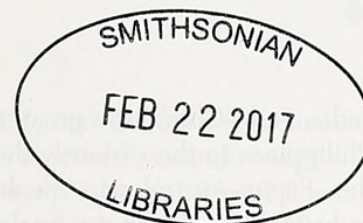


JOURNAL OF THE LEPIDOPTERISTS' SOCIETY



Volume 63

2009

Number 2

Journal of the Lepidopterists' Society
63(2), 2009, 61–82

THE RIODINID BUTTERFLIES OF VIETNAM (LEPIDOPTERA)

CURTIS J. CALLAGHAN

Calle 93 5-45 Apt.302, Bogotá, Colombia; email: curtiscallaghan@yahoo.com

ABSTRACT. A review of the 29 riodinid taxa found in Vietnam is presented, including notes on taxonomy, diagnosis, behavior, habitat and range. The following nomenclatural changes are made: *Dodona eugenes maculosa* is returned to its original designation, *Dodona maculosa* Leech, 1890 **reinst. stat.**; *Dodona deodata longicaudata* is returned to species status as *Dodona longicaudata* Niceville, 1881 **reinst. stat.**, and *Dodona deodata lecerfi* is raised to species status as *Dodona lecerfi* Fruhstorfer, 1914, **n.stat.** *Abisara echerias notha* Bennett 1960 is synonymized with *A. e. paionea* Fruhstorfer, 1914, **n. syn.**; *Abisara geza latifasciata* Inuoé & Kawazoe, 1965, is raised to species status as *A. latifasciata* **n. stat.**; *Abisara savitri attenuata* (Tytler, 1915), is returned to species status as *Abisara attenuata* **reinst. stat.**, *Taxila dora hainana* Riley & Godfrey, 1925, is raised to species status as *Taxila hainana* **n. stat.**; *Stiboges nymphidia elodinia* Fruhstorfer 1914, is raised to species status as *Stiboges elodinia* **n. stat.** The genitalia and facies of complex taxa are illustrated as explanations for the nomenclatural changes. Data on the biogeography of each taxon in Vietnam are presented, and compared with distributions in Indo-China.

Additional key words: : Indo-Malayan Realm, Indochina, Laos, Cambodia, Thailand, biogeography, biology, habitats, behavior, genitalia

The riodinid butterflies of Vietnam are poorly known. Despite a long period of French colonial administration, few Europeans took an interest in the butterfly fauna. Also, much of the 20th century was taken up by armed conflicts, which prevented much serious collecting.

Most early records come from Fruhstorfer, who, during the last decade of the 19th century, collected in "Tonkin", today known as North Vietnam. He was followed in the 1950s by Roger Métaye (1957), whose efforts regarding riodinids were minimal. In the early 1960s, the Japanese scientists, Inuoé and Kawazoe collected only briefly in South Vietnam. The result is a dearth of material and records in major museums, not only from Vietnam, but from Laos and Cambodia as well. The Vietnamese specimens in the Natural History Museum, London are few beyond those collected by Fruhstorfer, and a handful of additional specimens from the colonial period are at the Muséum National d'Histoire Naturelle, Paris.

This situation started to change with agreements between the Vietnamese Government and foreign organizations for the purpose of documenting the biodiversity of the country. With increased investigation, Vietnam is becoming known as an extremely complex region with many endemic taxa of birds, butterflies and mammals. This study recognizes 27 species of riodinids,

of which 3, or 10% are endemic. For Thailand, a much larger country, Pinratana (1988) records 29 and Corbet & Pendlebury (1992) list 16 species for Malaysia.

MATERIALS AND METHODS

This revision was based on specimens from a number of different sources. I studied type specimens and the collections at the Zoologisches Museum für Naturkunde, Humboldt-Universität, Berlin, Germany (ZMHU), the Muséum National d'Histoire Naturelle in Paris (MNHN), and the Natural History Museum, London (BMNH). Additional types are in the Moscow State University (MSU). Private collections studied were those of the author and Alexander Monastyrskii of the Vietnam Russian Tropical Centre in Hanoi. A total of 341 Vietnamese specimens were examined, as well as others from neighboring countries including 19 primary types. Ninety-five genitalia preparations were made. Dissected and voucher specimens are in the collections of the author (CJC) and A. Monastyrskii (ALM), and the MNHN.

Biogeography. Vietnam forms part of the Indo-Malayan Realm, sometimes referred to as the Oriental Region. This extends from western Pakistan eastwards south of the Himalayan Mountains through southern China to the island of Taiwan, then south to include

India, Indo-China, the greater Sunda islands and the Philippines to the variously-defined western border of the Papuo-Australasian Realm. Geographically, the Indo-Malayan Realm can be divided into three regions; the Indian sub-continent, Indochinese region and the Malay archipelago, or Sundaland.

Indo-China, to which Vietnam belongs, was part of Laurasia, which separated from northern Gondwanaland about 120 million years ago. Indo-China can be divided into three regions. In the west, the Chin and Patkai hills form a barrier with India. This gives rise to four great south flowing rivers that follow divergent courses, the Salween, Mekong, Red and Black rivers. They form basins divided by ranges of low hills before emptying into broad alluvial plains and the Gulfs of Thailand and Tonkin.

The largest of these basins is the Mekong and Chao Phraya valleys of present day Laos and Cambodia, which form the second geographical subdivision between the Tanen Tong hills and the Annamite mountain chain on the Vietnam-Lao border. The final southeast Asian division is the drainage to the Gulf of Tonkin east of the Annamites and north to the Red River delta in present day Vietnam, the southern coastal plains of China and the islands of Hainan and Taiwan.

These three regions also reflect diverse climatic conditions. The Chin and Patkai hills region in Burma starts with the high rainfall of the Himalayan plateau, decreasing to 1000–2000mm/yr in the east through the Mekong basin to the Annamites, and then increasing to 2000–3000mm/yr along the Vietnamese coastal plain north to coastal China and Taiwan island. Throughout these regions climate and rainfall vary considerably depending on topography, latitude and altitude. The pattern of rainfall in Vietnam is typical of the rest of tropical Asia with two monsoon seasons. A relatively dry period occurs during the northern winter months (November to April) following a wet period with heavy rains during the northern summer (May to October).

The fauna of the Indo-Malayan Realm is derived mostly from the Palaearctic and Afro-tropical biotas. There are few endemic families of animals as compared to the Neotropical or Afro-tropical Realms due to its relatively recent origin. However, because the Realm is geologically very active with land connections coming and going, and with a relatively stable tropical climate, the conditions are created for high levels of local endemism on the specific and generic levels.

The fauna of the Indo-Chinese sub-region shows richness comparable to other parts of the Realm, but considerably lower endemism. The fauna is a mixture of Palaearctic and south China species. Some Malaysian species enter into the southeast coast of southern

Vietnam. In North Vietnam, the Red River and delta form an effective barrier to the dispersion of many species.

Vietnam has a number of prominent geographic features. North of the Red River the land rises towards the Chinese border and is punctuated by a number of limestone mountains comprising the Indochina limestone karst. South of the Red River along the Chinese border are the Hoanglier Mountains that rise to 3000m at Mt Farsipan, the highest point in Indochina. To the southeast are the highlands of the Xiarg Khouang Plateau on the Laotian border. The highlands terminate in a series of rugged limestone hills. To the south the central Vietnam coastal plain is bordered on the west by the Annamite mountain range following the Laotian border. The Annamite range is divided into three main sections. The northern Annamites extend from Nghe An province south to Quang Binh Province. The narrow coastal plain is hot and humid, drenched by the Northeast monsoon. The central Annamites are more extensive and nearly reach the sea between Quang Tri and Gia Lai Provinces, and extend into Laos. The southern Annamite Mountains, or the Dalat Plateau, is nearly entirely within Vietnam and forms a high plateau reaching to 1500m between Gia Lai and Lam Dong Provinces. The coastal plain here is very dry, lying in the rain shadow of the mountains. To the south the land drops into the alluvium plains around the Mekong delta.

The distribution of the Riodinidae in Vietnam is also influenced by the geography of the country. The Annamite range with altitudes to over 2000m allows temperate climate species to inhabit Central and South Vietnam. Primary among these is the genus *Dodona* (Fig. 61). These same features allow a similar distribution of temperate middle altitude *Paralaxita*, *Taxila* and *Abisara neophron* group species over the same range (Figs. 63, 64). The range of the lowland tropical *Abisara echerias* group (Fig. 62), however, shows a sharp division along the Red River of North Vietnam, suggesting that this has been an effective barrier to dispersion.

Localities and habitats. In the study of the Vietnam fauna, 17 areas were sampled for riodinids. Three additional sites were located from material examined. These localities are described below, from north to south. An additional 14 Indochina localities were taken from the literature. The locations are shown on the map, Figure 1.

North Vietnam – Tonkin

1. Hoang Lien Nature Reserve, Sa Pa District, Lao Cai Province, 22°09'–24°00'N 103°47'–59'E. The reserve is in the Hoang Lien Mountains on the Chinese

border south of the Red River valley and near the town of Sa Pa. The forest is montane dry evergreen, tropical montane deciduous, and sub alpine forest from 1500 to 3143m on Farsipan peak. The topography is steep, with mountainsides cut by numerous streams. Much of the fauna is Sino-Himalayan. Riordinids range between 1220 and 2150m above sea level (asl).

2. Muong Nhe Nature Reserve, Lai Chau Province, 21°50'–85°N 102°10'–58°E. This reserve is on the Laotian border to the west of the former locality, is dryer and lower, around 300 to 1800m. Habitat is lower montane evergreen forest to 800m and upper montane evergreen forest to 1800m and has been significantly altered by human activity. The principal vegetation formation is secondary scrub and grass savanna.

3. Chiem Hoa, Tuyen Quang Province, 21°14'N 105°33'E. Vegetation is lowland evergreen forest on limestone. Mount Mauson, referred to by Fruhstorfer, is located here.

4. Tam Dao National Park, Vinh Phuc Province, 21°21'–42°N 105°23'–44°E. Once a French hill station, Tam Dao is an isolated mountain peak, reaching 1400m and lying north of the Red River valley and Hanoi. The lower slopes to 800m are altered low montane evergreen forest, but the areas above 900m support good low montane forest formations. Riordinid records are from above 900m.

5. Bai Tu Long Islands National Park, Hai Phong Province. This area is off the coast of North Vietnam and north of the Red River delta. The altitude is sea level to 90m. Disturbed limestone forest is the predominant formation.

6. Cat Ba Island, Cat Ba National Park, Hai Phong Province. 20°44'–51°N 106°45'–85°E. This reserve lies to the south of Bai Tu Long, off the Red River delta. Altitude is sea level to 330m. Vegetation is limestone tropical evergreen forest. Riordinid records are from 100m.

7. Cuc Phuong National Park, Ninh Binh, Hoa Binh, Than Hoa Provinces. 20°14'–24°N 105°29'–44°E. The Park area is characterized by rugged limestone karst hills covered with evergreen forest, from 100 to 636m. The area sampled was between 300 and 550m.

Central Vietnam – Annam

8. Pu Mat Nature Reserve, Nghe An Province, 18°50'–19°00'N 104°20'–55°E. This area extends along the northern Annamite mountain ridge. The terrain is steep and mountainous reaching 2700m. Vegetation is lowland evergreen forest and some deciduous and conifers above 1800m. The higher peaks have cloud forest. The area sampled was between 650 and 1000m.

9. Vu Quang Nature Reserve, Ha Tinh Province,

18°09'–25°N 105°16'–12°E, 300–1600m. This area is the second locality on the northern Annamite ridge and is very precipitous with steep valleys and swift flowing streams. Vegetation is lowland evergreen to lower montane evergreen forest to 1000m, and medium montane forest to 1600m.

10. Ba Na Nature Reserve, Da Nang Province, 15°57'–16°08'N 107°49'–50°E. This area is in the Central Annamite range and is principally lowland evergreen Forest habitat 245–880m with lower montane evergreen forest above. Area sampled was between 200 and 1100m.

11. Ngoc Linh Nature Reserve, Kon Tum Province, 14°45'–15°15'N 107°21'–108°20'E, 1250–1850m. This reserve is also located in the Central Annamite Mountains. Vegetation formations are low montane broadleaf evergreen forest with some medium to high montane evergreen forest. The highest point is Mt. Ngoc Linh (2598m). The area sampled was between 1200 and 1700m.

12. Kon Ka Kinh Nature Reserve, Gia Lai Province, 14°09'N 108°16'E, 1000–1700m. This is a key area of the Central Annamite Mountains. It is assumed to be a climatic gradient to the Northern Annamites. Forest is montane and lower montane broad leafed evergreen and coniferous forest. The terrain is rugged with peaks reaching to 1742m. The area sampled was from 1000 to 1200m.

13. Kon Cha Rang Nature Reserve, Gia Lai Province, 14°26'–35°N 108°30'–39°E, 850–1500m. This is the third Central Annamite locality. The vegetation is lower montane and montane evergreen forest. The area sampled was from 850 to 1300m.

South Vietnam - Cochinchin

14. Hon Ba Provincial Nature Reserve, Khanh Hoa Province, 12°02'–15°N 108°57'–109°05'E. This area consists of the Deo Ca Spur, a ridge of high ground forming the extension of the southern Annamites towards the coast. Peaks along the ridge reach 2000m. Habitats are evergreen forest to 1000m and montane evergreen forest to 1700m. The area sampled was between 700 and 1400m.

15. Bao Lam District, Lam Dong Province, 11°38'–52°N 107°42'–50°E. This area is in the southernmost extension of the Southern Annamite chain. The main forest types are low montane, evergreen and secondary forest. Most forest exists above 1500m.

