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# An observation on odonata (damselflies and dragonflies) fauna of Manchabandha reserve forest, Baripada, Odisha

**Gaurab Jyoti Kalita, Bitupan Boruah and Gaurab Nandi Das**

*Department of Wildlife & Biodiversity Conservation, North Orissa University, India*

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**ABSTRACT**

*Odonates are represented by dragonflies and damselflies. Odonates variety in Manchabandha Reserve Forest was observed, where recorded a total of 48 species of odonates. The sub-order Zygoptera was represented by 15 species out of which Coenagrionidae was the richest family with 9 species. And sub-order Anisoptera was represents 33 species out of 33species Libellulidae was the richest family with 27 species. We are also reporting for the first time observation of odonates diversity in Manchabandha Reserve Forest, Baripada, Mayurbhanj District, Odisha. A detailed list of odonates recorded from Manchabandha Reserve Forest is presented.*

**Keywords**: Observation, Manchabandha, odonates, Reserve Forest, Odisha.

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## INTRODUCTION

The term odonates are collectively called both Dragonflies and Damselflies. Odonates are an important amphibiotic invertebrate group depending on freshwater ecosystems for most of their life span. They have been around from the Carboniferous era [19].These are the most common insects which are flying over forest, rang land, meadows, corps, stream and rivers and one of the dominant groups of aquatic and terrestrial insects. These flying machines can fly backward, move vertically like a helicopter or stop in turn in the mist of the most rapid progression as if they have been remained into [11]. Even though most species of odonates are highly specific to a habitat, some have adapted to urban areas and exploit man-made water bodies [15] .Odonate taxa are ideal models for the investigation of the impact of environmental warming and climate change due to their tropical evolutionary history and adaptations to temperate climates [14].Odonates play crucial role in ecosystem functioning and serve to keep other insects including those harmful to humans (like mosquitos, blood-sucking flies, etc.) under control [13].They occur almost all over the world in varied ecological niches. Eight super families, 29 families and some 58 subfamilies of dragonflies covering approximately 600 genera and 6,000 named species have so far been described all over the world [17]. Dragonflies & damselflies of the Indian sub-region (India, Sri Lanka, Pakistan, Nepal, Bhutan, Bangladesh & Myanmar) are well documented with over 600 species[13]. Odonate study in Odisha can be traced back to Laidlaw[9] ,Fraser &Drover[4] , Srivastava & Das[18] , Mitra [12], Sethy & Siddiqi[16] , Das et al. [3] [2] and Nair[13] who have worked on odonate fauna in the state of Odisha. In this study we tried to explore the occurrence of odonata in Manchabandha reserve Forest, Odisha, India.

## MATERIALS AND METHODS

*Location of study area*

The study was conducted in Manchabandha Reserve Forest Odisha. It is open and moderately dense. The forest is protected by Manchabandha, Gouddihi & Bagdiha villages where the people have constituted JFMC (Joint Forest Management Committees) and are protecting Manchabandha Reserve Forest. The area is located at21$^0$ 54'21.23"North latitude&86$^0$ 45'10.35" .East longitudes. A survey of odonates was carried out along streams and water bodies from September 2012to October 2013, covering all 3 seasons viz. summer (March to June), monsoon (July to October) and winter (November to February).

*Methods*

Visual encounter surveysHeyeretal.et al,[8] were used to study odonates. A number of trails were randomly made near different possible odonate habitats such as ponds, streams and river banks. Species were photographed. Doubtful species were collected using an entomological net and identified with the help of Fraser[5][6] [7], Mitra[12], Subramanian[19], and Nair[13]. Photographs were taken with a Sony cyber shoot DX-200vcamera with progmmer mode.

