

ORIGINAL ARTICLE

Diversity of Odonates (Dragonflies and Damselflies) and Lepidopteron (Butterflies) Fauna of Nawabganj Bird Sanctuary, Unnao District, Uttar Pradesh, India

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ABSTRACT

Dragonflies, Damselflies (Order-Odonata) and Butterflies are one of the most common insects flying over forest, agriculture fields, wetlands and rivers. About 6,000 species of 37 families distributed all over the world and India diverse with 491 species of 25 families of odonates. Odonates, being predators both at larval and adult stages, play a significant role in the wetland ecosystem. Adult odonates feed on mosquitoes and other blood-sucking flies and act as an important bio-control agent of these insects. Lepidoptera contain about 1, 74,250 species of 135 families in all over the world and India varied with 15,065 species of 70 families. Butterflies are important aspect of ecosystems for they interact with plants as pollinators and herbivores. They are good bio-indicators of environmental changes which should be protected to conserve the biodiversity and environment. Study was done in Nawabganj Bird Sanctuary during January 2013 to January 2014. This Sanctuary has an area of 224.60 hectares and geographically located at 26° 34' N and 80° 40' E. The study reveals 18 species of odonates belonging to 15 genera and 5 families, which include Libellulidae (9 species), Aeshnidae (3 species), Coenagrionidae (3 species), Gomphidae (2 species) and Platycnemididae (1 species). Out of total 18 *Lathrecista asiatica* and *Ischnura aurora* were abundant or very common species and *Anax guttatus* and *Bradinopyga geminata* were rare in observation. A total 30 species of butterflies belonging to 22 genera and 4 families, which include Papilionidae (6 species), Pieridae (8 species), Nymphalidae (14 species) and Lycaenidae (2 species), in which *Danaus chrysippus* and *Junonia almana* were very common species and *Euploea core* and *Papilio demoleus* rare in observation. In present study family Nymphalidae (Lepidopteron) and Libellulidae (Odonates) shows more abundance than other families.

Keyword: Odonates, Butterflies, Lepidoptera, Sanctuary, Abundance.

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INTRODUCTION

Dragonflies, damselflies (Order-Odonata) and butterflies are one of the most common insects flying over forest, agriculture fields, wetlands and rivers. About 6,000 species of 37 families distributed all over the world and India diverse with 491 species of 25 families of odonates [10]. Odonates, being predators both at larval and adult stages, play a significant role in the wetland ecosystem. Adult odonates feed on mosquitoes and other blood-sucking flies and act as an important bio-control agent of these insects. Being very specific about breeding habitat, odonates are sensitive indicators of the health of wetland and its landscape. Lepidoptera contain about 1, 74,250 species of 135 families in all over the world and India varied with 15,065 species of 70 families [14]. Butterflies are important aspect of ecosystems for they interact with plants as pollinators and herbivores, play an important role in pollination and as a bio-indicator species. They are good bio-indicators of environmental changes which should be protected to conserve the biodiversity and environment. The impact of landscape changes going on since last fifty years in India on dragonflies, damselflies and butterflies distribution and status is very sparsely known.

This can be go ahead only by field surveys to know the threat status and distribution of these fauna in NBS.

MATERIALS AND METHODS

Site Description

A study was done in Nawabganj Bird Sanctuary (NBS) during January 2013 to January 2014 on Dragonflies, Damselflies (Order-Odonata) and Butterflies. This Sanctuary has an area of 224.60 hectares and geographically located at 26° 34' N and 80°40'E (Fig. 1). The average rainfall is about < 1,000 mm per annum and the temperature ranges from 1° C to 48° C, and humidity is about 94%.



Fig. 1 Map of Study area (source: Google map)

