

Butterflies of Athgarh Forest Division, Odisha, Eastern India, with notes on some significant records

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The present paper deals with first annotated list of butterflies from Athgarh Forest Division, Odisha, India. 136 species belongs to six families were recorded during January 2015 to September 2015. Notes on some of the significant record of butterflies for the region, were provided along with their distribution. Among the recorded 136 species of butterflies, 14 species are legally protected under Indian Wildlife Protection Act, 1972.

Introduction

Butterflies occupy vital position in natural ecosystem as their adults are very good pollinators and larvae act as primary herbivores (Choudhury et al., 2012). They directly depend on plants for their entire life span from larval host plant to nectar of flowers and their diversity may serve as a surrogate for plant diversity (Harisha & Hosetti, 2013). Due to their attractive coloured wings and fluttering flight, butterflies always attract the attention of naturalists, researchers, and conservationists. There are about 1501 species of butterflies in Indian subcontinent (Kunte et al., 1999), out of which 150 species have been recorded from Eastern Ghats (Gunathilagaraj et al., 1998), 334 species from Western Ghats (Tiple *et al.*, 2009) and 962 species from North East region (Evans, 1932). In Odisha, first faunistic study on butterfly fauna presented by Taylor & de Niceville (1888). They reported a list of butterflies from Khurda district. Later, Crawford (1921) noted some butterflies from Meghasani hills of Mayurbhanj district and at the same time, Annandale & Dover (1921) published a list on butterflies from the Barkuda Island of Chilka. Afterwards, many noticeable works on butterflies have been carried out by several workers in different parts of the state (Mandal & Nandi 1984; Mandal & Moulik 1991; Sahu et al. 2006; Sethy et al. 2006; Sethy & Jana 2009; Nair, 2007, 2011; Das & Sahu 2011; Mohapatra et al. 2012; Palei & Rath, 2014; Payra et al. 2016; Paria et al. 2018; Boruah et al. 2019). As there is no literature available on butterfly diversity in Athgarh Forest Division, an attempt was made to strengthen the information on diversity and distribution of butterflies in Odisha through this present study.

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Materials and Methods

Athgarh Forest Division situated in Cuttack district comprises of five Ranges i.e. Athgarh, Baramba, Khuntuni, Narasinghpur East and Narasinghpur West over an area of 1510 Km² (Figure 11 .gi). It is located between latitude 20°21'19.2"N to 20°40'27.6"N and longitude 85°52'0.72" E to 84°55'42.8"E. There are 37 Reserve Forests in Athgarh Division. This division is surrounded by Satkosia Tiger Reserve in the West, Cuttack Forest Division and City Forest Division in the East, Chandaka Wild Life Sanctuary, Nayagarh Forest Division and some part of Mahanadi Wildlife Division in the South and Dhenkanal Forest Division in the North. In Athgarh Forest Division, forest types are mainly Peninsular Sal forest, Dry Mixed-deciduous Forest, small patches of Semi-evergreen forest and Scrub forest (Champion & Seth, 1968). The climate condition of the area experiences three distinct seasons: monsoon (July to September), winter (October to February) and summer (March to June). The area receives an average annual rainfall of 1400 mm to 1500 mm and the temperature ranges from 9°C in winter to 42°C in summer.