**Table 1- Checklist of Anisoptera from ManchabandhaReserve Forest, Odisha**

| Sl. No. | Common Name | Scientific name |
|---|---|---|
| **A. Sub Order: Anisoptera** | | |
| **a. Family: Aeshnider** | | |
| 1. | Rusty Darner | *Anaciaeschna jaspidea* (Burmeister, 1839) |
| 2. | Blue Darner | *Anax immaculifrons* (Rambur, 1842) |
| 3. | Emperor Darner | *Anax imperator* (Leach, 1815) |
| 4. | Brown Darner | *Gynacantha dravida* (Lieftinck, 1960) |
| **b. Family : Gomphidae** | | |
| 5. | Common Club Tail | *Ictinogomphus rapex* (Rambur, 1842) |
| 6. | Common hook Tail | *Paragomphus lineatus* (Selys, 1850) |
| **c. Family : Libellulidae** | | |
| 7. | Trumpet Tail | *Acisoma panorpoides* (Rambur, 1842) |
| 8. | Scarlet Marsh Hawk | *Aethriamanta brevipennis* (Rambur, 1842) |
| 9. | Rufous backed Marsh Hawk | *Brachydiplax chalybea* (Brauer, 1868) |
| 10. | Emaraled flanked marsh hawk | *Brachydiplax farinosa Laidlaw*, 1902 |
| 11. | Little blue marsh hawk | *Brachydiplax sobrina* (Rambur, 1842) |
| 12. | Granite Ghost | *Bradynopyga geminate* (Rambur, 1842) |
| 13. | Ditch Jewel | *Brachythemis contaminata* (Fabricius, 1793) |
| 14. | Giant forest skimmer | *Camacinia gigantea* (Brauer, 1867) |
| 15. | Ruddy Marsh Skimmer | *Crocothemis servilia* (Drury, 1770) |
| 16. | Ground Skimmer | *Diplocodes trivialis* (Rambur, 1842) |
| 17. | Fulvous Forest Skimmer | *Neurothemis fulvia* (Drury, 1773) |
| 18. | Pied Paddy Skimmer | *Neurothemis tullia* (Drury, 1773) |
| 19. | Blue Marsh Hawk | *Orthetrum glaucaum* (Brauer, 1865) |
| 20. | Tri coloured Marsh Hawk | *Orthetrum luzonicum* (Brauer, 1868) |
| 21. | Crimson Tailed Marsh Hawk | *Orthetrum pruinosum* (Burmeister, 1839) |
| 22. | Green Marsh Hawk | *Orthetrum sabina* (Drury, 1770) |
| 23. | Blue Tailed Yellow Skimmer | *Palpopleura sexmaculata* (Fabricius, 1787) |
| 24. | Wandering Glider | *Pantala flavescens* (Fabricius, 1798) |
| 25. | Yellow Tailed Ashy Skimmer | *Potamarcha congener* (Rambur, 1842) |
| 26. | Rufous Marsh Glider | *Rhodothemis rufa* (Rambur, 1842 |
| 27. | Common Picture Wing | *Rhyothemis variegata (Linnaeus, 1763* |
| 28. | Coral Tailed Cloud Wing | *Tholymis tillarga* (Fabricius, 1798) |
| 29. | Red Marsh Trotter | *Tramea basilaris* (Palisot de Beauvois, 1805) |
| 30. | Black Marsh Trotter | *Tramea limbata* (Desjardins, 1832) |
| 31. | Crimson Marsh Glider | *Trithemis aurora* (Burmeister, 1839) |
| 32. | Pygmy skimmer | *Tetrathemis platyptera* (Selys, 1878) |
| 33. | Greater Crimson Glider | *Urothemis signata* (Rambur, 1842) |

## RESULTS AND DISCUSSION

The order Odonata is an ideal model taxon for the investigation of the impact of environmental warming and climate change due to its tropical evolutionary history and adaptations to temperate climates (Hassall et al, 2008). A total of

48 species representing 34 genera from 8 families recorded from the reserve forest. In case sub order Zygoptera (Damselfly) family Coenagrionidae is the dominant by 9 species followed by Chlorocyphidae (1), Platycnemididae (1), Calopterygridae (2), and Lestidae (2). In case of sub order Anisoptera (Dragonfly) family Libellulidae is the dominant by 27 species followed by Gomphidae (2), Aeshnidae (4).In this reserve forest, Libellulidae was found to the most dominant family. As in many other studies this family is also widely represented in surveys elsewhere locally & globally[1]. During study we observed that the Manchabandha Reserve Forest area is highly disturbed the presence of Libellulidae especially species like *Brachythemis contaminate* mainly sighted in so many places near to human being activities area & clearly indicates polluted water and deteriorating habitats under reserve forest. But the presence of Gomphids, Calopterygids, and Chlorocyphids also indicates that, some of undisturbed and unpolluted water inside the reserve forest[13].

