

Butterfly diversity of Phansad – Preliminary study

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Abstract: Total 153 species of butterflies distributed in five families have been reported from Phansad wildlife sanctuary. Further to this there are seven species which might be existing in the area. Nymphalidae and Lycaenidae were the co-dominant families with 47 species each. Pieridae represented by 17 species, Hesperidae by 31 species and Papilionidae by 11 species.

Key words : Phansad, butterflies

Introduction

Phansad wildlife sanctuary (73.05908°N 18.3441°E) is located in Raigad district of the Konkan region of Maharashtra. It is spread over 6979 hectares. It was declared as sanctuary in 1986. Before independence it was the private hunting ground of the Nawabs of the princely state of Murud Janjira. Some parts of the sanctuary touch the Arabian Sea. Geographically it can roughly be divided into north and south part; the arm extending north north west of Supegaon and the other arm extending south south east of Supegaon. The primary forest type is moist deciduous dominated by Anjani *Memecylon umbalatum*. On the western boundary are some regions of broad leaved forest dominated by Teak *Tectona grandis*. Few grasslands are spread across the forest which are the good place for sighting other mega fauna. As per the forest department data there are at least 30 perennial water streams locally called as 'Gaan'.

There are no published data of the butterfly diversity of this region except Padhye *et.al* (2013) who reported 91 species. The area seems to be very rich with 718 species of plants reported further studies will increase the knowledge of its diversity.

Materials and Methods

The area was visited in all the seasons throughout the year from 2002 to 2011. The standard observation time was from 07.00 hrs in the morning to 12.00 noon however observations were made for the entire day if required. The butterflies were observed along paths inside the forest and along water streams. They were observed on both sides of the paths. Lycaenids and hesperids were caught in the net whenever required, identified and released. In case of uncertain identity photographs were taken. The identification was done with the keys of Evans (1932), Kehimkar (2008), Kunte (2000) and Wynter Blyth (1957). The classification follows Kehimkar (2008). Their status was decided on visual observations as C - common, VC - very common, NC – not common, R – rare, VR – very rare. This status does not correlate to the entire geographical distribution status of a corresponding species.

Results and discussion

Total 153 species distributed in five families have been identified from the study area. Lycaenidae and Nymphalidae were co-dominant family with 47 species each (30.72% each) followed by Hesperidae 31 species (20.26%), Pieridae 17 species (11.11%). The swallowtail family was the least diverse with 11 species (7.19%). (Fig. 1)

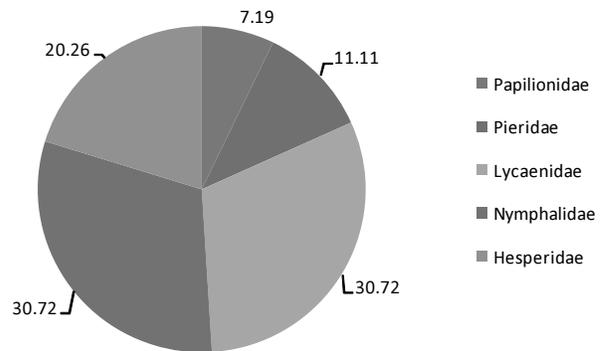


Fig. 1. Family wise composition of butterflies

Total 21 subfamilies were recorded with Nymphalidae distributed in 10 subfamilies while Papilionidae 11 species distributed in only 1 subfamily. Lycaenidae dominated the list by having most Rare (8 species) and Very rare (3 species) status. Fig. 2 shows distribution of diversity amongst different status.

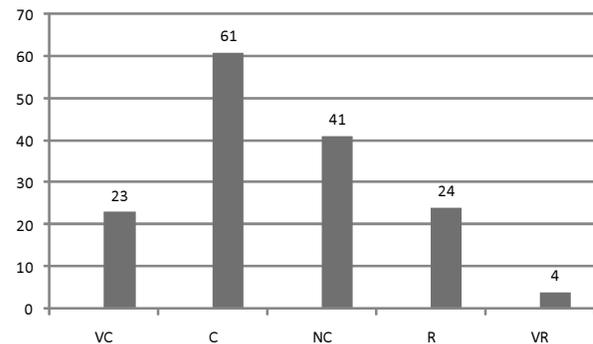


Fig. 2 Status wise distribution of species

The different landscapes present in the forest are grasslands, dense forests, perennial streams and clearings near road. Most diversity recorded at perennial streams and at the edge of the forests and grasslands. Water level in the streams near water bodies reduces drastically during February-March thereby exposing wet soil below it. Most of the diversity was recorded here on these wet soil patches.