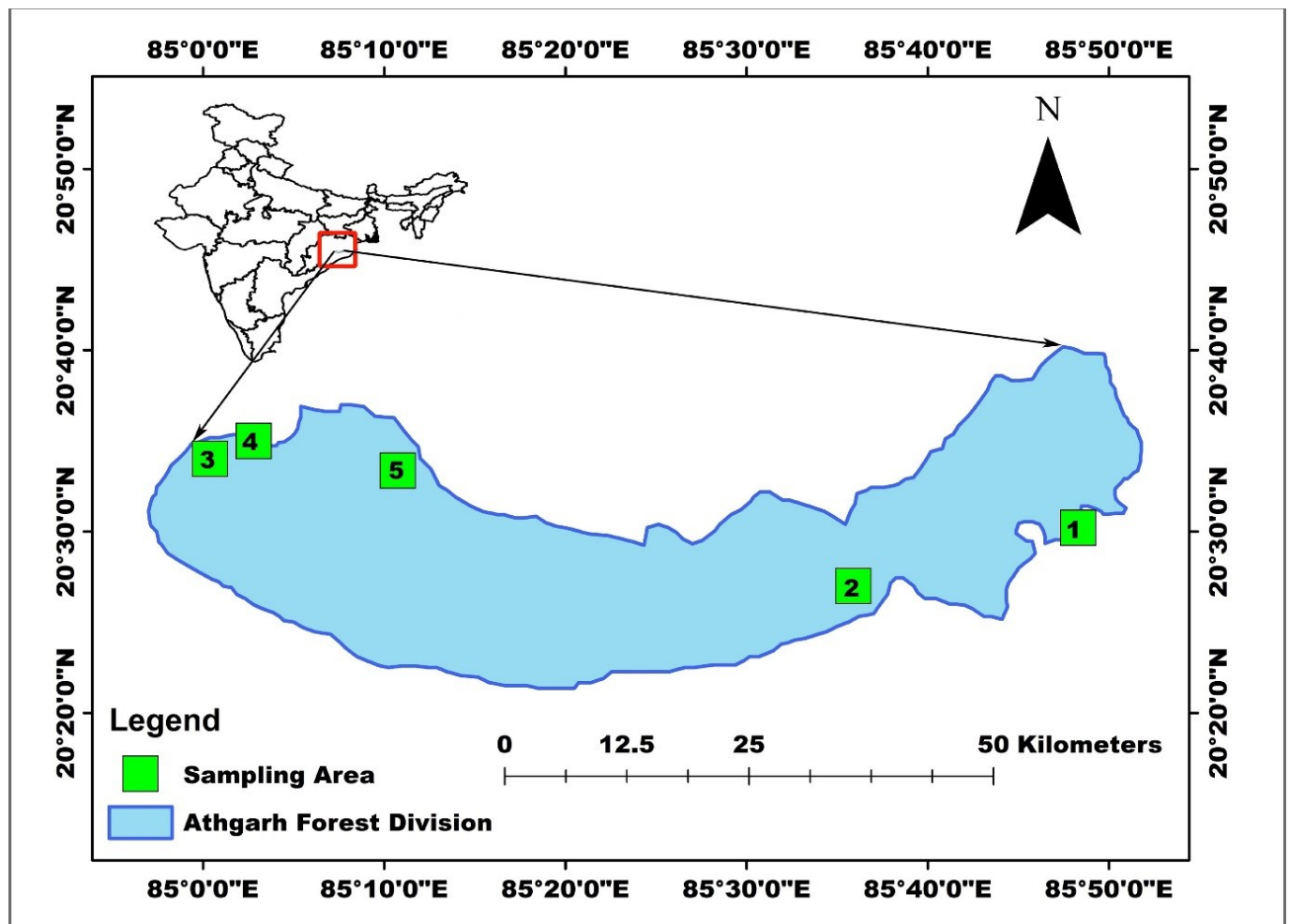


Figure 1. Location map of study sites in Athgarh Forest Division, Odisha, Eastern India

Five sites were surveyed for the documentation of butterflies in Athgarh Forest Division.

Site 1 - Dhabaleswar Island (20.503°N, 85.805° E, 19 m a.s.l). It is a small island on Mahanadi River, comes under Khuntuni Range of Athgarh Forest Division. The frequently found plant species of this area are *Ficus bengalensis*, *Ficus religiosa*, *Cassia siamea*, *Syzgium cumini*, *Polyalthia longifolia*, *Azadirachta indica* etc. Besides the above, the composites of the shrub forest are *Lantana camara*, *Sidaspinosa*, *Justicia adhatoda*, *Calotropis gigantea* etc.

Site 2 - Ansupa Lake (20.459°N, 85.602°E, 30 m a.s.l). Ansupa lake is one of the largest freshwater lakes of Odisha spreading over 140 ha, situated at the left bank of Mahanadi River. It is surrounded by undulating plain and isolated hill ranges. The surrounding vegetation of the lake is mainly characterized by Cashew plantation, Agricultural land, patches of bamboo and hilly thorny scrub forest.

Site 3 - Balikiari Reserve Forest (20.552°N, 85.038°E, 233 m a.s.l.). With an area of 5217.87 hectare, this Reserve Forest (RF) is situated in Narsingpur West Range. Small streams flow within this RF mainly in rainy season, but mostly remain dry for rest of the seasons. *Mangifera indica*, *Shorea robusta*, *Aegle marmelos*, *Anogeissus latifolia*, *Dalbergia latifolia*, *Diospyros*, *Azadirachta indica* are dominated floral components of this region.

Site 4 - Tersing (20.582°N, 85.047°E, 435 m a.s.l.). This is the bordering area between Athgarh Forest Division and Satkosia Tiger Reserve. It lies at an altitude of about 450 m. The dominant trees are mainly *Aegle marmelos*, *Terminalia tomentosa*, *Shorea robusta*, *Ficus religiosa*, *Diospyros melanoxylon*, *Syzgium cumini*, *Ciccu* etc.

Site 5 - Deobhuin Reserve Forest (20.556°N, 85.179°E, 160 m a.s.l.). This reserve forest is situated in Narsingpur East Range with an area of 6082.23 ha. Slow flowing streams, and one waterfall is present within this reserve forest. The vegetation is dominated by *Shorea robusta*, *Xilixylocarpa*, *Terminalia tomentosa*, *Schleichera oleosa*, *Lagerstroemia parviflora* etc.

