JoTT Short Communication 3(3): 1601-1609

3rd Asian Lepidoptera Conservation Symposium
Special Series

Butterfly diversity in relation to nectar food plants from Bhor Tahsil, Pune District, Maharashtra, India

R.K. Nimbalkar [1], S.K. Chandekar [2] & S.P. Khunte [3]

[1] Department of Zoology, Vinayakrao Patil Mahavidyalaya, Vaijapur, Aurangabad District, Maharashtra 423701, India
[2] Department of Zoology, Annasaheb Magar Mahavidyalaya, Pune, Maharashtra 411028, India
[3] Department of Botany, Mahatma Phule College, Pimpri, Pune, Maharashtra 411017, India
Email: rknimbalkar@gmail.com [1], sonalkchandekar@rediffmail.com [2] (corresponding author)

Abstract: Floral attributes are well known to influence nectar feeding butterflies. However, there is paucity of information on food resources of adult butterflies as compared to that of larvae. The present study was carried out from Bhor Tahsil of Pune District, Maharashtra, India, during August 2007 to August 2009. A total of 64 butterfly species were recorded. Family Nymphalidae dominates in the study area, followed by Lycaenidae, Pieridae, Hesperiidae and Papilionidae. Nineteen nectar food plants were identified belonging to 10 plant families. Plants of the Asteraceae family are more used by butterflies as nectar food plants. Visits of butterflies were more frequent to flowers with tubular corollas than to non-tubular ones, to flowers coloured red, yellow, blue and purple than those coloured white and pink and to flower sources available for longer periods in the year. Species abundance reached the peak in the months during August to November. A decline in species abundance was observed from the months December to January and continued up to the end of May. Our findings are important with respect to monitoring butterfly and plant diversity and defining conservation strategies in the Bhor Tahsil.

Keywords: Bhor Tahsil, butterfly diversity, nectar food plants, seasonal distribution.

Date of publication (online): 26 March 2011
Date of publication (print): 26 March 2011
ISSN 0974-7907 (online) | 0974-7893 (print)

Editor: Krushnamegh Kunte

Manuscript details:
Ms # o2612
Received 23 October 2010
Finally accepted 05 December 2010

Citation: Nimbalkar, R.K., S.K. Chandekar & S.P. Khunte (2011). Butterfly diversity in relation to nectar food plants from Bhor Tahsil, Pune District, Maharashtra, India. *Journal of Threatened Taxa* 3(3): 1601-1609.

Acknowledgements: Mrs. S.K. Chandekar expresses a deep sense of gratitude to the Director, Board of College and University Development, Pune University, for Research Grant. We are thankful to Dr. K.A. Subramanian, Mr. A.D. Tiple and Dr. J.S. Wadatkar, for their help in confirming identification of butterfly species. We are also thankful to the Regional Meteorological Centre of Government of India, Mumbai 400099 for providing the rainfall data.

The problems of environmental damage and degradation of natural resources have received increasing attention throughout the country. Pune District is one of the important industrial districts in the state of Maharashtra. The increased industrialization and urbanization has manifold effects on the ecology of this region. It has 14 tahsils, out of which Bhor Tahsil was selected for the study of butterfly diversity in relation to nectar food plants. Bhor Tahsil is famous for historical places, tourist places and dams.

Butterflies are scaled wing insects belonging to the order Lepidoptera of class Insecta. There is an intimate association between butterflies and plants and their lives are exceptionally interlinked (Feltwell 1986), which leads to different patterns in their distribution depending on the availability of their food plants.

Feeding is a significant activity and food may often be the most decisive factor affecting distribution, abundance and movements of animals. In butterflies, this has a special relevance because food and mode of feeding are different in the larval and adult stages (Kunte 2000).

Butterflies and their caterpillars are dependent on specific host plants for foliage, nectar and pollen as their food. Thus butterfly diversity reflects overall plant diversity, especially, that of herbs and shrubs in the given area. Herbs and shrubs start their life cycle in the beginning of the monsoon and complete

This article is part of the peer-reviewed Proceedings of the 3rd Asian Lepidoptera Conservation Symposium (3ALCS-2010) jointly organized by the IUCN SSC South Asian Invertebrate Specialist Group (SAsISG); Department of Zoology, Bharathiar University; Zoo Outreach Organisation and Wildlife Information Liaison Development, held from 25 to 29 October 2010 at Coimbatore, Tamil Nadu, India. http://www.zooreach.org/3alcs2010.html

it by the end of the postmonsoon season. While some shrubs like *Lantana camara* shows flowering throught out the year.