It is interesting to note that few diurnal species of butterflies got attracted towards the tubelight of the rest house during night. Bushbrowns, Common Tinsel, Black prince female, Orange ail awl, Brown awl were seen on the wall lit by tubelight.

H.L. Naik (2002) reported 71 species in a local publication. In the same publication unknown author has compiled a list of 718 plant species.

Following are the species which are suspected to be present in the area and requires further study for the confirmation.

Suspected occurrence

Southern Birdwing *Troides minos*. Naik (2002) stated to have spotted Southern Birdwing *Troides minos* on 14th June 2000 in compartment no. 683. This observation needs authentication.

Plain Puffin *Appias indra* (Moore, 1857)

I have recorded Abnormal Silverline *Spindasis abnormis* from Yeoor, Sanjay Gandhi National Park during 2010. This is a Western Ghat endemic species spotted from Coorg (Moore, 1883), Lonavla (Beans, 1965), Chiplun (Kunte et al. 2011) and by me. The last record is the northernmost limit of species recorded. Phansad lies south of this limit hence there is a probability of existence of this species.

Double Banded Crow *Euploea Sylvester* (Fabricius, 1857)

Pale Four Lineblue *Nacaduba hermus* (C. Felder)

Transparent Six Lineblue *Nacaduba kurava* (Moore, 1857)

Orchid Tit *Chilaria othona* (Hewitson, 1865)

Table 1: Family composition of butterflies recorded from Phansad WLS

	Family	No. of Species	%	Sub families	VC	C	NC	R	VR
1	Papilionidae	11	7.19	1	1	6	3	1	-
2	Pieridae	17	11.11	2	3	9	1	3	1
3	Lycaenidae	47	30.72	5	5	17	14	8	3
4	Nymphalidae	47	30.72	10	9	19	13	6	-
5	Hesperiidae	31	20.26	3	5	10	10	6	-
	Total	152	100	21	23	61	41	24	4

Table 2: Species composition of butterflies

		Status
I	Family Papilionidae	
A	Subfamily Papilioninae	
1	Common Rose <i>Atrophaneura aristolochiae</i> (Fabricius, 1775)	C
2	Crimson Rose <i>Atrophaneura hector</i> (Linnaeus, 1758)	NC
3	Common Mime <i>Chilasa clytia</i> (Linnaeus, 1758)	NC
4	Lime butterfly <i>Papilio demoleus</i> (Linnaeus, 1758)	C
5	Common Mormon <i>Papilio polytes</i> (Linnaeus, 1758)	C
6	Red Helen <i>Papilio helenus</i> (Linnaeus, 1758)	R