16. Da Lat, km 8, Chutes, Lam Dong Province, 11°47'–20°N 108°20'–40°E.

The capital of Lam Dong Province, Da Lat, was a French hill station. Much material from here was

collected during the colonial period. Habitats are natural coniferous forest (*Pinus kasiya*).

17. Cat Tien National Park, Dong Nai Province, 11°21'–48°N 107°10'–34°E, to 650m. This area comprises the central and main parts of the southern Annamite massive. The climate of this area is more complex than the northern or central Annamites, rainfall depending largely on orientation, reaching 2850mm in the higher elevations. The vegetation is evergreen and low evergreen forest.

Other Vietnamese localities identified from material examined, but not collected recently:

- 18. Chau Doc, An Giang Province.
- 19. Mont du Haute Song Chai, Lao Cai Province.
- 20. Than-Moi, Lang Son Province.

Indo-Chinese localities from the literature:

Laos

- 21. Phongsak
- 22. Boun Neua
- 23. Oudomsay
- 24. Xam Neua
- 25. Xaignabouri
- 26. Vang Vieng
- 27. Vietiane
- 28. Lak Sao
- 29. Thakhek
- 30. Thateng

Thailand

- 31. Nakhon Ratchasima
- 32. Nakhon Nayak
- 33. Chonburi
- 34. Chanthaburi

A Synonymic List of Vietnam Riodinidae

ZEMEROS Boisduval, 1836

flegyas (Cramer, [1780]) (*Papilio*)

- =*annamensis* Fruhstorfer, 1912
- =*esla* Fruhstorfer, 1912

DODONA Hewitson, [1861]

- katerina* Monastyrskii & Devyatkin, 2000
- a. sombra* Monastyrskii & Devyatkin, 2003
- oida palaya* Fruhstorfer, 1914
- adonira* Hewitson, 1866
- egeon* (Westwood, 1851) (*Taxila*)
- maculosa phuongi* Monastyrskii & Devyatkin, 2000
- speciosa* Monastyrskii & Devyatkin, 2000
- deodata* Hewitson, 1876

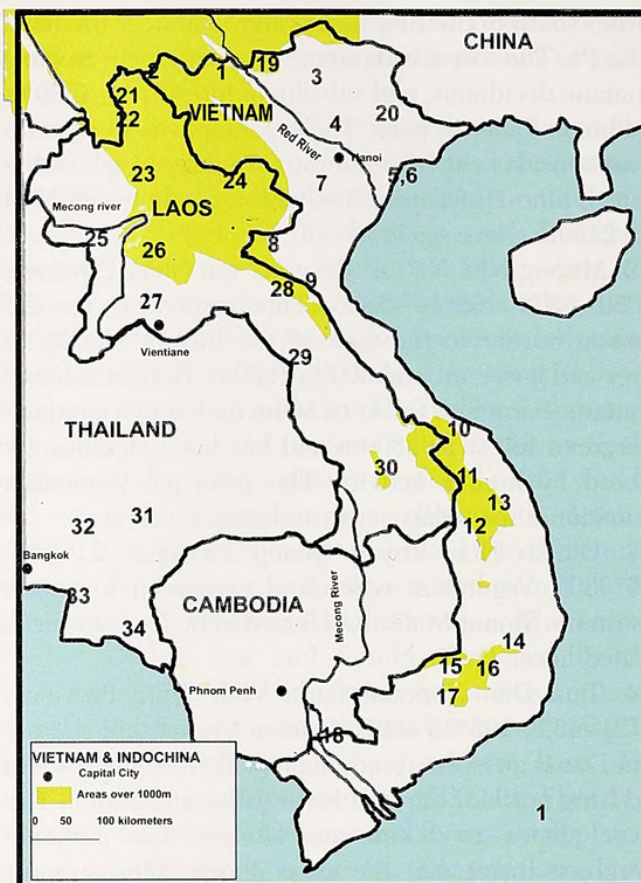


FIG. 1. Map of Indo-China, with numbers of localities given in the text.

longicaudata Niceville, 1881, **reinst.stat.**

lecerfi Fruhstorfer, 1914, **n. stat.**

ABISARA C & R Felder, 1860

=*oenabarus* Toxopeus, 1926, *nom. nud.*

echerias (Stoll, 1790) (*Papilio*)

=*tonkinianus* Fruhstorfer, 1904

a) *paionea* Fruhstorfer, 1914

= *notha* Bennett, 1950, **n. syn.**

saturata meta Fruhstorfer, 1904

=*siamensis* Fruhstorfer, 1904

=*annamitica* Fruhstorfer, 1904

bifasciata angustilineata Inuoé & Kawazoé, 1965

abnormis Moore, 1884

latifasciata Inuoé & Kawazoé, 1965, **n. stat.**

kausambi C & R. Felder, 1860

neophron chelina Fruhstorfer, 1904

=*neophronides* Fruhstorfer, 1914

=*f. gratius* Fruhstorfer, 1912

attenuata (Tytler, 1915) (*Taxila*), **reinst. stat.**

burnii timaeus (Fruhstorfer, 1904) (*Taxila*)

fylla magdala (Fruhstorfer, 1904) (*Sospita*)

freda Bennett, 1957

TAXILA Doubleday, 1847*dora* Fruhstorfer, 1904*hainana* Riley & Godfrey, 1925, **n. stat.****PARALAXITA Eliot, 1978***telesia bouletti* (Fruhstorfer, 1914) (*Laxita*)**LAXITA Butler, 1879***thuisto thuisto* Hewitson, [1861] (*Taxila*)**STIBOGES Butler, 1876***nymphidia* Butler, 1876*elodinia* Fruhstorfer, 1914, **n. stat.**

Species Accounts

Genus **Zemeros** Boisduval, 1836***Zemeros flegyas flegyas*** (Cramer, [1780])

(Figs. 2, 3)

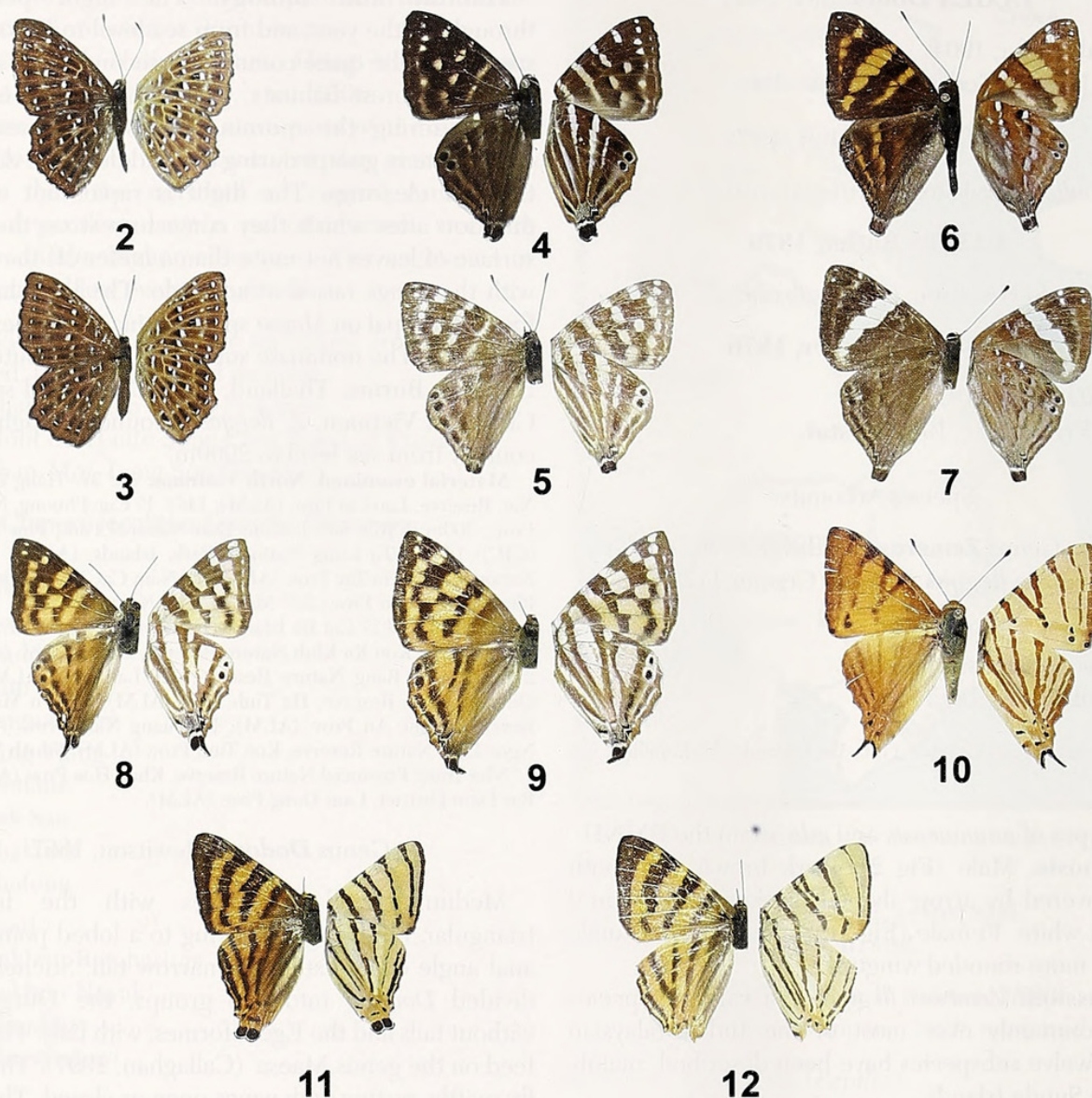
=annamensis Fruhstorfer, 1912*=esla* Fruhstorfer, 1912*Papilio flegyas flegyas* Cramer, 1780, *De Uitlandische Kapellen*, v.3, p.158, pl. 175.The types of *annamensis* and *esla* are in the BMNH.**Diagnosis.** Male (Fig 2). Dark brown with both wings covered by arrow shaped black spots bordered distad in white. Female (Fig.3). Same pattern as male but with more rounded wingtips.**Discussion.** *Zemeros flegyas* is a variable species found commonly over most of the Indo-Malaysian realm. Twelve subspecies have been described, mainly from the Sunda Islands.Material from Vietnam shows considerable variation depending on the season and locality. Two forms have been described. *Zemeros annamensis* Fruhstorfer, 1912 —“Darker chocolate brown than males from Tonkin (*flegyas*) which are nearly identical to males from south China, smaller white spots and VS light golden brown. In December, and rainy season”, and *esla* Fruhstorfer, 1912 —“small with a broad white apical band. Found in the south in Feb to 1000m.” It is similar to subspecies *confucius* Moore, 1878 from Hainan, and *allica* (Fabricius, 1787) from Thailand, but with the sub-apical spot larger and maculation less prominent. In examining specimens from all over Vietnam, I have not been able to associate the two forms with any geographical area, but there appears to be some correlation with season, *esla* more common in the dry season from November to March, and *annamensis* in the wet season from March to October.**Habitat and biology.** The flight period is throughout the year, and from sea level to 1600m. This species can be quite common in secondary to severely degraded forest habitats, where they feed on flower nectar during the morning hours. Both sexes will congregate in groups during the middle of the day along trails or clearings. The flight is rapid, but of short duration after which they come to rest on the dorsal surface of leaves not more than a meter off the ground with the wings raised at an angle. The larva has been found in Nepal on *Maesa* sp. (Myrsinaceae), (pers. obs).**Range.** The nominate subspecies is distributed from Nepal to Burma, Thailand, Indo-China, and southern China. In Vietnam, *Z. flegyas* is found throughout the country from sea level to 2000m.**Material examined. North Vietnam:** 2♂♂ 3♀♀ Hang Lien Song Nat. Reserve, Lao Cai Prov. (ALM); 14♂♂ 1♀ Cuc Phuong, Ninh Binh Prov., 300m (CJC); 6♂♂ 1♀ Tam Dao National Park, Pho Tho Prov. (CJC); 1♂ Bai Tu Long National Park, Islands, (ALM); 1♂ Ba Vi National Park, Ha Tay Prov. (ALM); 1♂ Nam Cat Tien National Park, Phan Quoc Tuan Prov.; 3♂♂ Muong Nhe Nature Reserve, Lai Chau Prov. (ALM); 1♂ 1♀ Cat Ba Island, Hai Phong Prov. (ALM). **Central Vietnam:** 1♂ Kon Ka Kinh Nature Reserve, Gia Lai Prov. (ALM); 1♂ 2♀♀ Kon Cha Rang Nature Reserve, Gia Lai Prov. (ALM); 1♀ Vu Quang Nature Reserve, Ha Tinh Prov. (ALM); 8♂♂ Pu Mat Nature Reserve, Nghe An Prov. (ALM); 1♂ Quang Nam Prov. (ALM); 1♂ Ngoc Linh Nature Reserve, Kon Tum Prov. (ALM). **South Vietnam:** 1♂ Nha Trang Provincial Nature Reserve, Khanh Hoa Prov. (ALM); 2♂♂ Bar Dam District, Lam Dong Prov. (ALM).Genus **Dodona** Hewitson, 1867Medium sized butterflies with the forewing triangular, hindwing narrowing to a lobed point at the anal angle or an extended, narrow tail. Stichel (1928) divided *Dodona* into two groups, the Durgiformes without tails and the Egeonformes, with tails. The larvae feed on the genus *Maesa* (Callaghan, 1997). The adults fly swiftly, resting with wings open or closed. The males are often found on wet sand along streams. Males of some species are strong hilltoppers.***Dodona katerina katerina*** Monastyrskii & Devyatkin, 2000

Figs. 4, 5, 61

D. katerina, Monastyrskii & Devyatkin, 2000, *The zoological Miscellany*, (1):[1] tp., 32. (*Papilio*) (Pl.21a figs 1, 2).