Earlier, various workers like Kunte (1997) studied seasonal patterns in butterfly abundance and species diversity in four tropical habitats in the northern Western Ghats. These four sites are close to Pune City within a radius of 20km. Kunte (2001) studied the butterfly diversity of Pune City along the human impact gradient; Rane & Ranade (2004) studied butterflies of Tamhini-Dongarwadi area, Mulshi, Maharashtra; Padhye et al. (2006) studied season and landscape wise distribution of butterflies in Tamhini, northern Western Ghats of India; Sharma (2009) studied the fauna of Bhimashankar Wildlife Sanctuary, Maharashtra; Tiple et al. (2006) studied factors influencing nectar plant resource visits by butterflies and implications for conservation on Amravati University campus. Further, Tiple et al. (2009) investigated butterfly-flower morphological interrelationships for 108 butterfly species and 20 plants at Nagpur.

Material and Methods

Bhor is located 54km away from Pune City in a south-westerly direction. It is situated between 18^{0}45'N & 73^{0}15'E. It has an elevation of about 591.43m. Bhor Tahsil has an irregular shape, having an area of 892km^2, bordered by Tahsil Khandala of Satara District on the east, Mahad of Raigad District on the west, Wai of Satara District on the south and Velhe, Haveli and Purandar tahsils on the north (Image 1).

The flora of Bhor Tahsil has a great diversity which includes many exotic species. The climate is moist but healthy. The vegetation is mainly of dry deciduous type and scrub type. It is due to moderate and irregular rainfall. The actual rainfall in Bhor Tahsil during the period August 2007 to August 2009 was 2603mm, as provided by the Regional Meteorological Centre, Mumbai.

The study area was fully explored during August 2007 to August 2009 and then probable areas were decided. To study the seasonal patterns/diversity in butterfly abundance in relation to nectar food plants, the entire year was divided into three seasons. The three seasons of the year are premonsoon from February to May, monsoon from June to September and postmonsoon from October to January. The study area was visited twice in each season during the two years i.e. 2007–2008 and 2008–2009. In the said investigation the selected sites were surveyed mainly between 0730 and 1230 hr. Butterfly species were

