings yellowish. Fore wing with vein M ₁ close to cell angle than to fork. ...	<i>Ixias</i> Hübner	

1. *Leptosia nina* (Fabricius)

Talbot (1939) reported only one subspecies in the Indian area, viz., *nina nina*, and occurring in areas of Andaman Islands besides other areas as given below.

Ferrar (1951), however, referred to another subspecies viz., *nina nicobarica* Moore.

1a. *Leptosia nina nina* (Fabricius)

1793. *Papilio nina* Fabricius, *Ent. Syst.*, 3 (1) : 194.

Material examined.—Andaman : 2 exs. (no date) (in *N. Z. C.*). N. Andaman : Rangat Jetty, 1 ♂, 1 ♀, 23. iv. 1970.

Wing expanse.—Male, 31-34 mm ; female, 32 mm.

Distribution.—India (Peninsular India to Mussoorie in North Western Himalayas ; Andaman Islands). Also Sri Lanka, Burma and China.

Remarks.—Although the subspecies is reported to be common throughout Peninsular India to Mussoorie (*vide* Talbot 1939), Ferrar (1951) reported it to be extremely local in Port Blair and adjoining areas.

1b. *Leptosia nina nicobarica* (Doherty)

1886. *Nychitona xiphia var nicobarica* Doherty, *J. Asiat. Soc. Beng.*, 55 : 262.

Material examined.—Great Nicobar, 2 ♂♂, 2 ♀♀, (no other data), Galathea Bay, 1 ♀ (no date) (in *N. Z. C.*).

Wing expanse.—Male and female, 33-43 mm.

Distribution.—South Nicobar.

Remarks.—This subspecies is close to *nina nina*, except in the sub-apical spot being smaller.

2. *Cepora nerissa* (Fabricius)

Talbot (1939) reported as many as four subspecies in the Indian area, including the two from Andaman & Nicobar Islands. Both these subspecies are dealt with here.

The species differs from *C. nadina* (Lucas) in the black spot in the middle of area above vein Cu_{1a} on underside of fore wing being separate from black border by a white spot.

2a. *Cepora nerissa dapha* (Moore)

1878. *Appias dapha* Moore, *Proc. zool. Soc. Lond.* : 838.

Material examined.—India : Gt. Nicobar, Cowrightat, 1 ♂, 1 ♀, 9. iv. 1966.

Wing expanse.—Male and female, 54-62 mm. (50-60 mm in literature).

Distribution.—India : Assam, Nicobars. Also Burma extending to Siam and Malaya.

Remarks.—The subspecies is stated to be a straggler in Nicobars from Burma, by Talbot (1939) as well as Ferrar (1951), but since a pair from Great Nicobar Island has been collected again in the recent surveys, it is quite probable the subspecies is normally available locally, though rare, as compared to the following from Andaman islands.

2b. *Cepora nerissa lichenosa* (Moore)

1877. *Pieris lichenosa* Moore, *Proc. zool. Soc. Lond.* : 591.

Material examined.—S. Andaman : Caddle gunj, 1 ♂, 16. xii. 1972 ; Manglutan, 1 ♂, 17. xii. 1972. N. Andaman : Durgapur, Diglipur, 1 ♂, 23. iv. 1971 ; Kishori Nagar, Mayabunder, 1 ♂, 3. v. 1971 ; Rest House Tugapur, 1 ♂, 11. v. 1971.

Wing expanse.—Male and female, 55-65 mm.

Distribution.—Andaman Islands.

Remarks.—The species is reported to be common in Andaman Islands.

3. *Cepora nadina andamana* (Swinhoe)

1889. *Huphina nama* var. *andamana*, Swinhoe, *Proc. zool. Soc. Lond.* : 398.

Material examined.—Andaman : 5 ♂♂, 7 ♀♀ (no other data) (in N. Z. C.).

Wing expanse.—Male, 54-67 mm ; female, 49-65 mm.

Distribution.—India : Andaman Islands.