This interesting species was described from 2 males and 2 females captured in the Kon Ka Kinh Nature Reserve, 1500m to 1600m, Gia Lai Province in Central Vietnam. The holotype resides in the Moscow State University (MSU). Paratypes are in the BMNH, London.

Diagnosis. Male (Fig.4). Dorsal ground color brown with spots infused with orange scaling. Ventral surface forewing with white spots, hind wing with white lines converging on the anal angle where there is a black bilobed extension. Female (Fig.5). Dorsal ground color



FIGS. 2–12. All figures are Vietnamese specimens, except where indicated. 2. *Zemerus flegyas* male, 3. *Zemerus flegyas* female, 4. *Dodona katerina* male, 5. *Dodona katerina* female, 6. *Dodona ouida palaya* male, 7. *Dodona ouida palaya* female, 8. *Dodona egeon* male, 9. *Dodona egeon* female, 10. *Dodona speciosa* male, 11. *Dodona adonira* male, 12. *Dodona adonira* female.

light brown with white spots on the forewing. Ventral surface nearly identical to male, but with lighter ground color.

Discussion. The species resembles *Dodona eugenes* without tails. It appears closest to *D. dipoea* and *D. dracon* Niceville, 1897, which likewise have the same bi-lobed anal angle and basic wing pattern. However, *D. katerina* differs in having larger spots and darker brown color on the dorsal surface, broad white bands on the ventral surface, and a white spot on the costa of the hind wing.

In 2003, the same authors described a subspecies *sombra* from a male specimen captured at the Vu Quang Nature Reserve, Ha Tinh Province, 1500m. It

differs from the nominate subspecies in its darker ground color. Whether this is an aberrant individual or a geographical race will have to await the examination of additional material.

Comparison of genitalic dissections with figures published with the original description leaves no doubt that the material examined from both North and Central Vietnam represent the same species. A female specimen is figured on Plate 103 in Osada *et al.* (1999) under "*dipoea*" from Xam Neua, Laos, near the Vietnam border. This suggests that the species is much more widely distributed than previously thought.

It is noted that Osada *et al.* (1999) illustrate *Dodona dracon* (as *dipoea*) also from Xam Neua, suggesting that

this taxon is likely to be found in Vietnam.

Habitat and biology. The species inhabits the middle to high montane broad-leaved evergreen forest at about 1500m. Dates: March, April, September; Rare.

Range (Fig.61). From the Chinese border south of the Red River down the Annamite chain to Central Vietnam and eastern Laos.

Material examined. **North Vietnam:** 3♂♂ Huang Lien Son Nature Reserve (ALM); 1♂ 1♀ Nha Trang, Khanh Hoa Prov. (ALM). **Central Vietnam:** 1♂ 1♀ Kon Ka Kinh Nature Reserve, Gia Lai Prov., 1500–1600m (ALM); 1♂ Vu Quang Nature Reserve, Ha Tinh Prov., 1500m (ALM) (*D. k. sombra*).

***Dodona ouida palaya* Fruhstorfer, 1914**

Fig. 6, 7, 61

Dodona ouida palaya Fruhstorfer, 1914, in Seitz, ed. Grossschmetterlinge der Erde, v.9. p.777.

Fruhstorfer described the subspecies *D. o. palaya* from “Omeishan” and Mupin in Sze-Tschuan, China. I was unable to locate the type specimen.

Diagnosis. Male (Fig.6). Ground color dark reddish brown, both wings crossed by three yellow orange bands. Ground color on the underside is reddish brown. Hindwing with elongated extension of the tornus, terminating in two black lobes. Female (Fig.7). The forewing is crossed by a broad white irregular band.

Discussion. According to Fruhstorfer, *palaya* from China differs from the nominate subspecies in having a “wider reddish-gold median band on the forewing”. He remarks that Karen Hills (Burma) material is a transition to typical *ouida* from Nepal and India. The taxon was not illustrated. Examination of material at the BMNH suggests that the main difference is a darker color in *palaya*, particularly on the ventral surface, which is also typical of Vietnamese material.

Habitat and biology. *D. ouida* perches frequently on hilltops during the afternoon where males can be abundant at times. During the morning hours it can be found absorbing salts by streams with other *Dodona* species (Callaghan 1997). Dates: March, June, September, December. The food plant is *Maesa chisia* Buch. (Myrsinaceae) (Sevastopoulo 1946).

Range (Fig. 61). The species is found in the mountains above 800m from Nepal following the Himalayas across Burma, northern Thailand to southwest China and Indo-China. There is one subspecies from Nepal (*phlegra* Fruhstorfer, 1882). Subspecies *palaya* inhabits southwestern China to east Indochina, and north and central Vietnam.

Material examined. **North Vietnam:** 10♂♂ 1♀ Huang Lien Son Nature Reserve, Lao Cai Prov., 2000m (ALM); 1♂ Tam Dao National Park, Vinh Phuc Prov., 1300m (CJC). **Central Vietnam:** 2♂♂ Kon Ka Kinh Nature Reserve, Gia Lai Prov. (ALM); 2♂♂ Ngoc Linh Nature Reserve, Kon Tum Prov., 1600m (ALM); 4♂♂ 6♀♀ Vu Quang Nature Reserve, Ha Tinh Prov., 1500m

(ALM); 1♂ 1♀ Kon Cha Rang Nature Reserve, Gia Lai Prov., 1000m (ALM).

***Dodona adonira*, Hewitson, 1866**

Fig. 11, 12, 61

Dodona. adonira Hewitson, 1865, Exot Butts v4(2) Erycinidae *Dodona* and *Sospita* I, fig. 1,2.

Hewitson described *Dodona adonira* from a male originating from Darjeeling, India, currently in the BMNH. Two additional males are identified as paratypes.

Diagnosis. Male (Fig.11). Ground color dorsal surface dark brown with 4 yellow-orange bands on the forewing and 5 on the hindwing converging on the anal angle, with a black bilobed extension. Ventral surface light yellow with black narrow transverse lines reflecting the dorsal surface interspaced with variable silver scaling on the hindwing. Female (Fig.12). Like male with wider wings and lighter, paler color.

Discussion. Fruhstorfer (1904) described subspecies *argentea* from a northern Burmese specimen with wide borders and faint silver markings between the ventral hindwing veins. Comparison of the Fruhstorfer type (also in the BMNH) with Vietnamese material suggests that the latter are closer to typical *adonira* with wider yellow submarginal bands on both wings. Both have variable silver markings on the ventral hindwing.

Habitat and biology. *D. adonira* inhabits the higher mountains above 1200m. It can be found along streams where it rests with wings open, taking salts and other nutrients. Dates: November, February. Rare in Vietnam. The food plant is *Maesa chisia* Buch. (Myrsinaceae) (Sevastopoulo 1946).

Range (Fig.61). *D. adonira* is found from Nepal to North and Central Vietnam.

Material examined. **North Vietnam:** 3♂♂ 1♀ Huang Lien Son Nature Reserve, Sa Pa, Lao Cai Prov., 1650m (ALM). **Central Vietnam:** 1♂ Ngoc Linh Nature Reserve, Kon Tum Prov., 1800m (ALM).

***Dodona egeon* (Westwood, 1851)**

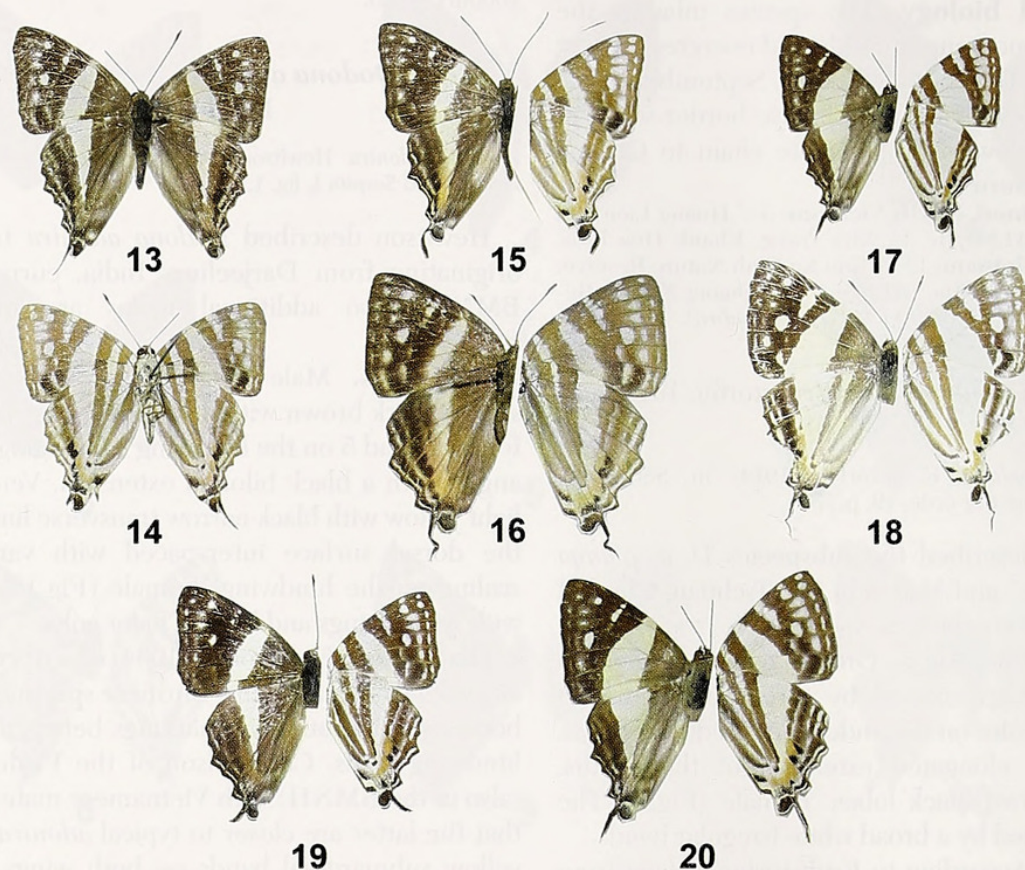
Figs. 8, 9, 61

=*Emesis egeon* Doubleday, 1847, nom. nud.

Taxila egeon Westwood, 1851, in Gen.diurn.Lep. 2:422 Pl.69, fig.2.

This species was described from Kumaon, Nepal. It was not possible to locate the type in the BMNH even after an extensive search. However, a neotype would not be required even if the type is lost, as the species is well known and common throughout its range.

Diagnosis. Male (Fig.8). Ground color is uniform orange-yellow with irregular checkered black bands



FIGS. 13–20. **13, 14.** *Dodona lecerfi*, holotype, dorsal and ventral, **15.** *Dodona lecerfi*, male form with yellow infusion on hindwing, **16.** *Dodona lecerfi* female, with yellow infusion on hindwing, **17.** *Dodona deodata* male, Thailand, **18.** *Dodona deodata* female, **19.** *Dodona longicaudata* male, **20.** *Dodona longicaudata* female, Andaman Isles.

crossing both wings, converging in two black lobes at the anal angle, the outer of which is extended into a short tail. The ventral surface reflects the dorsal maculation with wide, silver bands on the hind wings. Female (Fig.9). Similar to the male; differs in having wider wings and lighter coloration.

Discussion. The species can be easily separated from other tailed *Dodona* by the dominant orange yellow color of the dorsal surface and the wide bands. Comparison of Vietnamese material with specimens from Nepal shows no significant difference.

Habitat and biology. Vietnam specimens were recorded from disturbed forest at 1500m. During the morning hours, they frequent streams and damp earth. In Nepal, the food plant is *Maesa capitellata* Wall., (1824), (Callaghan 1997). Dates: March. Rare.

Range (Fig.61). *D. egeon* is distributed from Nepal to Vietnam and Laos in the mountains.

Material examined. **Central Vietnam:** 2♂♂ 1♀ Vu Quang Nature Reserve, Ha Tinh Prov., 1500m (ALM). **South Vietnam:** 1♂ 2♀♀ Nha Trang, Khanh Hoa Prov. (ALM).

Dodona speciosa Monastyrskii & Devyatkin, 2000

Figs. 10, 61.

D. speciosa Monastyrskii & Devyatkin, 2000 The Zoological Miscellany, (1):[1] tp., 32. (Papilio), (Pl.20 figs. 7,8).

This species was described from a single male from Central Vietnam. The holotype is in the MSU.

Diagnosis. Male (Fig.10). Dorsal surface dark yellow, darker at the margins; faint thin bands cross the forewing, wider and darker on the costa. Hindwing with faint, thin bands converging on the bi-lobed tornus with a short black tail. Ventral surface light yellow, maculation of the dorsal surface takes the form of thin, uniform reddish lines. Female: Unknown

Range (Fig.61). The species is known only from 2 specimens from Central and South Vietnam.

Material examined. **Central Vietnam:** 1♂ Ngoc Linh Nature Reserve, Kon Tum Prov. (ALM). **South Vietnam:** 1♂ Col du Da Troun, Lam Dong Prov., 1225m (MNHN).

Dodona maculosa phuongi Monastyrskii & Devyatkin, 2000

Fig. 61

Dodona maculosa phuongi Monastyrskii & Devyatkin, 2000, p.488 (Pl. 21a figs. 3, 4).

