



Research Article

DIVERSITY OF ODONATES AT SIRPUR POND, INDORE

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ABSTRACT

Dragonflies and damselflies collectively called Odonates are one of the most common insects flying over forest, fields, meadows, ponds and rivers. About 6,000 extant species are distributed all over the world. India is highly diverse with more than 500 known species. Odonates play an important role in our ecosystem and can be used as biological indicators of environmental quality. Though much work has been done on insects but still there is need to study about the diversity of Odonates (Dragonfly and Damselfly). Thus a study has been done on the diversity of odonates at Sirpur Pond in Indore district of Madhya Pradesh, India. A total of 16 species of Odonates were recorded from the study area from January 2016 to June 2017. Out of 16 species, 8 species were among the Anisoptera (Dragonflies) and 8 species were among the Zygoptera (Damselflies). Among the 8 species of Anisoptera, 7 were of family Libellulidae while 1 of family Gomphidae. Among the 8 species of Zygoptera, 7 were of family Coenagrionidae and 1 of family Lestidae.

Keywords: Dragonflies, Damselflies, Devendra, Sirpur, Holkar.

INTRODUCTION

Dragonflies and damselflies collectively called Odonates are one of the most common insects flying over forest, fields, meadows, ponds and rivers. About 6,000 extant species are distributed all over the world. India is highly diverse with more than 500 known species (Nair, 2011). Odonata are one of the ancient orders of insects. It first appeared during the Carboniferous era, about 250 million years ago along with mayflies (Ephemeroptera). Dragonflies and mayflies are ancient groups of insects, which amongst others, were the first to develop wings and venture into air. Dragonflies mastered the art of flying and continue to be the master's aerobats. Based on morphology, the order Odonata are divided into three groups, Damselflies (Zygoptera), Anisozygoptera and Dragonflies (Anisoptera) (Meitei, 2014).

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. Odonates, being predators both at larval and adult stages, play a significant role in the wetland ecosystem. Even though most species of odonates are highly specific to a habitat, some have adapted to urban areas and exploit man-

made water bodies (Mitra, 2005). Dragon fly have unequal for wings and hind wings while Damselfly have almost equal wings. In Dragon fly hind wings are broad at the base while in case of Damsel fly the hind wings are narrower at the base. Dragon fly spread out their wings at rest whereas Damselfly holds their wings dorsally over thorax and abdomen. The life history of odonates is closely linked with water bodies. They use a wide range of flowing and stagnant water bodies. Even though most species of odonates are highly specific to a habitat, some have adapted to urban areas and make use of man-made water bodies. Habitat specificity has an important bearing on the distribution and ecology of odonates. Some species use specialized habitats such ponds, streams, river, waterfalls. Odonates are an efficient predators during both in larval as well as adult stages and thus Odonates play crucial role in ecosystem functioning and serve to keep other insects including those harmful to humans like mosquitoes, flies etc. under control. Thus the present study focuses on the diversity of Odonates at Sirpur Pond in Indore which might be helpful for future research and conservation of Odonates.

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MATERIAL AND METHODS

Study Area

The Odonates were studied at the Sirpur Pond of district Indore (22°43'0"N 75°50'50"E). The average annual temperature here is around 24.0°C (75.2°F). It lies in the Malwa region of Madhya Pradesh. Indore has a humid subtropical climate. The Sirpur Pond contains water throughout the year and thus favors a very diverse variety of flora and fauna.

Survey Method

Surveys were conducted throughout the Sirpur Pond. Photographs and field notes were taken during the day hours in between 9am and 1pm. Photographs were taken by Canon 1300d DSLR. Samples were collected for identification by using nets and were preserved in 70% formalin. The specimens were studied in the research laboratory of Zoology Department, Govt. Holkar Science College, Indore (MP).

Identification

Images of each Odonate were photo-documented and identified using standard references and field guides (Debata *et al.*, 2013; Fraaer, 1936; Nair, 2011; Subramanian & Gadgil, 2009). For the identification four keys were measured: (a).The length of Abdomen (b).The wing size (c).The wing spot (d).The colour and size of eye.

RESULTS AND DISCUSSION

A total of 16 species of Odonates were recorded from the study area from January 2016 to June 2017 (Table 1 and Plate). Out of 16 species, 8 species were among the Anisoptera (Dragonflies) and 8 species were among the Zygoptera (Damselflies). Among the 8 species of Anisoptera, 7 were of family Libellulidae while 1 of family Gomphidae. Among the 8 species of Zygoptera, 7 were of family Coenagrionidae and 1 of family Lestidae (Moore, 1997; Neseemann *et al.*, 2011). Odonates are ideal creatures in order to study the impact of environmental warming and climate change due to its tropical evolutionary history and adaptations to temperate climates (Neseemann *et al.*, 2011).