7	Blue Mormon <i>Papilio polymnestor</i> (Cramer, 1775)	NC
8	Common Blue Bottle <i>Graphium sarpedon</i> (Linnaeus, 1758)	C
9	Common jay <i>Graphium doson</i> (C & R Felder, 1864)	C
10	Tailed jay <i>Graphium agamemnon</i> (Linnaeus, 1758)	C
11	Spot swordtail <i>Pathysa nomius</i> (Esper, 1785-98)	VC
II	Family Pieridae	
A	Subfamily Coliadinae	
1	Common Grass Yellow <i>Eurema hecabe</i> (Moore, 1886)	VC
2	Spotless Grass Yellow <i>Eurema laeta</i> (Moore, 1906)	C
3	Small Grass Yellow <i>Eurema brigitta</i> (Wallace, 1867)	C
4	Common Emigrant <i>Catopsilia pomona</i> (Fabricius, 1775)	C
5	Mottled Emigrant <i>Catopsilia pyranthe</i> (Linnaeus, 1758)	C
B	Subfamily Pierinae	
6	Common Jezebel <i>Delias eucharis</i> (Drury, 1773)	C
7	Psyche <i>Leptosia nina</i> (Fabricius, 1793)	VC
8	Common Gull <i>Cepora nerissa</i> (Fabricius, 1775)	VC
9	Lesser Gull <i>Cepora nadina</i> (Moore, 1857)	C
10	Pioneer <i>Anaphaeis aurota</i> (Fabricius, 1793)	R
11	Common Albatross <i>Appias albina</i> (Boisduval, 1836)	R
12	Striped Albatross <i>Appias libythea</i> (Fabricius, 1775)	R
13	Chocolate Albatross <i>Appias lyncida</i> (Boisduval, 1836)	VR
14	White Orange Tip <i>Ixias marianne</i> (Cramer, 1779)	NC
15	Yellow Orange Tip <i>Ixias pyrene</i> (Butler, 1989)	C
16	Great Orange Tip <i>Hebomoeta glaucippe</i> (Linnaeus, 1758)	C
17	Common Wanderer <i>Pareronia valeria</i> (Fabricius, 1787)	C
III	Family Lycaenidae	
A	Subfamily Miletinae	
1	Apefly <i>Spalgis epius</i> (Westwood, 1852)	R
B	Subfamily Curetinae	
2	Indian Sunbeam <i>Curetis thetis</i> (Westwood, 1882)	C
3	Angled Sunbeam <i>Curetis dentata</i> (Moore, 1882)	C
C	Subfamily Theclinae	
4	Large Oak blue <i>Arhopala amantes</i> (Hewitson, 1862)	NC

5	Western Centaur Oak blue <i>A. pseudocentaurus</i> (Doubleday, 1847)	NC
6	Common Acacia blue <i>Surendra quercetorum</i> (Moore, 1857)	C
7	Leaf blue <i>Amblypodia anita</i> (Hewitson, 1862)	NC
8	Silverstreak blue <i>Iraota timoleon</i> (Stoll, 1790)	R
9	Yamfly <i>Loxura atymnus</i> (Cramer, 1782)	NC
10	Monkey Puzzle <i>Rathinda amor</i> (Fabricius, 1775)	NC
11	Redspot <i>Zesius chrysomallus</i> (Hubner, 1819)	VR
12	Peacock Royal <i>Tajuria cippus</i> (Fabricius, 1798)	R
13	Tufted White Royal <i>Pratapa deva</i> (Moore, 1884)	VR
14	Guava blue <i>Deudorix isocrates</i> (Fabricius, 1793)	R
15	Cornelian <i>Deudorix epijarbas</i> (Moore, 1858)	R
16	Indian Red Flash <i>Rapala iarbas</i> (Fabricius, 1787)	C
17	Indian Slate Flash <i>Rapala manea</i> (Moore, 1879)	C
18	Indigo Flash <i>Rapala varuna</i> (Hewitson, 1863)	C
19	Common Tinsel <i>Catapaecilma elegans</i> (Druce, 1873)	VR
20	Common Silverline <i>Spindasis vulcanus</i> (Moore, 1881)	NC
21	Long banded Silverline <i>Spindasis lohita</i> (Moore,)	NC
22	Shot Silverline <i>Spindasis ictis</i> (Hewitson, 1865)	R
D	Subfamily Polyomantinae	
23	Pointed Cilliate blue <i>Anthene lycaenina</i> (R. Felder, 1868)	R
24	Common Pierrot <i>Castalius rosimon</i> (Fabricius, 1775)	C
25	Angled Pierrot <i>Caleta caleta</i> (Hewitson, 1876)	NC
26	Rounded Pierrot <i>Tarucus nara</i> (Kollar, 1848)	NC
27	Zebra blue <i>Leptotes plinius</i> (Fabricius, 1793)	C
28	Dark Grass blue <i>Zizeeria karsandra</i> (Moore, 1865)	VC
29	Pale Grass blue <i>Pseudozizeeria maha</i> (Kollar, 1844)	NC
30	Tiny Grass blue <i>Zizula hylax</i> (Fabricius, 1775)	C
31	Lesser Grass blue <i>Zizina otis</i> (Fabricius, 1787)	C
32	Grass Jewel <i>Chilades putli</i> (Freyer, 1845)	NC
33	Gram blue <i>Euchrysops cnejus</i> (Fabricius, 1798)	VC
34	Pea blue <i>Lampides boeticus</i> (Linnaeus, 1767)	C
35	Common Cerulean <i>Jamides celeno</i> (Cramer, 1775)	VC
36	Dark Cerulean <i>Jamides bochus</i> (Stoll, 1782)	C