This subspecies is known from a single specimen from Ba Be National Park in Bac Can Province, North Vietnam. The holotype male is in the MSU.

Diagnosis. The subspecies differs from nominate *D. maculosa* from China in "a faintly developed yellow streak in the cell of the forewing, more diffused spots on the dorsal surface, and the pure white markings on the ventral surface, which in the nominate species are mostly yellow" (Monastyrskii & Devyatkin 2000).

Discussion. *Dodona maculosa* Leech, 1890 was described from China (Ichang) as a species. In Tierreich (1928), Stichel made *maculosa* a subspecies of *D. eugenes*. Comparison of the types of *D. maculosa* and *D. eugenes* as well as the genitalia confirms the original status of this taxon, which thus becomes *Dodona maculosa* Leech, 1890, reinst. stat.

Habitat and biology. The Ba Be National Park is set among the limestone hills north of Hanoi. This phenotype appears to be rare. Date: June.

Range (Fig.61). The nominate subspecies is distributed throughout southwest China to Vietnam north of the Red River. Subspecies *phuongi* is known only from the type locality.

Dodona deodata Hewitson, 1876

Figs 17, 18, 61.

Dodona deodata Hewitson, 1876, Ent. Mo. Mag., 13:151.

Dodona deodata was described from a male from Moulmein, south Burma. The type is in the BMNH, London.

Diagnosis. Male (Fig.17). Dorsal ground color dark brown, both wings crossed by a white 6 mm wide median band, narrowing at the forewing costa to a point, and on the hindwing narrowing to a point towards the anal angle with a black lobe and pointed tail as an extension of vein Cu3. Some sympatric individuals are paler with extension of the white areas over much of the wing. Female (Fig.18). As male, but with more extensive white areas.

Discussion. Vietnam material examined is identical to specimens from Thailand and Laos.

Habitat and biology. Local, rare. Date: April.

Range (Fig. 61). The nominate subspecies is distributed from southern Burma through the Malay Peninsula and Thailand to Laos and Vietnam.

Material examined. North Vietnam: 1♂ Muong Nhe, Lai Chau Prov. (ALM). South Vietnam: 1♂ km 8 Route Darlac (Dalat?) (CJC);

1♀ Cat Tien, Lam Dong Prov., 700m (ALM); 2♂♂ 1♀ Bao Loc, Lam Dong Prov. (MNHN).

Dodona lecerfi Fruhstorfer, 1914, n. stat.

Figs. 13, 14, 15, 16.

Dodona deodata lecerfi Fruhstorfer, in Seitz, 1914, Vol. 9, p.779, fig. 141b.

Dodona lecerfi was described from a male from Vinh, Annam (Central Vietnam). Although originally placed as a subspecies of *D. deodata*, examination of the morphology suggests it should be raised to species status. The type (Figs 13, 14) was located by me in the Vieux Collection, MNHN, and has been placed in the type collection of that institution.

Diagnosis. Male (Figs. 13, 14, 15). Forewing length 23mm. Dorsal wing ground color dark brown. Forewing median area crossed with a narrow, white irregular band, from cell to inner margin. Hindwing dorsad with a white median band 5mm wide at the costa narrowing to a point before the tail, and below M3 often infused with light orange scaling (Fig.15). Ventral ground color light brown with wide markings. Female. Forewing length 25mm, wings broad and rounded convex to base, distal margin straight. Maculation identical to male, though width of discal band may vary.

Discussion. *D. lecerfi* is related to *D. deodata* and *D. longicaudata*, sharing the white medial band and similar pattern on the ventral surface. However, it can be immediately separated by the extension of the narrow discal band to the anal angle, infused with orange scaling on the hindwing (Fig. 15), although this can be minimal, as in the type (Fig. 13). The male forewing distal margin is longer and female margin straighter. The dark bands on the ventral surface of both sexes are lighter and broader. Examination of the male genitalia of the three species shows many differences. *D. deodata* and *D. longicaudata* have a deeply bifurcated and pointed terminus on the transtilla, whereas in *D. lecerfi* (Fig. 54) it is wider and less bifurcated. *D. deodata* has a proportionately longer tegumen and small, rounded saccus and *D. longicaudata* narrower and longer valvae. In the female genitalia, the ductus bursae of *D. lecerfi* is long, narrow and straight, whereas in *D. longicaudata* and *D. deodata* it is wider, more robust with a ventral protrusion opposite the exit of the ductus seminalis.

Habitat and biology. This species is endemic to Central Vietnam. It is rare in collections. Nothing is known of its habits.

The white banded *Dodona* have always been a source of confusion and are in need of a general revision. In the literature (e.g. Pinratana, 1988) all the white *Dodona* are treated as seasonal forms. Examination of the genitalia, however, suggests that they involve several distinct species. Three of these have been identified for Vietnam, *D. deodata*, *D. longicaudata* and *D. lecerfi*.

Material examined. Central Vietnam: 1♂ "Grande Bute, Annam" (MNHN); 2♂♂ Annam Caleu, N. Maumer 1921 (MNHN); 2♀♀ Annam 1924 (Fournier) (MNHN); 1♀ Lam Dong, Bao Loc, 779m, 19-05-1974 (MNHN); 1♀ "Annam" (BMNH).

***Dodona longicaudata* Niceville, 1881, reinst. stat.**
Figs. 19, 20.

Dodona longicaudata, Niceville, 1881. P. Asiat. Soc. Bengal, p.121.

D. longicaudata was described from a male from Assam. The location of the type is currently unknown. Fruhstorfer in Seitz (1914) placed *longicaudata* as a subspecies of *D. dodona*. However, examination of the facies and genitalia suggest that it is a valid species.

Diagnosis. Both sexes have a narrower white band on both wings, reaching 3mm on the male forewing and more infusion of the white areas with darker scaling. Ventral surface markings red-brown. Male genitalia differs from *D. deodata* in the longer tegument, wider valvae, and a longer and squared saccus.

Discussion. Material from Vietnam is identical to specimens from Assam and Burma. It has much the same range as *D. deodata*. Although not mentioned from Thailand it probably occurs there.

Range. Burma through Thailand to Vietnam.

Material examined. Central Vietnam: 1♂ Pu Mat Nature Reserve, Ngho An Prov., 1000m (ALM).

Genus ***Abisara*** C. & R. Felder, 1860

=*oenabarus* Toxopeus, 1926, *nom. nud.*

Abisara is the largest old world genus of riodinid butterflies, occurring from Africa throughout the tropical Oriental Realm to Weber's Line. The Oriental species are divided into three groups; the *echerias* group with the margin of the hindwing forming a dentate extension below M3; the *neophron* group with M3 on the hindwing extended into a pointed tail, and the *fylla* group with little or no extension. The butterflies included in this genus all have one to three black ocelli on the apex of the hindwing. They have a bouncy flight and land on dorsal leaf surfaces with wings halfway open, making a few jerky movements on the leaves when landed. They do not stay long before flying to another leaf. I have never seen them on damp earth. The larvae have been recorded on *Maesa*. (Johnson & Johnson 1980).

Abisara echerias Group

The *echerias* group consists of a large number of variable phenotypes that have created much confusion over the years. A semblance of order came with its revision by Bennett (1950). Unfortunately the British Museum collection has little material from Indo-China,

so Bennett's work largely ignored this region. This gap was partially filled for the South Vietnamese fauna by Inuoé & Kawazoé (1964).

***Abisara echerias echerias* (Stoll, 1790)**
Fig 21, 22, 62.

=*odin* (Fabricius, 1793)

=*coriolanus* (Fabricius, 1793) (*Papilio*)

=*xenodice* (Hubner, 1816) (*Lycaena*)

=*f. lydda* (Hewitson, 1865) (*Sospita*)

=*tonkiniana* Fruhstorfer, 1904

Papilio echerias. C. Stoll in Suppl. Cramer, 1790, Pap. Exot., 383, p140.

The nominate race of *echerias* in Vietnam was originally described as *tonkiniana* by Fruhstorfer, of which the type is in the BMNH. The type of *A. echerias* is lost.

Diagnosis. Male (Fig.21). Small (wing length 17 mm), uniformly darker discal area on both wings bordered distad by a darker line and then by a light uniform band; two additional lighter parallel narrow submarginal and marginal bands follow; variable black spots bordered in white are present in cells M1–M2, M2–M3, and C1–C2 on the ventral surface. Female (Fig.22). Dorsal surface like the male, but lighter with larger spots and more rounded forewings. Postdiscal area of the forewing ventral surface with straight, uniform bands.

Discussion. The North Vietnamese population was originally described by Fruhstorfer (1904) as *A. tonkiniana* from a male from the Manson mountains. This population differs from the nominate subspecies that ranges from southern China to Hong Kong only in having generally larger spots. However, the range of variation is within that of the nominate subspecies. Nominate *echerias* borders with subspecies *paionea* to the west and south of Vietnam.

Habitat and biology. The nominate subspecies inhabits lowland forests to 1100m (Tam Dao), and usually is seen along forest paths. The life history has been recorded from Hong Kong. (Johnson & Johnson 1980). Dates: December, March. Uncommon.

Range (Fig 62).The nominate subspecies occurs from Hong Kong through southeast China to Vietnam north of the Red River to northern Laos and Thailand.

Material examined. North Vietnam: 1♂ 1♀ "Tonkin" (BMNH); 1♂ 1♀ Song Chai, "Tonkin" (BMNH); 2♀♀ Haut Lon Ca – Vinh, Tonkin (BMNH); 1♂ 1♀ Tam Dao, 1100m (ALM); 1♂ 1♀ Bai Tu Long National Park, Islands (ALM); 10♂♂ 2♀♀ Bien Hoa region, Tonkin (MNHN).

***Abisara echerias paionea* Fruhstorfer, 1914**

Figs. 23, 24, 62.

=*Abisara echerias notha* Bennett, 1950, **n. syn.***Abisara kausambi paionea* Fruhstorfer, 1914, in Seitz, *Grossschmetterlinge der Erde*, v.9, p.782.

Abisara echerias paionea was described by Fruhstorfer from the Karen Hills in Burma as a subspecies of *Abisara kausambi* C & R. Felder. The type is in the BMNH.

Diagnosis. Male (Fig.23). Differs from nominate *echerias* in larger size, more pointed forewing, dark reddish brown ground color and broader bands and larger spots; dorsal side of forewing with post median bands clearly seen. Dorsal surface uniform reddish brown. Ventral surface with post median bands parallel; second band meeting marginal band at the tornus. Female (Fig.24). Differs from nominate *echerias* in the less angled median band and lighter submarginal area above M3.

Discussion. Bennett (1950) transferred *paionea* from *A. kausambi* to *A. echerius* based on the similarity of the male genitalia. He also described subspecies *notha* from a female from Chiem Hoa, central North Vietnam that had been designated by Fruhstorfer (1904) as the female of *A. meta* Fruhstorfer, 1904. Bennett considered the male of *A. meta* to be a subspecies of *A. saturata* (see below). Bennett recorded an additional female of *notha* from Phuc Son in Central Vietnam. In South Vietnam, another female was located by Inuoé and Kawazoé at Bu Dang, 210km north of Ho Chi Minh City. No males were examined by either author, which is surprising as they can be quite common. My examination of males and additional females left no doubt that these refer to subspecies *A. e. paionea*, being identical to specimens from Thailand (Pinratana 1988, p.38). Pinratana suggests that *paionea* is the wet season form of *echerias*. It is true that their capture dates appear to correspond to the seasons and the genitalia are identical. However, the ranges do not overlap and *paionea* is the only form recorded in central to South Vietnam. There are specimens that appear intermediate with *A. echerias echerias* from Tam Dao and Bien Hoa north of Hanoi, and a rather aberrant female from Cuc Phuong National Park. Whether or not *paionea* in fact constitutes a separate species will have to await the study of more material and field observations.

Habitat and biology. Found from sea level to 1500m in primary and secondary forest and disturbed habitats. The female from Cuc Phuong was captured in open grass beside the road. Dates: March, April, June,

July, September. Local but common.

Range (Fig. 62). Found throughout eastern Thailand, Laos, and Central to South Vietnam. In Thailand, it is recorded from Chaing Mai, Chanthaburi, Nakhon Ratchasima (Pinratana 1988) and in Laos, from Vientiane, Xiang Khouang, and Thakhek (Osada *et al.* 1999).

Material examined. North Vietnam: 1♀ (Type) Chiem Hoa, Tuyen Quang Prov. (BMNH); 12♂♂ 2♀♀ Hoa Binh, Tonkin (MNHN); 1♀ Tam Dao, Vinh Puc Prov. (ALM). **Central Vietnam:** 2♂♂ Ba Na, Quang Nam Prov. (ALM); 4♂♂1f Kon Ka Kinh, Gia Lai Prov. (ALM); 1♂ Phong Dien, Thua-Hien Hue Prov. (ALM); 1♂ 1♀ Pu Mat Nature Reserve, Nghe An Prov. (ALM); 1♂ Ngoc Linh Nature Reserve, Kon Tum Prov. (ALM). **South Vietnam:** 1♂ Bha Trang Nature Reserve, Khanh Hoa Prov. (ALM); 1♀ Bao Dam District, Lam Dong Prov. (ALM).

***Abisara saturata meta* Fruhstorfer, 1904**

Figs. 25, 26, 62.

=*siamensis* Fruhstorfer, 1904=*annamitica* Fruhstorfer, 1904*Abisara meta* Fruhstorfer, 1904, *Berl. Ent. Zeit.*, 48:285.