Data Collection and Identification

Butterflies were observed through opportunistic survey from January 2015 to September 2015. During this inventory all possible and suitable habitats of butterflies, like agricultural land, forest trails, streams, waterfall, nectaring plants were surveyed. All observations were mainly carried out between 7.00 am to 11.00 am and 2.30 pm to 4.30 pm. Most of the species were photographed in the field by using Nikon D3200 Camera with Tamron 70-300 mm lens. Coordinates and elevations of study sites were obtained by using Garmin eTrex and Google earth. An entomological net was also used for capturing butterflies, which were released immediately at the spot of capture without any harm. Butterflies were identified using available literature of Evans (1932, 1949), and photographic guidebooks of Haribal (1992) and Kehimkar (2008, 2016) together with website of Indian butterflies ([http://www.indianbutterflies.com](#)). Scientific names and common names presented according to Kunte et al. (2019), Varshney & Smetacek, (2015).

Results

A total of 136 species of butterflies belonging to six families were recorded in the study area (See [Table 1](#)). The most dominant family was Lycaenidae with 41 species (30.15%), followed by Nymphalidae (28.68%, 39 species), Hesperidae (19.85%, 27 species), Pieridae (11.76%, 16 species), Papilionidae (8.82%, 12 species) and Riodinidae (1 species, 0.74%). Notes on some of the significant records of butterflies were provided below along with their distribution.

Sl.No	Family / Scientific	Common Name	Study Sites	Figure number
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	Name		S1	S2	S3	S4	S5
Family Hesperidae							
1	Hasorachromus (Cramer, [1780])	Common Banded Awl	+	+	+	2a	
2	Hasoravitta (Butler, 1870)	Plain Banded Awl	+	2o			
3	Badamiaexclamationis (Fabricius, 1775)	Brown Awl	+	+	+	2b	
4	Celaenorrhinusleucocera (Kollar, [1844])	Common Spotted Flat	+				
5	Coladeniaindrani (Moore, [1866])	Tricolour Pied Flat	+	+	+	2c	
6	Tagiadeslitigiosa Möschler, 1878	Water Snow Flat	+	+	+	2d	
7	Tagiadesjapetus (Stoll, [1781])	Common Snow Flat	+	+	+	+	+
8	Capronaransonnetii (R. Felder, 1868)	Golden Angle	+	+	+	+	2e
9	Sarangesadasahara (Moore, [1866])	Common Small Flat	+	+	+	+	2f
10	Spialialgalba (Fabricius, 1793)	Indian Skipper	+	+			
11	Ampittiadioscorides (Fabricius, 1793)	Bush Hopper	+	+	+	2g	
12	Iambrixsalsala (Moore, [1866])	Chestnut Bob	+	+	+	+	+
13	Suastusgremius (Fabricius, 1798)	Indian Palm Bob	+	+	+	+	
14	Zographetusatwa de Nicéville, 1884	Purple-and-gold Flitter	+	2h			
15	Udaspesfolus (Cramer, [1775])	Grass Demon	+	+	+	2i	
16	Notocryptacurvifascia (C. & R. Felder, 1862)	Restricted Demon	+	2j			
17	Notocryptaparysidos (Wolff)	Common Banded	+	+			

	od-Mason & de Nicéville, 1881)	Demon						
18	Hyarotisadras (Stoll, [1780])	Tree Flitter	+					
19	Mataparia (Moore, [1866])	Common Redeye	+	+	+	+	+	
20	Oriensgoloides (Moore, [1881])	Ceylon Dartlet	+	+	+			
21	Potanthus sp.	Dart	+	2k				
22	Telicota sp.	Palm Dart	+	+	+			
23	Parnara sp.	Swift	+	+	+	+		
24	Pelopidas mathias (Fabricius, 1798)	Small Branded Swift	+	+	+	+		2n
25	Baorisfarri (Moore, 1878)	Paint-brush Swift	+	+	+		2l	
26	Halpeporus (Mabille, [1877])	Moore's Ace	+	+	+		2m	
27	Caltois sp.	Swift	+					
Family Papilionidae								
28	Graphiumdison (C. & R. Felder, 1864)	Common Jay	+	+	+	+	+	
29	Graphiumagamemnon (Linnaeus, 1758)	Tailed Jay	+	+	+	+	+	
30	Graphiumnomius (Esper, 1799)	Spot Swordtail	+	+	+		3a	
31	Graphiumantiphates (Cramer, [1775])	Five-bar Swordtail	+					
32	PapiliopolymnestorCramer, [1775]	Blue Mormon	+	+	+	+	+	3b
33	Papiliocrino Fabricius, 1793	Common Banded Peacock	+	+	+	+	+	3c
34	Papilionephehus Boisduval, 1836	Yellow Helen	+	+				
35	Papiliopolytes Linnaeus, 1758	Common Mormon	+	+	+	+	+	3d
36	Papilioclytia Linnaeus, 1758	Common Mime	+	+	+	+	+	3f, 3g
37	Pachlioptahector (Linnaeus,	Crimson Rose	+	+	3j			