37	Forget – me –not <i>Catochrysops strabo</i> (Fabricius, 1793)	NC
38	Common Line blue <i>Prosotas nora</i> (C. Felder, 1860)	C
39	Tailless Line blue <i>Prosotas dubiosa</i> (Semper, 1879)	VC
40	Dingy Lineblue <i>Petrelaea dana</i> (de Nicéville, 1883)	R
41	Malayan <i>Megisba malaya</i> (Moore, 1879)	C
42	Common Hedge blue <i>Acytolepis puspa</i> (Horsfield, 1828)	C
43	Dark Pierrot <i>Tarucus ananda</i> (de Nicéville, 1883)	NC
44	Indian Cupid <i>Everes lacturnus</i> (Godart, 1824)	NC
45	Plains Cupid <i>Chilades pandava</i> (Horsfield, 1892)	C
46	Lime blue <i>Chilades laius</i> (Cramer, 1878)	C
E	Subfamily Riordininae	
47	Plum Judy <i>Abisara echerius</i> (Moore, 1878)	VC
IV	Family Nymphalidae	
A	Subfamily Libytheinae	
1	Club beak <i>Libythea myrrha</i> (Fruhstorfer, 1914)	R
B	Subfamily Danainae	
2	Plain Tiger <i>Danaus chryssipus</i> (Linnaeus, 1758)	VC
3	Striped Tiger <i>Danaus genutia</i> (Cramer, 1779)	VC
4	Blue Tiger <i>Tirumala limniace</i> (Butler, 1886)	VC
5	Dark blue Tiger <i>Tirumala septentrionis</i> (Butler, 1874)	C
6	Glassy Tiger <i>Parantica aglea</i> (Moore, 1883)	VC
7	Common Crow <i>Euploea core</i> (Cramer, 1790)	VC
8	Brown king Crow <i>Euploea klugii</i> (Moore, 1858)	C
C	Subfamily Charaxinae	
9	Tawny Rajah <i>Charaxes bernardus</i> (C. & R.Felder, 1867)	NC
10	Black Rajah <i>Charaxes solon</i> (Fabricius, 1781)	R
11	Common Nawab <i>Polyura athamas</i> (Drury, 1770)	NC
12	Anomalous Nawab <i>Polyura agraria</i> (Swinhoe, 1887)	R
D	Subfamily Satyrinae	
13	Common Evening brown <i>Melanitis leda</i> (Cramer, 1775)	C
14	Bamboo Tree brown <i>Lethe europa</i> (Fruhstorfer, 1911)	NC
15	Common Bush brown <i>Mycalesis perseus</i> (Fabricius, 1798)	C
16	Dark brand Bush brown <i>Mycalesis mineus</i> (Linnaeus, 1765)	NC