Fruhstorfer described *A. meta* from a male and female from Lang Son Province, Vietnam, just south of the Chinese border. The male of this taxon was made a subspecies of *Abisara saturata* by Bennett (1950) based upon the male genitalia. Nominate *A. saturata* was described from Hainan island. The type of *A. meta* is in the BMNH.

Diagnosis. Male (Fig. 25). Differs from *A. e. paionea* in its slightly larger size, and on the ventral surface of the forewing, the discal and postdiscal bands are straighter, the postdiscal band is curved distad at the tornus toward the submarginal band, instead of being straight. On the hindwing, the discal band is rounder as it approaches the inner margin, whereas on *paionea* it jags more sharply. Female (Fig. 26). Differs from the male in the lighter brown ground color and the more pronounced tail on the hindwing. It differs in addition from *paionea* females in the darker ground color, and absence of lighter scaling along the veins in the postdiscal area of the hindwing. Females from Thailand have a light tan subapical area that is lacking in Vietnamese specimens.

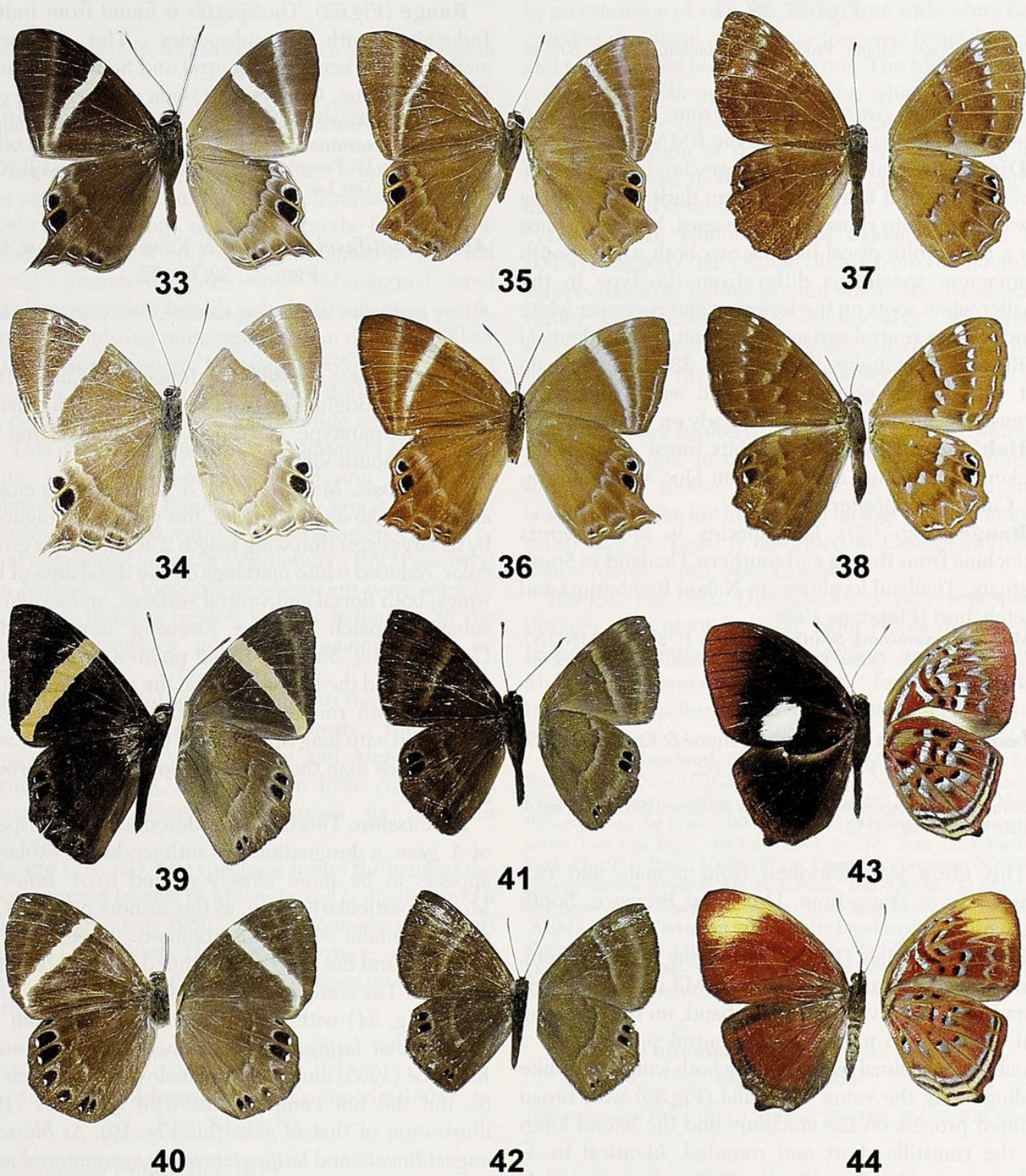
Habitat and biology: Unknown.

Range (Fig.62). North Vietnam along the Chinese border, to northern Thailand.

Material examined. 1♂ (holotype) Than-Moi, Lang Son Prov. (BMNH); 4♂ 4♀♀ Mont Du Haute Song Chai, Lao Cai Prov. (MNHN).



FIGS. 21-32. 21. *Abisara echerias echerias* male, 22. *Abisara echerias echerias* female, 23. *Abisara echerias paionea* male, 24. *Abisara echerias paionea* female, 25. *Abisara saturata meta* male, 26. *Abisara saturata meta* female, 27. *Abisara abnormis* male, 28. *Abisara abnormis* female, 29. *Abisara bifasciata angustilineata* male, 30. *Abisara bifasciata angustilineata* female, 31. *Abisara latifasciata* male, 32. *Abisara latifasciata* female.



FIGS. 33–44. 33. *Abisara neophron chelina* male, 34. *Abisara neophron chelina* female, 35. *Abisara attenuata* male, 36. *Abisara attenuata* female, 37. *Abisara burnii timaeus* male, 38. *Abisara burnii timaeus* female, 39. *Abisara fylla magdala* male, 40. *Abisara fylla magdala* female, 41. *Abisara freda* male, 42. *Abisara freda* female, 43. *Paralaxita telesia bouletti* male, 44. *Paralaxita telesia bouletti* female.

***Abisara abnormis* Moore, 1884**

Figs. 27, 28, 62.

Abisara abnormis, Moore, Proc. Z. soc. London, 1884, p. 532, pl. XLIX, fig. 3.

This species was described from a male from Moulmein, Burma, currently in the BMNH.

Diagnosis. Male (Fig. 27). Forewing length 1.7cm. Dorsal surface of forewing uniform dark brown with a row of four white spots below the apex. Ventral surface has a thin, white discal band across both wings. South Vietnamese specimens differ from the type in the smaller white spots on the forewing and narrower white bands on the ventral surface. The genitalia are identical to Burmese specimens. Female (Fig. 28). Like the male but with lighter ground color and wider and more extensive white markings, particularly on the forewing.

Habitat and biology. Inhabits forest areas of the Mekong delta, 50m, and the Chau Doc Mountains on the Cambodian border.

Range (Fig. 62). The species is found across Indochina from Burma and southern Thailand to South Vietnam. Thailand localities are Nakon Ratchasima and Phetchaburi (Pinratana 1988).

Material examined. South Vietnam: 1♂ Saigon (MNHN); 1♂ 1♀ Montagnes Chau Doc, Cochinchine, An Giang Prov. (MNHN).

***Abisara bifasciata angustilineata* Inuoé & Kawazoé, 1965**
Figs. 29, 30, 55, 62.*Abisara bifasciata angustilineata* Inuoé & Kawazoé, 1965, p323, figs 4, 5, plate II figs 9, 10, 11, 12.

This taxon was described from a male and two females from Trang Bom, Dong Nai Province, South Vietnam.

Diagnosis. Male (Fig.29). Forewing length 1.7 cm. Dark discal area angled sharply at M3 on both wings; distad of this is a variable white band, on the forewing wider above M3 to the costa. Ventral surface with a variable white discal band crossing both wings and white scaling along the veins. Genitalia (Fig.55) with broad pointed process on the vinculum and the lateral lobes on the transtilla short and rounded, identical to *A. bifasciata angulata* from Burma. Differs from typical *A. abnormis* on the dorsal surface of the forewing in having a wider white band above M3, and on the ventral surface in having white scaling from the discal band outlining the veins crossing the sub-margin. Female (Fig.30). Like the male but with lighter ground color and wider white lines. Genitalia identical to *A. b. angulata*.

Habitat and biology. Inhabits primary forest areas in middle altitudes. Dates: Feb, April, May, July,

August. Local, but can be common.

Range (Fig.62). The species is found from India to Indochina with 5 subspecies. The subspecies *angustilineata* occurs in Central and South Vietnam to Laos (Vientiane, Oudomsay, Osada *et al.* [1999], plate 104 under *Abisara abnormis*) and to southeast Thailand.

Material examined. 2♂♂ 1♀ Dar Lac Road, km 8, Dac Lak Prov. (CJC); 1♀ Puom Bekheng, Dac Lac Prov. (CJC); 2♂♂ darker males, Dar Lac Road, km 8 (CJC).

***Abisara latifasciata* Inuoé & Kawazoé, 1965, n. stat.**
Figs. 31, 32, 56, 62.*Abisara geza latifasciata* Inuoé & Kawazoé, 1965, p325, fig.6, plate II fig 15,16.

This taxon was described by Inuoé & Kawazoé (1965) from a male originating from Dalat (Thac Pongour). An additional paratype is from Dinh Quan, Ding Nai Province, South Vietnam.

Diagnosis. Male (Fig.31). *A. latifasciata* is close in appearance to *angustilineata*, but can be distinguished by its larger size (forewing length 2.3cm), darker ground color, reduced white markings on the distal area of both wings, both dorsal and ventral surfaces, and a yellowish subapical patch on the forewing dorsal surface. Genitalia (Fig. 56) with broad pointed process on the vinculum and the lateral lobes on the transtilla short and rounded with rounded lateral process; valvae deeply bifurcated with long tips. Female (Fig. 32). Wider white discal bands than the male and more rounded forewing tips.

Discussion. This taxon was described as a subspecies of *A. geza*, a designation the authors do not explain. It appears to be more closely related to *A. bifasciata* Moore, particularly since, as the authors point out, the male genitalia share the pointed process on the vinculum and the short and rounded lateral lobes of the annellus. The comparison of the genitalia of *latifasciata* (their Fig. 21) with that of nominate *geza* from Java suggest that *latifasciata* is distinct. Indeed, Inuoé & Kawazoé (1965) illustrated the male genitalia (their Fig. 6), but did not compare this with Bennett's (1950) illustration of that of *geza* (his Fig. 10). As *bifasciata angustilineata* and *latifasciata* were encountered at the same locality and date, I consider them distinct species, and raise *latifasciata* to species rank.

Habitat and biology. Inhabits primary evergreen forest in the middle elevations in South Vietnam. Dates: February, April, May.

Range (Fig.62). The species is found in South Vietnam and Laos (Xaignabouri) (Osada *et al.* 1999, under *A. bifasciata*).

Material examined. 5♂♂ 1♀ Dar Lac Road, km 8 (CJC); 4♂♂ 7♀♀ "Vietnam" (BMNH).

***Abisara kausambi kausambi* C. & R. Felder, 1860**
Fig. 62.

Abisara kausambi [C. & R.] Felder, 1860. Wiener ent. Monatschrift 4(12): 397.

This taxon was described from Malaysia. The type is in the BMNH.

Diagnosis. Male. Dorsal surface crimson brown, paler at the apex of the forewing, ventral surface bands straight on both wings, not angled; on the holotype, the hindwing margin is only slightly indented at M3, not pointed. Female. Lighter, with submarginal band widening to form a broad, pale buff subapical patch. Margin of hindwing more pointed than male at M3.

Discussion. Inuó & Kawazó (1965) determined 2 females as belonging to this species. Both the genitalia and description of the facies are in line with Bennett's key. This is the first record for *A. kausambi* from Indo-China, and outside of Sundaland and the Malay peninsula, although Pinratana (1988) says it is found in peninsular Thailand, without illustrating specimens or giving a locality. Corbet & Pendlebury (1992) record it from Malaya. No Vietnamese specimens were seen by me, so this taxon is treated here as belonging to the nominate subspecies until more material can be examined.

Habitat and biology. According to Bennett (1950), the species inhabits primary forests. Inuó and Kawazó's captures were in July and August, at the height of the rains, a time when little collecting is normally done, which may explain its rarity in collections.

Range (Fig. 62). The species is found throughout the Greater Sunda Islands to Malaysia and is divided into 6 subspecies (Bennett 1950). The Vietnamese specimens are from Dinh Quan, Dong Nai Province, and Col de Blao, Lam Dong Province, both locations on Rte. 20, in South Vietnam.

Abisara neophron Group

***Abisara neophron chelina* Fruhstorfer, 1904**
Figs. 33, 34, 63.

=*neophronides* Fruhstorfer, 1914

=*f. gratius* Fruhstorfer, 1912

Abisara chela chelina Fruhstorfer, 1904, Berlin ent Z. 48(4): 283.

Indochinese material is generally attributed to subspecies *chelina* Fruhstorfer, 1904. Originally described as a subspecies of *Abisara chela* de Nicéville, (1886), it was transferred to *A. neophron* by Fruhstorfer, in Seitz, (1914). The type of *chelina* is in the BMNH.

Diagnosis. Male (Fig. 33). Easily recognized by a

long, pointed white tipped tail on the hindwing formed by an extension of vein M3, and a 3mm wide white band crossing the discal area of the forewing from the costa and tapering just before the tornus. The hindwing has 2 prominent ocelli at the apex; the white discal band, reduced by the infusion of brown scaling, continues to the inner margin of the hindwing. Female (Fig. 34). Nearly identical to the male, only larger with slightly darker ground color and wider bands.

