



Butterflies of Nandur Madhmeshwar Wildlife Sanctuary, Maharashtra (India): Part – I

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Abstract: The Government of Maharashtra has declared the Nandur Madhmeshwar weir and area around it as a Wildlife Sanctuary in 1986. However till date, the sanctuary has not been explored scientifically for its varied faunal diversity. Hence the present study aimed to understand butterfly diversity is undertaken. The study is carried out from April 2013 to May 2014, using Checklist Survey method. The study reveal 41 butterfly species belonging to 5 families, of which Nymphalidae (11 species belonging to 9 genera and 31.70 %) is dominant family followed by Lycaenidae, Pieridae, Hesperidae and Papilionidae. Among recorded species, *Hypolimnas misippus*, *Atrophaneura hector* and *Euploea core* are listed as schedule species.

Keywords: Butterflies, Insecta, Nandur Madhmeshwar Wildlife Sanctuary.

1 Introduction

Insects are the most species rich group of animals, representing over 50% of the world's biodiversity (Groombridge 1992). However compared with other groups of insects, butterflies are well documented as they are easy to recognize and popular with the general public (Thomas 2005). There are about 18,000 species of butterflies in the world (Gaonkar 1996), of which India has 1,501 species and in which 321 are skippers, 107 swallowtails, 109 whites and Yellow, 521 Brush footed butterflies and 443 Blues (Kehimkar 2008). Many of these species are strictly seasonal and prefer only particular set of habitat (Kunte 1997) so they are considered

as good indicator of habitat quality (Kocher and Williams 2000). Hence butterflies are increasingly being used in biodiversity studies and conservation prioritization programme (Gadgil 1996).

In Maharashtra, researchers have significantly contributed in understanding butterflies diversity of many protected areas (Palot and Soniya 2003, Kasambe and Wadatkar 2004, Sharma and Radhakrishnan 2004, 2005 and 2006, Chandrakar *et al.* 2007, Sharma 2009, Wadatkar and Kasambe 2009, Kasambe 2012, Narasimmarajan 2014, Deshmukh and Dharamkar 2014). However, so far Nandur Madhmeshwar wildlife sanctuary has not been explored for its butterfly diversity. Hence the present study is undertaken with objective to prepare a preliminary checklist of butterfly

diversity and their abundance at Nandur Madhmeshwar Wildlife Sanctuary. The present study is useful as it can provide baseline data for further studies and research and to prepare a conservation and management plan of the sanctuary.

