



Dragonflies and Damselflies (Odonata: Insecta) of Tropical Forest Research Institute, Jabalpur, Madhya Pradesh, central India

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The Tropical Forest Research Institute (TFRI), Jabalpur, is one of the nine institutes under the Indian Council of Forestry Research & Education. It lies on the bank of the Gour River on Mandla Road (79°59'23.50"E & 21°08'54.30"N) about 10km south east of Jabalpur. The campus is spread over an area of 1.09km² amidst picturesque surroundings. The area enjoys a semi-arid type of climate with a mean annual precipitation of 1358mm (Image 1).

The campus is surrounded by agricultural fields with rural inhabitation. The water reservoir and the vegetation planted around the institute have created

a very good habitat and source of attraction for many faunal species like insects, reptiles, birds and mammals.

The damselflies (Zygoptera) and dragonflies (Anisoptera) are amphibiotic insects, which belong to the order Odonata. They spend a major part of their life cycle in fresh water ecosystem. The adults are generally predacious insects, while the larvae are carnivorous and voracious. Even though the species are usually highly specific to a habitat, some have adapted to urbanization and use man-made water bodies. Being primarily aquatic, their life history is closely linked to specific aquatic habitats (Andrew et al. 2009).

Dragonflies mostly occur in the vicinity of different freshwater habitats like rivers, streams, marshes, lakes and even small pools and rice fields. Odonates are good indicators of environmental changes as they are sensitive to changes in the habitats, atmospheric temperature and the weather conditions. They are biocontrol agents, many species of odonates inhabiting agro ecosystems play a crucial role controlling pest populations (Tiple et al. 2008).

Fraser (1933–1936) published three volumes on Odonata in the 'Fauna of British India' including 536 species and subspecies of Odonata from India with many species from Madhya Pradesh (MP) and from Bangladesh, Bhutan, Myanmar, Nepal, Pakistan and Sri Lanka. After Fraser's work, some additions were made to MP, India by Bhasin (1953), Kumar & Prasad (1978) and Mitra (1988) reported 39 species of Odonata from central India. Mitra (1995) while working on Odonata of Indravati Tiger Reserve added nine more species bringing the number of species to 48. Prasad & Varshney (1995) published a checklist of the Indian odonates, including updated data on larval studies of all the known species. Srivastava & Babu (1997) studied the damselflies of Sagar.

Mishra (2007) studied the Odonata of Madhya Pradesh and described a total of 70 species belonging to 40 genera and nine families distributed in different localities. But no published checklist of different species of Odonata of TFRI campus is known hence, the present work was initiated.

Materials and Methods: The odonates were collected from the Gour River, gardens, temporary and permanent flowing or still water bodies of TFRI

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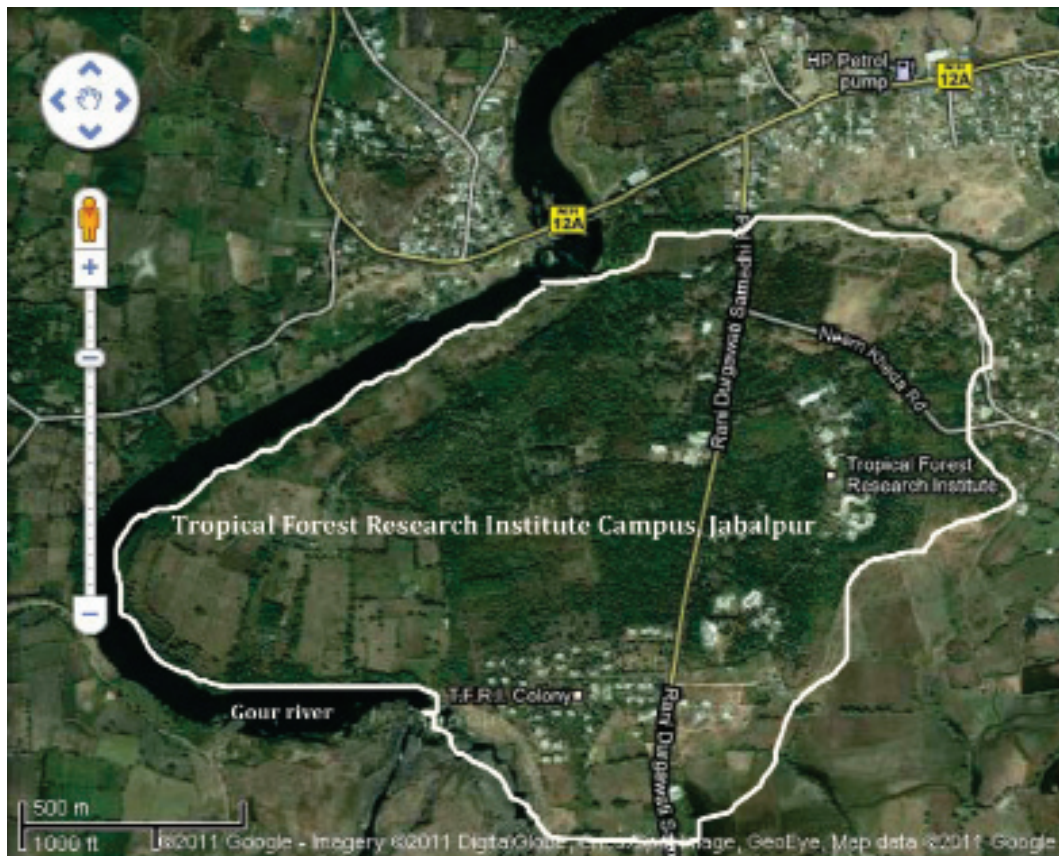