Remarks.—This subspecies is not rare and is restricted to Andamans. The other two Indian subspecies, viz., *nadina remba* (Moore) and *nadina nadina* (Lucas) are reported from Peninsular India, and Sikkim to Burma, respectively.

It differs from the preceding species in the black spot in the area above vein Cu_{1a} on underside of fore wing not being separate from the black border.

4. *Anapheis aurota aurota* (Fabricius)

1793. *Papilio aurota* Fabricius, *Ent. Syst.*, iii, I : 197 (Coromandel)

Wing expanse.—Male and female, 40-55 mm. (*vide* Talbot, 1939).

Distribution.—Throughout India except Assam and Burma.

Remarks.—The authors have not seen any material of the species from Andaman and Nicobar Islands. Bingham (1907) reports a dry season form of the species from Great Nicobar and is of the opinion that the same is a straggler. Probably, the species does not occur in the area.

5. *Appias libythea olferna* Swinhoe

1890. *Appias olferna* Swinhoe, *Ann. Mag. nat. Hist.*, (6) 5 : 358.

Distribution.—India : W. Bengal to Assam ; Car Nicobar and extending to Burma and Malaya Peninsula.

Remarks.—The subspecies is extremely rare in Car Nicobar. The nominate subspecies is reported to be distributed in Peninsular India. Ferrar (1951) is of the opinion that in Nicobars the Dry Season Forms do not occur normally so that the collection of the males and females of both the forms by the collectors of Ferrar, is considered by the latter as being due to its migration from the mainland. The authors have not seen any material from these areas in *N. Z. C.*

The species *A. libythea* is close to *A. lyncida*, the hind wing being without a black spot at the end of cell and marginal dots between veins on the underside, but, however, differs in the character of the marginal border (see *A. lyncida*).

6. *Appias lyncida* (Cramer)

The species is represented by two subspecies viz., *nicobarica* and *galbana* from Nicobar Islands and is not reported to occur in Andaman Islands. Both these are dealt with here.

The species differs from *libythea* in the hind wing being yellow on underside and the marginal border being broad and dark chocolate, unlike *libythea* where it is without the above mentioned border.

6 a. *Appias lyncida nicobarica* Moore

1905. *Appias nicobarica* Moore, *Lep. Indica*, 6 : 198.

Material examined.—Car Nicobar, 2 ♂♂ (no other data) (in *N.Z.C.*) ; Arong 7 ♂♂, 27. xii. 1972.

Wing expanse.—Male and female, 48-66 mm.

Distribution.—Car Nicobar and Central Nicobar ; not rare.

Remarks.—Of the five subspecies which are available in the Indian region, *nicobarica* is restricted to the areas as mentioned above and is reported to vary considerably in size and colouration. The material before us also has a male, as small as 48 mm. in expanse as compared with the minimum recorded expanse of 55 mm. (*vide* Talbot, 1939 and Wynter Blyth, 1957).

6 b. *Appias lyncida galbana* Fruhstorfer

1910. *Appias lyncida nicobarica*, ♀ f. *galbana*, Fruhstorfer, In : Seitz, *Macrolepidoptera of the World*, 9 : 149.

Material examined.—Great Nicobar and Little Nicobar, 9 ♂♂, 5 ♀♀ (no other data) (in *N. Z. C.*).

Wing expanse.—Male, 48-63 mm ; female, 47-58 mm.

Distribution.—South Nicobar Islands.

Remarks.—The subspecies is restricted to South Nicobar Island, particularly the areas of Great Nicobar and Little Nicobar Island as recorded for the material present in *N. Z. C.* Both males as well as females are smaller in wing expanse than the earlier minimum record of '55 mm' (*vide*, Talbot, 1939).

7. *Appias albina darada* (C. & R. Felder)

1865. *Pieris darada* C. & R. Felder, *Reise Novara, Lep.*, 2 : 166.

Material examined.—S. Andaman : 5 ♂♂, 1 ♀, (no other data).

Wing expanse.—Male, 59-61 mm ; female, 56-58 mm.

Distribution.—India : Peninsular India to Sikkim and N. E. India ; S. Andaman ; Car Nicobar. Also Burma and Sri Lanka.