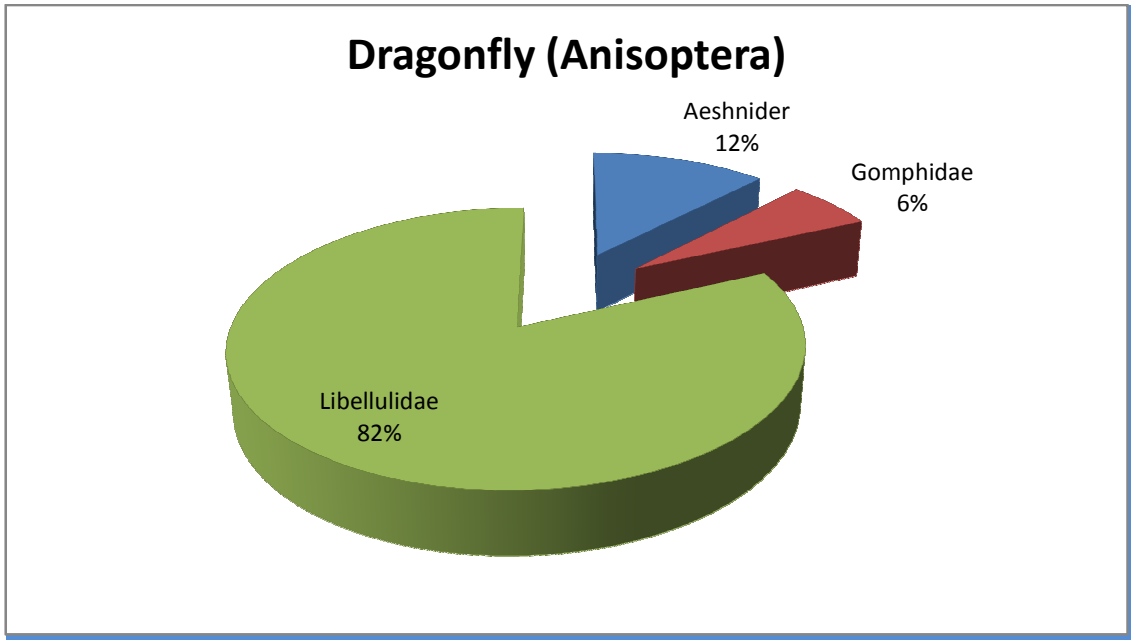



**Fig: 1 Percentage of occurrencesof Anisoptera from ManchabandhaReserve Forest, Odisha**

**Table 2- Checklist of Zygoptera from ManchabandhaReserve Forest, Odisha**

| Sl. No. | Common Name | Scientific name |
|---|---|---|
| **B. Sub Order: Zygoptera** | | |
| **a. Family: Calopterygridae** | | |
| 34. | Stream Glory | *Neurobasis chinensis* (Linnaeus, 1758) |
| 35. | Black-tipped Forest Glory | *Vestalis apicais* (Selys, 1873 |
| **b. Family : Chlorocyphidae** | | |
| 36. | Stream Ruby | *Rhinocypha bisignata* (Selys, 1853) |
| **c. Family : Coenagrionidae** | | |
| 37. | Green-striped slender Dartlet | *Aciagrion occidentale*( Laidlaw, 1919) |
| 38. | Pale slender Dartlet | *Aciagrion pallidum* (Selys, 1891 ) |
| 39. | Pruinosed Dartlet | *Agriocnemis femina* (Brauer, 1868) |
| 40. | Milky Dartlet | *Agriocnemis lecteola* (Selys, 1877) |
| 41. | Pygmy Dartlet | *Agriocnemis pygmaea* (Rambur, 1842) |
| 42. | Orange-tailed Marsh Dart | *Ceriagrion cerinorubellum* (Brauer, 1865) |
| 43. | Coromandel Marsh Dart | *Ceriagrion coromandelium* (Fabricius, 1798) |
| 44. | Rusty marsh Dart | *Ceriagrion olivaceum* (Laidlaw, 1914) |
| 45. | Golden Dartlet | *Ischnura aurora* (Brauer, 1865) |
| **d. Family: Lestidae** | | |
| 46. | Brown spreadwing | *Lestes umbrinus* (Selys,1891) |
| 47. | Emerald Striped Spreadwing | *Lestes viridulus* (Rambur, 1842) |
| **e. Family: Platycnemididae** | | |
| 48. | Yellow Bush Dart | *Copera marginipes* (Rambur, 1842) |