Discussion. Examination of a long series at the BMNH suggests that *chelina* differs from the nominate subspecies in its lighter ground color. The band width within populations varies considerably. Vietnamese specimens generally differ in having a narrower forewing medial band in the males and sharper markings on the ventral surface.

Habitat and biology. This species is locally common, and inhabits low to middle altitude evergreen forests, from 300 to 1500m. The males perch in open areas beside trails. The life history and biology of the nominate subspecies in Nepal is described in Callaghan (1997). Dates: March, April, May, October.

Range (Fig. 63). This species is very widespread through the Oriental region, from Nepal through the Indian subcontinent, to Indochina and Peninsular Malaysia. Subspecies *chelina* is found throughout Indochina from Burma and Yunnan in China to Vietnam and Malaysia.

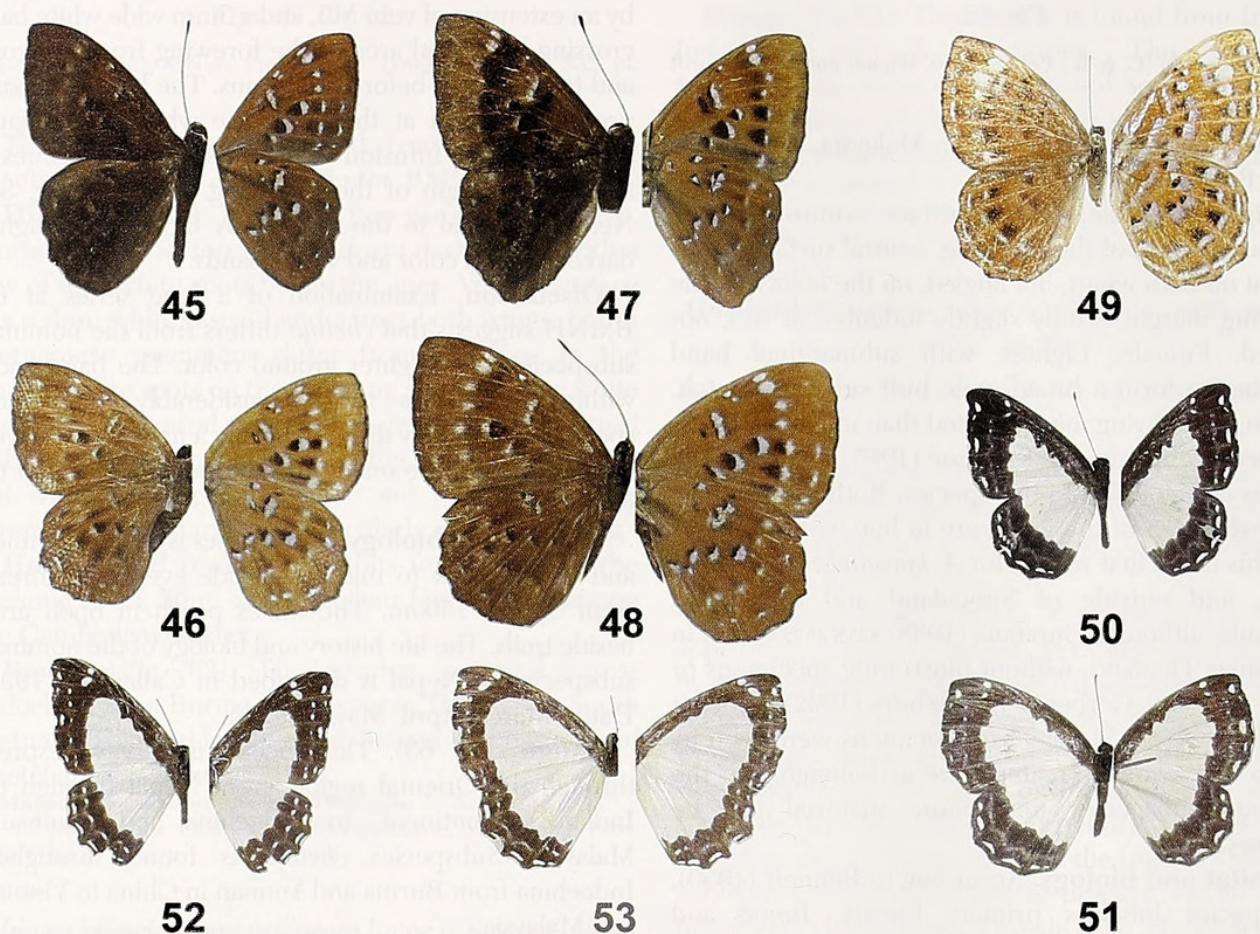
Material examined. North Vietnam: 1♂ Cuc Phuong, Ninh Binh Prov., 300m (CJC); 1♂ Muong Nhe Nature Reserve, Muong Nhe Prov., 460m (ALM), (AW); 2♂♂ 3♀♀ Pu Mat Nature Reserve, Nghe An Prov., 1000m (FFI); 1♀ Huang Lien Nature Reserve, Lao Cai Prov., 1600m (AW); 1♂ 3♀♀ Tam Dao National Park, Phu Tho Prov., 1000m (TD). **Central Vietnam:** 2♂♂ 1♀ Vu Quang Nature Reserve, Ha Tinh Prov., 400–1500m (ALM); 11♂♂ 2♀♀ Ngoc Linh Nature Reserve, Kon Tum Prov., 1250–1850m (ALM). **South Vietnam:** 2♂♂ Hon Ba Provincial Nature Reserve, Khanh Hoa Prov., 1200m (ALM); 1♂ Bao Dam District, Lam Dong Prov. (BHM); 2♂♂ Quang Nam Prov., 450m; 1♀ Kon Ka Kinh Nature Reserve, Gia Lai Prov. (AW).

***Abisara attenuata* (Tytler, 1915), reinst. stat.**
Figs. 35, 36, 63.

Taxila attenuata Tytler, 1915, J. Bombay Nat. Hist. Soc. 23: 512, planche 2.

A. attenuata was described from a male from Assam. Stichel (1928) made this taxon a subspecies of *Abisara savitri* C. & R. Felder, 1860, undoubtedly due to its similar appearance. The examination of a long series of material and the types at the BMNH, as well as comparison of the genitalia, confirms their original designation as separate species.

Diagnosis. Male (Fig. 35). Easily recognized by the tails formed by an extension of vein M3 of the hindwing, and separated from *A. neophron* by the light, orange



FIGS. 45–53. 45. *Taxila dora* male, 46. *Taxila dora* female, 47. *Taxila hainana* male, 48. *Taxila hainana* female, 49. *Laxita thuisto thuisto* female, 50. *Stiboges nymphidia nymphidia* male, 51. *Stiboges nymphidia nymphidia* female, 52. *Stiboges elodinia* male, 53. *Stiboges elodinia* female.

brown color of the dorsal surface, shorter tails and two narrow white discal bands on the forewing instead of one. It is easily distinguished from *A. savitri* by the forewing bands that diverge towards the costa instead of being parallel. Female (Fig. 36). Larger than the male and with rounded wingtips and slightly darker ground color.

Habitat and biology. Found in wet evergreen forests in middle altitudes. Uncommon.

Range (Fig. 63). The species is found from Assam to Laos near the Vietnam border, and Central to South Vietnam. Interestingly, Pinratana (1988) does not record it from Thailand.

Material examined. **Central Vietnam:** 1♂ 7♀♀ Kon Ka Kinh Nature Reserve, Gia Lai Prov. (AW). **South Vietnam:** 2♂♂ Dar Lac Road, km 8 (CJC); 1♀ Na Trang Provincial Nature Reserve, Khanh Hoa Prov. (ALM).

Abisara fylla group

Abisara fylla magdala (Fruhstorfer, 1904)

Figs. 39, 40, 63.

Sospita fylla magdala Fruhstorfer, 1904, Berlin ent Z. 48(4): 284.

Subspecies *magdala* was described from a male and female from Chiem Hoa in central North Vietnam. The types are in the BMNH.

Diagnosis. Male (Fig. 39). Differs from the nominate subspecies in the narrower forewing discal band colored white to golden (In the nominate subspecies it is always yellow), larger ocelli on the hind-wing apex, and more prominent black spots on the margin of the hindwing. Female (Fig. 40). Forewing band broader than the male, and always white. It differs from the nominate species in having larger hindwing marginal black spots.

Habitat and biology. Common in secondary forest and disturbed habitats along streams.

Range (Fig. 63). The species ranges from Nepal to Yunnan, China and south to Vietnam and Laos. Subspecies *magdala* occurs in Vietnam, Thailand, and eastern Laos.

Material examined. **North Vietnam:** 2♂♂ 1♀ Pu Mat Nature

Reserve, Nghe An Prov., 1000m (ALM); 1♂ 1♀ Tam Dao National Park, Phu Tho Prov., 1000m (ALM); 1♀ "Tonkin" (MNH). **Central Vietnam:** 2♂♂ Ba Na, Quang Nam Prov., 1400m (ALM). **South Vietnam:** 1♂ 1♀ Nha Trang Provincial Nature Reserve, Khanh Hoa Prov., 600m (ALM).

Abisara burnii timaeus (Fruhstorfer, 1904)

Figs. 37, 38, 63.

Taxila burnii timaeus Fruhstorfer, 1904, Berlin ent. Z. 48(4): 278.

This subspecies was described from a male and female captured at Than Moi, Lang Son Province in northeast Vietnam. The type is in the BMNH.

Diagnosis. Male (Fig.37). Ground color dark red brown, as Fruhstorfer says, like "Munich beer". Dorsal markings, especially a submarginal row of spots are somewhat obliterated by brown scaling. Border of hindwing slightly scalloped between the veins. Ventral surface light brown-yellow with a prominent eyespot at the apex of hindwing. Female (Fig.38). Lighter ground color, white markings slightly more prominent than the male. Subspecies *timaeus* may be distinguished from the nominate subspecies by the reduced ocellus and fainter and more separated white markings.

Habitat and biology. Inhabits low altitude primary evergreen forest throughout Vietnam. Dates: April, July. It appears to be rare.

Range (Fig.63). *Abisara burnii* is found from the Naga hills in north Burma to central Laos, to west China (Sze-Tschuan) and Taiwan. Subspecies *timaeus* is confined to Vietnam and eastern Laos.

Material examined. **North Vietnam:** 2♀♀ Cuc Phuong National Park, Ninh Binh Prov., 400m (ALM). **Central Vietnam:** 1♂ Kon Cha Rang Nature Reserve, K'Bang District, Gia Lai Prov. (ALM). **South Vietnam:** 2♂♂ 1♀ Nha Trang Provincial Nature Reserve, Khanh Hoa Prov., 600–1400m (ALM).

Abisara freda Bennett, 1957

Figs. 41, 42, 63.

Abisara freda Bennett, 1957, The Entomologist 90(1125): Figs 1-4.

A. freda was described from a male specimen from Loimwe, southern Shan states in Burma. The type is in the BMNH.

Diagnosis. Male (Fig.41). Similar in appearance to *Abisara fylla*, but easily separated by the lack of the broad discal band on the forewing and its smaller size. Genitalia are similar to *A. fylla*. Female (Fig.42). Like male, but lighter ground color and rounded wing tips.

Habitat and biology. Disturbed mountain forest habitat along the Chinese border. Uncommon.

Range (Fig.63). Recorded from Burma through northern Thailand and Laos (Phong Saly, Osada *et al.*

1999) to North Vietnam.

Material examined. **North Vietnam:** 3♂♂ 2♀♀ Huang Lien Son, SaPa District, Lao Cai Prov., 1900m (ALM); 1♀ "Vietnam" (BMNH).

Genus ***Taxila*** Doubleday, 1847

Taxila dora Fruhstorfer, 1904

Figs. 45, 46, 57, 64.

Taxila dora Fruhstorfer, 1904, Berliner Entomol. Zeitschrift 48(4): 277.