	1758)							
38	Pachlioptaaristolochiae (Fabricius, 1775)	Common Rose	+	+	+	+	3i	
39	Papiliodemolus Linnaeus, 1758	Lime Butterfly	+	+	+	+	+	3h
Family Pieridae								
40	Belenoisaurata Fabricius, 1793	Pioneer	+	+	4a			
41	Ceporanerisa Fabricius, 1775	Common Gull	+	+	+	+	+	4b
42	Delias eucharis Drury, 1773	Common Jezebel	+	+	+	+	+	
43	Deliashypante Linnaeus, 1758	Painted Jezebel	+	4c				
44	Appiasolferea Swinhoe, 1890	Eastern Striped Albatross	+	+	+	+		
45	Leptosianina Fabricius, 1793	Psyche	+	+	+	+	+	
46	Ixias marianne (Cramer, [1779])	White Orange-tip	+	4d				
47	Ixias pyrene (Linnaeus, 1764)	Yellow Orange-tip	+	+	+			
48	Pareroniahippia Fabricius, 1787	Common Wanderer	+	+	+	+	+	4e
49	Catopsiliapomona Fabricius, 1775	Lemon Emigrant	+	+	+	+	+	4f
50	Catopsiliapyranthe Linnaeus, 1758	Mottled Emigrant	+	+	+	+	+	
51	Euremabrigittata Stoll, 1780	Small Grass Yellow	+	+	+	+	+	
52	Euremalaeta Boisduval, 1836	Spotless Grass Yellow	+	+	+			
53	Euremablанда Boisduval, 1836	Threespot Grass Yellow	+	+	+	+	4i	
54	Euremaheca Linnaeus, 1758	Common Grass Yellow	+	+	+	+	+	4g
55	Euremaandersonii (Moore,	Onespot Grass Yellow	+	+	+	4h		

	1886)							
Family Riodinidae								
56	Abisarabifasciata Moore, 1877	Double-banded Judy	+	+	+		5a	
Family Lycaenidae								
57	Spalgisepeus (Westwood, [1851])	Apefly	+	+				
58	Curetisthetis (Drury, [1773])	Indian Sunbeam	+	+	+		+	
59	Prostasnorra Felder, 1860	Common Lineblue	+	+	+		+	
60	Prostasdubiosa Semper, 1879	Tailless Lineblue	+	+	+		+	5c
61	Petrelaeadana (de Nicéville, [1884])	Dingy Lineblue	5b					
62	Caletadecidia (Hewitson, 1876)	Angled Pierrot	+	+	+		5d	
63	Jamidesbochus Stoll, 1782	Dark Cerulean	+	+	+		+	5e
64	Jamidesceleno Cramer, 1775	Common Cerulean	+	+	+		+	
65	Catochrysops Strabo (Fabricius, 1793)	Forgetmenot	+	+	+		+	5f
66	Lampidesboeticus (Linnaeus, 1767)	Pea Blue	+	+	+		+	
67	Leptotesplinius (Fabricius, 1793)	Zebra Blue	+	+	+		+	5g
68	Castaliusrosimon (Fabricius, 1775)	Common Pierrot	+	+	+		+	
69	Tarucus sp.	Pierrot	+	+	+		+	5h
70	Tarucusananda (de Nicéville, [1884])	Dark Pierrot	+	5i				
71	Zizeeriakarsandra (Moore, 1865)	Dark Grass Blue	+	+	+		+	
72	Pseudozizeeriamaha Kollar, 1844	Pale Grass Blue	+	+	+		+	+
73	Zizinaotis Fabricius, 1787	Lesser Grass Blue	+	+	+		+	+

74	Zizulahlax (Fabricius, 1775)	Tiny Grass Blue	+	+			
75	Evereslactur nus Godart, 1824	Indian Cupid	+	+	+	5j	
76	Neopithecop szalmora Butler, 1870	Quaker	+	+	+	+	+
77	Megisbamal aya (Horsfield, [1828])	Malayan	+	+	+	5k	
78	Acytolepispu spa (Horsfield, [1828])	Common Hedge Blue	+	+	+	5l	
79	Euchrysopsc nejus (Fabricius, 1798)	Gram Blue	+	+	+	+	
80	Chiladeslaju s (Stoll, [1780])	Lime Blue	+	+	+	+	+
81	Chiladespan dava (Horsfield, [1829])	Plains Cupid	+	+	+	+	+
82	Chiladesparr hasiusFabric ius, 1793	Small Cupid	+	5m			
83	Freyeriaputli (Kollar, [1844])	Grass Jewel	+	+	+	+	
84	Antheneemo lus (Godart, [1824])	Ciliate Blue	+	+	+	+	
85	Anthenelyca enina (R. Felder, 1868)	Pointed Ciliate Blue	+				
86	Spindasisvul canus (Fabricius, 1775)	Common Silverline	+	+	+	+	+
87	Spindasisnya ma (Horsfield, [1829])	Club Silverline	+	+	5n		
88	Spindasisloh ita (Horsfield, [1829])	Long-banded Silverline	+	5o			
89	Arhopalaatra x (Hewitson, 1862)	Indian Oakblue	+	+	+	+	
90	Arhopalaam antes Hewitson, 1862	Large Oakblue	+	+	+		
91	Amblypodiaa nita Hewitson,	Purple Leaf Blue	+	+	+	+	

