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## **BUTTERFLIES (FAMILY : PAPILIONIDAE) FROM ANAMALAI RANGE, SOUTHERN WESTERN GHATS, TAMILNADU**

**D. JEYABALAN**

*Zoological Survey of India, F.P.S. Building, Kolkata-700 016, India*

### **INTRODUCTION**

Anamalai is a significant segment of the Western Ghats, which possesses many endemic species and is a unique ecological tract rich in biodiversity. The Anamalai, declared as a Wildlife Sanctuary in 1976, falls within three taluks of Coimbatore District namely Pollachi, Valparai and Udumalpet with six territorial ranges *viz.* Pollachi, Valparai, Ulandy, Manambolly, Udumalpet and Amaravathy. The forest tract of Anamalais exhibiting a wide diversity in terrain, elevation and climate supports diverse vegetation of striking differences. Thus, the forest types from luxuriant tropical evergreen forests to thorn forests and scrub jungles are represented here.

Location and Geographical aspects (Sekar and Ganesan, 2003)

Location	:	Coimbatore district, Tamilnadu
Access	:	Via Pollachi
Latitude	:	N 10°13'–10°33'
Longitude	:	E 76°49'–77°21'
Sanctuary Area	:	850 sq km
National Park Area	:	108 sq km
a. Karian Shola	:	05 sq km
b. Manjampatty	:	72 sq km
c. Grass Hills	:	31 sq km
Altitude	:	350 m to 2500 m above sea level (Sekar and Ganesan, 2003)
Average Annual Rainfall	:	500–5000 mm

The forests of Indira Gandhi Wildlife Sanctuary (IGWS) occur mainly on the Anamalai hills, which run along the southern boundary of the Coimbatore district. The Anamalai hills are a continuation of the vast range of Western Ghat mountains that runs southwards through the Travancore-Cochin. The IGWS is contiguous to the Parambikulam Wildlife Sanctuary (Kerala) to its west and on the east from the Palani hills by the valley of Pachiar. The northern slopes descend precipitously to the cultivated plains of Coimbatore. The range is separated from the Aiyamalai and Bolampatti hills of Coimbatore division which connect on to the Nilgiri hills by the break in the Western Ghats known as "Palghat gap" which is about 32 km wide.

The main range of Anamalai hills has a general direction from north west to south east, with an elevation ranging from about 900 m to 2500 m (Akkamalai – 2483 m, Thanakamalai – 2513 m). On the south west of the central spur, the gradient is more gentle, it is an undulation plateau with an elevation of 900–1400 m, now almost entirely taken up for cultivation of products such as coffee, tea, cardamom and cinchona. The northwestern portions draining westwards consist of low, undulation hills much broken up by the streams.

Traditional systems of conservation are still valuable for offering protection to certain elements of diversity including endemic and threatened species. Endemic species of the Anamalai range may require large unbroken forest in the protected area. The resource availability in the already degraded landscape in the form of useful species may be important in removing the pressure of resource use from the protected area to the traditionally managed land, thus achieving a better conservation of a strictly protected area. The protected area is instrumental in protecting many species of conservation importance. A combination of approaches is therefore necessary for conservation of biodiversity in Anamalai.

The Anamalai has certainly received the much-deserved special attention from the conservationists. There have been positive trends in the growth of knowledge on the ecology of the system. The results from this exercise have percolated into the management practices and conservation implementation. The wide coverage of taxa and ecological issues has created a strong information base for developing projects for the area that can proper conservation measures in the region.

Biological indicators are organisms, which are very sensitive to their environment. Now it is well known that certain insects, especially Butterflies and Moths, are particularly suited as biological indicators. This is manifested by their 'performances' in their habitat. Their very presence or absence, or their number, is a good indication of state of the environment. The diversity of habitats, ranging from grasslands to plantation areas to natural degraded scrub lands and ravines was responsible for the species richness. By using butterflies as biological indicators, in the present study it is found that the quality of the Anamalai hills is not exceptionally good. The tropical wet evergreen forests possessed the greatest butterfly diversity in the Anamalai range, some reduction in butterfly diversity was observed in both dry deciduous habitats and plantations areas.

Butterflies belong to the order Lepidoptera, from either of the superfamilies Hesperioidea (the skippers) or Papilionoidea (all other butterflies).

India has a rich butterfly fauna comprising 1501 species out of 16,823 species recorded from all over the world (Gaonkar, 1996). Of the various butterfly habitats found in India, the Western Ghats is one of the most diversified areas containing a wide variety of species due to the typical ecoclimatic and geographic features.

The Papilionidae, or Swallowtail, is a family of large and beautiful butterflies which is well represented in India (about 107 species according to Goankar, 1996). When compared to other butterflies, swallowtails can be considered as better bioindicators because of their significant size, elegance and number. Papilionids usually have prominent tails which have given the name to this family. They are often spectacular and much sought after by collectors, a number of Papilionids world wide are threatened.

The Swallowtails are generally easily identified in the field by their large size, prominent markings, colour patterns and variable wing and tail shape.

The family *Papilionidae* is divided into three subfamilies, namely Baroniinae Parnassiinae and Papilioninae. Out of which Baroniinae is not represented in India.

From the present study, 19 species belonging to five genera under family Papilionidae have been recorded. Status of these species has been given as per IUCN 2006, CITES 2007 and Indian Wild Life (Protection) Act. 1972 amended in 2004.

## SYSTEMATIC ACCOUNT

### Family PAPILIONIDAE (Leech, 1815)

1815. Papilionidae Leech, *Edinburgh Encycl.*, ix, p. 127.

*Diagnostic characters* : Wings very variable in shape. Fore wing (except in *Parnassius* and *Hypermnestra*) with 12 veins and in addition a short internal vein, venation of anterior portion of fore wing in *Parnassius*, that invariably terminates on the dorsal (inner) margin. There is also a short transverse vein, the median spur, present near the base of the wing between the cell (median vein) and venation of anterior portion of fore wing in *Papilio* in all genera except *Armandia*, *Parnassius* and *Hypermnestra*. Veins  $R_5$  and  $R_4$  are stalked. Vein culb rises before the middle of the cell and four veins rise from the outer lower edge of the cell. Cell closed in both wings. Hind wing very frequently with a tail, which may be slender, or broad and spatulate, but is always an extension of the termen at vein  $M_3$ . In the genus *Armandia* the termen is prolonged into tails at the apices of veins culb and cula as at vein  $M_3$ . Venation of anterior portion of fore wing is absent. A basal cell and a precostal (basal) vein are both present. The inner (abdominal) margin is frequently folded over and within the fold, in the ♂ the wing often bears a patch of special scales known as

androconia or scent-scales, a mass of woolly pubescence, or a brush of hair often strongly scented. In the males of some species, certain veins on the fore wing above are edged with pilose scent-stripes.