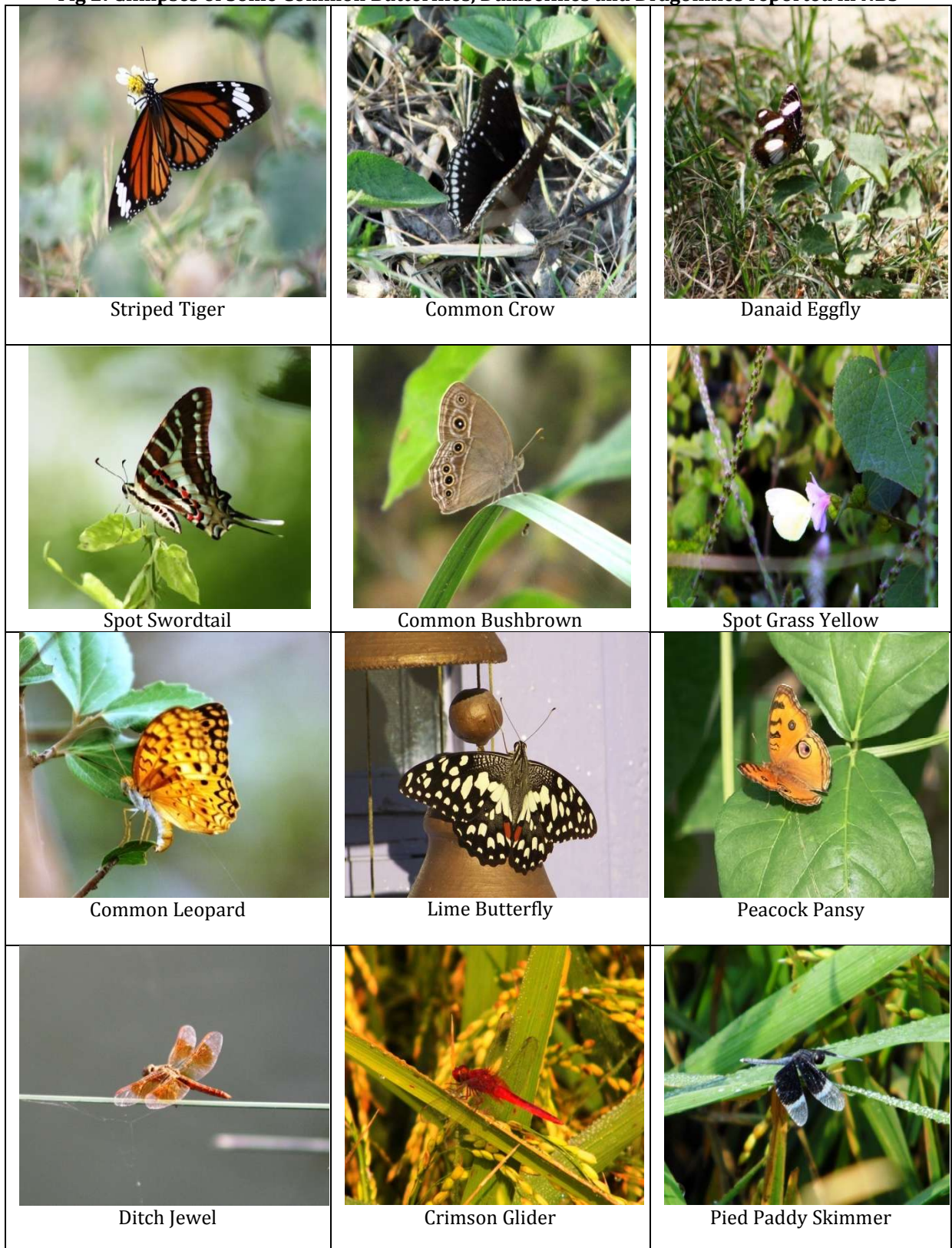
METHODOLOGY

Observations were made during a fixed daily transect (500 m for areas) carried out between 7-11 A.M. and 5-6 P.M. Species were identified directly in the field or, in Laboratory with the help of identification Keys' of Kehimkar Issac [5] and Arun Pratap Singh [12]. Collection was restricted to those specimens that could not be identified directly. Photographs of the adults of different species were taken with the help of 70 D SLR camera. All scientific names follow the book of Kehimkar Issac, 2008 [5] and Kunte, 2000 [3].

RESULTS & DISCUSSION

Total 48 species of 37 genera and 9 families of Odonates and Lepidopteron have been recorded during study at NBS (Fig 2). The study reveals 18 species of odonates belonging to 15 genera and 5 families, which include Libellulidae (9 species), Aeshnidae (3 species), Coenagrionidae (3 species), Gomphidae (2 species) and Platycnemididae (1 species) shown in Table 1. Chandna *et al.*, studied a total of 28 odonate species assemblages, specific habitats such as bushlands, marshlands, lagoons, flowing water bodies, stagnant water bodies and vegetation type in Bundela National Park, Sri Lanka [2]. Family wise percentage composition of odonates of NBS are shown in Fig 3. Out of total 18 *Lathrecista asiatica* and *Ischnura aurora* were abundant or very common species and *Anax guttatus* and *Bradinopyga geminata* were rare in observation.