Table 1: Diversity of Odonates.

S.No.	Common Name	Scientific Name	IUCN Status
Anisoptera (Dragonflies)			
Family: Libellulidae (Skimmers)			
1	Trumpet Tail	<i>Acisoma panorpoides</i>	Least Concern (LC)
2	Ditch Jewel	<i>Brachythemis contaminata</i>	Least Concern (LC)
3	Little Blue Marsh Hawk	<i>Brachydiplax sordida</i>	Least Concern (LC)
4	Ruddy Marsh Skimmer	<i>Crocothemis servilia</i>	Concern (C)
5	Green Marsh Hawk	<i>Orthetrum sabina</i>	Least Concern (LC)
6	Common Picture Wing	<i>Rhyothemis variegata</i>	Least Concern (LC)
7	Granite Ghost	<i>Bradinopyga geminata</i>	Least Concern (LC)
Family: Gomphidae (Clubtails)			
1	Common Clubtail	<i>Ictinogomphus rapax</i>	Least Concern(LC)
Zygoptera(Damselflies)			
Family: Coenagrionidae (Marsh Darts)			
1	Green Striped Slender Dartlet	<i>Aciagrion occidentale</i>	Least Concern (LC)
2	Pigmy Dartlet	<i>Agriocnemis pigmoea</i>	Least Concern (LC)
3	Coromandel Marsh Dart	<i>Ceriagrion coromandelianum</i>	Least Concern (LC)
4	Azure Dartlet	<i>Enallagma parvum</i>	Least Concern (LC)
5	Blue Dart	<i>Pseudagrion microcephalum</i>	Not Evaluated Yet
6	Three Lined Dart	<i>Pseudagrion decorum</i>	Least Concern (LC)
7	Senegal Golden Dartlet	<i>Ischnura senegalensis</i>	Least Concern (LC)
Family: Lestidae (Spreadwings)			
1	Brown Spreadwing	<i>Lestes umbrinus</i>	Data Deficient (DD)

PLATE 1



Acisoma panorpoides



Brachydiplex sobrina



Brachythemis contaminata



Orthetrum sabina



Crocothemis servilia



Rhyothemis variegata



Pseudagrion decorum



Ceriagrion coromandelianum



Pseudagrion microcephalum



Paracercion malayanum

*Ischnura senegalensis**Agriocnemis pygmaea*

CONCLUSION

Among the 8 species of Anisoptera, 7 were of family Libellulidae while 1 of family Gomphidae. Among the 8 species of Zygoptera, 7 were of family Coenagrionidae and 1 of family Lestidae.

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REFERENCES

- Debata, S., Sahu, H.K., Rout, S., & Kumar, R. (2013). An observation on Odonata diversity in Hadgarh Wildlife Sanctuary, Odisha, Eastern India. *Tigerpaper*, 40(2), 10-13.
- Fraaer, L. (1936). The Fauna of British India, including Ceylon and Burma: Taylor And Francis, Red Lion Court, Fleet Street; London.1-442.
- Meitei, ABL. (2014). Odonates (Dragonflies and Damselflies) of Indian Council of Agricultural Research (ICAR), Research Complex for NEH Region Campus, Umiam, Meghalaya, India. *Journal of Entomology and Zoology Studies*, 2(5),16-21.
- Mitra, T.R. (2005). Evolutionary adaptations in morphology and ecology of *Tholymis tillarga* (fabricius) and *Bradinopyga geminata* (rambur) (Insecta: odonata). *Records of the Zoological Survey of India*, 104(1-2), 101.
- Moore, N.W. (1997). Dragonflies: status survey and conservation action plan: IUCN Gland Switzerland and Cambridge, United Kingdom.1-37.
- Nair, MV. (2011). Dragonflies & damselflies of Orissa and eastern India. Wildlife Organisation, Forest & Environment Department, Government of Orissa, 1-254.
- Nesemann, H., Shah, R.D.T., & Shah, D.N. (2011). Key to the larval stages of common Odonata of Hindu Kush Himalaya, with short notes on habitats and ecology. *Journal of Threatened Taxa*, 3(9), 2045-2060.
- Subramanian, K., & Gadgil, M. (2009). Dragonflies of India, a field guide. Department of Science and Technology, Govt. of India. Vigyan Prasar, 1-168.