Remarks.—Ferrari (1951) was able to capture this rather rare species in hundreds only in the year 1927 in S. Andamans, but could get only a pair, or so, after that and has also recorded the subspecies as far as Car Nicobar Island. The material before us for study from *N. Z. C.*, however, show no other data except the date of registration as '21.4.84' which indicate that the material had been collected even earlier.

A. albina is close to *A. paulina*, particularly in the marginal black, in males, not being produced inwardly on upperside fore wing, which has the apex rather acute and with the outer margin curved as compared with the obtuse apex and the straight outer margin in *paulina*.

8. *Appias paulina galathea* (Felder)

1862. *Pieris galathea* C. Felder, *Verh. zool.-bot. Ges. Wien*, 12 : 485.

Material examined.—Little Nicobar, 2 ♂♂, 1 ♀ ; Nancowry, 1 ♂, 1 ♀ ; Camorta, 2 ♂♂ ; Great Nicobar, 6 ♂♂, 2 ♀♀, (all in *N. Z. C.*) ; Appiah Bay, 2 ♂♂, 14. iv. 1966 ; Forest around Campbell Bay, 4 ♀♀ (f. *principalis*), 1 ♀ (f. *semiflava*), 26. xii. 1975 ; Laksman Beach, 2 ♀♀ (f. *semiflava*), 28. xii. 1975 ; Champa Bay, 1 ♀ (f. *flava*), 31. xii. 1975. S. Andaman : Chiriatapu, 1 ♀, 28. v. 1971.

Wing expanse.—Male, 46-64 mm ; female, 55-61 mm.

Distribution.—Andaman and Nicobar Islands.

Remarks.—Talbot (1939) is of the view that there is no authenticated record of *galathea* from Andamans, and states it to be 'Not rare' in Nicobars. The material present here for study, however, includes a single female from Chiriatapu, which confirms its occurrence in Andamans, though undoubtedly rare as compared with its availability in the areas of Nicobars. Whereas Talbot (1939) reports four female forms of this subspecies, Ferrar (1951) is of the view that there may be as many as six female forms and all of them may occur together. The female forms available for study are mainly referable to f. *flava* (with upperside yellow, underside with the apical area of forewing yellow) ; f. *semiflava* (with upperside white and underside with the apical area of fore wing yellow) ; and *principalis* (with upperside white and underside with the apical area of fore wing stone white).

9. *Saletara panda chrysea* Fruhstorfer

1903. *Saletara panda chrysea* Fruhstorfer, *Soc. Ent.*, 18 : 124.

Material examined.—Great Nicobar, 9 ♂♂ ; Little Nicobar, 1 ♂ (no other data) (in *N. Z. C.*) ; Galathea Bay, 1 ♂, 23. iii. 1966.

Wing expanse.—Male, 49-60 mm.

Distribution.—South Nicobar Islands.

Remarks.—The species is rare and reported to be restricted to South Nicobar Is. only, particularly Gt. Nicobar and Little Nicobar Islands. The females seem to be quite rare and hitherto only three examples have been reportedly collected by Ferrar (1951).

10. *Ixias pyrene andamana* Moore

1877. *Ixias andamana* Moore, *Proc. zool. Soc. Lond.* : 590.

Material examined.—Andamans, 11 ♂♂, 6 ♀♀ (no other data) (in *N. Z. C.*). South Andaman : Humfraygunj, 1 ♂, 7. iii. 1964 ; Chiriatapu, 1 ♂, 28. v. 1971, 1 ♀, 20. xii. 1972, 1 ♀, 10. i. 1976. Middle Andaman : Colonighat, 1 ♀, 8. iv. 1964 ; East of Rangat jetty, 1 ♂, 23. iv. 1970. Car Nicobar : Malacca-Kakana Road, 1 ♂, 25. xii. 1972.

Wing expanse.—Male, 53-61 mm. ; female, 52-63 mm.

Distribution.—Andaman Islands extending from Gt. Cocos and Car Nicobar Islands (New record).