17	Long Brand Bush brown <i>Mycalesis visala</i> (Moore, 1858)	C
18	Common Four Ring <i>Ypthima huebneri</i> (Kirby, 1871)	NC
19	Common Five Ring <i>Ypthima baldus</i> (Fabricius, 1775)	C
20	Common Palmfly <i>Elymnias hypermenstra</i> (Linnaeus, 1763)	NC
E	Subfamily Heliconinae	
21	Tawny Coaster <i>Acraea violae</i> (Horsfield, 1829)	C
22	Common Leopard <i>Phalanta phalantha</i> (Drury, 1770)	VC
23	Rustic <i>Cupha erymanthis</i> (Drury, 1773)	NC
F	Subfamily Limenitinae	
24	Commander <i>Moduza procris</i> (Cramer, 1777)	C
25	Color Sergeant <i>Athyma inara</i> (Doubleday, 1850)	R
26	Chestnut Streaked Sailer <i>Neptis jumbah</i> (Moore, 1857)	C
27	Common Sailer <i>Neptis hylas</i> (Moore, 1872)	C
28	Short banded Sailer <i>Neptis columella</i> (Cramer, 1780)	NC
29	Common Lascar <i>Pantoporia hordonia</i>	NC
30	Grey Count <i>Tanaecia lepida</i> (Fruhstorfer, 1913)	R
31	Common Baron <i>Euthalia aconthea</i> (Hewitson, 1874)	C
32	Gaudy Baron <i>Euthalia lubentina</i> (Cramer, 1777)	NC
33	Baronet <i>Symphadra nais</i> (Forster, 1771)	VC
G	Subfamily Cyrestinae	
34	Common Map <i>Cyrestis thyodamas</i>	R
H	Subfamily Biblidinae	
35	Common Castor <i>Ariadne merione</i> (Cramer, 1771)	C
36	Angled Castor <i>Ariadne ariadne</i> (Linnaeus, 1763)	C
I	Subfamily Apaturinae	
37	Black Prince <i>Rohana parisatis</i>	NC
J	Subfamily Nymphalinae	
38	Painted Lady <i>Cynthia cardui</i> (Linnaeus, 1758)	NC
39	Yellow Pansy <i>Junonia hierta</i> (Evans, 1923)	NC
40	Blue Pansy <i>Junonia orithya</i> (Huebner, 1816)	NC
41	Lemon Pansy <i>Junonia lemonias</i> (Linnaeus, 1758)	C
42	Peacock Pansy <i>Junonia almana</i> (Linnaeus, 1758)	C
43	Grey Pansy <i>Junonia atlites</i> (Johanssen, 1764)	C

44	Chocolate Pansy <i>Precis iphita</i> (Cramer, 1779)	C
45	Danaid Eggfly <i>Hypolimnas missipus</i> (Linnaeus, 1764)	VC
46	Great Eggfly <i>Hypolimnas bolina</i> (Linnaeus, 1758)	VC
47	Blue Oak leaf <i>Kallima horsfieldi</i> (Kollar, 1844)	C
V	Family Hesperidae	
A	Subfamily Coeliadinae	
1	Brown Awl <i>Badamia exclamationis</i> (Fabricius, 1775)	C
2	Plain Banded Awl <i>Hasora vitta</i> (Butler, 1870)	C
3	Common Banded Awl <i>Hasora chromus</i> (Cramer, 1780)	C
4	Common Awl <i>Hasora badra</i> (Moore, 1858)	NC
5	Orange tail Awl <i>Bibasis sena</i> (Moore, 1865)	R
6	Orange Awlet <i>Bibasis jaina</i> (Moore, 1866)	R
B	Subfamily Pyrginae	
7	Malabar Spotted Flat <i>Celaenorrhinus ambareesa</i> (Moore, 1866)	VC
8	Common Spotted Flat <i>Celaenorrhinus leucocera</i> (Kollar, 1844)	C
9	Tricolored Pied Flat <i>Coladenia indrani</i> (Moore, 1866)	C
10	Fulvous Pied Flat <i>Pseudocoladenia dan</i> (Fabricius, 1787)	NC
11	Common Small Flat <i>Sarangesa dasahara</i> (Moore, 1866)	NC
12	Spotted Small Flat <i>Sarangesa purendra</i> (Moore, 1882)	R
13	Golden Angle <i>Caprona ransonnetti</i> (R. Felder, 1868)	VC
14	Angled Flat <i>Tapena thwaitesi</i> (Moore, 1881)	NC
15	Indian Skipper <i>Spialia galba</i> (Fabricius, 1793)	NC
16	Water Snow Flat <i>Tagiades litigosa</i>	R
17	Chestnut Angle <i>Odontoptilum angulata</i>	R
C	Subfamily Hesperinae	
18	Tamil Grass Dart <i>Taractrocera ceramas</i> (Hewitson, 1868)	C
19	Dark Palm Dart <i>Telicota ancilla</i> (Herrich-Schaeffer, 1869)	C
20	Pale Palm Dart <i>Telicota colon</i> (Fabricius, 1775)	C
21	Grass Demon <i>Udaspes folus</i> (Cramer, 1775)	VC
22	Common Red Eye <i>Matapa aria</i> (Moore, 1866)	C
23	Straight Swift <i>Parnara guttatus</i> (Bremer & Grey, 1852)	C
24	Rice Swift <i>Borbo cinnara</i> (Wallace, 1866)	VC
25	Small Branded Swift <i>Pelopidas mathias</i> (Fabricius, 1798)	NC