Proboscis well developed, Palpi small and appressed to frons, rarely and projecting (*Teinopalpus*). Antennae comparatively short, with generally a distinct club; upperside either scaled or naked. Three types of antenna occur : The fine sensory hairs beneath and laterally are almost equally distributed over the proximal part of each segment, or there is a cavity on each side which is covered with sensory hairs (recalling the Nymphalids) or there is only one row of such cavities presents (recalling the Pierids). "Mesothorax very powerful, the sternum completely fused with the episternum, the suture outwardly quite wanting as in the Pierids, which distinguishes these two families from all other Lepidoptera" (Jordan, 1908).

Fore leg fully developed; fore tibia with spur on the underside. Hind tibia with middle spurs. Claws simple, rarely with a tooth; paronychium and pulvillus wanting.

*Classification* : The genera of extant Papilionidae are usually classified into three subfamilies, Baroniinae, Parnassiinae and Papilioninae the latter two being further divided into tribes. The tribes recognized are Baroniini, Parnassiini, Zerynthiini, Luehdorfiini, Leptocircinini, Teinopalpini, Troidiini and Papilioniini. An additional subfamily Praepapilioninae has a single extinct member and is known only from a single fossil (Durden and Rose, 1978).

Swallowtail tribes Zerynthiini (Parnassiinae), Luehdorfiini (Parnassiinae) and Troidini (Papilioninae) almost exclusively use the Aristolochiaceae family as their host plants. Many species sequester aristolochic acids making them unpalatable, causing both the larval and adult stages to be unpalatable to predators (Von Euw *et al.*, 1968).

The subfamily Baroniinae is represented by the sole representative species *Baronia brevicornis*. They are unique in the family to use the Fabaceae as their larval host plants.

The Apollos, Parnassiinae, are a distinctive group and all species are alpine and capable of living at high altitudes. Most species have two small reddish spots on their hindwings. The genera *Parnassius* and *Hypermnestra* were found to be extremely close based on molecular studies (Kato *et al.*, 2005). After mating, the male Parnassines produce glue like substance that is used to seal the female genital opening and prevent other males from mating.

The pupae are typically attached to the substrate attached by the cremaster but with head up held by a silk girdle. In the temperate regions the winters are passed in a pupal diapause stage.

*Distribution* : The family is found everywhere in the world except in the extreme north and south and in desert areas. It is as abundant in the tropics of America as it is in the tropics of the Old World. The number of species, excluding *Parnassius*, inhabiting the Oriental Region from India to the Pacific.

### Key to the Genera

- 1 Hindwing V8 short, not as long as vein 1 in forewing ..... 2
  - Hindwing vein Sc + R<sub>1</sub> as long as vein 1 in forewing ..... 3
2. Forewing with vein R<sub>1</sub> arising opposite to vein cula ..... *Pachliopta* Reakirt
  - Forewing with vein R<sub>1</sub> arising opposite to vein culb ..... *Troides* Hub
3. Forewing vein R<sub>1</sub> anastomosed to vein Sc ..... *Graphium* Scop
  - Forewing vein R<sub>1</sub> free from vein Sc ..... 4
4. Hindwing vein Rs either near vein Sc + R<sub>1</sub> or vein M<sub>1</sub> ..... *Chilasa* Moore
  - Hindwing vein Rs midway between vein Sc + R<sub>1</sub> and vein M<sub>1</sub> ..... *Papilio* Linn

#### 1. *Pachliopta hector* (Linnaeus, 1758)

1758. *Papilio hector*, Linnaeus, *Syst. Nat.*, ed. X, p. 459.

1842. *Aernauta hector*, Berge, *Schmett B.* p. 108.

1881. *Menelaides hector*, Moore, *Lep. Ceylon*, i, p. 58.

*Material examined* : Yanaikadu, Anamalai area, 2 exs., 24.xii.2005. Top slip, Indira Gandhi National Park and Wildlife Sanctuary, 3 exs., 26.xii.2005. Aliyar dam, Anamalai area, 1 ex., 01.i.2006. Sholaiyar, Valparai, 2 exs., 04.i.2006. Thirumurtinagar, Indira Gandhi National Park and Wildlife Sanctuary, 2 exs., 09.iv.2006. Amaravathi nagar, Indira Gandhi National Park and Wildlife Sanctuary, 1 exs., 15.iv.2006. Top slip, Indira Gandhi National Park and Wildlife Sanctuary, 1 exs., 29.xi.2006.

*Diagnostic characters* : ♂ : Upperside black. Fore wing with a broad white interrupted band from the subcostal vein opposite the origin of veins R<sub>2</sub> and R<sub>1</sub>, extended obliquely to the tornus and a second similar subapical band; both bands composed of detached irregularly indented broad streaks in the interspaces. Hind wing with a discal posteriorly strongly curved series of seven crimson spots followed by a submarginal series of crimson lunules. Cilia black alternating with white. Head, collar, sides of the breast and the abdomen, with the exception of the dorsal plates of the anterior segments, red.

♀ : Resembles the ♂ Discal and submarginal markings duller, pale crimson irrorated with black, scales; in some specimens the anterior spots and lunules almost white. Abdomen above with the black colour extending further towards the apex

*Wing Expanse* : ♂ ♀ 90–110 mm.

*Larval Host Plants* The larvae of the *P. hector* feed on *Aristolochia indica*, *Aristolochia bracteolata* and *Thottea siliquosa*.

*Distribution* : It is found in India and Sri Lanka and possibly the coast of western Myanmar. In India, it is found in the Western Ghats, southern India, eastern India (West Bengal and Orissa) and the Andaman Islands and also recorded from Pune.

*Status* : Generally common and not known to be threatened. It is common all along the Western Ghats up to Maharashtra but rare in Gujarat also in eastern India. It is considered to be very rare in the Andamans. This species is protected by Indian Wild Life (Protection) Act, 1972 (IWPA).

*Remarks* : The butterfly is commonly called Crimson Rose (*Atrophaneura (Pachliopta) hector*) is a large swallowtail butterfly belonging to the *Pachliopta* subgenus, the Roses, of the genus *Atrophaneura* or the Red-bodied Swallowtails. This species is commonly available in all the ranges of Anamalai and all the seasons also.

## 2. *Pachliopta pandiyana* (Moore, 1881)

1881. *Papilio pandiyana*, Moore, *Trans. Ento. Soc. Lon.*, p. 313.  
 1889. *Menelaides pandiana*, Hampson, *J. As. Soc. Beng.*, p. 368.  
 1891. *Menelaides pandiyana*, Fergusson, *J. Bomb. nat. His. Soc.*, p. 446.  
 1895. *Papilio pandianus*, Rothschild, *Nov. Zoo.*, ii, p. 234.  
 1907. *Papilio jophon pandiyana*, Bingham, *Fauna Brit. Ind., Butterflies-II*, p. 19, 22.  
 1923. *Byasa jophon pandiayana*, Evans, *J. Bomb. nat. His. Soc.*, p. 232.  
 1932. *Tros jophon pandiyana*, Evans, *Identification of Indian Butterflies*, ed., p. 44.