Fig 2: Glimpses of Some Common Butterflies, Damselflies and Dragonflies reported in NBS





Rufous-backed Marsh Hawk

Coromandal Marsh Dart

Trumpet Tail

Table.1: Odonates (Dragonflies and Damselflies) Species Reported in NBS

S.N.	Family	Common Name	Scientific Name
1	Libellulidae	Ditch Jewel	<i>Brachythemis cotaminata</i>
2		Little Blue Marsh Hawk	<i>Orthetrum laucum</i>
3		Asiatic Blood tail	<i>Lathrecista asiatica</i>
4		Trumpet tail	<i>Acisoma panorpoides</i>
5		Granite Ghost	<i>Bradinopyga geminata</i>
6		Fulvous Forests Skimmer	<i>Neurothemis fulvia</i>
7		Ruddy Meadow Skimmer	<i>Neurothemis intermedia</i>
8		Pied Paddy Skimmer	<i>Neurothemis tullia</i>
9		Coral-tailed Cloud Wings	<i>Tholymis tillarga</i>
10	Aeshnidae	Rusty Darner	<i>Anaciaeschna jaspidea</i>
11		Blue Darner	<i>Anaximmaculifrons</i>
12		Blue -tailed Green Darner	<i>Anax guttatus</i>
13	Coenagrionidae	Coromandel Marsh Dart	<i>Ceriagran caromandelianum</i>
14		Blue Grass Dartless	<i>Pseudagrion microcephalum</i>
15		Golden Dartless	<i>Ischnura aurora</i>
16	Gomphidae	Common Hooktail	<i>Paragomphus lineatus</i>
17		Common Club-Tail	<i>Ictinogomphus rapax</i>
18	Platycnemididae	Yellow Bush-Dart	<i>Copera marginipes</i>

