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Odonates of Coimbatore District, Tamil Nadu, India

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Abstract: Odonates were surveyed in Coimbatore District from September 2012 to January 2016. The survey sites covered three major rivers—the Noyyal, Bhavani and Aliyar. Aquatic habitats such as forest streams, riverine sites, irrigational tanks and paddy fields were surveyed in the study. A total of 70 species of odonates were recorded in the survey, which brings the list of odonates in Coimbatore to 87 species. Eighteen species are first time records to the district. In this paper, we catalogue odonates and their distribution from the present survey and pre-existing records.

Keywords: Aliyar River, Bhavani River, Coimbatore, damselflies, dragonflies, Noyyal River.

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Author Details and Contribution: M. Suhirtha Muhil is a PhD scholar in Salim Ali Centre for Ornithology and Natural History. All field studies, data collection and the preparation of the manuscript in the prescribed format was done by her. The work is part of her doctoral thesis. Dr. P. Pramod is a Principal Scientist at Salim Ali Centre for Ornithology and Natural Histroy and Head of the Nature Education department. The study was conceptualized and planned by him.

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INTRODUCTION

Freshwater ecosystems the world over are under tremendous anthropogenic pressure and there is an urgent need to assess the quality of these freshwater habitats. In biodiversity hotspots such as Western Ghats, which support numerous endemic taxa, freshwater resources are highly exploited. To assess and characterize freshwater habitats, bioindicators are used. Among the bioindicators of freshwater, odonates are known to be highly sensitive indicators of the habitat concerned (Clarke & Samways 1996; Samways & Steytler 1996; Subramanian 2009). Baseline data on the distribution of odonates provide valuable information on habitat specific species and the status and quality of aquatic systems.

Dragonflies and damselflies (Odonata) are known to have high diversity and endemism in the Western Ghats (Subramanian et al. 2011). Numerous studies on the odonates of Western Ghats have been published recently (Rangnekaer et al. 2010; Kiran & Raju 2013; Verghese et al. 2014; Adarsh et al. 2015; Tiple & Koparde 2015); however, the studies on range extension (Das et al. 2013), species additions (Rangnekar et al. 2010; Emiliyamma et al. 2012, 2013; Rangnekar & Naik 2014) and new species description (Subramanian et al. 2013) confirm the need for extensive odonatological research required in the Western Ghats.

Surrounded by the Western Ghats, Coimbatore exhibits varied landscapes, vegetation and aquatic bodies suitable for a rich diversity of odonates. Odonates in this region were first documented by Fraser (1924, 1931, 1933, 1934, 1936) enlisting 48 species and by Ayyar & Ayyar (1933) adding six more species. Twenty-three species have been documented from the insect collection of Agricultural College and Research Institute, Coimbatore (Abraham 1959), of which two species were additional records after which, studies in the region (1999 onwards) have recorded: 22 species from the paddy fields of Coimbatore (Gunathilagaraj et al. 1999; Chitra et al. 2002; Arulprakash & Gunathilagaraj 2010b); 23 species from tanks (Arulprakash & Gunathilagaraj 1999; Karthika & Krishnaveni 2014); seven species from Bhavani River (Arulprakash & Gunathilagaraj 2010a) and seven species from other opportunistic observations (Arulprakash & Gunathilagaraj 2010b). These checklists provide an addition of 13 species to the district.

Odonata checklist from various forest reserves and wildlife sanctuaries adjoining Coimbatore has also been catalogued extensively—Silent Valley National Park (Rao & Lahiri 1972), Parambikulam (Emmiliyama & Radhakrishnan 2000), Thattekad (Varghese et al. 2014), Chinnar Wildlife Sanctuary (Adarsh et al. 2015).

Published catalogues of odonates of Coimbatore cover limited habitats and areas of the district. Given the wide geographical extent of the district and its varied habitats, our aim was to catalogue odonates from various aquatic bodies in Coimbatore, covering forest streams, river, irrigational tanks, ponds and paddy fields. We have consolidated the number of species recorded in our survey and from previous existing literature. The distributions of species from various habitats are also provided.