Remarks.—The subspecies reported to be restricted to Andaman Island (*vide* Talbot, 1939) was, later, recorded as very common at Gt. Cocos, an island 20 miles to the North of Gt. Andaman (*vide* Ferrar, 1951). Now, the single male, recorded from Car Nicobar, extends its distribution further southwards and is of zoogeographic interest.

11. *Hebomoia glaucippe roepstorffii* Wood-Mason

1880. *Hebomoia roepstorffii* Wood-Mason, *J. Asiat. Soc. Beng.*, 49: 134.

Material examined.—Andaman, 2 ♂♂, 1 ♀. S. Andaman : 2 ♂♂, 2 ♀♀ ; Port Blair, 1 ♀ (no date) (in *N. Z. C.*).

Wing expanse.—Male, 85-91 mm. ; female, 84-86 mm.

Distribution.—Andaman Islands.

Remarks.—Popularly known as 'The Great Orange Tip', because of the characteristic orange patch in the forewing apical area, this subspecies is very common and more closely allied to the mainland subspecies *australis* than to the nominate one which extends from Nepal to Burma.

12. *Valeria ceylanica naraka* (Moore)

1877. *Eronia naraka* Moore, *Proc. zool. Soc. Lond.* : 591.

Material examined.—S. Andaman : 11 ♂♂, 1 ♀, Port Blair, 4 ♀♀ (no date) (in *N. Z. C.*) ; Caddlegunj, 1 ♂, 16. xii. 1972 ; Panighat, 1 ♂, 3. i. 1973 ; Ferrargunj, 1 ♂, 17. i. 1973 ; Manglutan, 1 ♂, 18. xii. 1975 ; Chiriatapu, Mundapahar, 1 ♂, 10. i. 1976 ; Kudiyaghat, 1 ♀, 11. i. 1976. M. Andaman : Rangat jetty, 1 ♂, 23. iv. 1970 ; Rangat Forest, 1 ♂, 31. i. 1972 ; Rangat, 1 ♂, 7. i. 1973. N. Andaman : Durgapur, Diglipur, 2 ♂♂, 26. iv. 1971 ; Smith Island, Near Forest Dept. Camp, 2 ♂♂, 27. iv. 1971.

Wing expanse.—Male, 76-80 mm. ; female, 67-86 mm.

Distribution.—Andaman Islands.

Remarks.—This subspecies is close to *V. valeria* particularly in the fore wings being bluish-green in the males ; and without submarginal spots, or smaller if present. However, the females have the narrow submarginal bluish-green spots or streaks unlike those in *valeria* where these are bluish to white or yellow.

II. Subfamily COLIADINAE

The subfamily Coliadinae is represented by eight species with twelve subspecies distributed over 3 genera, from these areas, and is characterised by the precostal vein on hind wing either being absent or very short and directed basad if present.

The three genera are differentiated by the following key (as adapted from Talbot, 1939) :

- | | | | |
|--|-----|-------------------|--------|
| 1. Precostal vein on the hind wing short | ... | ... | 2 |
| — Precostal vein absent or obsolete. Fore wing with or without sex brand on upperside, and without tuft on inner area of underside | ... | | |
| | | <i>Eurema</i> | Hübner |
| 2. Precostal vein thick. Male with an oval sex patch on upperside at the base of vein Rs on hind wing ; fore wing with a tuft on inner area on underside | ... | | |
| | | <i>Catopsilia</i> | Hübner |
| — Precostal vein thin. Male without secondary sexual characters on wings | ... | | |
| | | <i>Gandaca</i> | Moore |

13. *Catopsilia crocale crocale* (Cramer)

1775. *Papilio crocale* Cramer, *Pap. Exot.*, 1 : 87, pl. IV, figs. C. D. (♀).

Material examined.—Andaman : 2 ♂♂, (no other data) (in *N. Z. C.*). S. Andaman : Chiriatapu, 1 ♂, 1 ♀, 20. xii. 1972. N. Andaman : Kishorinagar, Mayabunder, 1 ♂, 3. v. 1971.