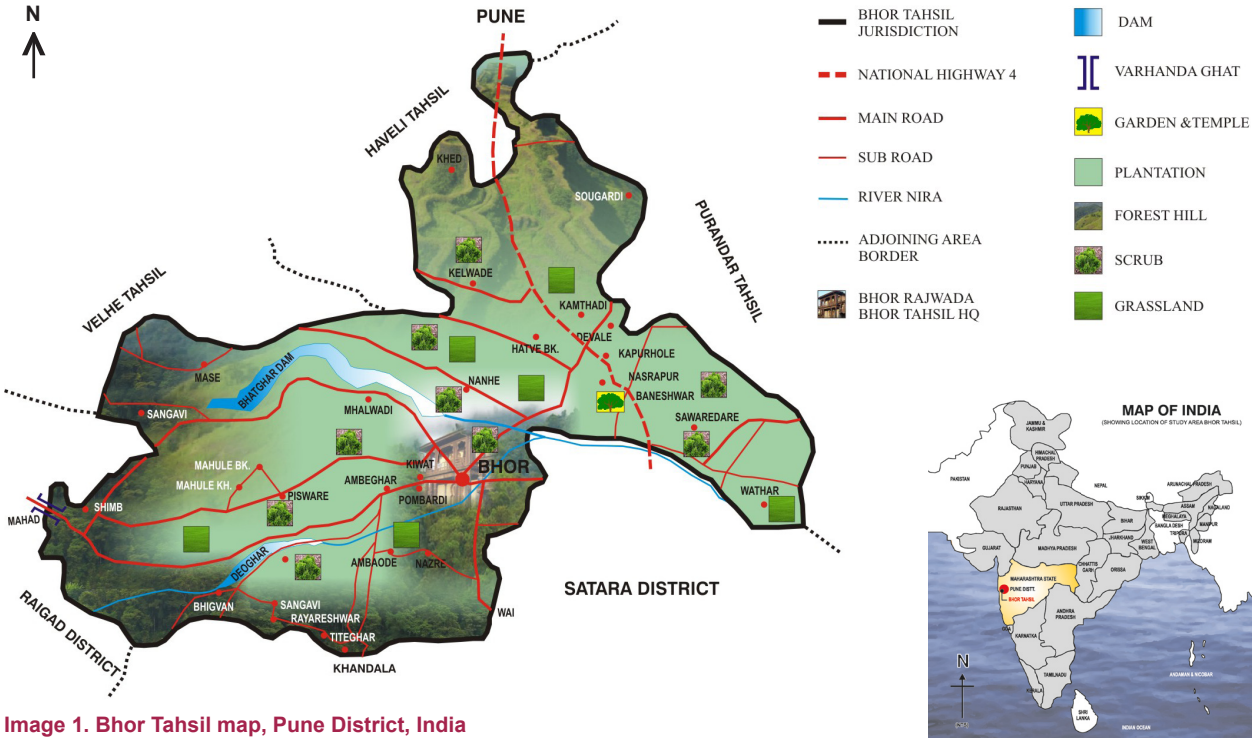

Image 1. Bhor Tahsil map, Pune District, India

identified directly in the field visually with the help of field guides followed by photography, in difficult cases, rarely by capture. Collection was restricted to those specimens that could not be identified directly. All scientific names follow Varshney (1983) and common English names follow Wynter-Blyth (1957). Classification of butterflies is after Gaonkar (1996). Benthum & Hooker (1862) system of classification is followed for plants. GPS readings and biotopes of a few sites in Bhor Tahsil area are given in Table 1.

Results

During the course of study, 64 species of butterflies belonging to five families were recorded in Bhor Tahsil. Out of 64 species, six belong to Papilionidae, eleven to Pieridae, 23 to Nymphalidae, seventeen to Lycaenidae and seven to Hesperiidae. Species belonging to the family Nymphalidae were the most dominant (36%) followed by Lycaenidae (27%), Pieridae (17%), Hesperiidae (11%) and Papilionidae (9%).

The status recording was as follows: VC - very common (75–100 sightings), C - common (50–75 sightings), NR - not rare (25–50 sightings), R - rare (5–25 sightings) and VR - very rare (1–5 sightings). Among the 64 species 15 were found very common, 27 species common, 17 species not rare and five species were found rare. None of the species were observed in very rare category from the study area. Six species (*Pachliopta hector*, *Neptis jumbah, Hypolimnas misippus, Lampides boeticus, Euchrysops cnejus* and *Acytolepis puspa*) come under protection of the Indian Wildlife (Protection) Act 1972. Out of the 64 species 27 species were recorded from botanical and nursery gardens, 55 from forest areas, 33 from grasslands, 58 on plantations and 51 from scrub biotope. Results are indicated in Table 2. Nectar food plants of butterfly species and floral characteristics of plants are indicated in Table 3. Mud puddling is usually observed in males. However, females of *Hypolimnas bolina* and *Hypolimnas misippus* were also observed while mud puddling (Table 4).

Ten families of plants are used by butterflies as nectar food plants, as recorded from the study area: six plants of the family Asteraceae, two plants of each family Asclepiadaceae, Caesalpiniaceae, Fabaceae and Verbenaceae, while only one plant of each family Amaranthaceae, Apocynaceae, Malvaceae, Rubiaceae and Thymeleaceae. Visits of butterflies were more frequent to flowers of herbs and shrubs rather than to flowers of trees (Table 4).