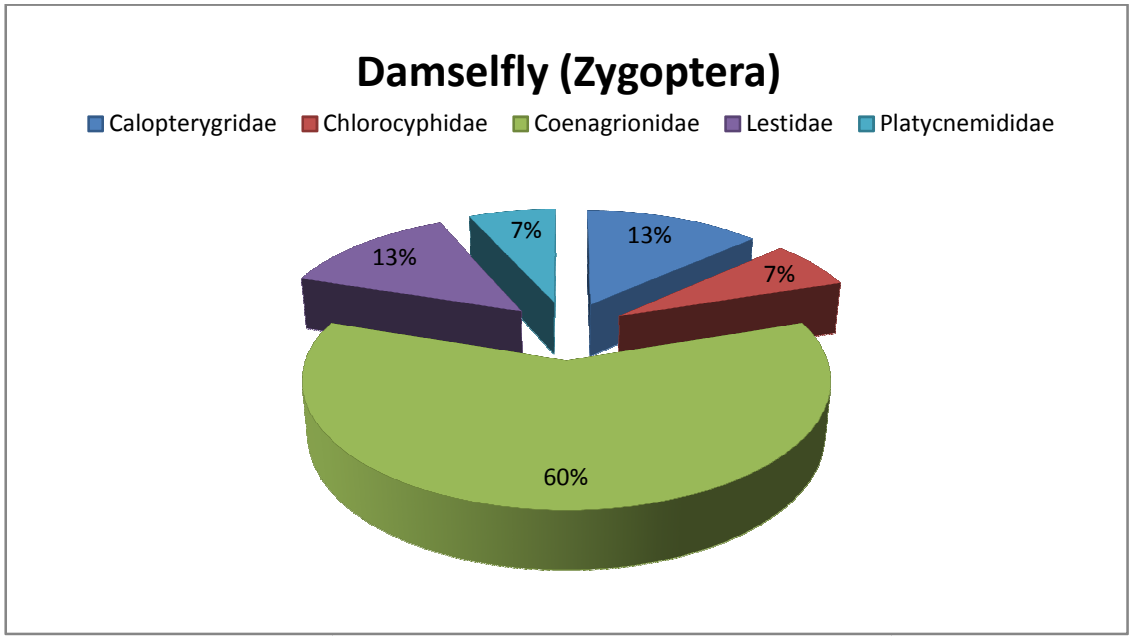



**Fig: 2Percentage of occurrence Zygoptera from ManchabandhaReserve Forest, Odisha**

Odonates are the important link between aquatic and terrestrial ecosystem changes in aquatic communities such as mowing of shoreline vegetation or introduction of aquatic exotic species reduce the quality of Odonates habitat[10]. Because its play crucial ecological role as prey and predator that means diminishing of odonate species could have an adverse effect both terrestrial and aquatic food web.