26	Great Swift <i>Pelopidas assamensis</i> (de Niceville, 1882)	NC
27	Conjoined Swift <i>Pelopidas conjuncta</i> (Herrich-Schäffer, 1869)	NC
28	Chestnut Bob <i>Iambrix salsala</i> (Moore, 1866)	VC
29	Vindhyan Bob <i>Arnetta vindhiana</i> (Moore, 1884)	NC
30	Indian Palm Bob <i>Suastus gremius</i> (Fabricius, 1798)	NC
31	Moore's Ace <i>Halpe porus</i> (Mabille, 1877)	R

References

- Aitkin, E. H. and E. Comber. (1903a). A list of Butterflies of Konkan. *Journal of the Bombay Natural History Society*. 15:42-55.
- Aitkin, E. H. and E. Comber (1903b). Further notes on Konkan butterflies. *Journal of the Bombay Natural History Society*. 15: 356-357.
- Bell, T. R. (1909 to 1927). The common butterflies of plains of India (including those met within the hill stations of Bombay Presidency). *Journal of the Bombay Natural History Society*. Vol. 19 (1) to vol. 31 (4).
- Best, A. E. G. (1951). The Butterflies of Bombay and Salsette. *Journal of the Bombay Natural History Society*. 50: 331-339.
- Borkar, M.R. & N. Komarpant. (2004). Diversity, abundance, and habitat associations of butterfly species in Bondla wildlife sanctuary of Goa, India. *Zoo's Print Journal*. 19(10):1648-1653.
- de Niceville, L.(1890). The Butterflies of India, Burmah and Ceylon. Vol. III. Re-published by A. J. Reprints Agency., New Delhi 503 p.
- Evans, W.H. (1932). The Identification of Indian Butterflies. Second Ed. Revised. Published by Bombay Natural History Society, Bombay (1985 reprint). 454p.
- Gaonkar, H. (1996). Butterflies of the Western Ghats, India (including Sri Lanka): A biodiversity assessment of a threatened mountain system. Report to the Centre of Ecological Sciences, I.I. Sc., Bangalore. 86 p.
- Kehimkar, I. (2008). The Book of Indian Butterflies. Published by Bombay Natural History Society, Mumbai. 497 p.
- Kunte, K. 2000. Butterflies of Peninsular India (India: A Lifescape). Universities Press (India) Limited, Hyderabad 272 p.
- Kurve, P. and A. Patwardhan. (2005). Comparative study of butterflies from urbanized zone, degraded forest and core forest in and around Thane city, Mumbai: Minor project submitted to the University of Mumbai. 72 p.
- Patwardhan, A. (2010). Sightings of rare butterfly species and new record from Sanjay Gandhi National Park, Mumbai and Tungareshwar Sanctuary, Thane, India. *Zoo's Print* 25 (5): 19-20.
- Rangnekar, P. (2007). *A Photographic Guide to Butterflies of Goa. (also includes butterflies of other ranges of the Western Ghats & Southern India)*. Mineral Foundation of Goa, 66pp.
- Wynter-Blyth, M. A. (1957). Butterflies of the Indian Region. Reprint 1982, Today and Tomorrow's Printers and Publishers, New Delhi. 523p.