STUDY AREA

Coimbatore District lies in the western part of Tamil Nadu state ($10^0$13'4"–$11^0$24'5"N and $76^0$39'25"–$77^0$18'26"E). Many parts of the district lie in the leeward side of the Western Ghats (Fig. 1). The district is criss-crossed by the Palghat gap (a 30km-wide gap in the otherwise continuous mountain chain) dividing the hills into northern and southern sections. The northern section comprises the Siruvani-Vellingiri Hills; the Anaikatty Hills and Athikadavu Valley which skirts the lower elevations of the Nilgiris. The former hill range contributes to the Noyyal River basin and the latter two to the Bhavani River. The southern section comprises the high rising Anaimalai Hills from which the Aliyar River originates. In between these two sections of mountains lies the Palghat gap, a 30-km stretch of plain which tapers in gradient towards the west. The Aliyar River drains in the gap and adjoins many other tributaries flowing from the Anaimalais and the northern section of the hills to form the Ponnani River. The forested hilly terrains of Coimbatore District are covered by semi-evergreen, wet dry deciduous forest and in most parts by dry deciduous forest. While the plains of Coimbatore and the Palghat gap are predominantly agricultural landscapes.

The south-west monsoon provides copious rainfall (>800mm) to the higher slope of the northern and southern section of the mountains and the Palghat gap (Arun & Vijayan 2004; Rathod & Aruchamy 2010). The rest of the district receives scanty rainfall from the south-west monsoon and this region is supplemented with 600-800 mm rainfall by the north-east monsoon (Rathod & Aruchamy 2010). Rainfall in the higher reaches contributes to the seasonal river Noyyal and the irrigational tanks in the plains during the south-west monsoon.