	1862							
92	LoxuraatymnusStoll, 1780	Yamfly	+	+	+	+	+	
93	Chliariaothona(Hewitson, 1865)	Orchid Tit	+	5p				
94	Viracholaisocrates (Fabricius, 1793)	Common Guava Blue	+	+	5q			
95	RapalavarunaHorsfield, 1829	Indigo Flash	+	+	5r			
96	Rapalamana Hewitson, 1863	Slate Flash	+	+	+	+		
97	Rapalaiarbus (Fabricius, 1787)	Indian Red Flash	+	+				
Family Nymphalidae								
98	Paranticaaglaea Stoll, 1782	Glassy Tiger	+	+	6a			
99	Tirumalalimniace Cramer, 1775	Blue Tiger	+	+	+	+	+	
100	Danausgenutia Cramer 1779	Common Tiger	+	+	+	+	+	
101	Danauschrypsippus Linnaeus, 1758	Plain Tiger	+	+	+	+	+	
102	Euploea core (Cramer, [1780])	Common Indian Crow	+	+	+	+	+	6b
103	Melanitisleda Linnaeus, 1758	Common Evening Brown	+	+	+	+	+	
104	Elymniashypmnestra Linnaeus, 1763	Common Palmfly	+	+	+	+	+	
105	Lethe europa (Fabricius, 1775)	Bamboo Treebrown	+	+	+			
106	Lethe rohria Fabricius, 1787	Common Treebrown	+	6c				
107	Mycalesispeerseus Fabricius, 1775	Common Bushbrown	+	+	+	+	+	6d
108	Orsotriaenamodus Fabricius, 1775	Nigger	+	+				
109	Ypthimahuabneri Kirby, 1871	Common Fourring	+	+	+	+	+	
110	Ariadne	Angled	+	+	+	+	+	

	Ariadne Linnaeus, 1763	Castor					
111	Ariadne merione Cramer, 1777	Common Castor	+	+			
112	Phalantaphal antha Drury, 1773	Common Leopard	+	+	+	+	+
113	Vanessa cardui Linnaeus, 1758	Painted Lady	+	+			
114	Junoniahierta Fabricius, 1798	Yellow Pansy	+	+	+	+	
115	Junoniaorithya Linnaeus, 1758	Blue Pansy	+	+	+	+	
116	Junonialemo nias Linnaeus, 1758	Lemon Pansy	+	+	+	+	+
117	Junoniaalma na Linnaeus, 1758	Peacock Pansy	+	+	+	+	+
118	Junoniaatlite s Linnaeus, 1763	Grey Pansy	+	+	+	+	+
119	Junoniaiphit a Cramer, 1779	Chocolate Pansy	+	+	+	+	+
120	Kallimainachus Doyere, 1840	Orange Oakleaf	+	+	+		
121	Hypolimnas misippus (Linnaeus, 1764)	Danaid Eggfly	+	6e			
122	Hypolimnasbolina Linnaeus, 1758	Great Eggfly	+	+	+	+	+
123	Cyrestisthyo damas Doyère, 1840	Common Map	+	+			
124	Neptishylas Linnaeus, 1758	Common Sailer	+	+	+	+	+
125	Neptissapho Pallas, 1771	Pallas Sailer	+	+	+	6f, 6g	
126	Pantoporiah ordonia Stoll, 1790	Common Lascar	+	+	+	6h	
127	Athymaperius Linnaeus, 1758	Common Sergeant	+	+	+		
128	Moduzaproc ris Cramer, 1777	Commander	+	+	+	+	+

129	Tanaecialepidea Butler, 1868	Grey Count	+	+	+	+	6i
130	Symphaedra nais (Forster, 1771)	Baronet	+	+	+	6j	
131	Euthaliaaconthea Cramer, 1777	Baron	+	+	+	+	6k
132	Euthaliaalubentina Cramer, 1777	Gaudy Baron	+				
133	Polyuraathamas (Drury, [1773])	Common Nawab	+	+	+	6l	
134	Charaxes solon Fabricius, 1793	Black Rajah	+	+			
135	Charaxesbernardus Fabricius, 1793	Tawny Rajah	+				
136	Acraea terpsicore (Linnaeus, 1758)	Tawny Coster	+	+	+	+	+