Table 1. GPS readings and biotopes of a few sites in Bhor Tahsil area

Locations in Bhor Tahsil		GPS Readings			Type of Biotope
	Location	Latitude	Longitude	Altitude	
1	Baneshwar	18°15.406'	73°52.346'	655m	Garden
2	Bhor	18°45.340'	73°14.601'	592m	Scrub
3	Pisavare	18°07.902'	73°47.608'	601m	Plantation
4	Pombardi	18°08.467'	73°48.926'	630m	Forest
5	Wathar	18°07.781'	73°47.636'	605m	Grassland

Discussion and Conclusions

The species abundance rose from the beginning of the monsoon, from the months June to July and reached a peak in the months from August to November. A decline in species abundance was observed from the months December to January and continued up to the end of May. A previous study (Wynter-Blyth 1956) had identified two seasons as peaks, March-April and October for butterfly abundance in India. However, our finding observed peak period in the months from August to November, in line with the findings of Kunte (2000). Bhusal & Khanal (2008) reported that there is a significant correlation between species diversity and spring season, indicating the abundances of diverse species was positively affected by approaching warmer days, high relative humidity and more rainfall. These factors help to flourish diverse vegetations, which are vital food sources for many butterfly species. Gutierrez & Mendez (1995) suggested that the abundance of butterflies is not affected by altitudes but it is more related to the availability of food plants. A similar seasonal variation in species abundance was observed by Prajapati et al. (2000) in Daman of Makawanpur District of central Nepal. Plants have importance in increasing the butterfly diversity and their abundance in the area. In study area, maximum species of butterflies were recorded on plantation biotope, followed by forest and scrub biotope. However, grassland and botanical and nursery gardens are not observed as rich biotopes; heavy grazing pressure on grassland and use of pesticides in gardens have adversely affected diversity of butterflies in these biotopes. The nectar flowering plants visited by

Table 2. Biotopes, status and seasonal sightings of butterfly species from Bhor Tahsil, Pune District, India

	Common name	Scientific name	Biotopes	Status	Seasonal sightings			
					Monsoon	Post-monsoon	Pre-monsoon	Total
Papilionidae								
1	Common Bluebottle	*Graphium sarpedon* Linnaeus	BFP	C	28	12	10	50
2	Tailed Jay	*Graphium agamemnon* Linnaeus	BGP	C	35	20	15	70
3	Common Mormon	*Papilio polytes* Linnaeus	BFGP	VC	42	25	18	85
4	Lime Butterfly	*Papilio demoleus* Linnaeus	BFGPS	C	30	25	5	60
5	Common Rose	*Pachliopta aristolochiae* Fabricius	BFGPS	C	28	16	7	51
6	Crimson Rose*	*Pachliopta hector* Linnaeus	BFPS	C	29	15	6	50
Pieridae								
7	Three Spot Grass Yellow	*Eurema blanda* Boisduval	FS	NR	20	15	5	40
8	Small Grass Yellow	*Eurema brigitta* Cramer	BFGPS	VC	50	28	18	96
9	Common Grass Yellow	*Eurema hecabe* Linnaeus	BFGPS	VC	48	22	27	97
10	Spotless Grass Yellow	*Eurema laeta* Boisduval	FGPS	C	30	15	10	55
11	Common Emigrant	*Catopsilia pomona* Fabricius	BFGPS	VC	45	35	19	99
12	Mottled Emigrant	*Catopsilia pyranthe* Linnaeus	BFGPS	VC	42	24	12	78
13	White Orange Tip	*Ixias marianne* Cramer	BFPS	C	17	30	15	62
14	Common Gull	*Cepora nerissa* Fabricius	FGPS	C	35	25	15	75
15	Common Jezebel	*Delias eucharis* Drury	FPS	C	25	20	8	53
16	Psyche	*Leptosia nina* Fabricius	FGPS	R	15	12	0	27
17	Pioneer	*Belenois aurota* Fabricicus	BFGPS	VC	39	37	19	95
Nymphalidae								
18	Blue Tiger	*Tirumala limniace* Cramer	FPS	C	35	25	6	66
19	Striped Tiger	*Danaus genutia* Cramer	FGPS	C	25	35	8	68
20	Plain Tiger	*Danaus chrysippus*Linnaeus	BFGPS	VC	40	35	25	100
21	Glassy Tiger	*Parantica aglea* Stoll	FGPS	C	26	20	5	51
22	Common Indian Crow	*Euploea core* Cramer	BFGPS	VC	37	24	20	81
23	Common Nawab	*Polyura athamas* Drury	FPS	R	10	6	2	18
24	Black Rajah	*Charaxes Solon* Fabricius	FPS	R	12	7	3	22
25	Common Evening Brown	*Melanitis leda* Linnaeus	FPS	VC	43	32	11	86
26	Common Three Ring	*Ypthima asterope* Klug	FGS	NR	17	9	4	30
27	Common Five Ring	*Ypthima baldus* Fabricius	FS	NR	21	9	5	35
28	Tawny Coster	*Acraea violae* Fabricius	BGPS	C	33	25	14	72
29	Common Leopard	*Phalanta phalantha* Drury	FGPS	VC	38	26	26	90
30	Chestnut Streaked Sailer*	*Neptis jumbah* Moore	FPS	NR	18	9	7	34
31	Angled Castor	*Ariadne ariadne* Linnaeus	BGPS	VC	40	31	13	84
32	Common Castor	*Ariadne merione* Cramer	BGPS	C	29	17	12	58
33	Painted Lady	*Vanessa cardui* Linnaeus	GPS	C	29	25	7	61
34	Blue Pansy	*Junonia orithiya* Linnaeus	FGPS	C	27	21	17	65
35	Yellow Pansy	*Junonia hierta* Fabricius	FGPS	C	24	19	10	53
36	Chocolate Pansy	*Junonia iphita* Cramer	BFGPS	C	32	16	8	56
37	Grey Pansy	*Junonia atlites* Linnaeus	BFPS	C	18	24	8	50
38	Lemon Pansy	*Junonia lemonias* Linnaeus	BFGPS	VC	48	30	22	100
39	Great Eggfly	*Hypolimnas bolina* Linnaeus	BFPS	VC	36	28	18	82
40	Danaid Eggfly*	*Hypolimnas misippus* Linnaeus	BFPS	VC	44	25	7	76