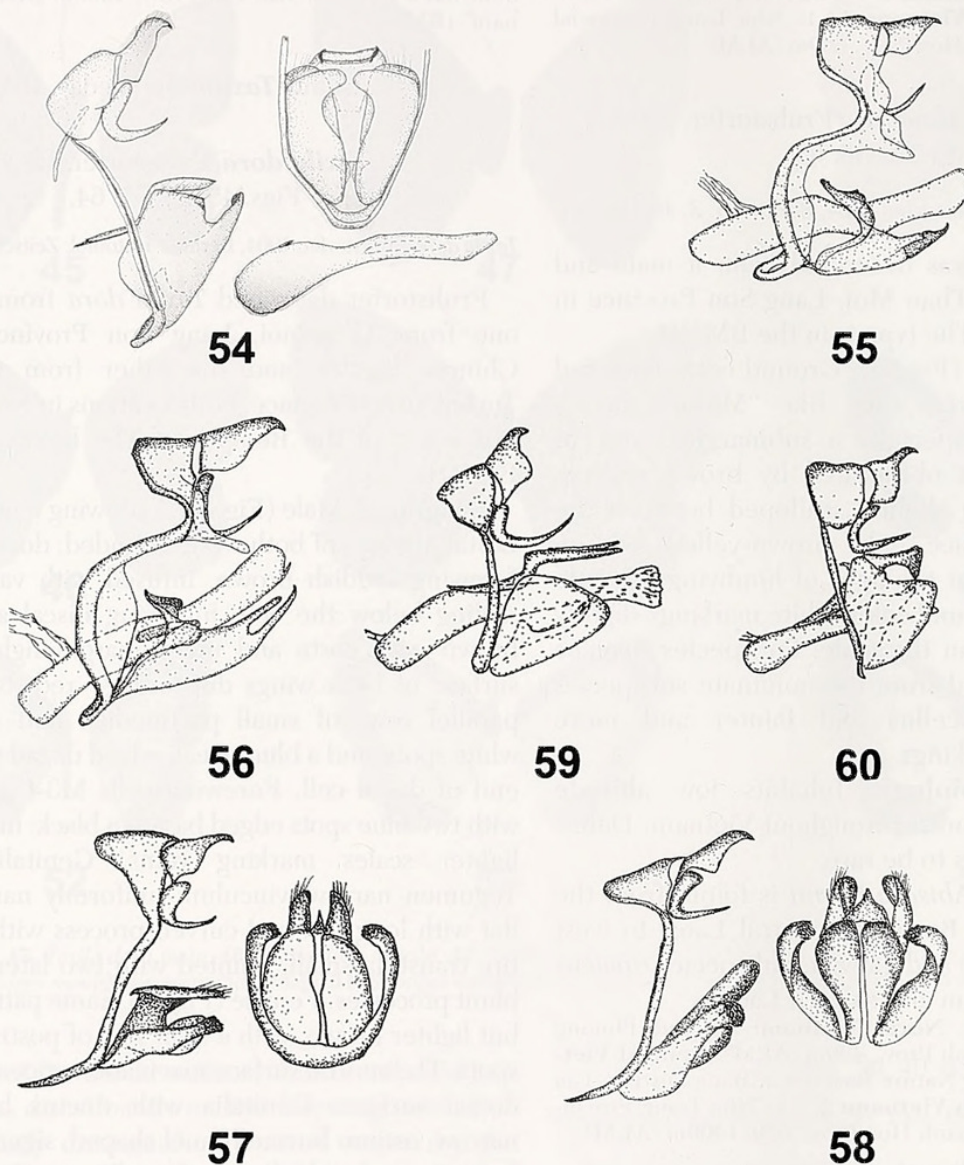
Fruhstorfer described *Taxila dora* from two males, one from Than-moi, Lang Son Province near the Chinese border, and the other from Chiem-Hoa, TuyenQuang Province, both locations in North Vietnam and north of the Red River. The holotype is in the BMNH.

Diagnosis. Male (Fig.45). Forewing length 19.5mm. Distal margins of both wings rounded; dorsal surface of forewing reddish brown, infused with variable black scaling below the cell; hindwing discal area reddish brown with costa and inner margin lighter. Ventral surface of both wings dull orange-red, two irregular parallel rows of small postmedian and submarginal white spots, and a blue streak edged distad with black at end of discal cell. Forewing cells M3-Cu1, Cu1-Cu2 with two blue spots edged basad in black; hindwing with lighter scales marking veins. Genitalia (Fig.57). Tegumen narrow, vinculum uniformly narrow; valvae flat with long external curved process with cornuti on tip; transtilla small, pointed with two lateral rounded, blunt processes. Female (Fig.46). Same pattern as male, but lighter brown, with a faint row of postmedial white spots. The ventral surface maculation appears clearly on dorsal surface. Genitalia with ductus bursae long, narrow; ostium bursae funnel shaped; signae on corpus bursae round with cluster of small cornuti.

Habitat and biology. *T. dora* can be encountered locally from sea level to 1700m in primary evergreen forest, and occasionally in secondary forest.

Range (Fig.64). This species is found from North through South Vietnam. Osada *et al.* (1999) record it from Boun Neua in Laos near the Chinese border.

Material examined. **North Vietnam:** 1♀ Haut Tonkin Bas Yunnan, (MNH); 4♂♂ 1♀ Tonkin Hoa Binh (MNH); 1♀ Tam Dao National Park, Phu Tho Prov. (ALM); 1♂ 1♀ Pu Mat Nature Reserve, Nghe An Prov. (ALM); 1♂ 4♀♀ Cuc Phuong National Park, Ninh Binh Prov., 400m (CJC); 2♂♂ Bai Tu Long National Park (ALM). **Central Vietnam:** 1♂ Vu Quang Nature Reserve, Ha Tinh Prov. (ALM); 1♂ Kon Cha Rang Nature Reserve, Gia Lai Prov. (ALM); 1♂ Quang Nam Prov. (ALM); 1♂ 1♀ Kon Ka Kinh Nature Reserve, Gia Lai Prov. (ALM); 1♀ Thua Thien Hue, Phong Diem District, Khe Lau Prov. (ALM). **South Vietnam:** 1♂ 4♀♀ Hon Ba Provincial Nature Reserve, Khanh Hoa Prov. (ALM); 2♂♂ Bao Dam District, Lam Dong Prov. (ALM).



FIGS. 54-60. Male genitalia: 54. *Dodona lecerfi*, 55. *Abisara bifasciata angustilineata*, 56. *Abisara latifasciata*, 57. *Taxila dora*, lateral and ventral views; 58. *Taxila hainana*, lateral and ventral views; 59. *Stiboges nymphidia nymphidia*, 60. *Stiboges elodinia*.

***Taxila hainana* Riley & Godfrey, 1925, n. stat.**

Figs. 47, 48, 58, 64.

Taxila dora hainana Riley & Godfrey, 1925, The Entomologist, 1925, p140, pl. III, fig. 4.

This taxon was described from a single male specimen from Five Finger Mountain, 700m, Hainan Island, China, as a subspecies of *P. dora*. The holotype is in the BMNH.

Diagnosis. Male (Fig. 47). Similar to *P. dora*, but larger, forewing length 22mm and more pointed. Dorsal surface light brown, forewing with a wide, diffuse black postdiscal band reaching from costa to dorsum and

discal area to base infused with black scaling; hindwing with discal area to dorsum black; ventral surface lighter orange brown than *dora*, pattern similar. Genitalia (Fig. 58). General configuration similar to *dora*. Differs in the following respects: wider uncus and tegumen, end of tegumen wide and flat, lateral projections of transtilla wide and cup shaped, transtilla wide, external processes on valvae strongly curved inwards, but flatter internally. Female (Fig. 48). With similar pattern as male but paler, with a prominent postmedial row of white spots. Darker than the female of *P. dora*, larger (22mm vs. 19mm), and with more pointed forewings. Also, the first two

white spots of the postmedial row are larger. Genitalia. Ductus bursae a long, narrow tube; ostium bursae a small triangular plate.

Discussion. Comparison of the dorsal wing pattern and genitalia of specimens of *P. dora* with *P. hainana* suggests the two phenotypes are separate species. The two phenotypes are sympatric through most of their range in Vietnam with no indication of intergrades.

Habitat and biology. Inhabits primary evergreen forest from 220m to 1200m. Dates: March, April. Local.

Range (Fig.64). Hainan through south China to Vietnam and Laos. Osada *et al.* (1999) illustrate a male and female from Lak Sao in central Laos as "*Taxila dora*". One female from Yunnan, China (MNHN).

Material examined. **North Vietnam:** 4♂♂ 3♀♀ "Tonkin" (MNHN); 4♂♂ 1♀ Hoa Binh, Hoa Binh Prov. (ALM). **Central Vietnam:** 2♂♂ 1♀ Kon Cha Rang Nature Reserve, Gia Lai Prov. (ALM); 1♀ Vu Quang Nature Reserve, Ha Tinh Prov. (ALM). **South Vietnam:** 1♂ Nha Trang Provincial Nature Reserve, Khanh Hoa Prov. (ALM); 1♂ Kon Ka Kinh Nature Reserve, Gia Lai Prov. (ALM).

Genus *Paralaxita* Eliot, 1978

Paralaxita telesia bouletti (Fruhstorfer, 1914)

Figs. 43, 44, 64.

Laxita bouletti Fruhstorfer, in Seitz, 1914, p.790, fig.141a, female.

Laxita bouletti was described from a single female from Siam (Mission Harmand). The holotype female was located by the author in the Ancienne Collection in the MNHN, Paris, and deposited in the type collection of that institution. The specimen has a label "Lakhon, Siam 1878, Dr Harmand". A type label with the currently recognized name was added. In addition, there is a male in the BMNH from north Siam with the label "Type". However, this specimen cannot be a type, having the date of capture as 1918, four years after the species was described.

Diagnosis. Male (Fig.43). Dorsal ground color black, forewings with dark reddish apex and distal area, and a large, round white spot below the discal cell on the inner margin. Ventral surface with two discal rows of unconnected blue-silver spots edged basad with black, forewing with a subapical yellow spot, hindwing with a black submarginal line edged basad in silver-blue and distad in black and yellow. Female (Fig.44). Dorsal surface carmine with a yellow subapical spot on the forewing. Differs from the nominate subspecies in the solid carmine color of the hindwing dorsal surface. Ventral surface as in male.

Habitat and biology. *P. telesia bouletti* inhabits primary evergreen forests from 400 to 1300m and flies throughout the year.

Range (Fig.64). The species ranges from northern

Thailand through southern Indo-China and Sumatra, Borneo and Malaysia. Six subspecies have been described. Subspecies *bouletti* is found from Thailand across Laos (Lak Sao, Osada *et al.* 1999) to Central and South Vietnam.

Material examined. **Central Vietnam:** 2♂♂ Ba Na, Quang Nam Prov., 850m (ALM). **South Vietnam:** 1♂ Hon Ba Provincial Nature Reserve, Khanh Hoa Prov., 1300m (ALM); 2♂♂ 1♀ Nam Cat Tien National Park, Dong Nai Prov. (ALM); 2♂♂ 1♀ Nha Trang Provincial Nature Reserve, Khanh Hoa Prov. (ALM); Additional South Vietnam locality is Trang bom, Dong Nai Prov. (Inuoé & Kawazoé 1965).

Genus *Laxita* Butler, 1879

The genus *Laxita* was described by Butler with *Taxila teneta* Hewitson, [1861] as the type species. Only one species is found in Vietnam.

Laxita thuisto thuisto (Hewitson, 1860)

Figs. 49, 64.

Taxila thuisto Hewitson, 1860, Exot. Butt. V.4(2), pl37, figs. 5, 6.

Laxita thuisto was described from a male specimen from Singapore. A search for the type at the BMNH was unsuccessful. Four subspecies have been described.

Diagnosis. Male. Dorsal surface uniform dark brown. Ventral surface ground color reddish brown with a broken irregular post discal band of black spots edged distad in blue across both wings. A submarginal band of spots that are white on the forewing turn to black triangles edged distad with white/blue from Cu2 to the inner margin of the hindwing. On the margin is band of black lines bordered by white. Female (Fig. 49). Dorsal surface is reddish-brown; forewing with a subapical row of white spots to Cu2, the other markings reflecting those on the ventral surface. Ventral surface is identical to male.

Discussion. The row of white subapical spots on the females separates it from subspecies *sawaja* Fruhstorfer, 1914, which is characterized by a wide subapical bar. Vietnam material is nearly identical to Malaysian specimens.

Habitat and biology. Little is known of this butterfly due to its rarity in Vietnam. The single female specimen examined was captured in primary evergreen forest.

Range (Fig.64). The species is found from the Karen hills in Burma south throughout tropical Indo-China south to Sumatra and Borneo. Osada *et al.* (1999) illustrate a male and female from Thakhek and Xaignabouri in Laos.

Material examined. **South Vietnam:** 1♀ Tay Cat Tien National Park, Dong Nai Prov. (ALM); 1♂ "Cochinchine" (MNHN).