Table 1. List of the recorded butterflies from Athgarh Forest Division, Odisha, Eastern India

***Hasora vitta* (Butler, 1870) - Plain Banded Awl (Hesperidae) (Figure 2o)**

A single individual was photographed at 11:25 (here and below local time, UTC+05:30) on 04.10.2015 in Deobhuin Reserve forest. This hesperid butterfly was perching under the leaf, at about 2 m height from the ground, along the forest trail. This butterfly ranges from Sikkim to Northeast India; Maharashtra to Goa up to Kerala (Varshney & Smetacek, 2015). From Odisha, previously it was recorded from single locality, Mundasaru in Kandhamal District by Vivek Sarkar on 08.06.2013 (Kunte, 2019). Most recently this species has been reported from Maredumill, and Jalatarangini area of the adjoining state, Andhra Pradesh (Goswami et al., 2018). Apart from the record of Vivek Sarkar from Kandhamal District, no such decisive record of this butterfly is available from Odisha.



Figure 2. Photographs of Hesperidae butterflies a - *Hasora chromus*; b - *Badamia exclamationis*; c - *Coladenia indrani*; d - *Tagiades litigiosa* Möschler, 1878; e - *Caprona ransonnettii*; f - *Sarangesa dasahara*; g - *Ampittia dioscorides*; h - *Zographetus satwa*; i - *Udaspes folus*; j - *Notocrypta curvifascia*; k - *Potanthus* sp.; l - *Baoris farri*; m - *Halpe porus*; n - *Pelopidas mathias*; o - *Hasora vitta*

***Zographetus satwa* de Nicéville, 1884 - Purple and Gold Flitter (Hesperiidae) (Figure 2h)**

We have recorded this species several times from different places of Balikiari Reserve Forest, during September 2015. On 01.09 we recorded two individuals. First, we spotted it at 11:50, near a stream. It was perching on shrubs at about 1m above the ground. Later it was recorded during 15:05, at about 1km distance from the first place of observation. It was perching on shrubs under dense canopy cover. On 02.09, we have encountered this species twice, Near the Sishupathra dam. This butterfly ranges from Uttarakhand to Northeast India (Varshney & Smetacek, 2015). Previously, from Odisha only single record was available from same locality, i.e., Balikiari Reserve Forest, by Vivek Sarkar during September 2012 (Anonymous, 2019).



Figure 3. Photographs of Papilionidae butterflies a - *Graphium nomius*; b - *Papilio polymnestor*; c - *Papilio crino*; d - *Papilio polytes*; f - *Papilio clytia* (form *dissimilis*); g - *Papilio clytia* (form *clytia*); h - *Papilio demoleus*; i - *Pachliopta aristolochiae*; j - *Pachliopta hector*



Figure 4. Photographs of Pieridae butterflies a - *Belenois aurota*; b - *Cepora nerissa*; c - *Delias hyparete*; d - *Ixias marianne*; e - *Pareronia hippia*; f - *Catopsilia pomona*; g - *Eurema hecabe*; h - *Eurema andersonii*; i - *Eurema blanda*

***Potanthus* sp. - Dart (Hesperiidae) (Figure 2k)**

One individual was photographed near Tersing on 03.09.2015 at 09:35 it was perching on the small shrubs, near the fast-flowing hill stream. Until this date, no record is available of *Potanthus* sp. from Odisha. Recently the Genus has been reported from adjacent state Andhra Pradesh (Goswami et al., 2018). As Goswami et al. (2018) mentioned, without examination of genitalia species the identification is very difficult in this butterfly group. Further examination of specimen is required to validate the occurrence of this species in Odisha.

***Tarucus ananda* (de Nicéville, [1884]) - Dark Pierrot (Lycaenidae) (Figure 5i)**

On 03.09.2015, a single individual of Dark Pierrot *Tarucus ananda* was sighted from Tersing (Site 4) at 11:40. It was puddling on pond side sandy soil, along with other butterflies such as Common Mormon *Papilio polytes*, Angled Pierrot *Caletadecidia* and Common Nawab *Polyura athamas*. The distribution of this tiny butterfly is mainly from South-West India to North Maharashtra, Sikkim to Arunachal Pradesh, Central Nepal, North East India and Burma to Dawngas (Evans, 1932; Kehimkar, 2008; Varshney & Smetacek, 2015). In Odisha previously Vivek Sarkar recorded it during June 2013 from Balgaon Range of Khordha district (Churi, 2019). Our present record confirms its occurrence in Odisha.