*Material examined* : Top slip, Indira Gandhi National Park and Wildlife Sanctuary, 1 ex., 27.xii.2005. Blandy Valley, Valparai, 2 exs., 06.i.2006.

*Diagnostic characters* : ♂ ♀ : Compared with the nominotypical form the fore wing has more extended white, especially in the apical region, but is also more shaded with black scales; the internervular black streaks in areas 2 to 5 extend nearly to the cell. Hind wing with the posterior discal white spot usually reaching vein1; the anterior spot is very large in the ♂ small or divided into two spots, or obliterated in the ♀

*Wing Expanse* : ♂ ♀ 100–130 mm.

*Larval Host Plants* : The larval food plant is *Thottea siliquosa* (*Aristolochiaceae*).

*Distribution* : Southern India, particularly western slopes of the Nilgiris and elsewhere on the Western Ghats.

*Status* : Uncommon, but not considered to be threatened as a species. Locally common in the Western Ghats.

*Remarks* : The butterfly is commonly called Malabar Rose (*Atrophaneura (Pachliopta) pandiyana*) is a swallowtail butterfly belonging to the *Pachliopta* subgenus, the Roses, of the genus *Atrophaneura* or the Red-bodied Swallowtails. It resembles the Common Rose, *Pachliopta aristolochiae* from which it can be differentiated by the much larger white patch on its hindwings. It is an important endemic butterfly of South India.

### 3. *Pachliopta aristolochiae* (Fabricius, 1775)

1775. *Papilio aristolochiae*, Fabricius, *Syst. Ent.*, p. 443.

1885b. *Menelaides aristolochiae*, Niceville, *J. As. Soc. Beng.*, p. 52.

*Material examined* : Top slip, Indira Gandhi National Park and Wildlife Sanctuary, 2 exs., 26.xii.2005. Thirumurtinagar, Indira Gandhi National Park and Wildlife Sanctuary, 2 exs., 30.xi.2006. Upper Aliyar, Indira Gandhi National Park and Wildlife Sanctuary, 1 ex., 7.iv.2006.

*Diagnostic characters* : ♂ ♀ : Upperside black, the fore wing discal area paler, with black fold-stripes and well-marked pale vein-stripes. Hind wing with a spatulate tail, white discal spots and red sub-marginal spots which above are more or less strongly shaded with black. The ♀ is paler, with broader wings. Abdomen red laterally and at the tip, also the margin of the ventral segments; the sides of the breast and also the head red.

*Wing Expanse* : ♂ ♀ 80–110 mm.

*Larval Host Plants* : The larvae food plants are *Aristolochia bracteolata*, *Aristolochia indica*, *Aristolochia tagala*, *Aristolochiae griffithi* and *Thottea siliquosa*.

*Distribution* : It is widely distributed in Asia. Afghanistan, Pakistan, India (including Andaman & Nicobar islands), Nepal, Sri Lanka, Myanmar, Thailand, Japan (south-western Okinawa only), Laos, Vietnam, Kampuchea(now Cambodia), peninsular and eastern Malaysia, Brunei, Philippines (Palawan and Leyte), Indonesia. In China, it is distributed in southern and eastern China (including Hainan, Guangdong province), Hong Kong and Taiwan. In Indonesia, it is distributed in Sumatra, Nias, Enggano, Bangka, Java, Bali, Kangean, Lombok, Sumbawa, Sumba, Flores, Tanahjampea and Kalimantan.

*Status* : Very common almost all over the plains of India and not threatened as a species. Extremely abundant during and after the monsoon.

*Remarks* : The butterfly is commonly called Common Rose (*Pachliopta aristolochiae*) is a swallowtail butterfly belonging to the *Pachliopta* subgenus, the Roses, of the genus *Atrophaneura* or Red-bodied Swallowtails. It is a common butterfly which is extensively distributed across South and South East Asia.

#### 4. *Troides minos* (Cramer, 1779)

1779. *Papilio minos* Cramer, *Uitlandsche Kapellen* (Papillons exot.) 3 : 4, pl. 195.

*Material examined* : Top slip, Indira Gandhi National Park and Wildlife Sanctuary, 1 ex., 26.v.2005. Upper canal, Indira Gandhi National Park and Wildlife Sanctuary, 2 exs., 05.iv.2006.

*Diagnostic characters* : ♂ : Hindwing : the black along the dorsal and terminal margins both on upper and undersides much broader; on the upperside entirely filling interspace 1, on the underside with only a narrow streak of yellow at the angle between the median vein and vein  $R_4$ ; the cone-shaped black markings on the terminal margin shorter and broader; on the costal margin the black is narrower than in *cerberus*, barely extended below vein  $R_4$  except at the base and apex of the wing where it broadens; the abdomen is dull yellow above and below not shaded with black.

♀ : Hind wing : the black on the costal margin as in *cerberus*, but there is always a large yellow spot at base of interspace 7; interspace 1 black, with a pale patch in the middle; the black terminal border broader, the inwardly extended cone-shaped markings prominent, those in interspaces 2 and 3 with pale buff lateral edgings, extended inwards to the postdiscal spots. In both male and female the hind wing on the upperside is clothed with soft, silky, long brownish-black hairs from base along the dorsal area.

*Wing Expanse* : 140–180 mm.

*Larval Host Plants* : The larval host plants of these butterflies are the family *Aristolochiaceae* such as *Aristolochia indica*, *Aristolochia tagala* and *Thottea siliquosa*.

*Distribution* : Western Ghats and parts of the Eastern Ghats.

*Status* : The *Troides minos* is very common in the Western Ghats particularly Southern and Central Western Ghats. *T. minos* found in southern Maharashtra also. In Northern Goa it is uncommon. Despite its restricted range and endemism, the butterfly is not known to be threatened but the IUCN recommends continuous monitoring. It is listed in Appendix II of Convention on the International Trade in Endangered Species of Wild Flora and Fauna (CITES).

*Remarks* : The butterfly is commonly called Southern Birdwing (*Troides minos*) is a large and striking Swallowtail butterfly endemic to Peninsular India. With a wingspan of 140–180 mm, it is the largest butterfly found in southern India. It was earlier considered a subspecies of the Common Birdwing (*Troides helena*) but is now recognised as a valid species. The species is more common in the Western Ghats.

#### 5. *Graphium sarpedon* (Linnaeus, 1758)

1758. *Papilio sarpedon*, Linnaeus, *Syst. Nat.*, (Edn 10) : 479.

1872. *Papilio parsedon*, Westwood, *Trans. Ent. Soc. Lond.* : 85-110.

2003. *Graphium* (*Graphium*) *sarpedon*, Page & Treadaway, *Butterflies of the world*, 17 : 3.

*Material examined* : Varakaliyar, Indira Gandhi National Park and Wildlife Sanctuary, 1 ex., 28.xii.2005. Upper canal, Indira Gandhi National Park and Wildlife Sanctuary, 1 ex., 05.iv.2006. Sholaiar Nagar, Indira Gandhi National Park and Wildlife Sanctuary, 1 ex., 08.iv.2006. Thirumurtinagar, Indira Gandhi National Park and Wildlife Sanctuary, 1 ex., 09.iv.2006.