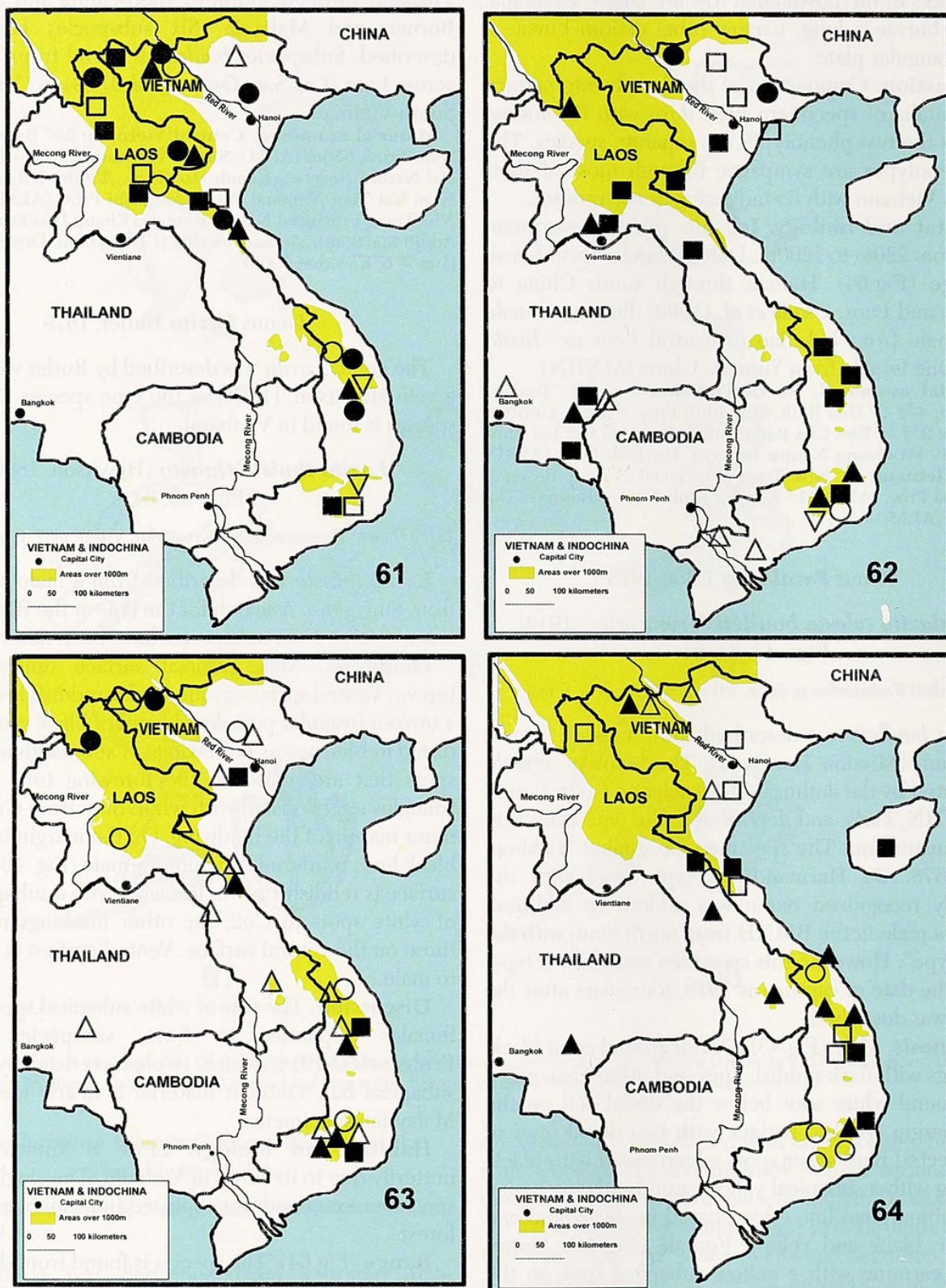


FIG. 61-64. 61. Distribution map for *Dodona*: closed circles - *oida palaya*, open circles - *adonira*, closed triangles - *katerina*, inverted open triangle - *speciosa*, open triangle - *maculosa phuongi*, open square - *egeon*, closed square - *deodata*. 62. Distribution map for *Abisara echerias* group: *echerias* - open squares, *paionea* - closed squares, *saturata meta* - closed circles, *bifasciata angustilineata* - closed triangles, *abnormis* - open triangles, *latifasciata* - open circles, *kausambi kausambi* - inverted triangle. 63. Distribution map for *Abisara neophron* and *fylla* groups: *neophron chelina* - open triangles, *attenuata* - closed triangles, *burnii timaeus* - closed square, *fylla magdala* - open circles, *freda* - closed circles. 64. Distribution map for *Paralaxita*, *Taxila*, *Laxita* and *Stiboges*: *dora* - open squares, *hainana* - closed squares, *telesia bouletti* - open circles, *nymphidia* - open triangles, *elodinia* - closed triangles.

Genus *Stiboges* Butler, 1876*Stiboges nymphidia nymphidia* Butler, 1876

Figs. 50, 51, 59, 64.

Stiboges nymphidia Butler, 1876. Proc. zool. soc. London :309, Plate XXII, fig. 1.

This species and genus were described from a female from Penang, Malaysia. The type is in the BMNH. Two subspecies have been described from Sumatra and Java.

Diagnosis. Male (Fig. 50). Transparent white with broad black borders on both wings surrounding a row of marginal white spots; white triangular area of forewing pointed towards the apex. Genitalia (Fig. 59). Small with beaked uncus, valvae large and broad with a pair of long pointed processes extending from the base caudad, transtilla with two narrower long pointed processes caudad; aedeagus broad and blunt; vesica with numerous small cornutae. Female (Fig. 51). Resembles male except for more rounded wingtips. Genitalia with ostium bursae very broad and rounded, ductus bursae long and tubular, palpi anales small, signae on corpus bursae round with small cornutae and slightly invaginated.

Habitat and biology. The species can be common in lowland primary forest from 300m. Their behavior as well as appearance is similar to neotropical riordinids of the genus *Nymphidium*. They have an irregular flight and rest on the ventral leaf surfaces with wings spread, which they flex slightly, a behavior unlike that of other Old World riordinids. In most Vietnamese localities, the butterfly is accompanied by a diurnal geometrid moth that closely resembles it and has the same flight and resting behavior.

Range (Fig. 64). *S. nymphidia* is found from Malaysia north through peninsular Thailand to Burma, Sikkim, Bhutan, Thailand, and Vietnam (Stichel 1930, BMNH). In North Vietnam, it inhabits the lowland forest from 300m just south of the Red River, to 2000m on the Chinese border. It has not been recorded from South Vietnam. Dates: March through September.

Material examined. **North Vietnam:** 10♂♂ 4♀♀ Cuc Phuong National Park, Ninh Binh Prov., 300m (CJC); 1♀ Mont Hte Song Chai, Tonkin (MNH); 1♂ Huan Lien Song, Sa Pa District, Lao Cai Prov., 2000m (ALM).

Stiboges elodinia Fruhstorfer, 1914, n. stat.

Figs. 52, 53, 60, 64.

Stiboges nymphidia elodinia Fruhstorfer, 1914, in Seitz, Grossschmetterling der Erde, v. p. 796, pl. 139c ("nymphidia")

Stiboges elodinia was described as a subspecies of *S. nymphidia* from a female from Sze-Tschuan, China. The holotype is in the BMNH.

Diagnosis. Male (Fig. 52). Similar to *S. nymphidia*,

but with more pointed forewings. The distal borders slightly narrower, the apex of the white triangular area of the forewing rounded, and a row of tiny white submarginal spots present on both wings. Genitalia (Fig. 60) with uncus beaked, valvae flat, rounded ventrad, pointed dorsad, and with basad internal bifurcated process much smaller than in *S. nymphidia*; transtilla covered by a large, flat plate that is bifurcated caudad, with tips wide, down-turned and extending caudad over the aedeagus. Female (Fig. 53). Differs from the female of *S. nymphidia* in having wider white areas, smoother borders and small white submarginal spots. Genitalia. Ostium bursae with two small lateral flanges, ductus bursae long and narrow, flared slightly at the end. Signae round, slightly invaginated.

Discussion. *S. elodinia* can be separated from *S. nymphidia* by its narrower black border and generally larger size. Fruhstorfer noted that both wide- and narrow-bordered individuals are found in Tonkin, but ascribed the difference to wet and dry season forms. Examination of the genitalia of both phenotypes shows that they are in fact distinct species.

Habitat and biology. Inhabits primary forest above 1000m. Habits similar to *S. nymphidia*, but is considerably rarer. Dates March through September.

Range (Fig. 64). The distribution of this species overlaps with that of *S. nymphidia*, with the result that most writers have considered it a subspecies or a seasonal form. It is found from west China to Vietnam in the mountains, west to northern Laos – Pak Munung (BMNH); Thakhek and Thateng (Osada *et al.* 1999), Thailand (Chang Mai, Nakkhon Nayok – Pinratana 1988), and probably south to Malaysia in the mountains (Corbet & Pendlebury 1978).

Material examined. **North Vietnam:** 2♀♀ Huang Lien Son Nature Reserve, Lao Cai Prov. (ALM). **Central Vietnam:** 1♂ Ba Na, Quang Nam Prov. (ALM). **South Vietnam:** 1♂ 2♀♀ Ngoc Linh Nature Reserve, Kon Tum Prov., 1600m (ALM); 1♀ Kon Cha Rang Nature Reserve, Gia Lai Prov. (ALM); Additional record: Col de Blau, Dong Nai Prov. (Inuoé & Kawazoé 1965).

ACKNOWLEDGEMENTS

I wish to thank the curators of the museums visited for access to the collections and type specimens under their care and the loan of specimens: Mr. Philip Ackery, (BMNH), Dr. Jacques Pierre (MNH) and Dr. Wolfram Mey (ZMHU). Material and information was provided by my friend Alexander (Sasha) Montrievskii of the Vietnamese Russian Tropical Institute. An anonymous reviewer provided helpful comments on the manuscript. This work is dedicated to my friend and field companion Le Trong Dat who accompanied me on numerous excursions to Cuc Phuong National Park. My thanks also to the Cuc Phuong Park authorities who gave permission for work in the Park.

LITERATURE CITED

- BATES, H.W.J. 1867. Linn. Soc London, Zool. 9: 371–412.
 BENNETT, N.H., 1950. A revision of the *echeris* group of the genus *Abisara*. Entomologist, 83: 1–9, 34–42.

- _____. 1957. A new species of *Abisara* from Burma. (Lepidoptera, Riodinidae). The Entomologist 90: 1, plate 2.
- BUTLER, A.G. 1876. Descriptions of Lepidoptera from the collection of Lieut. Howland Roberts. Proc. Zool. Soc. Lond. 2: 308–310, 1 plate.
- CALLAGHAN, C.J. 1997. The biology of *Abisara neophron neophron* (Hewitson 1860) from Nepal (Lepidoptera, Riodinidae). Bulletin de la Société Entomologique de France (Paris). 102(2): 129–132.
- _____. 1997 (2000). A study of the riodinid butterflies of the genus *Dodona* in Nepal (Riodinidae). Journal of Research on the Lepidoptera 36: 1–15.
- CORBET, A. & H.M. PENDLEBURY. 1992. The butterflies of the Malay Peninsula, 4th ed. Revised by J.N. Eliot. xiv + 578pp., 146+438 figs., Kuala Lumpur.
- D'ABRERA, B. 1986. Butterflies of the oriental region. Part III Lycaenidae & Riodinidae. Hill House. 672 pp.
- FELDER, C. & R. FELDER. 1860. Lepidoptera nova in paeninsula Malayica collecta. Wiener Ent. Monatschrift 4(12): 394–402.
- FRUHSTORFER, H. 1904. Verzeichnis in Tonkin, Annam, und Siam gesammelten Nemeobiine und Libytheinae und Besprechung verwandter Formen. Berl. Ent. Z. 48(4): 274–296.
- _____. In Seitz, A. 1914. Grossschmetterlinge der Erde, 9: 772–798, pl. 138–141.
- HEWITSON, W.C. 1857–1861. Illustrations of new species of exotic butterflies 2: [124] pp., 60 pls. London.
- _____. 1874. Descriptions of new species of butterflies. Entomologist's Monthly Magazine 11: 56–58.
- _____. 1876. Notes on Mr. Atkinson's collection of East Indian Lepidoptera, with descriptions of new species of Rhopalocera. Entomologist's Monthly Magazine 13(7): 149–152.
- INOUE, S. & A. KAWAZOE. 1965. Riodinidae, Curetidae and Lycaenidae (Lepidoptera: Rhopalocera) from South Viet-Nam. Nature & Life in South-East Asia 4: 317–394.
- JOHNSON & JOHNSON. 1980. This is Hong Kong: Butterflies. Government printer, Hong Kong.
- LEECH, D. 1890. New species of Lepidoptera from China. The Entomologist 23: 26–45.
- METAYE, R. 1957. Contribution a l'étude des Lepidopteres du Vietnam (Rhopalocera). Annals Faculte des Sciences. Saigon, 69–106, 3 pls.
- MONASTYRSKII, A.L. & A.L. DEVYATKIN. 2000. New taxa and new records of butterflies from Vietnam (Lepidoptera, Rhopalocera). Atalanta 31(3/4): 471–492.
- _____. & _____. 2003. New taxa and new records of butterflies from Vietnam, 2. Atalanta (June 2003) 34(1/2): 51–85, Pls V–IX.
- _____. & _____. 2004. Butterflies of Vietnam: Satyridae.
- MOORE, F. 1883. Descriptions of new Asiatic diurnal Lepidoptera. Proc. zool. Soc. London : 532, 2 plates 48 & 49.
- NICEVILLE, L. DE & L. MARTIN. 1896. A list of the butterflies of Sumatra with special reference to the species occurring in the north-east of the island. J. Asiat. Soc. Bengal. 64 II: 357–555.
- OSADA, S., Y. UÉMURA, J. UEHARA. 1999. In Y. Nishiyama (ed.). An illustrated checklist of the butterflies of Laos PDR. Mokuyo-sha, Tokio. 240pp.
- PINRATANA, A. 1988. Butterflies in Thailand 4. Virarham Press, Bangkok. viii+216pp., 26 pls.
- RILEY, N.D. & GODFREY. 1925. New Rhopalocera from Siam and Hainan. The Entomologist, 58: 140, planche 3.
- SEVASTOPOULO, D.G. 1946. The early stages of Indian Lepidoptera. Part iv. J. Bombay Nat. Hist. Soc. 46: 253–269.
- STICHEL, H. 1928. Lepidoptera: Nemeobiinae. Das Tierreich 51: 1–330.
- _____. 1930. Lepidoptera Catalogus 30: Riodinidae I. W. Junk Berlin, 544pp.

Received for publication 18 October; revised and accepted 25 March 2008.



Callaghan, Curtis J. 2009. "THE RIODINID BUTTERFLIES OF VIETNAM (LEPIDOPTERA)." *Journal of the Lepidopterists' Society* 63(2), 61–82.

View This Item Online: <https://www.biodiversitylibrary.org/item/247194>

Permalink: <https://www.biodiversitylibrary.org/partpdf/260482>

Holding Institution

Smithsonian Libraries and Archives

Sponsored by

Biodiversity Heritage Library

Copyright & Reuse

Copyright Status: In Copyright. Digitized with the permission of the rights holder

License: <https://creativecommons.org/licenses/by-nc-sa/4.0/>

Rights: <http://www.biodiversitylibrary.org/permissions/>

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.