Wing expanse.—Male and female, 55-80 mm.

Distribution.—Andaman Islands.

Remarks.—The subspecies is rare and is without any markings on upper side unlike the following two species, viz., *pyranthe* and *florella*, where the wings are marked on the upperside.

Although Talbot (1939) records the subspecies from both Andamans and Nicobars, Ferrar (1951) reports that he had no material from Car Nicobar.

14. *Catopsilia pyranthe pyranthe* (Linnaeus)

1758. *Papilio pyranthe* Linnaeus, *Systema Naturae*, ed. 10th ; 469.

Material examined.—S. Andaman : Dockyard, 1 ♀, 25. ii. 1970 ; Chiriatapu, 1 ♂, 27. v. 1971, 1 ♂, 28. v. 1971, 1 ♀, 22. x. 1972 ; Aberdeen Bay, 1 ♀, 12. xii. 1972 (heavy dusting in the margin) ; Marine hill, 1 ♂, 4 ♀♀, 16. xii. 1975 ; South Point, Port Blair, 1 ♂, 1 ♀, 17. xii. 1975. Kamorta, 1 ♀, 30. iii. 1970. Car Nicobar : Sawai, 1 ♂, 1 ♀, 25. ix. 1972 ; Kakana, 4 ♂♂, 2 ♀♀, 27. xii. 1972,

Wing expanse.—Male and female, 50-70 mm.

Distribution.—India, including Andaman Islands, Sri Lanka, Burma extending to Hainan and Taiwan (China) in the South, and Philippines, Borneo, Sulawesi and Java in the East.

Remarks.—The subspecies, rare in Andamans, but common elsewhere, closely resembles *Catopsilia crocale* as well as *florella gnoma* except in the forewing marginal markings which are sometimes heavily dusted in Andaman specimens compared with those from Car and Great Nicobars where the marginal markings are comparatively narrow, almost as in the latter species, so that it becomes difficult to differentiate these from each other. Although Talbot (1939) reports the distribution of *crocale* in Nicobars, there seems to be no authenticated record of the latter there. Instead, following the characters given by Talbot (1939), the present material can be assigned only to *pyranthe* and *florella gnoma* both of which occur together.

Accordingly, the subspecies has a wide distribution through S. Andamans, Central and Car Nicobar to the South Nicobar, thus filling the gap in its distribution at least between the mainland and the Indonesian Islands.

15. *Catopsilia florella gnoma* (Fabricius)

1776. *Papilio gnoma* Fabricius, *Syst. Ent.* : 828.

Material examined.—Great Nicobar : Campell Bay, 1 ♀, 24. viii. 1882 (in. *N. Z. C.*). S. Andaman : Chiriatapu, Near Guest House, 1 ♀, 22. x. 1972. Car Nicobar : Horticulture garden, 2 ♂♂, 1 ♀, 8. iii, 2 ♂♂, 1 ♀, 9. iii, 3 ♂♂, 11. iii. 1970 ; Kakana, 2 ♂♂, 2 ♀♀, 27. xii. 1972 ; Agriculture garden, Malacca, 1 ♂, 2 ♀♀, 26, 29. xii. 1972.

Wing expanse.—Male, 50-64 mm ; female, 52-66 mm.

Distribution.—India : Andaman Islands and Nicobars (New) ; Burma.

Remarks.—The record of the subspecies from S. Andamans to Great Nicobar, similar to that of *pyranthe* is interesting in view of being the first authenticated record of the subspecies from areas other than of Andamans. The majority of the specimens, both males as well as females, are invariably with reddish brown markings, though specimens without such markings are not rare but they can be differentiated by the presence of the narrow marginal spots, which are often separate from each other.

16. *Gandaca harina* (Horsfield)

Two subspecies are known to occur in Andaman and Nicobar islands, besides one each from the Indian mainland, Burma and Tonkin. Both these subspecies are dealt with here.

16 a. *Gandaca harina andamana* Moore

1906. *Gandaca andamana* Moore, *Lep. Indica*, 7 : 35, pl. 563 figs. 4, a, b, c. (♂ ♀).