*Diagnostic characters* : ♂ ♀ : Upperside brownish-black, with a green or greenish-blue discal band; fore wing with the band anteriorly strongly narrowed and separated into spots, on the hind wing narrowed posteriorly and ending in a point on vein culb near the anal angle; hind wing with the costal part of the band scaled with white, as also partly the veins intersecting the band; a row of green submarginal lunules; scent-fold grey on the inside, furnished with a tuft of long, somewhat stiff white hairs; ♀ paler, with slightly broader wings.

Underside with paler ground-colour, the discal band scaled with transparent whitish. Fore wing with slight indications of submarginal spots before the tornus. Hind wing near base with a red transverse bar, which extends from the costal margin to the cell and is separated from the discal band; five red discal spots, of which the anterior one encircles the apex of the cell. Body above brownish-black with dark grey hairs, beneath of the most party grey –white.

*Wing Expanse* : 80–90 mm.

*Larval Host Plants* : The larvae feed primarily on the leaves of trees in the families *Lauraceae*, *Myrtaceae*, *Sapotaceae* and *Rutaceae*. In particular, *G.s. sarpedon* and *G.s. teredon* often feed on leaves of the *Cinnamon* bark tree, *Cinnamomum zeylanica*, or of the *Indian laurel*, *Litsea sebifera*. The list of larval food plants also include *Alseodaphne semecarpifolia*, *Cinnamomum camphora*, *Cinnamomum macrocarpum*, *Cinnamomum malabattrum*, *Litsea chinensis*, *Polyalthia longifolia*, *Miliusa tomentosa*, *Persea macrantha* and *Michelia doltoSPA*.

*Distribution* : The common bluebottle is distributed throughout south and southeast Asia. Subspecies appear in India and Sri Lanka (*G. s. sarpedon* and *teredon*), China and Taiwan (*G. s. semifasciatus* and *connectens*), Japan (*G. s. nipponum*), Indonesia and the Solomon Islands, New Guinea (*G. s. messogis*) and Australia (*G. s. choredon*). In India it occurs in Southern India in the Western Ghats and in the Himalayas from Kashmir in the west to Myanmar in the east.

*Status* : Generally common and not threatened.

*Remarks* The butterfly is commonly called Common bluebottle (*Graphium sarpedon*), is a species of swallowtail butterfly found in South and Southeast Asia, as well as parts of Australia. There are approximately 15 subspecies with differing geographical distributions.

## 6. *Graphium agamemnon* (Linnaeus, 1758)

1758. *Papilio Agamemnon* Linnaeus, *Syst. Nat.* (Edn 10), p. 462.

2003. *Graphium (Macfarlaneana) Agamemnon*, Page & Treadaway, *Butterflies of the world*, 17 : 3.

*Material examined* : Varakaliyar, Indira Gandhi National Park and Wildlife Sanctuary, 1 ex., 28.xii.2005. Upper canal, Indira Gandhi National Park and Wildlife Sanctuary, 1 ex., 05.iv.2006.

*Diagnostic characters* : ♂ ♀ : Upperside brownish-black, with a blue-green patches, of which those placed towards the base are band-like and those below the cell of the fore wing large and elliptical. Hind wing with tail, which is longer in the ♀ Underside paler, the green patches partly covered with white or brownish scales, both wings clouded with violet-grey. Hind wing with a black crescent, basally margined with red between vein 8 and cell; beneath this spot usually a distinct second are; often a red anal spot and sometimes a row of red discal spots. Body brown-black above, beneath grey, with a grey-green lateral stripe.

*Wing Expanse* : 80–90 mm.

*Larval Host Plants* : The larvae *G. agamemnon* feed on the leaves of *Polyalthia longifolia*, *P. cerasoides*, *A. squamosa*, *A. reticulata*, *A. discolor*, *A. muricata* and *Uvaria narum* of the family Annonaceae. *Michelia doltoSPA*, *M. champaca*, *MilliUSA tomentosum*, *Cinnamomum* spp. and *Artabotrys hexapetalus*.

*Distribution* : Southern India to Saurashtra, Northern India (Kumaon to Assam) Andaman & Nicobar Islands, Nepal, Sri Lanka, Bangladesh, Brunei, Myanmar, Thailand, Laos, Kampuchea, southern China (including Hainan), Taiwan, South East Asia to Papua & New Guinea, Bougainville, Solomon Islands and Australia (northern Queensland).

*Status* : Common and not threatened.

*Remarks* : The butterfly is commonly called Tailed Jay (*Graphium agamemnon*) is a predominantly green and black tropical butterfly that belongs to the swallowtail family. The butterfly is also called Green Spotted Triangle, Tailed Green Jay or the Green Triangle. It is a common, non-threatened species native to India, Sri Lanka through Southeast Asia and into Australia. Several geographic races are recognized.

### 7. *Graphium doson* (C. & R. Felder, 1864)

1864a. *Papilio doson* C. & R. Felder, *Verh. zool.-bot. Ges. Wien.*, p. 305.

2003. *Arisbe (Eurypleana) doson*, Page & Treadaway, *Butterflies of the world*, **17** : 4.

*Material examined* : Top Slip, 1 ex., 28.xii.2005. Upper canal, Indira Gandhi National Park and Wildlife Sanctuary, 1 ex., 05.iv.2006.

*Diagnostic characters* : ♂ ♀ : Upperside white, with green or greyish-white makings which are scaleless for the most part. Fore wing with five cell-spots, of which the basal one is streak-like and the fourth comma-shaped; a posteriorly widened discal macular band a row of submarginal spots and a single subcostal spot between the submarginal and discal spots. Hind wing with a discal elongate-triangular band, which is anteriorly divided by a short, narrow black band; a submarginal row of spots; ♂ with yellow scent-wool which reaches to the inner marginal stripe.

Underside markings mostly larger and silver-scaled. Hind wing with red (rarely yellow) markings; a spot before the costa in the short black costal band, this band never united with the black subbasal stripe; a row of spots from apex of cell to inner margin, of which the posterior one is usually produced basad into a long stripe. ♀ paer, with smaller markings. Body above black, with bluish-grey hairs, abdomen with white lateral line, white below.

*Wing Expanse* : 70–80 mm.

*Larval Host Plants* : Larva of *G. doson* feed on *Desmos cochinechinensis*, *Uvaria microcarpa*, *Michelia alba*, *Annona* sp., *Desmos* sp., *Polyalthia* sp., *Rauwenhoffia* sp., *Mitrephora* sp., *Uvaria* sp., *Diploglottis* sp., *Cinnamomum* sp., *Magnolia* sp. and *Michelia* sp..

*Distribution* : S. India, Bengal, Kumaon-Assam, Myanmar, S. Japan, Riu Kiu and Sri Lanka.

*Status* : Common and not threatened.