	Common name	Scientific name	Biotopes	Status	Seasonal sightings			
					Monsoon	Post-monsoon	Pre-monsoon	Total
Lycaenidae								
41	Silver Streak Blue	*Iraota timoleon* Stoll	FP	NR	16	7	5	28
42	Large Guava Blue	*Deudorix perse* Hewitson	FP	NR	11	8	6	25
43	Angled Pierrot	*Caleta caleta* Hewitson	F	NR	20	10	0	30
44	Banded Blue Pierrot	*Discolampa ethion* Westwood	FPS	NR	16	12	0	28
45	Zebra Blue	*Leptotes plinius* Fabricius	FGPS	C	31	19	4	54
46	Common Cerulean	*Jamides celeno*Cramer	FP	VC	34	25	20	79
47	Forget-me-not	*Catochrysops strabo* Fabricius	FPS	NR	13	9	6	28
48	Pea Blue*	*Lampides boeticus* Linnaeus	BFGS	C	20	30	18	68
49	Dark Grass Blue	*Zizeeria Karsandra* Moore	FGPS	NR	20	14	7	41
50	Pale Grass Blue	*Pseudozizeeria maha* Kollar	BGPS	NR	17	8	5	30
51	Tiny Grass Blue	*Zizula hylax* Fabricius	BFGPS	C	37	20	15	72
52	Red Pierrot	*Talicada nyseus* Guerin -Meneville	BPS	NR	21	14	10	45
53	Gram Blue*	*Euchrysops cnejus* Fabricius	FGPS	NR	18	12	7	37
54	Common Hedge Blue*	*Acytolepis puspa* Horsfield	FPS	C	32	19	5	56
55	Plains Cupid	*Chilades pandava* Horsfield	GPS	NR	19	9	3	31
56	Lime Blue	*Chilades laius* Stoll	BP	C	36	25	10	71
57	Plum Judy	*Abisara echerius* Stoll	FPS	C	19	29	10	58
Hesperiidae								
58	Fulvous Pied Flat	*Pseudocoladenia dan* Fabricius	FP	C	29	17	7	53
59	Dark Palm Dart	*Telicota ancilla* Herrich-Schaffer	FS	NR	17	7	2	26
60	Rice Swift	*Borbo cinnara* Wallace	FPS	C	31	19	4	54
61	Conjoined Swift	*Pelopidas conjuncta* Herrich-Schaffer	FP	R	8	5	1	14
62	Vindhyan Bob	*Arnetta vindhiana* Moore	FP	R	17	8	0	25
63	Chestnut Bob	*Iambrix salsala* Moore	FP	NR	22	23	5	50
64	Grass Demon	*Udaspes folus* Cramer	FP	NR	20	10	5	35