Material examined.—Andaman : 3 ♂ ♂ (no other data). S. Andaman, 3 ♂ ♂, 6. v. 80, Port Blair, 2 ♂ ♂, (April-May), 1 ♂, (in *N. Z. C.*) ; Manglutan, 1 ♀, 17. xii. 1972 ; Panighat, 1 ♂, 3. i. 1973. N. Andaman : Kishorinagar, Mayabunder, 1 ♀, 3. v. 1971.

Wing expanse.—Male, 48-50 mm ; female, 44 mm.

Distribution.—Andaman Islands.

Remarks.—The subspecies *Gandaca harina andamana* Moore, seems to be common on the Andaman group of islands, and differs from the mainland specimens in the marginal border extending up to vein Cu_{1b} , or rarely below it. *Gandaca harina* bears a close resemblance to the species of the genus *Eurema*, but can be easily distinguished by the presence of a well developed precostal spur, a character present only in *Dercas* and *Catopsilia*. The species, is however, differentiated by the forewing apical margin being rounded (*vs.* pointed in *Dercas*) and in the absence of any secondary sexual characters in the male (*vs.* present in *Catopsilia*).

16 b. *Gandaca harina nicobarica* Evans

1932. *Gandaca harina nicobarica* Evans, *Identification of Indian Butterflies*, 2nd ed. : 76.

Material examined.—Great Nicobar : 2 ♂ ♂, 2 ♀ ♀, (no other data) (in *N. Z. C.*)

Wing expanse.—Male, 38-42 mm ; female 42-48 mm.

Distribution.—Nicobar Islands.

Remarks.—This differs from the preceding subspecies in being paler and having a reduced marginal border. The subspecies is rare as compared with the preceding one from the areas of the Andamans.

17. *Eurema brigitta rubella* (Wallace)

1867. *Terias rubella* Wallace, *Trans. ent. Soc. Lond.*, (3) 4 (3) : 323.

Material examined.—No material was available.

Wing expanse.—Male and female, 30-40 mm. (*vide* Talbot, 1939).

Distribution.—India including Nicobar Islands ; Sri Lanka, Burma and extending to South China.

Remarks.—Referable to the genus *Eurema*, the species *brigitta*, rare in Nicobar but very common elsewhere, is recognised by the complete absence of the discocellular ring spots on the underside of the fore wing ; the inner edge of apical black border on the upperside of fore wing being regular and not indented ; and the male fore wing being without a sex brand on upper side. There is only a single subspecies with the distribution as above, but it seems to be very rare in Nicobars since it has neither been reported by Ferrar (1951) nor represented in the *N. Z. C.*, either in old collections or in recent surveys.

18. *Eurema blanda* (Boisduval)

The species is easily distinguishable by the number of cell spots being three on the underside of fore wing, as compared with generally two in *hecabe*. However, in the latter one or both the spots may be absent. The species is represented throughout the Andaman & Nicobar Islands. The mainland subspecies *blanda silhetana* extends right up to Andaman Island ; the material viz., *blanda moorei* from Central & C. Nicobar Island is more closely allied to *silhetana* than to the southern Nicobar subspecies viz., *blanda grisea*. All the three subspecies are dealt with here.

18a. *Eurema blanda silhetana* (Wallace)

1867. *Terias silhetana* Wallace, *Trans. ent. Soc. Lond.*, (3) 4 (3) : 324.

Material examined.—S. Andaman, 3 ♂♂, 1 ♀, 1 ex. without abdomen (no other data) (in *N. Z. C.*) ; Bedanabad, 2 ♀♀, 21. xii. 1972 ; Panighat, 2 ♀♀, 3. i. 1973 ; Ferrargunj, 2 ♀♀, 15. i. 1973 ; 2 ♂♂, 17. i. 1973 ; Aniket, 1 ♂, 16. i. 1973 ; Marine hill, Port Blair, 1 ♀, 16. xii. 1975 ; Horticulture garden, 2 ♀♀, 21. xii. 1975 ; Kalapahar, Rutland Island, 1 ♀, 9. i. 1976. Mid. Andaman : Yereta, 2 ♂♂, 8. i. 1973 ; 1 Km. E. of Rangat, 1 ♂, 5. iii. 1975, 2 Km. W. of Rangat, 1 ♀, 6. iii. 1975, N. Andaman : Mayabunder, 1 ♂, 1 ♀, 10. i. 1973.