*Remarks* : The butterfly is commonly called Common Jay (*Graphium doson*) is a black with a pale blue, semi-transparent central band that is formed by large spots tropical butterfly that belongs to the swallowtail family. The sexes look alike. It has mud-puddling character. The Common Bluebottle is brighter blue and lacks the series of marginal spots present in the Common Jay.

### 8. *Graphium nomius* (Esper, 1785)

1785. *Papilio nomius*, Esper *Die Schmett.*, 3 : 210.

*Material examined* : Varakaliyar, Indira Gandhi National Park and Wildlife Sanctuary, 1 ex., 28.xii.2005. Upper canal, Indira Gandhi National Park and Wildlife Sanctuary, 1 ex., 05.iv.2006.

*Diagnostic characters* : ♂ ♀ : Fore wing with four dark bars in the cell; anterior submarginal spots rounded. Beneath with the first and second brown bands blackish at the costal margin. Hind wing above with well developed black discal band; abdominal fold with a well marked cottony scent-organ.

*Wing Expanse* : 75–90 mm.

*Larval Host Plants* : The larval host plants of *G. nomius* are *Miliusa tomentosum*, *M. velutina* and *Polyalthia longifolia*.

*Distribution* : Southern and Eastern India (including Sikkim and Assam), Sri Lanka, Nepal, Bangladesh, Myanmar, Thailand, Vietnam, Laos and Kampuchea.

*Status* : Fairly common. Tends to be local. Not known to be threatened.

*Remarks* : The butterfly is commonly called Spot Swordtail (*Grphium (Pathysa) nomius*) is a beautiful butterfly found in India that belongs to the Swallowtail family. One of the grandest sights is a host of Spot Swordtails mud-puddling or swarming around a flowering forest tree. The Spot Swordtail gets it's name from the beautiful line of distinct white spots along the margin of its wings.

### 9. *Graphium antiphates* (Cramer, 1775)

1775. *Papilio antiphates* Cramer, *Uitl. Kapellen*, 1(6) : 113.

*Material examined* Varakaliyar, Indira Gandhi National Park and Wildlife Sanctuary, 1 ex., 28.xii.2005.

*Diagnostic characters* : ♂ ♀ : White, the fore wing above and beneath greenish towards the costa, as also the basal half of hind wing beneath; fore wing with seven black bands. Hind wing above with black marginal spots and a row of black submarginal spots; the posterior part of the marginal area dusted with grey-black, or the whole margin broadly grey-black.

Underside of fore wing with black markings as follows : Before the inner margin a stripe which is anally united with a subbasal stripe; a double discal band longitudinally divided by the ground-colour, the distal half of which is broken up into spots; a row of submarginal and a row of marginal spots the former ones shaped, at their proximal side yellow patches, which are for the most part indistinctly defined. Body above black with light lateral stripe, or the abdomen entirely white; underside white with black lateral stripe. Abdominal fold of ♂ without scent-wool.

*Wing Expanse* : 75–90 mm.

*Larval Host Plants* : The larval host plants of *G. antiphates* are *Desmos cochinchinensis*, *Uvaria microcarpa* and *Annona lawii*.

*Distribution* : India, China, Sri Lanka, Malaysia and Myanmar.

*Status* : Considered to be very rare, is not uncommon.

*Remarks* : The butterfly is commonly called Five-bar Swordtail (*Graphium antiphates*) is a species of papilionid butterfly found in South Asia. This butterflies are mostly found during November to April/May in Anamali range.

### 10. *Chilasa clytia* (Linnaeus, 1758)

1758. *Papilio clytia*, Linnaeus, *Syst. Nat.* (Edn 10), p. 479.

2003. *Chilasa clytia*; Page & Treadaway, *Butterflies of the world*, 17 : 8.

*Material examined* : Top Slip, Indira Gandhi National Park and Wildlife Sanctuary, 1 ex., 28.xii.2005.

*Diagnostic characters* : ♂ ♀ : Both wings with light marginal spots; hind wing sinuous between the veins. Frons with two white spots. Abdomen in the light forms with the white spots merged together into longitudinal lines, in the dark forms usually separated and those of the subdorsal row small and partly suppressed.

*Wing Expanse* : 90–120 mm.

*Larval Host Plants* : The larvae of *C. clytia* feed on *Alseodaphne semicarpifolia*, *Cinnamomum camphora*, *C. macrocarpum*, *Litsea chinensis*, *L. deccansis*, *Tetranthera apetal*.

*Distribution* : This butterfly is found in India from Kangra to Sikkim, from Assam to Burma, Nepal, Bangladesh, Peninsular India and the Andaman Islands. It is also found in Sri Lanka, Thailand, Southern China (including Hainan), Hong Kong, Vietnam, Laos, Kampuchea, peninsular Malaysia, Philippines and Indonesia (Flores, Alor, Timor and Moea). Several regional variants and forms are recognized.

*Status* : Generally common and not threatened. The nominate subspecies is protected by Indian Wild Life (Protection) Act, 1972 (IWPA).

*Remarks* : The butterfly is commonly called Common Mime (*Papilio (Chilasa) clytia*) is a Swallowtail butterfly found in South and South-east Asia. The butterfly belongs to the *Chilasa* group or the *Black-bodied Swallowtails*. The Common Mime has two mimetic forms, *clytia* and *dissimilis*. The nominate form *clytia* mimics the **Common Indian Crow** (*Euploea core*) while the form *dissimilis* mimics the **Blue Tiger** (*Tirumala limniace*). It serves an excellent example of a Batesian mimic among the Indian butterflies.

#### 11. *Papilio paris tamilana* (Moore, 1881)

1881b. *Papilio tamilana*, Moore, *Trans. Ent. Soc. Lond.*, p. 313.

1895. *Papilio paris tamilana*, Rothschild, *Nov. Zool.*, p. 385.

1903. *Achillidess tamilana*, Moore, *Lep. Indica*, p. 65.

*Material examined* : Iyarpadi, Valparai, 2 exs., 03.i.2006. Upper canal, Indira Gandhi National Park and Wildlife Sanctuary, 3 exs., 05.iv.2006. Amaravathi river, Indira Gandhi National Park and Wild life Sanctuary, 2 exs., 16.vi.2006.

*Diagnostic characters* : ♂ ♀ : Closely resembles the nominotypical form, but is much larger. Hind wing with a much larger and paler metallic blue discal patch, which extends from area 3 well into area 7, from the apex of the cell into areas 3 to 5 and from the middle of area 6 much further towards the margin than in the nominotypical form. Underside with the transverse post-discal pale band on the fore wing conspicuously narrower than in the nominotypical form and curved inwards towards the costa.

*Wing Expanse* : 120–140 mm.

*Larval Host Plants* : The larval host plant of these butterflies is *Evodia roxburghiana*.

*Distribution* : Southern India, Kanara, Nilgiris, Travancore.

*Status* : The butterfly is endemic to southern India particularly southern Western Ghats and not rare.