***Chliaria othona* (Hewitson, 1865) - Orchid Tit (Lycaenidae) (Figure 5p)**

Single individual was recorded from Balikiari Reserve Forest, on 05.03.2015, at 11:35. It was

puddling on sandy streambed. Place was covered by dense canopy cover. According to Varshney & Smetacek (2015), this species ranges from Uttarakhand to Northeast India, Maharashtra to Karala. In Odisha previously Vivek Sarkar recorded it during June 2013 from Balgaon Range of Khordha district. Most recently, Subhajit Roy records it during June 2019 from Similipal National Park of Mayurbhanj District (Ogale et al., 2019).

***Neptissappho* Pallas, 1771 - Pallas Sailer (Nymphalidae) (Figure 6g)**



Figure 5. Photographs of Riodinidae and Lycaenidae butterflies a - *Abisarabifasciata*; b - *Petrelaea dana*; c - *Prosotasdubiosa*; d - *Caletadecidia*; e - *Jamidesbochus*; f - *Catochrysops Strabo*; g - *Leptotesplinius*; h - *Tarucus* sp.; i - *Tarucusananda*; j - *Evereslacturnus*; k - *Megisbamalaya*; l - *Acytolepispuspa*; m - *Chiladesparrhasius*; n - *Spindasisyama*; o - *Spindasislohita*; p - *Chliariaothona*; q - *Viracholaisocrates*; r - *Rapalavaruna*



Figure 6. Photographs of Nymphalidae butterflies a - *Paranticaaglea*; b - *Euploea core*; c - *Lethe rohria*; d - *Mycalisperseus*; e - *Hypolimnasmisippus*; f - *Neptis Sappho* (upper side); g - *Neptis Sappho* (under side); h - *Pantoporiahordonia*; i - *Tanaecialepidea*; j - *Symphaedranais*; k - *Euthaliaaconthea*; l - *Polyura athamas*