Wing expanse.—Male, 47-49 mm ; female, 49 mm.

Distribution.—Andaman Islands.

Remarks.—The subspecies is common and occurs in the company of *E. hecabe blairiana*, but is characterised by at least two well developed marks in the cell of fore wing and with a subapical bar in both sexes on underside ; the ground colour being lighter or sulphur yellow but not pale as compared with the latter.

18b. *Eurema blanda moorei* (Butler)

1886. *Terias moorei* Butler, *Ann. Mag. nat. Hist.*, (5) 17 : 216, pl. v, fig. 1 (imago)
(Nicobars : Camorta).

Material examined.—Kamorta, 1 ♂, 1 ♀, 2 exs. without abdomen
(in *N. Z. C.*).

Wing expanse.—Male, 45 mm ; female, 40 mm.

Distribution.—Car Nicobar ; Central Nicobar Islands.

Remarks.—Very similar to the preceding, except in being paler and occurring in the company of *E. hecabe nicobariensis*. However, the three spots, rarely two well developed spots, differentiate *moorei* to a certain extent ; *moorei* is rare compared with the two other subspecies.

18c. *Eurema blanda grisea* (Evans)

1932. *Terias blanda grisea* Evans, *Identification of Indian Butterflies*, 2nd ed. : 78
(South Nicobar).

Material examined.—Great Nicobar, 2 ♂♂, 1 ♀, 1 ex. without abdomen ; Forest around Campbell Bay, 2 ♂♂, 26. xii. 1975 ; Campbell Bay, 2 ♂♂, 1 ♀, 31. xii. 1975.

Wing expanse.—Male, 48-52 mm ; female, 54 mm.

Distribution.—South Nicobar Island.

Remarks.—This subspecies can very easily be distinguished from the preceding subspecies from Car and Central Nicobar by the marginal band on the upperside of the fore wing being very narrow and reduced, particularly in male. In all the above specimens the three spots in cell of fore wing on the underside are quite prominent which differentiate it from *E. hecabe*.

19. *Eurema hecabe* (Linn.)

This species is widely distributed in India and is represented by as many as five subspecies, of which two viz., *blairiana* and *nicobariensis* occur in these islands and are dealt with here.

19a. *Eurema hecabe blairiana* (Moore)

1907. *Terias blairiana* Moore, *Lep. Indica*, 7 : 75, pl. 575, figs. 1 (♂), 1a (♀)
(Andamans).

Material examined.—S. Andaman : Horticulture cum Zoological Garden, 2 ♀♀, 28. iv. 1970, 2 ♂♂, 1 ♀, 21. xii. 1975 ; Aberdeen Bay, 2 ♀♀, 13. xii. 1972, 1 ♂, 15. xii. 1972 ; Caddlegunj, 2 ♀♀, 16. xii.

1972 ; Bedanabad, 1 ♀, 21. xii. 1972 ; Ferrargunj, 1 ♂, 17. i. 1973 ; Aniket, 1 ♀, 16. i. 1973 ; Marine hill, 1 ♀, 15. xii. 1972, 2 ♂♂, 1 ♀, 16. xii. 1975 ; South Point, 3 ♂♂, 2 ♀♀, 17. xii. 1975 ; Wandoor, 30 Km. S. W. of Port Blair, 1 ♂, 18. xii. 1975 ; Moujari, Chiriatapu, 1 ♂, 8. i. 1976 ; Kalapahar, Rutland Island, 1 ♀, 9. i. 1976. Mid. Andaman : Panchwati, 1 ♀, 6. i. 1973 ; 1 Km. South of Rangat, 1 ♀, 4. iii. 1975, 2 Kms. W. of Rangat, 1 ♂, 6. iii. 1975. N. Andaman : Mayabunder, 2 ♀♀, 10. i. 1973 ; Tugapur, 1 ♂, 10. i. 1973.