*Remarks* : The butterfly is commonly called Paris Peacock (*Papilio paris tamilana*) is an endemic swallowtail butterfly found in southern India. The species is more common in the Western Ghats.

12. *Papilio buddha* Westwood, 1872

1872. *Papilio Buddha* Westwood, *Trans. Ent. Soc. Lond.*, p. 186.

*Material examined* : Top slip, Indira Gandhi National Park and Wildlife Sanctuary, 1 ex., 26.v.2005.

*Diagnostic characters* : ♂ ♀ : Upperside of both wings with a broad green discal band which on the fore wing is placed anteriorly with its greater part in the cell and on the hind wing extends far into the cell. The basal area of both wings dusted with green, the distal marginal area almost pure black. Hind wing with a yellow submarginal spot at the costal margin and a similar one at the anal angle; tail black. Underside of fore wing with a very broad post-discal grey band which is almost straight on its inner edge. Hind wing with a pale outer marginal border and a row of narrow yellow submarginal spots which are distally bordered with black and proximally with bluish-white. ♂ without scent-streaks on the fore wing. In the ♀ there is a second yellow spot placed behind the subcostal vein on the hind wing.

*Wing Expanse* : 90–100 mm.

*Larval Host Plants* : The larval host plants of these butterflies is *Xanthoxylon rhetsa* DC., family *Rutaceae*.

*Distribution* : Southern India.

*Status* : Locally common and not rare. Protected in India but not known to be threatened.

*Remarks* : The butterfly is commonly called Malabar Banded Peacock (*Papilio buddha*) is a species of swallowtail found in the Western Ghats of India.

13. *Papilio demoleus* Linnaeus, 1758

1758. *Papilio demoleus* Linnaeus, *Systema Naturae*, ed. X, p. 464.

1780a. *Papilio erithonius*, Cramer, *Pap. Exot.*, p. 76.

1881a. *Orpheides erithonius*, Moore, *Lep. Ceylon*, p. 147.

*Material examined* : Sethumadai, Pollachi, 3 ex., 23.xii.2005. Thirumorthy malai, Indira Gandhi National Park and Wildlife Sanctuary, 2 ex., 02.I.2006. Aruljothi nagar, Aliyar dam, 2 exs., 04.iv.2006. Amaravathy nagar, Indira Gandhi National Park and Wildlife Sanctuary, 2 exs., 15.iv.2006.

*Diagnostic characters* ♂ ♀ : Body below, head at the sides and a stripe on each side of thorax pale yellow. Fore wing above at the base dotted with pale yellow, these dots united into transverse lines; a large cell-patch, usually divided into two spots, at the upper angle of cell two or three spots; a macular discal band, the upper spots small and placed far apart, the posterior ones large and usually contiguous; band on the hind wing not interrupted; both wings with a row of submarginal spots and small marginal lunules; hind wing with a red anal spot. Not tailed.

*Wing Expanse* : 80–100 mm.

*Larval Host Plants* The larval food plants of the Lime Butterfly are Oranges and Citrus. *Ruta graveolens*, *Glycosmis pentaphylla*, *Aegle marmelos*, *Murraya koenigi*, *Chloroxylon swietenia*.

*Distribution* : India, Nepal, Burma, Thailand, Philippines, Kampuchea, southern China (including Hainan, Guangdong province), Taiwan, Japan (rare strays), Malaysia, Singapore, Indonesia (Kalimantan, Sumatra, Sula, Talaud, Flores, Alor and Sumba), Oman, UAE, Saudi Arabia, Kuwait, Bahrain, Qatar, western and possibly eastern Afghanistan and western Pakistan, Sri Lanka, Papua & New Guinea, Australia (including Lord Howe's island), apparently Hawaii and possibly other Pacific Ocean islands. Formerly absent from Borneo it is now one of the commonest *Papilionids* in Sabah and Sarawak in Malaysian Borneo, Kalimantan (Indonesian Borneo) and in Brunei. In the Western Hemisphere, Dominican Republic, Jamaica and Puerto Rico.

*Status* : Very common.

*Remarks* : The butterfly is commonly called Common Lime or the Lemon Butterfly (*Papilio demoleus*) is a common and widespread Swallowtail butterfly. It gets its name from its host plants which are usually citrus species such as the lime. It is also sometimes called the Chequered Swallowtail. Unlike most swallowtail butterflies it does not have a prominent tail. It is perhaps the most widely distributed swallowtail in the world (Collins and Morris, 1985).

#### 14. *Papilio liomedon* Moore, 1874

1874b. *Papilio liomedon* Moore, *Proc. Zool. Soc. Lond.*, p. 575.

1895. *Papilio demolion liomedon*, Rothschild, *Nov. Zool.*, p. 283.

1902. *Araminta liomedon*, Moore, *Lep. Indica*, V, p. 466.

*Material Observed* : Top slip, Indira Gandhi National Park and Wildlife Sanctuary, 1 ex., 28.ix.2006, Upper canal, Indira Gandhi National Park and Wildlife Sanctuary, 1 ex., 30.ix.2006.

*Diagnostic characters* : ♂ ♀ : Upperside brownish-black. Both wings crossed by a broad, prominent, oblique, greenish-yellow band from the apex of fore wing to the middle of the inner margin of hind wing; on the fore wing the band is composed of separate spots; on the hind wing the band passes through the apex of the cell. Hind wing with a submarginal series of greenish-yellow lunules. Underside fuliginous-black with transverse band as above and other markings very similar to those in *demolion*.

*Wing Expanse* : 90–100 mm.

*Larval Host Plants* : The larval host plants of these butterflies are *Acronychia laurifolia* and *Evodia roxburghiana* of the family.

*Distribution* : Western Ghats and hills of southern India.

*Status* : The IUCN Red Data Book records the Malabar Banded Swallowtail as uncommon and not threatened as a species. However a survey in the early nineties by Harish Gaonkar showed the

butterfly to be rare but distributed from Kerala to Goa. The butterfly was considered to be common in Karwar in the past. It is not to be found in Maharashtra and Gujarat. It is protected by Indian Wild Life (Protection) Act, 1972 (IWPA).

*Remarks* The butterfly is commonly called Malabar Banded Swallowtail (*Papilio liomedon*) is a beautiful member of the Swallowtail family found in southern India. Earlier considered a subspecies of the Banded Swallowtail (*Papilio demolion*) of South-east Asia but now considered a distinct species.

### 15. *Papilio helenus* Linnaeus, 1758

1758. *Papilio helenus* Linnaeus, *Syst. Nat.*, p. 459.

2003. *Menelaides helenus*, Page & Treadaway, *Butterflies of the world*, **17** : 9.

*Material examined* : Sarkarpathi, Pollachi, 2 exs., 23.xii.2006. Aliyar, Indira Gandhi National Park and Wildlife Sanctuary, 1 ex., 01.i.2006. Thunkavi, Udumalaipettai, 1 ex., 27.xi.2006. Thirumurthinagar, Indira Gandhi National Park and Wildlife Sanctuary, 2 exs., 01.xii.2006. Manjampatti, Indira Gandhi National Park and Wildlife Sanctuary, 2 exs., 16.iv.2006.