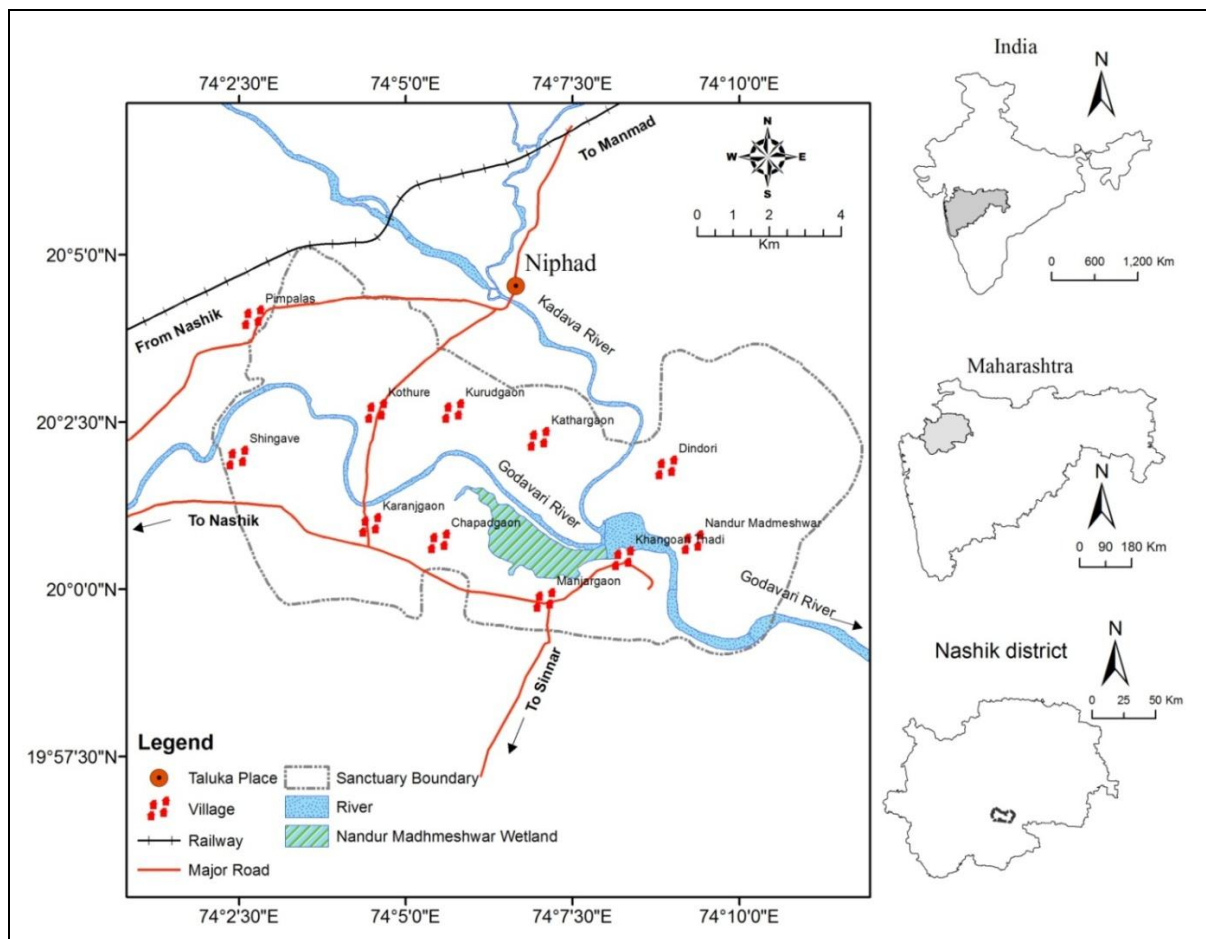
2 Materials and Methods

Study Area

The Nandur Madhmeshwar Wildlife Sanctuary is located in the Deccan Plateau Biogeographic Zone; Part 6 D Central Plateau of the Peninsular India. The Nandur Madhmeshwar wetland is located on the confluence of the Godavari and the Kadava Rivers in Nasik district of Maharashtra. It is

situated 35 km east of Nasik city and 9.6 km from Niphad (Map 1). Due to its avifaunal diversity the Nandur Madhmeshwar weir (a part of wildlife sanctuary) is known as ‘Bharatpur of Maharashtra.’ It is one of the proposed Ramsar site (Site code MH-04) of the state (Islam and Rahmani 2008).

The climate of the area is generally dry, except during South-West monsoon season. The maximum temperature in summer is 42.5°C and minimum temperature in winter is less than 5°C (Gazetteers of India 2004). The weir and its catchment receive rainfall ranging between 100 mm to 55 mm (Nandur Madhmeshwar Project Report 2011)



Map: 1. Location Map of the Nandur Madhmeshwar Wildlife Sanctuary

Methodology

The present study is carried out from April 2013 to May 2014, covering all seasons in a

year at Nandur Madhmeshwar Wildlife Sanctuary (Nasik) Maharashtra. The butterfly survey was done by Checklist Survey method.