Biotopes: B - Botanical and Nursery Garden; F - Forest; G - Grassland; P - Plantation; S - Scrub
Status: C - Common; VC - Very Common; R - Rare; NR - Not Rare; VR - Very Rare; * - Scheduled species

butterflies, as observed in our findings, namely *Carissa congesta, Asclepias curassavica, Calotropis gigantea, Senecio bombayensis, Vernonia divergens, Wedelia uticaefolia, Zinnia eleganas, Cassia auriculata, Urena lobata, Mussaenda glabrata* and *Gnidia glauca* are not reported by Tiple et al. (2006, 2009) in their study area of Amravati University Campus and Nagpur, Central India, respectively. The herbs from the study area namely *Celosia argentea, Tridax procumbens* and *Tephrosia purpurea* are more used by butterflies, probably due to the fact that the flowering period of these herbs is throughout the year. The shrubs namely *Calotropis gigantea and Lantana camara* also have a flowering period throughout the year, so they are more used by butterflies as their food plants. A few species of butterflies were observed feeding on either animal droppings or on ripe fruits or while mud puddling (Table 4). Mud puddling is usually observed in males, but in our findings females of *Hypolimnas bolina* and *Hypolimnas misippus* butterfly species were observed doing mud puddling. Mathew & Binoy (2002) reported that females of *Appias albina darada* were found to be very much active in mud puddling. The requirement of more water and salt could be the reason for this.

Monitoring and mapping biodiversity is the first step in systematic conservation planning (Margules & Pressey 2000). In the study area, events like grazing pressure, influx of tourists, construction of highways, use of pesticides and change in land use pattern, are mainly responsible for diversity loss of both butterflies and plants. Members from family Lycaenidae largely feed on grasses and cattle grazing affected their diversity

Table 3. Nectar food plants of buttrerfly species and floral characteristics of plants from Bhor Tahsil, Pune District, India

Family / Botanical name	Habit	Flowering period	Flower colour	Corolla shape	Flower abundance
Amaranthaceae					
Celosia argentea L.	Herb	Aug–Feb	Pink, White	NT	D
Apocynaceae					
Carissa congesta Wight	Shrub	Apr–Jun	White	T	M
Asclepiadaceae					
Asclepias curassavica L.	Undershrub	Jan–Dec	Red, Yellow	NT	D
Calotropis gigantea (L.) Ait.	Shrub	Oct–July	Purple, White	NT	M
Asteraceae					
Cosmos bipinnatus Cav.	Herb	Aug–Nov	Orange, Yellow	T	D
Senecio bombayensis Balakr.	Herb	Aug–Dec	Yellow	T	D
Tridax procumbens L.	Herb	Jan–Dec	Yellowish White	T	D
Vernonia divergens (Roxb.) Edgew.	Shrub	Nov–Apr	Purple, White	T	D
Wedelia urticaefolia DC	Herb	Aug–Sep	Yellow	T	D
Zinnia eleganas Jacq.	Herb	Aug–Dec	Pink, Yellow	T	D
Caesalpiniaceae					
Bauhinia purpurea L.	Tree	Sep–Jan	Purple	NT	S
Cassia auriculata L.	Shrub	Jan–Jul	Yellow	NT	M
Fabaceae					
Tephrosia purpurea (L.) Pers.	Undershrub	Jan–Dec	Rosy Purple	NT	M
Crotalaria juncea L.	Herb	Oct–Jan	Yellow	NT	M
Malvaceae					
Urena lobata L.	Shrub	Jul–Dec	Pink	T	S
Rubiaceae					
Mussaenda glabrata (Hook. F.) Hutch. ex Gamble	Shrub	Feb–Sep	Orange-Red	T	S
Thymeleaceae					
Gnidia glauca (Fresen.) Gilg.	Shrub	Oct–Jun	Bright Yellow	T	D
Verbenaceae					
Lantana camara L.	Shrub	Jan–Dec	Orange-Red	T	D
Vitex negundo L.	Shrub	Jan–Jul	Bluish-Purple	T	M

and abundance. In the United Kingdom grazing by cattle and sheep has been practiced as a management tool (Pollard 1991) and there is ample scope for such practices in India. A total of five species of butterflies from the study area are designated rare while describing their status and justifies its inclusion in scheduled list suggesting the need for strict conservation measures (Table 2). As reported by Kunte (2000), an objective revision of the scheduled list will be very useful in providing appropriate and adequate legal protection to Indian butterflies.