*Diagnostic characters* : ♂ ♀ Body black; occiput, pronotum, palpi and breast with white dots. Wings brown-black, the fore wing above in the ♂ thickly hairy on the disc, the only markings being four faintly visible stripes in the cell and beneath with two whitish stripes on the disc between each pair of veins. Hind wing with a white discal area which in the ♀ is usually more prolonged anally than in the ♂ and in both sexes consists of three or four spots of which the third is the largest. Hind wing with red submarginal lunules beneath; usually only the last one is distinct above. The ♀ is paler, with more distinct submarginal spots on the hind wing above.

*Wing Expanse* : 100–120 mm.

*Larval Host Plants* : The larvae of the *P. helenus* feed on plants of family Rutaceae such as *Zanthoxylum rhetsa*, *Zanthoxylum acanthopodium*, *Zanthoxylum nitidum*, *Glycosmis pentaphylla*, *Todalia asiatica*, *Philodendron* spp. and *Evodia* spp.

*Distribution* Southern and North-East India, Sri Lanka, Nepal, Bhutan, Bangladesh, Myanmar, Thailand, Laos, Kampuchea, Vietnam, southern China (including Hainan, Guangdong province), southern Japan, South Korea, Ryukyu Islands. Peninsular and Eastern Malaysia, Brunei, Philippines and Indonesia (Sumatra, Java, Bangka, Kalimantan and the Lesser Sunda Islands except Tanimbar). In India, along the Western Ghats from Kerala to Gujarat, also Palnis and Shevaroy. In the north from Mussoorie eastwards, to North-East India and onto Myanmar.

*Status* Common and not threatened. Common from Kerala to Maharashtra, rare in Gujarat.

*Remarks* The butterfly is commonly called Red Helen (*Papilio helenus*) is a large swallowtail butterfly found in the forests of southern India and parts of Southeast Asia. This is the third largest butterfly in India.

16. *Papilio polytes* Linnaeus, 1758

1758. *Papilio polytes* Linnaeus, *Syst. Nat.*, p. 459.  
 1865. *Papilio horsfieldi*, Reakirt, *Proc. ent. Soc. Philad.*, **3** : 476.  
 1879. *Papilio walkeri*, Janson, *Cistula ent.*, **2**(21) : 433.  
 1908. *Papilio depicta*, Fruhstorfer, *Ent. Wochenbl.*, **25**(9) : 38.  
 1908. *Papilio ocha*, Fruhstorfer, *Ent. Wochenbl.*, **25**(9) : 38.  
 1938. *Papilio chalcas*, Fabricius, Bryk, *Systema Glossatorum*, 24.  
 2003. *Menelaides polytes*, Page & Treadaway, *Butterflies of the world*, **17** : 9.

*Material examined* : Sarkarpathi, Pollachi, 3 exs., 23.xii.2006. Aliyar, Indira Gandhi National Park and Wildlife Sanctuary, 2 exs., 01.i.2006. Thunkavi, Udumalaipettai, 2 exs., 27.xi.2006. Thirumurthinagar, Indira Gandhi National Park and Wildlife Sanctuary, 1 ex., 01.xii.2006. Manjampatti, Indira Gandhi National Park and Wildlife Sanctuary, 1 ex., 16.iv.2006.

*Diagnostic characters* : ♂ : Palpi white laterally. Ground-colour black. Fore wing with white marginal spots which are broader proximally. Hind wing with a white post-discal band which consists of spots of about equal size.

♀ : There are three principal forms : one resembling the ♂ one with red discal patches on the hind wing and one with white discal patches on the hind wing. In the two latter forms the fore wing is black from the base to veins culb or cula and along the outer margin; the posteriorly narrowed central area is lighter and traversed by black vein and fold stripes; distal margin distinctly undulate, with thin white fringe-spots.

*Wing Expanse* : 90–100 mm.

*Larval Host Plants* : The larvae of *P. polytes* food plants are *Aegle marmelos* or Bael, *Atalantia racemosa* and *Citrus* spp. of *C. aurantifolia*, *C. grandis*, *C. limon*, *C. medica*, *C. sinensis*, *Glycosmis arborea*, *Murraya koenigii*, *Murraya paniculata*.

*Distribution* : India (including Andaman and Nicobar islands), Nepal, Sri Lanka, Myanmar Thailand, southern and western China (including Hainan, Guangdong province), Taiwan, Hong Kong, Japan (Ryukyu Islands), Vietnam, Laos, Kampuchea, Eastern and Peninsular Malaysia, Brunei and Indonesia (except Moluccas and Irian Jaya).

*Status* : Very common. Not threatened.

*Remarks* : The butterfly is commonly called Common Mormon (*Papilio polytes*) is a common species of swallowtail butterfly widely distributed across Asia. This butterfly is known for the mimicry displayed by the numerous forms of its females which mimic inedible Red-bodied Swallowtails, such as the Common Rose and the Crimson Rose. The Red Helen (*Papilio helenus*) is a large swallowtail butterfly found in forests in southern India and parts of Southeast Asia.

17. *Papilio polymnestor* Cramer, 1775

1775. *Papilio polymnestor* Cramer, *Uitlandsche Kapellen (Papillons exot.)*, p. 83.

*Material examined* : Top Slip, Indira Gandhi National Park and Wildlife Sanctuary, 1 ex., 28.xii.2005. Upper canal, Indira Gandhi National Park and Wildlife Sanctuary, 1 ex., 05.iv.2006.

*Diagnostic characters* : ♂ ♀ : Upperside of fore wing with a pale blue discal band which is obsolescent anteriorly. Hind wing with distal area pale blue, enclosing a row of black discal patches and a similar row of submarginal spots, some of the latter united with the black distal margin. Underside opaque black. Fore wing with an elongate spot of dark red at base of cell; the post discal transverse streaks as on the upperside, but grey tinged with ochraceous and extended to the costa; in some specimens similar, but narrow streaks also in the cell. Hind wing with five irregular small patches of red at base, the outer three-fourths of wing touched with ochraceous, but generally narrower than the blue on the upperside; the inner margin of the grey area crosses the wing beyond the cell; the post-discal and submarginal black spots as above. In some specimens this grey area is greatly restricted, its inner margin crossing the wing well beyond the apex of the cell; the submarginal spots merged completely with the marginal spots, forming a comparatively broad marginal black band. Antennae, head, thorax and abdomen blackish-brown. ♀ Resembles the ♂ but the internervular streaks on the fore wing paler, extended into the cell on both sides of the wing. Hind wing with paler blue and grey areas. In some specimens there is a diffuse short crimson streak at the base of the cell of the fore wing above.

*Wing Expanse* : 120–150 mm.

*Larval Host Plants* : The *P. polymnestor* larvae feed on *Atalantia racemosa*, *Atalantia wightii*, *Glycosmis arborea*, *Paramigyra monophylla*, *Citrus grandis*, *Citrus limon*.