Image 1. Satellite overview map of study locality at the Tropical Forest Research Institute, Jabalpur. Source: Google Earth

campus. A biweekly survey was undertaken from 2009–2010 during the monsoon and post monsoon (July–August) periods. The adult specimens were identified with the help of identification keys provided by Fraser (1933, 1934, 1936), Mitra (2006), Subramanian (2005), Andrew et al. (2009), and Subramanian (2009). The odonates were categorized on the basis of their abundance in TFRI campus VC - very common (> 100 sightings), C - common (50–100 sightings), R - rare (2–15 sightings), VR - very rare (< 2 sightings) (Tiple et al. 2008).

Results and Discussion: A total of 48 species of odonates belonging to 32 genera of two suborders and nine families viz., Coenagrionidae, Protoneuridae, Platycnemididae, Lestidae, Chlorocyphidae, Aeshnidae, Gomphidae, Libellulidae and Macromiidae were recorded. Among them, eight previously unrecorded species were included in the check list of Madhya Pradesh. Of the total 48 species 15 were very common, 15 were common, 16 rare and two very rare in occurrence.

Most odonates recorded belong to the Libellulidae

(20 species) with one new record (i.e., *Orthetrum luzonicum*) (Image 2). Coenagrionidae (13) species were recorded with one new record (*Agriocnemis femina*) (Image 3). The family Gomphidae includes three species with one new record (i. e. *Macrogomphus annulatus*) (Image 4). Aeshnidae (four) species were recorded with two new records (i.e., *Anax immaculifrons* (Image 5), *Hemianax ephippiger* (Image 6)). Only two species were recorded from the Protoneuridae, Lestidae. Family Platycnemididae, Chlorocyphidae and Macromiidae (with one new record, *Epophthalmia vittata* Image 7) recorded one species respectively from Madhya Pradesh. The list of odonates along with their scientific names and their status is provided in Table 1.

So far, the occurrences of 70 species of odonates were reported under 40 genera and nine families from Madhya Pradesh (Mishra 2007). The present observation indicates good diversity of Odonata in the Tropical Forest Research Institute by having about 70% of the reported species from Madhya Pradesh.

India harbors 463 species/subspecies of Odonata



Image 2. *Orthetrum luzonicum*



Image 3. *Agriocnemis femina*



Image 4. *Macrogomphus annulatus*



Image 5. *Anax immaculifrons*

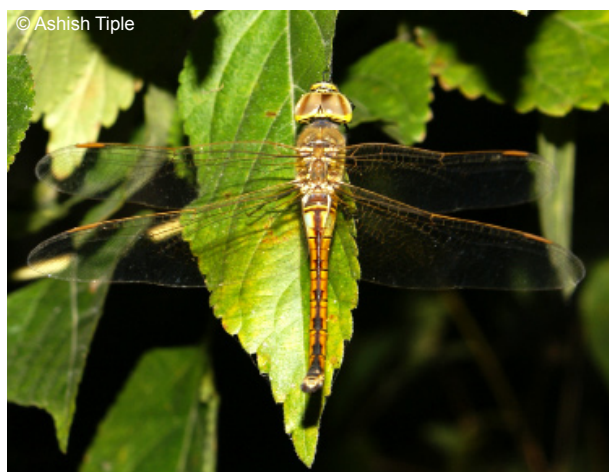


Image 6. *Hemianax ephippiger*



Image 7. *Epophthalmia vittata*

Table 1. List of Odonata recorded from the Tropical Forest Research Institute campus, Jabalpur.