Our findings are more important for monitoring butterfly diversity and nectar food plant diversity to improve the ecological utility of butterflies as indicator taxa and pollinating agents and defining conservation strategies in the study area.

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Table 4. Nectar food plants and other food sources of butterfly species observed from study area Bhor Tahsil, Pune District, india

	Common name	Scientific name	Scientific name of nectar food plant / other source
Papilionidae			
1	Common Bluebottle	*Graphium sarpedon* Linnaeus	*Cosmos bipinnatus, Zinnia eleganas*
2	Tailed Jay	*Graphium agamemnon* Linnaeus	*Lantana camara*
3	Common Mormon	*Papilio polytes* Linnaeus	*Cosmos bipinnatus, Lantana camara*
4	Lime Butterfly	*Papilio demoleus* Linnaeus	*Lantana camara, Mussaenda galbrata, Tephrosia purpurea, Tridax procumbens*
5	Common Rose	*Pachliopta aristolochiae* Fabricius	*Lantana camara*
6	Crimson Rose	*Pachliopta hector* Linnaeus	*Lantana camara, Tridax procumbens*
Pieridae			
7	Three Spot Grass Yellow	*Eurema blanda* Boisduval	*Tephrosia purpurea, Tridax procumbens*
8	Small Grass Yellow	*Eurema brigitta* Cramer	*Lantana camara, Urena lobata, Zinnia elegans*
9	Common Grass Yellow	*Eurema hecabe* Linnaeus	*Celosia argenta, Lantana camara, Tephrosia purpurea, Tridax procumbens*
10	Spotless Grass Yellow	*Eurema laeta* Boisduval	*Celosia argenta, Lantana camara, Tridax procumbens*
11	Common Emigrant	*Catopsilia pomona* Fabricius	*Cassia auriculata, Lantana camara, Tephrosia purpurea, Tridax procumbens, Wedelia uticaefolia*
12	Mottled Emigrant	*Catopsilia pyranthe* Linnaeus	*Lantana camara, Tridax procumbens*
13	White Orange Tip	*Ixias marianne* Cramer	*Calotropis gigantea, Tridax procumbens*
14	Common Gull	*Cepora nerissa* Fabricius	*Asclepias curassavica, Lantana camara, Tridax procumbens*
15	Common Jezebel	*Delias eucharis* Drury	*Celosia argenta, Lantana camara*
16	Psyche	*Leptosia nina* Fabricius	*Tridax procumbens*
17	Pioneer	*Belenois aurota* Fabricicus	*Calotropis gigantea, Lantana camara, Tridax procumbens*
Nymphalidae			
18	Blue Tiger	*Tirumala limniace* Cramer	*Crotalaria juncea, Lantana camara, Tridax procumbens*
19	Striped Tiger	*Danaus genutia* Cramer	*Celosia argentea, Crotalaria juncea, Lantana camara, Tridax procumbens, Sencio bombayenesis*
20	Plain Tiger	*Danaus chrysippus*Linnaeus	*Crotalaria juncea, Lantana camara, Tridax procumbens, Vitex negundo, Zinnia elegans*
21	Glassy Tiger	*Parantica aglea* Stoll	*Crotalaria juncea, Lantana camara, Zinnia elegans*
22	Common Indian Crow	*Euploea core* Cramer	*Celosia argentea, Cosmos sulphureus, Lantana camara, Tridax procumbens, Zinnia elegans*
23	Common Nawab	*Polyura athamas* Drury	On animal droppings
24	Black Rajah	*Charaxes Solon* Fabricius	On animal droppings, on over-ripe fruits
25	Common Evening Brown	*Melanitis leda* Linnaeus	*Tridax procumbens*
26	Common Three Ring	*Ypthima asterope* Klug	*Celosia argentea, Tridax procumbens*
27	Common Five Ring	*Ypthima baldus* Fabricius	*Celosia argentea, Tridax procumbens*
28	Tawny Coster	*Acraea violae* Fabricius	*Lantana camara, Tridax procumbens, Vitex negundo*
29	Common Leopard	*Phalanta phalantha* Drury	*Celosia argentea, Lantana camara, Tridax procumbens*
30	Chestnut Streaked Sailer	*Neptis jumbah* Moore	*Tridax procumbens*
31	Angled Castor	*Ariadne ariadne* Linnaeus	*Lantana camara, Tridax procumbens*
32	Common Castor	*Ariadne merione* Cramer	*Lantana camara, Tridax procumbens*
33	Painted Lady	*Vanessa cardui* Linnaeus	*Carissa congesta, Gnidia glauca, Lantana camara, Tridax procumbens*
34	Blue Pansy	*Junonia orithiya* Linnaeus	*Celosia argentea, Lantana camara, Tridax procumbens*
35	Yellow Pansy	*Junonia hierta* Fabricius	*Celosia argentea, Lantana camara, Tephrosia purpurea*
36	Chocolate Pansy	*Junonia iphita* Cramer	*Tephrosia purpurea*
37	Grey Pansy	*Junonia atlites* Linnaeus	*Celosia argentea, Cosmos sulphureus, Tridax procumbens*
38	Lemon Pansy	*Junonia lemonias* Linnaeus	*Celosia argentea, Tephrosia purpurea, Tridax procumbens*