*Distribution* : Endemic to India and Sri Lanka. In India it is restricted to the Western Ghats, Southern India and the East coast. It has been recorded as far north as Gujarat. It is often seen even in the gardens and sometimes in the middle of busy traffic in large cities such as Mumbai, Pune and Bangalore. Wynter-Blyth recorded it in Madhya Pradesh, Jharkhand, West Bengal and Sikkim.

*Status* : Not uncommon. Not thought to be threatened. Occurs throughout the year but more common in the monsoon and immediately after it.

*Remarks* The butterfly is commonly called Blue Mormon (*Papilio polymnestor*) is a beautiful butterfly found in South India belonging to the Swallowtail family. It is a delight in any garden and its striking blue, black and white markings coupled with the large wingspan make it a memorable sight.

18. *Papilio dravidarum* Wood-Mason, 1880

1880. *Papilio dravidarum* Wood-Mason, *J. As. Soc. Beng.*, p. 134.

1881. *Papilio pollux* var. *dravidarum*, Westwood, *Arc. Entom.*, p. 482.

1903. *Tamera dravidarum*, Moore, *Lep. Indica*, p. 79.

*Material examined* : Sethumadai, Pollachi, 2 exs., 23.xii.2005. Varakaliyar, Indira Gandhi National Park and Wildlife Sanctuary, 2 exs., 28.xii.2005. Aliyar, Indira Gandhi National Park and Wildlife Sanctuary, 1 ex., 01.i.2006. Sholaiar Nagar, Indira Gandhi National Park and Wildlife Sanctuary, 1 ex., 08.iv.2006. Thirumurtinagar, Indira Gandhi National Park and Wildlife Sanctuary, 09.iv.2006.

*Diagnostic characters* ♂ ♀ Upperside velvety black. Fore wing with the outer half and four somewhat indistinct longitudinal lines in the cell irrorated with yellowish-brown scales; a small white spot across the middle discocellular; a submarginal series of inwardly conical white spots and a marginal series of large white spots that decrease in size towards the costs; most often the spots do not extend beyond area 6; following each submarginal spot are spots of the black ground-colour formed by the absence of the irroration of yellowish-brown scales. Hind wing with the posterior three-fourths irrorated with yellowish-brown scales; a very prominent discal series of inwardly conical, outwardly emarginate, elongate white spots followed by a submarginal series of white lunules with spots of the black ground-colour that succeed them as on the fore wing. Cilia black, largely alternated with white in the interspaces.

Underside ground-colour a rich hair-brown with larger markings than above and with the yellowish irroration of the group. Antennae, head, thorax and abdomen dark brownish-black, head and abdomen minutely speckled with white; beneath, the white specklings larger and more numerous.

The ♀ has a paler ground-colour with larger white markings and more conspicuous yellowish-brown irroration.

*Wing Expanse* : 80–100 mm.

*Larval Host Plants* : The *P. dravidarum* larvae feed on *Glycosmis pentaphylla* of the family Rutaceae.

*Distribution* : It occurs in the states of Kerala, Tamil Nadu, Karnataka and Goa. Endemic to the Western Ghats in South India.

*Status* : Uncommon but not known to be threatened. Commonest in Waynad and Coorg in the past. Rarer towards the extremities of its range.

*Remarks* : The butterfly is commonly called Malabar Raven (*Papilio dravidarum*) is a species of Swallowtail butterfly found in India.

19. *Papilio crino* Fabricius, 1793

1793. *Papilio crino* Fabricius, *Ent. Syst.*, p. 5.  
 1903. *Harimala crino*, Moore, *Lep. Indica*, p. 67.  
 1881a. *Harimala montanus*, Moore, *Lep. Ceylon*, p. 146.  
 1864a. *Harimala montanus*, C. & R. Felder, *Verh. Zool. Bot. Ges. Wien*, pp. 289-378.  
 1895. *Papilio crino*, ab. *Montanus*, Rothschild, *Nov. Zool.*, p. 389.  
 1998. *Papilio (Achillides) crino*, Bauer & Frankenbach, *Butterflies of the world*, 1 : (2).

*Material examined* Varakaliyar, Indira Gandhi National Park and Wildlife Sanctuary, 2 exs., 28.xii.2005. Upper canal, Indira Gandhi National Park and Wildlife Sanctuary, 5 exs., 05.iv.2006. Sholaiar Nagar, Indira Gandhi National Park and Wildlife Sanctuary, 3 exs., 08.iv.2006. Thirumurtinagar, Indira Gandhi National Park and Wildlife Sanctuary, 3 exs., 09.iv.2006.

*Diagnostic characters* ♂ ♀ Upperside uniformly dusted with green and with a green post-discal band on both wings. The tail is tipped with green. Fore wing of the ♂ with thin pilose scent-streaks on veins 1 vein culb and cula. The bluish-green post-discal band does not enter the cell, is slightly sinuous and curved and distinctly decreases in width towards the costal margin; in the ♀ more sinuous than in the ♂ Hind wing with the bluish-green post-discal band very variable in width, not entering the cell and its inner edge fairly straight; above vein R<sub>5</sub> the band is abruptly narrowed; tornal ocellus claret-red, with a large black centre inwardly edged with blue; a dull whitish sub-apical spot; submarginal diffuse green lunules in areas 2 to 4.

Underside dull pale brown to blackish-brown irrorated with scattered yellowish scales, which, however, on the fore wing are absent from a large triangular discal patch that lies between the inner margin, the median vein, vein M<sub>2</sub> and a line of white lunules that crosses the wing in an outward curve from the upper third of the costa to just before the tornus; these white lunules are outwardly diffuse and merge gradually into the ground-colour. Hind wing with the tornal ocellus much as on the upperside; an obscure ill-defined highly arched post-discal narrow whitish band from above the tornal ocellus to the costa, ending near the apex of area 7 in a broad white lunule; beyond this a double submarginal row of somewhat straight ochreous-white lunules, each lunule of the inner row bordered outwardly with blue, this bordering very faint in many specimens. Cilia of fore and hind wings brown alternated with white.

*Wing Expanse* : 80–100 mm.

*Larval Host Plants* : The larva feeds on *Chloroxylon swietenia* DC.

*Distribution* Central and Southern India, Lower Bengal and Sri Lanka.

*Status* : The species is not rare, being rather common in the plains and ascending to about 6000 ft.

*Remarks* The butterfly is commonly called Common Banded Peacock (*Papilio crino*) is a species of swallowtail butterfly found in South Asia.

### SUMMARY

The paper deals with the systematic account of 19 species of butterflies belonging to five genera viz., *Pachliopta*, *Troides*, *Graphium*, *Chilasa* and *Papilio* of the family Papilionidae from Anamalai range, Southern Western Ghats, Tamilnadu. Common name, wing expanse, distribution and nomenclatural changes have been described for all the species. The host plants of larvae and adult species described were also mentioned. Keys to identification of species and genera were also provided.

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