Wing expanse.—Male, 44-54 mm ; female, 46-52 mm.

Distribution.—Andaman Islands.

Remarks.—Very common in Andaman Island, the subspecies is not easily separable from *E. blanda silhetana* and the large number of examples which are available to us vary considerably. However, both males and females are paler, generally unmarked on the underside or at most with one or two very faint marks in the cell of fore wing. The subapical bar is poorly developed in the male, and obsolete in the female (*vs* well developed in *silhetana*).

19b. *Eurema hecabe nicobariensis* (Felder)

1862. *Terias nicobariensis* C. Felder, *Verh. zool. bot. Ges. Wien*, 12 : 480.

Material examined.—Car Nicobar : 1 Km. South of Circuit House, Malacca Village, 1 ♂, 4. iii. 1970 ; Horticulture Garden, 1 ♂, 8. iii. 1970 ; Keating Point, 1 ♀, 7. iii. 1970. Malacca Agriculture Garden, 1 ♀, 26. xii. 1972 ; Teetop, 1 ♂, 26. xii. 1972 ; Kachal, 1 ♂, 1 ♀ (in. *N. Z. C.*). Kamorta, 1 ♀, 19. iii. 1970, 2 Km. North East of Guest House, 1 ♂, 24. iii. 1970, 1 ♂, 8. x. 1972 ; Trainkate Is., 1 ♀, 20. iii. 1970 ; Malacca, Kakana Road, 1 ♂, 25. xii. 1972, 1 ♀, 27. xii. 1972 ; Nancowry, 7 ♂♂, 2 ♀♀ (in. *N. Z. C.*). Great Nicobar : 1 ♂, 1 ♀ 6 exs. without abdomen (in. *N. Z. C.*) ; Forest around Campbell Bay, 2 ♂♂, 26. xii. 1975 ; Laksman Beach, 1 ♂, 28. xii. 1975 ; Champa Bay, 3 ♂♂, 2 ♀♀, 31. xii. 1975.

Wing expanse.—Male, 37-45 mm ; female, 30-56 mm.

Distribution.—Nicobar Islands.

Remarks.—Both males and females are slightly paler compared with *silhetana*. For remarks see *E. blanda moorei*.

20. *Eurema andersoni evansi* Corbet & Pendlebury

1932. *Eurema andersoni evansi* Corbet & Pendlebury, *Bull. Raffles Mus. Sing.*, 7 : 179, pl. V.

Material examined.—S. Andaman : Bedanabad, 1 ♀, 21. xii. 1972 ;

Ferrargunj, 1 ♀, 15. i. 1973 ; Port Blair, Marine hill, 1 ♀, 16. xii. 1975. Gt. Nicobar, 5 ♂♂, 2 ♀♀ (no other data). (in *N. Z. C.*)

Wing expanse.—Male, 37-45 mm ; female, 36-56 mm.

Distribution.—Andaman Islands.

Remarks.—This is very closely allied to *E. hecabe blairiana* in the markings which are reported to be well developed, being dry-season in form as compared with *blairiana* which is supposed to be a wet-season form of *hecabe contubernalis*. As a matter of fact there are certain specimens of *blairiana* from Port Blair, which, although heavily marked, do not possess one zig-zag spot in the cell but more than one spot, a characteristic feature of *andersoni evansi* ; the latter is also characterised by the presence of a well developed spot in each area between R_s-M_1 , and below Cu_{1b} , unlike *blairiana* where these spots are poorly developed, and by a well developed subapical transverse stripe, with yellow spots on it on the underside of fore wing.

SUMMARY

The paper deals with 20 species with 27 subspecies distributed over eleven genera under two subfamilies viz., *Pierinae* and *Coliadinae*. The paper gives the detailed distribution of the Pieriid-fauna from these islands and confirms the occurrence of one species, in Andamans and reports two new records from Nicobars.

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