As this is employed primarily to confirm the presence of species and in this method an observer is free to search out places where butterfly can see (Royer *et al.* 1998), so it is mainly used to observe butterfly around the Nandur Madhmeshwar weir and surrounding agricultural fields. As per guidelines by forest department specimen collection was strictly avoided and all common as well as rare species are photographically documented. Decomposing materials like fruits, meat, fish, feces, and urine from the study area were also observed for documenting butterflies. The mud-puddling spots of butterflies were identified around the weir and in the surrounding agriculture fields to record the butterfly species. At all these places and mud-puddling spots, the commonest and rare butterfly species were photographed and noted in the field book. The butterflies were

photographed using Nikon D7000 camera (with Tameron 80 mm micro and Sigma 18-250 mm lens). The species were identified up to species level with the help of standard books by Kunte (2000) and Kehimkar (2008).

3 Results and Discussion

The data obtained during three year (April 2013 to May 2014) of study period revealed that 41 species belonging to 31 genera and all 5 families are present in Nandur Madhmeshwar Wildlife Sanctuary. All recorded species along with their common English and scientific name, family and their relative abundance in the sanctuary area are mentioned in table 1. All the common English and scientific names follow Kehimkar (2008) and Kunte (2000).

Table: 1. Butterflies Diversity of Nandur Madhmeshwar Wildlife Sanctuary along with its Relative Abundance.

| Sr. No. | Family and Common Name | Scientific Name | Relative Abundance |
|---------------------|-------------------------|---|--------------------|
| HESPERIIDAE | | | |
| 1 | Common Banded Awl | <i>Hasora chromus</i> (Cramer) | C |
| 2 | Indian Skipper | <i>Spialia galba</i> (Fabricius) | C |
| 3 | Common Small Flat | <i>Sarangesa dasahara</i> Moore | C |
| 4 | Common Grass Dart | <i>Taractrocera maevius</i> (Fabricius) | LC |
| 5 | Small Branded Swift | <i>Pelopidas mathias</i> (Fabricius) | C |
| 6 | Indian Palm Bob | <i>Suastus gremius</i> (Fabricius) | C |
| PAPILIONIDAE | | | |
| 1 | Common Bluebottle | <i>Graphium sarpedon</i> (Linnaeus) | C |
| 2 | Common Mormon | <i>Papilio polytes</i> Linnaeus | VC |
| 3 | Lime Butterfly | <i>Papilio demoleus</i> Linnaeus | VC |
| 4 | Common Rose | <i>Atrophaneura aristolochiae</i> (Fabricius) | C |
| 5 | Crimson Rose | <i>Atrophaneura hector</i> (Linnaeus) | C |
| PIERIDAE | | | |
| 1 | One Spot Grass Yellow | <i>Eurema andersoni</i> (Moore) | C |
| 2 | Three Spot Grass Yellow | <i>Eurema blanda</i> (Boisduval) | C |
| 3 | Common Grass Yellow | <i>Eurema hecabe</i> (Linnaeus) | C |
| 4 | Common Emigrant | <i>Catopsilia Pomona</i> (Fabricius) | C |
| 5 | Mottled Emigrant | <i>Catopsilia pyranthe</i> (Linnaeus) | C |
| 6 | Common Jezebel | <i>Delias eucharis</i> (Drury) | C |
| LYCAENIDAE | | | |
| 1 | Common Pierrot | <i>Castalius rosimon</i> (Fabricius) | C |
| 2 | Dark Cerulean | <i>Jamides bochus</i> (Stoll) | C |
| 3 | Common Cerulean | <i>Jamides celeno</i> (Cramer) | C |