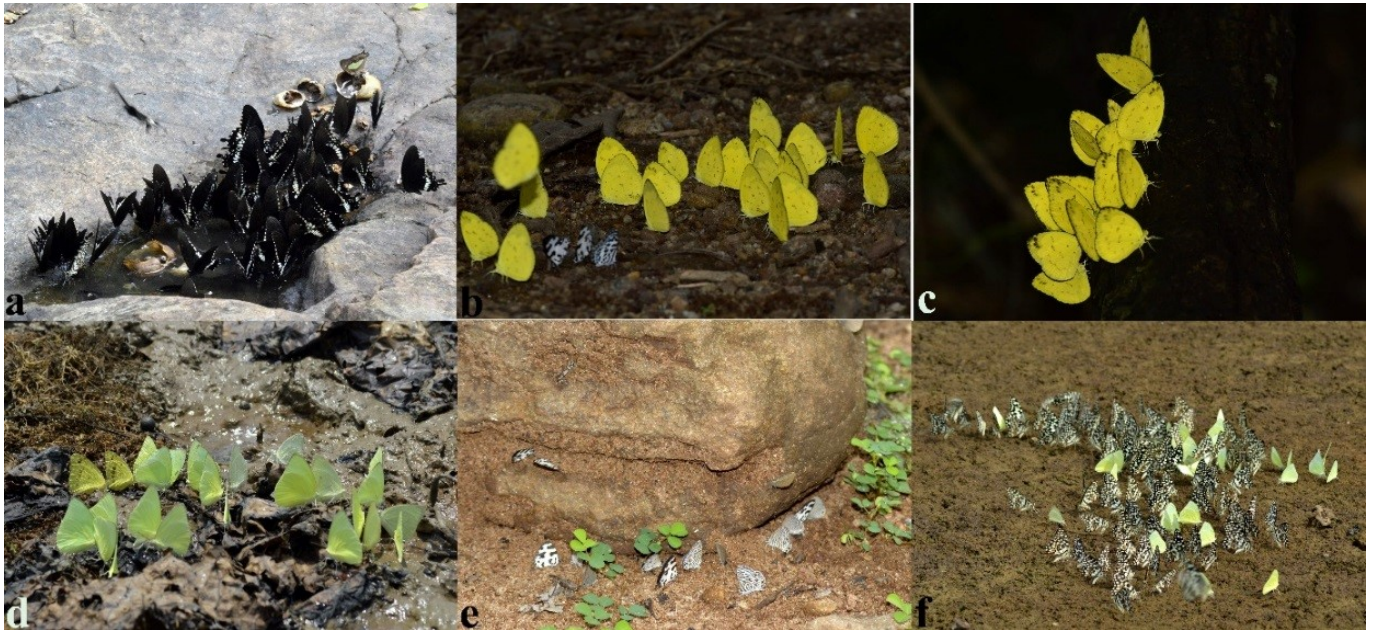


Figure 7. Photographs of some butterfly congregation a - *Papilio polytes*, *Graphium doson*, *Papilio demoleus* and *Polyura athamas* at Deobhuin Reserve Forest feeding on crab carcass and crab carcass mixed water; b - *Eurema blanda*, *Eurema hecabe*, *Eurema andersonii*, *Caleta decidia* and *Castalius rosimon* at Deobhin Reserve Forest puddling on forest trail; c - *E. andersonii* feeding on tree trunk sap; d - *Catopsilia pomona*, *Catopsilia pyranthe* and *Ixias marianne* puddling on mud at Ansupa Lake; e - *Prosotas dubiosa*, *Petrelaea dana*, *C. decidia*, *Leptotes plinius*, *Megisba malaya* and *Chilades pandava* puddling at Balikiari Reserve Forest; f - *P. demoleus* and *C. pomona* puddling on mud, near Sishupathra dam of Balikiari Beat

So far, this species has been known to distribute from Indian Himalaya and Northeastern India (Varshney & Smetacek, 2015). Recently, the species has been recorded from Araku Valley and Maredumilli of Andhra Pradesh (Goswami et al., 2018). We spotted two individuals near Tersing on 03.09.2015 at 09:40. As Goswami et al. (2018) mentioned, this species can be differentiated from closely relative *N. hylas*, by “the veins in under-hindwing is not blackened and, in the forewing not blackened at least till cell” (Evans, 1932). Hence, our present record confirms its occurrence in Odisha for the first time.

Discussion

The dominant occurrence of Lycaenidae and Nymphalidae butterflies in the study area might be due to the availability of host plants and nectaring plants (Mimosaceae, Acanthaceae, Poaceae, Malvaceae, Fabaceae), as the habitat association of butterflies can be directly related to the availability of larval host plants, vegetation cover of herbs, shrubs and trees for nectaring (Thomas, 1995; Kunte, 2000).

Among the recorded 136 species, 113 species of butterflies were found from Balikiari Reserve Forest (Site 3), 105 species from Deobhuin Reserve Forest (Site 5), 88 from Ansupa Lake (Site 2), 84 from Tersing (Site 4) and 78 species from Dhabaleswar Island (Site 1). Result of high number of species in Balikiari and Deobhuin Reserve Forest compare to other sites like Tersing and Dhabaleswar Island, may be due to the longer period of surveys rather than true species richness. As site Tersing also endowed with pristine habitats, which can be suitable for many butterfly species those are yet to explore.

Out of 136 species of butterflies, 14 species are legally protected under Indian Wildlife Protection Act, 1972 (see [Table 2](#)).

WPA Schedule	Family	Scientific Name
Schedule I	Papilionidae	Pachliopta hector (Linnaeus, 1758)
Schedule I	Lycaenidae	Chliariaothona (Hewitson, 1865)
Schedule II	Lycaenidae	Euchrysops snejus (Fabricius, 1798)
Schedule II	Lycaenidae	Lampides boeticus (Linnaeus, 1767)
Schedule II	Lycaenidae	Ropalavaruna (Horsfield, 1829)
Schedule II	Lycaenidae	Spindasis lohita (Horsfield, [1829])
Schedule II	Nymphalidae	Tanaecia lepidea (Butler, 1868)
Schedule II	Nymphalidae	Hypolimnismisippus (Linnaeus, 1764)
Schedule IV	Hesperiidae	Hasoravitta (Butler, 1870)
Schedule IV	Hesperiidae	Hyarotis adrastus (Stoll, [1780])
Schedule IV	Hesperiidae	Baoris farri (Moore, 1878)
Schedule IV	Lycaenidae	Tarucus ananda (de Nicéville, [1884])
Schedule IV	Nymphalidae	Euthalia lubentina (Cramer, 1777)
Schedule IV	Nymphalidae	Euploea core (Cramer, [1780])

Table 2. Legally protected butterflies of Athgarh Forest Division under the Wildlife (Protection) Act, 1972 (WPA).

In Athgarh Forest division various anthropogenic activities (e.g. wood cutting, grazing, logging, looping, herb collection etc.) by local villagers is a matter of concern, which leads to the destruction of suitable habitats of Butterfly fauna around Athgarh Forest Division. Butterflies are very sensitive insects. A little change in environmental condition and habitat alteration can influence their distribution and abundance (Wynter-Blyth, 1957). Therefore, habitat fragmentation, vegetation loss, grazing pressure, human settlement or any other damaging activities are mainly responsible for loss of diversity of both butterflies and plants in the study area must be regulated. Public awareness is also very important to conserve the suitable habitats of these ecologically important invertebrate organisms. However, the present study provides the baseline information of butterfly fauna of Athgarh Forest Division and enriches the butterfly checklist of Odisha. Further studies on Butterfly fauna is very necessary to understand the seasonal variation and population dynamics of butterflies in this precise geographical area.

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