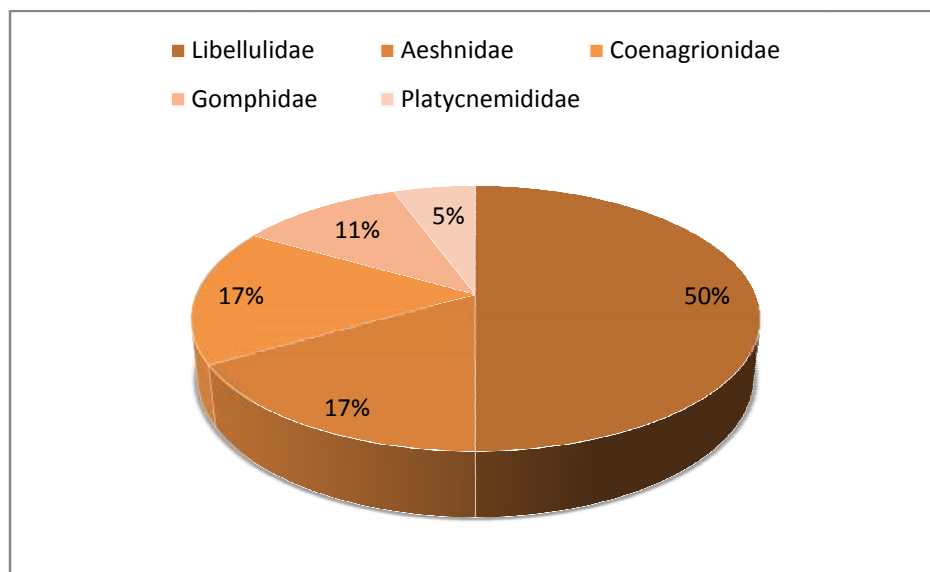


Fig 3: Family wise percentage composition of odonates of NBS

Table.2: Lepidopteron (Butterflies) Species Reported in NBS

S.N.	Family	Common Name	Scientific Name
1	Papilionidae	Common Jay	<i>Graphium doson</i>
2		Common Rose	<i>Astrophaneura aristolochiae</i>
3		Common Mormon	<i>Papilio polytes</i>
4		Common Raven	<i>Papilio castor</i>
5		Lime Butterfly	<i>Papilio demoleus</i>
6		Great Jay	<i>Graphium euryplus</i>
7	Pieridae	Common Emigrant	<i>Catapsilia Pomona</i>
8		Small Grass Yellow	<i>Eurema brigitta</i>
9		Common Grass Yellow	<i>Eurema hecabe</i>
10		Tree Yellow	<i>Gandoca harina</i>
11		Common Gull	<i>Cepora nerissa</i>
12		Common Jezebel	<i>Delias eucharis</i>
13		Pioneer	<i>Belenois aurota</i>
14		Painted Sawtooth	<i>Prioneris sita</i>
15	Nymphalidae	Blue Tiger	<i>Tirumala limniace</i>
16		Striped Tiger	<i>Danaus genutia</i>
17		Plain Tiger	<i>Danaus chrysippus</i>
18		Great Eggfly	<i>Hypolimnas bolina</i>
19		Danaid Egg fly	<i>Hypolimnas misippus</i>
20		Common Evening Brown	<i>Melanities leda</i>
21		Common Lasear	<i>Pantoporia hordonia</i>
22		Common Castor	<i>Aridine merione</i>
23		Blue Pansy	<i>Junonia orithiya</i>
24		Grey Pansy	<i>Junonia atlites</i>
25		Lemon Pansy	<i>Junonia lemonias</i>
26		Peacock Pansy	<i>Junonia almana</i>
27		Common Indian Crow	<i>Euploea core</i>
28		Common Leopard	<i>Phalanta Phalantha</i>
29	Lycaenidae	Dark Grass Blue	<i>Zizeeria karsandra</i>
30		Tailless lime Blue	<i>Prosotas dubiosa</i>