| | | | |
|--------------------|----------------------|--|---|
| 4 | Forget-Me-Not | <i>Catochrysops strabo</i> (Fabricius) | C |
| 5 | Dark Grass Blue | <i>Zizeeria karsandra</i> (Moore) | C |
| 6 | Pale Grass Blue | <i>Pseudozizeeria maha</i> (Kollar) | C |
| 7 | Lesser Grass Blue | <i>Zizina otis</i> (Fabricius) | C |
| 8 | Bright Babul Blue | <i>Azonus ubaldus</i> (Stoll) | C |
| 9 | Red Pierrot | <i>Talicauda nyseus</i> (Guérin- Ménévillie) | C |
| 10 | Gram Blue | <i>Euchrysops cnejus</i> (Fabricius) | C |
| 11 | Common Hedge Blue | <i>Acytolepis puspa</i> (Horsfield) | C |
| NYMPHALIDAE | | | |
| 1 | Blue Tiger | <i>Tirumala limniace</i> (Cramer) | C |
| 2 | Plain Tiger | <i>Danaus chrysippus</i> (Linnaeus) | C |
| 3 | Common Crow | <i>Euploea core</i> (Cramer) | C |
| 4 | Common Evening Brown | <i>Melanitis leda</i> (Linnaeus) | C |
| 5 | Common Fivering | <i>Ypthima baldus</i> (Fabricius) | C |
| 6 | Common Fourring | <i>Ypthima huebneri</i> Kirby | C |
| 7 | Tawny Coster | <i>Acraea violae</i> (Fabricius) | C |
| 8 | Baronet | <i>Euthalia nais</i> (Forster) | C |
| 9 | Blue Pansy | <i>Junonia orithiya</i> (Linnaeus) | C |
| 10 | Peacock Pansy | <i>Junonia almana</i> (Linnaeus) | C |
| 11 | Lemon Pansy | <i>Junonia lemonias</i> (Linnaeus) | C |
| 12 | Great Eggfly | <i>Hypolimnas bolina</i> (Linnaeus) | C |
| 13 | Danaid Eggfly | <i>Hypolimnas misippus</i> (Linnaeus) | C |

Where, C= Common, LC- Local Common and VC- Very Common

Nymphalidae is the most dominant family with 13 species belonging to 9 genera and with 31.70 % species richness of the total species, followed by Lycaenidae (11 species, 10 genera and 26.82 %), Pieridae (6 species, 3 genera and 14.63 %), Papilionidae (5 species, 5 genera and 12.19 %) and Hesperidae (6 species, 6 genera and 14.63 %) (Chart 1).

Three species of butterflies recorded during the study periods are listed in schedules of Wildlife (Protection) Act 1972. *Hypolimnas misippus* is listed in schedule I and *Atrophaneura hector* and *Euploea core* in schedule IV (Gupta and Mondal 2005).

In the present study at Nandur Madhmeshwar Wildlife Sanctuary area, of the 5 butterfly families observed Nymphalidae is richest in terms of species diversity (13 species). The dominance of Nymphalidae is may be attributed to its larval polyphagous habit which helps them to survive on varied food plants (Sreekumar and Balakrishanan, 2001). The second species rich family is Lycaenidae (11 species), representing blues that are known to adapt to varied climate and feed on variety

of larval food plants (Kunte, 2001). Pieridae (6 species) are sun lovers seen basking in sun with wings partially open and majority of them are seen in open country (Kehimkar, 2008). Family Hesperidae is also represented by only 6 species. Their general flight period is early morning hours at dawn and dusk (Kehimkar, 2008).

Papilionidae (5 species) had lower species richness compared to other family because they are known to prefer tall trees providing moderate sunlight (Mathews and Anto, 2007). This type of habitat is not present at Nandur Madhmeshwar Wildlife Sanctuary area where major vegetation is composed of shrubs and herbs. This is not a complete checklist of the butterflies of Nandur Madhmeshwar Wildlife Sanctuary, as authors are still scanning the area for its more faunal diversity

4 Conclusions

41 species of butterflies belonging to 31 genera and all 5 families are reported from Nandur Madhmeshwar Wildlife Sanctuary, Maharashtra.

Nymphalidae is richest family in terms of species diversity (13 species), and is followed by Lycaenidae (11 species), Pieridae (6 species), Hesperidae (6 species) and Papilionidae (5 species).

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