	Common name	Scientific name	Scientific name of nectar food plant / other source
39	Great Eggfly	*Hypolimnas bolina* Linnaeus	*Bauhinia purpurea, Celosia argentea, Lantana camara*
40	Danaid Eggfly	*Hypolimnas misippus* Linnaeus	*Asclepias curassavica, Celosia argentea, Lantana camara, Zinnia elegans*
Lycaenidae			
41	Silver Streak Blue	*Iraota timoleon* Stoll	Observed doing Mud Puddling
42	Large Guava Blue	*Deudorix perse* Hewitson	Observed doing Mud Puddling
43	Angled Pierrot	*Caleta caleta* Hewitson	Observed doing Mud Puddling
44	Banded Blue Pierrot	*Discolampa ethion* Westwood	*Lantana camara*
45	Zebra Blue	*Leptotes plinius* Fabricius	*Celosia argentea, Lantana camara, Tephrosia purpurea, Tridax procumbens*
46	Common Cerulean	*Jamides celeno*Cramer	*Celosia argentea, Tephrosia purpurea, Tridax procumbens*
47	Forget-me-not	*Catochrysops strabo* Fabricius	*Celosia argentea*
48	Pea Blue	*Lampides boeticus* Linnaeus	*Celosia argentea*
49	Dark Grass Blue	*Zizeeria Karsandra* Moore	*Lantana camara*
50	Pale Grass Blue	*Pseudozizeeria maha* Kollar	*Tephrosia purpurea*
51	Tiny Grass Blue	*Zizula hylax* Fabricius	*Lantana camara*
52	Red Pierrot	*Talicada nyseus* Guerin-Meneville	*Tridax procumbens*
53	Gram Blue	*Euchrysops cnejus* Fabricius	*Lantana camara*
54	Common Hedge Blue	*Acytolepis puspa* Horsfield	*Tephrosia purpurea*
55	Plains Cupid	*Chilades pandava* Horsfield	*Tridax procumbens*
56	Lime Blue	*Chilades laius* Stoll	*Urena lobata*
57	Plum Judy	*Abisara echerius* Stoll	On animal droppings
Hesperiidae			
58	Fulvous Pied Flat	*Pseudocoladenia dan* Fabricius	*Lantana camara*
59	Dark Palm Dart	*Telicota ancilla* Herrich-Schaffer	*Lantana camara, Tridax procumbens*
60	Rice Swift	*Borbo cinnara* Wallace	*Celosia argentea, Tephrosia purpurea, Tridax procumbens*
61	Conjoined Swift	*Pelopidas conjuncta* Herrich-Schaffer	*Celosia argentea, Tridax procumbens*
62	Vindhyan Bob	*Arnetta vindhiana* Moore	*Lantana camara*
63	Chestnut Bob	*Iambrix salsala* Moore	*Zinnia elegans*
64	Grass Demon	*Udaspes folus* Cramer	*Lantana camera*

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