*Ictinogomphus rapex* *Acisoma panorpoides* *Aethriamanta brevipennis*

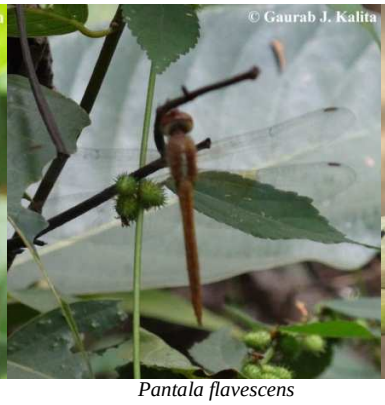

*Brachythemis contaminate* *Camacinia gigantean* *Diplocodes trivialis*

*Neurothemis fulvia*

*Neurothemis tullia*

*Orthetrum sabina*

*Palpopleura sexmaculata*



*Pantala flavescens*

*Potamarcha congener*

*Rhyothemis variegate*

*Tholymis tillarga*

*Trithemis aurora*

*Urothemis signata*

*Neurobasis chinensis*

*Vestalis apicais*

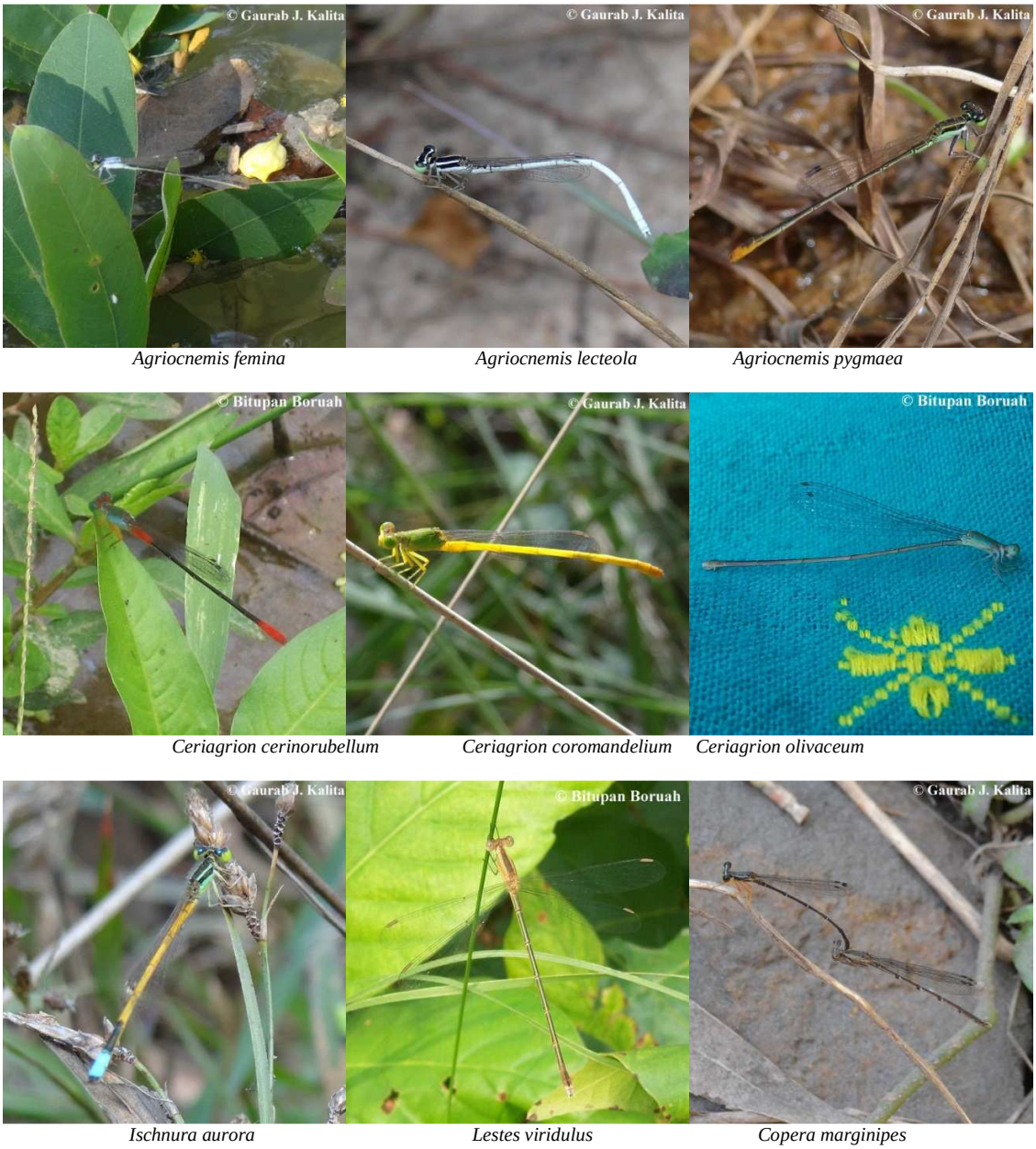



**Fig:3 Photographs showing different odonates recorded during the study period**

## CONCLUSION

Odonates are predatory in nature, but also a good source of energy to different animals, especially for birds and other insects such as spiders. Being as indicators of environment odonates are sensitive towards their surroundings and changes in their ambience may lead to the changes in their status. Recent studies in the Western Ghats of India have indicated that change in land use patterns leads to change in odonates community structure[13]. Odonates are important indicators of water quality and pollution levels. They inhabit diversified habitats near water bodies ranging from stagnant pond water to flowing streams. Although Manchabandha Reserve forest has a diversified habitat for odonates, due to Joint Forest Management Committees (JFMC) project the gradual increase in human pressure in and around water bodies has adverse effects on the sustainability of these insects. Therefore, protection measures are necessary of these valuable creatures. But much more elaborated study is required to access the biodiversity of this unique natural creature.

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