	Name	Status
	Zygotera (Damselflies)	
	Coenagrionidae	
1	<i>Aciagrion pallidum</i> Selys, 1891	R
2	<i>Agriocnemis pygmaea</i> (Rambur, 1842)	VC
3	<i>Agriocnemis femina</i> (Brauer, 1868)*	C
4	<i>Agriocnemis pieris</i> Laidlaw, 1919	R
5	<i>Ceriagrion coromandelianum</i> (Fabricius, 1798)	C
6	<i>Enallagma parvum</i> Selys, 1876	R
7	<i>Ischnura aurora</i> (Brauer, 1865)	C
8	<i>Ischnura senegalensis</i> (Rambur, 1842)	VC
9	<i>Pseudagrion decorum</i> (Rambur, 1842)	C
10	<i>Pseudagrion microcephalum</i> (Rambur, 1842)	C
11	<i>Pseudagrion rubriceps</i> Selys, 1876	VC
12	<i>Pseudagrion spencei</i> Fraser, 1922 (Image 8)	C
13	<i>Rhodischnura nursei</i> (Morton, 1907)	R
	Protoneuridae	
14	<i>Disparoneura quadrimaculata</i> (Rambur, 1842)	R
15	<i>Prodasineura verticalis</i> (Selys, 1860)	R
	Platycnemididae	
16	<i>Copera marginipes</i> (Rambur, 1842)	C
	Lestidae	
17	<i>Lestes umbrinus</i> Selys, 1891	VC
18	<i>Lestes elatus</i> (Hagen in Selys, 1862)	R
	Chlorocyphidae	
19	<i>Libellago lineata indica</i> (Fraser, 1928)	R
	Anisoptera (Dragonflies)	
	Aeshnidae	
20	<i>Anax guttatus</i> (Burmeister, 1839)	VC
21	<i>Anax immaculifrons</i> Rambur, 1842*	C
22	<i>Gynacantha bayadera</i> Selys, 1891	R

	Name	Status
23	<i>Hemianax ephippiger</i> (Burmeister, 1839)*	R
	Gomphidae	
24	<i>Ictinogomphus rapax</i> (Rambur, 1842)	VC
25	<i>Macrogomphus annulatus</i> (Selys, 1854)*	C
26	<i>Paragomphus lineatus</i> (Selys, 1850)	C
	Libellulidae	
27	<i>Acisoma panorpoides</i> (Rambur, 1842)	C
28	<i>Brachythemis contaminata</i> (Fabricius, 1793)	VC
29	<i>Bradinyopyga geminata</i> (Rambur, 1842)	VC
30	<i>Crocotthemis servilia</i> (Drury, 1770)	VC
31	<i>Diplacodes trivialis</i> (Rambur, 1842)	VC
32	<i>Neurothemis intermedia</i> (Rambur, 1842)	R
33	<i>Neurothemis tullia</i> (Drury, 1773)	VR
34	<i>Orthetrum glaucum</i> (Brauer, 1865)	C
35	<i>Orthetrum luzonicum</i> (Brauer, 1868)*	R
36	<i>Orthetrum pruinosum</i> (Burmeister, 1839)	C
37	<i>Orthetrum sabina</i> (Drury, 1770)	VC
38	<i>Orthetrum taeniolatum</i> (Schneider, 1845)	VR
39	<i>Pantala flavescens</i> (Fabricius, 1798)	VC
40	<i>Potamarcha congener</i> (Rambur, 1842)	C
41	<i>Rhyothemis variegata</i> (Linnaeus, 1763)	R
42	<i>Tholymis tillarga</i> (Fabricius, 1798)	R
43	<i>Tramea basilaris</i> (Palisot de Beauvois, 1805)	C
44	<i>Trithemis aurora</i> (Burmeister, 1839)	VC
45	<i>Trithemis festiva</i> (Rambur, 1842)	VC
46	<i>Trithemis kirbyi</i> Selys, 1891	R
47	<i>Trithemis pallidinervis</i> (Kirby, 1889)	VC
	Macromiidae	
48	<i>Epophthalmia vittata</i> Burmeister, 1839*	R

VC - very common; C - common; R - rare; VR- very rare; * - new report



Image 8. *Pseudagrion spencei*

belonging to 140 genera under 19 families (Subramanian 2009). Madhya Pradesh and Chhattisgarh states present 70 species of the entire Odonata diversity of India, which has now increased from 70–76 species.

The TFRI campus seems to have a rich odonate diversity of 48 species in a small area (1.09km²), probably due to its establishment on the bank of the river Gaur along with the dense shrub and tree vegetation, providing a major attraction to the Odonata species. The observations recorded in the present study may prove valuable as a reference for assessing the changes due to the environmental conditions in the locality, in future. The findings of the present study

underline the importance of institutional estates in providing preferred abodes for dragonfly and damselfly. Continuous exploration in TFRI campus region could add many more new species from the region.

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