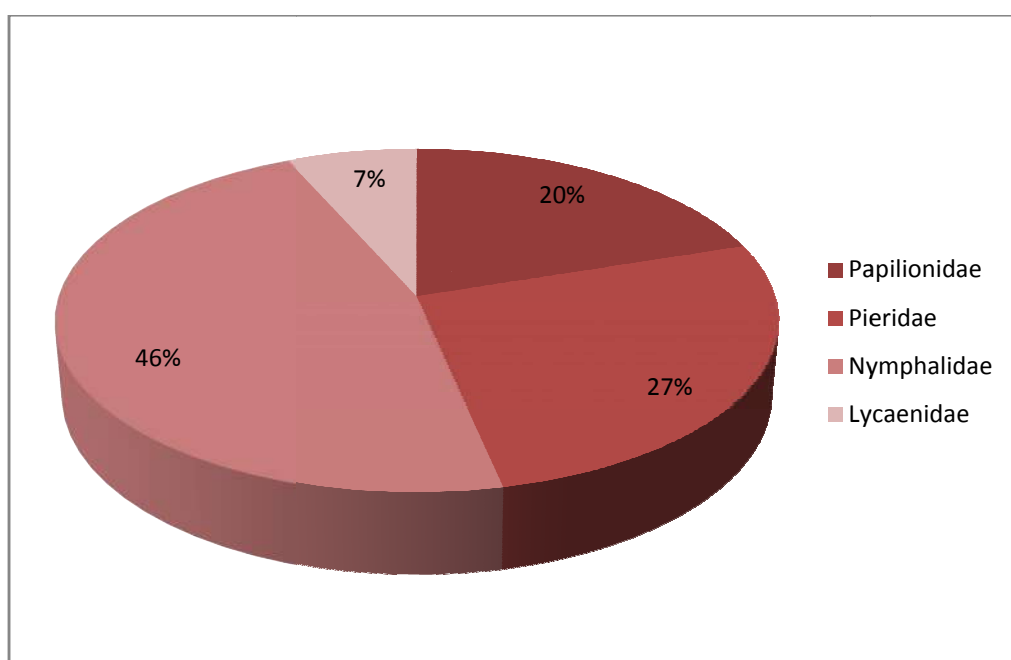


Fig 4: Family wise percentage composition of Lepidopteron of NBS

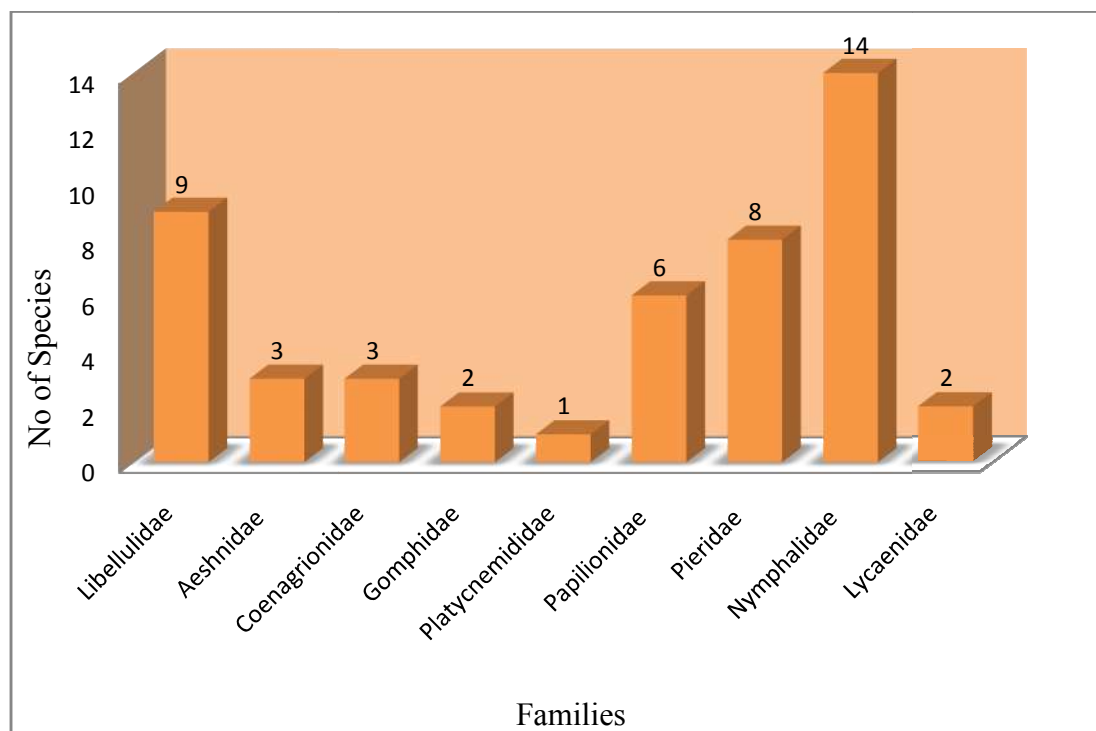


Fig 5: Family wise species diversity of Odonates and Lepidopteron Fauna

A total of 30 species of butterflies belonging to 22 genera and 4 families, which include Papilionidae (6 species), Pieridae (8 species), Nymphalidae (14 species) and Lycaenidae (2 species), in which *Danaus chrysippus* and *Junonia almana* are very common species because there are various nectar flowering plants such as *Lantana camara* etc. and *Euploea core* and *Papilio demoleus* are rare in observation (Table 2). Family wise percentage compositions of butterflies of NBS are shown in Fig 4. Larsen, T.B. (2002) listed 86 butterfly species in Delhi which constitute quite a high number, given its climatic extremes. However the 86 butterflies of Delhi are not equally common [7]. Khanal *et al.*, (2006) reported 54 species and categorized under seven families out of 14 families occurring in Nepal. Most of the recorded species were common to moderately common in status inhabiting open areas and visitors of water sources and flowers [4]. Chandra *et al.*; (2007) reviewed the butterflies of Madhya Pradesh and Chhattisgarh and recorded 174 species/subspecies of 100 genera under eight families [1]. Pathania and Kumari (2009) studied 28 species from district Una in Himachal Pradesh [8], Sharma and Joshi (2009) recorded a total of 41 butterfly species in district Hoshiarpur, Punjab [9], Tiple *et al.*, (2009) recorded total 145 species of butterflies in the Nagpur city [13], A.P. Singh (2010) his study revealed the presence of 71 species of butterflies [11] and Kunte *et al.*, (2012) reported 298 butterfly species for the Garo Hills [6]. In present study family Nymphalidae (Lepidopteron) and Libellulidae (Odonates) shows more abundance than other families shown in Fig 5.

CONCLUSION

Although India has a rich Odonates and Lepidopteron fauna, but due to various reasons such as habitat destruction, fire, use of pesticides and weedicides (Lurma, 2,4-D Amine Salt 58% SL) and illegal collection for trade, many species have become very rare and some are on the verge of extinction. Odonates and Lepidopteron in this landscape are poorly known due to lack of surveys. This baseline information (i.e. 18 species of Odonates and 30 species of butterflies), on Odonates and Lepidopteron thus generated by intensive survey across seasonal, altitudinal and habitat gradients. We hope that this will be useful in documenting the rich biodiversity of Nawabganj Bird Sanctuary.

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