Our study cover various aquatic habitats such as

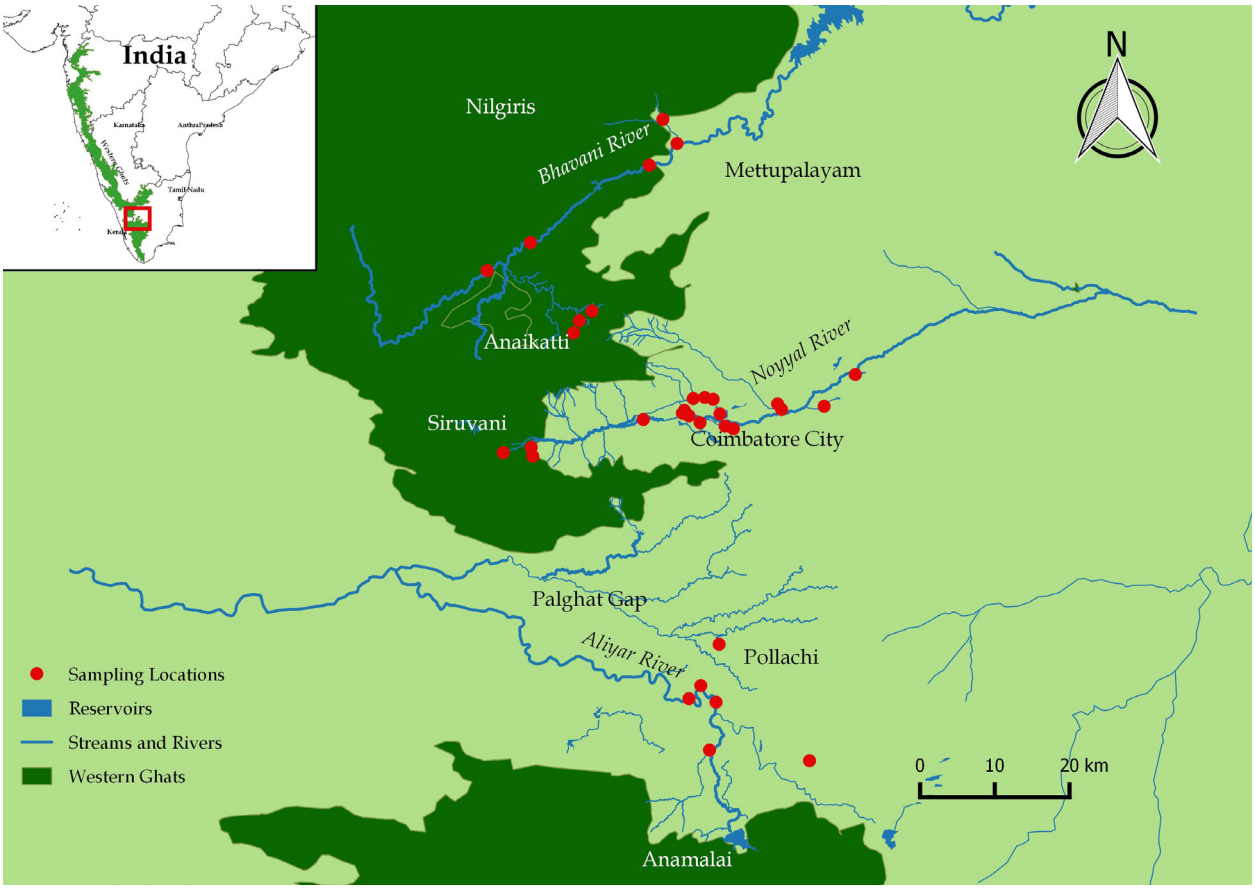

Figure 1. Study locations from the present survey.

forest streams; riverine sites; irrigational tanks and ponds and paddy fields across the Noyyal, Bhavani and Aliyar rivers.

METHODS

Our study was conducted from September 2012 to January 2016 across different aquatic bodies in Coimbatore District (Images 1–10). Adult dragonflies were surveyed between 09:00–16.00 hrs by direct search technique (Sutherland 1996). Opportunistic observations have also been included to the current list. The species were photographed using Lumix FZ 200 and identified with the help of standard field guides: Subramanian (2009), Nair (2011) and Fraser's Fauna of British India (1933–36). A total of 36 locations were surveyed (Table 1). We seasonally surveyed 24 sites with a frequency of 12 visits. The other sites were visited with a minimum frequency of one to a maximum of four visits. Previous records of odonates from this region are also included in the checklist (Table 2).

RESULTS AND DISCUSSION

We have recorded 70 species of odonates in our study, of which 18 species are first time records to the Coimbatore District making the list with 87 species, belonging to 58 genera and 12 families (Table 2). From the enlisted 87 species, there are 20 endemics (14 species and 6 subspecies level) of which 14 are endemic to the Western Ghats (10 species and 5 sub-species level) (Babu et al. 2013). Of the 70 species from the present survey, we recorded 14 endemics, eight of which are endemic to the Western Ghats. Recorded distribution of odonates shows that the highest number of species was recorded from forest streams (70), followed by river (52), tanks (37) and paddy fields (23) respectively (Fig 2). The most speciose family is Libellulidae (39), followed by Coenagrionidae (14) and Gomphidae (10) (Table 2).

In the present study, 18 species were recorded for the first time from Coimbatore District; however, most of these species have been recorded from various adjoining regions of Coimbatore—the Nilgiris, the Anaimalai and Palani hills (Fraser 1923, 1924, 1931,

Table 1. List of locations surveyed in the present study

Locations	Wetland type	Habitat and vegetation type	Altitude (m)	Co-ordinates
Bhavani River basin				
Kallar- tributary stream (not river)	FS	Between the Kallar-Jagganari slopes reserve forest, surrounded by dry deciduous forest at one end and areca nut groves on the other	379	11°20'15.0"N & 76°52'54.1"E
Bathrakaliammankovil	R	Riverine stretch surrounded by areca nut groves and other fields	315	11°17'37.6"N & 76°53'30.4"E
Vilamarathur	R	Riparian forest adjacent to areca nut groves	327	11°16'55.4"N & 76°51'54.9"E
Athikadavu	R	Riparian forest	449	11°12'50.82"N & 76°45'16.64"E
Chavadiyur	R	Riverine stretch surrounded by agricultural fields	486	11°09'23.2"N & 76°55'38.9"E
Chavadiyur- Mulli	R	Riparian forest on one side and agricultural fields on the other	481	11°09'52.27"N & 76°41'01.53"E
SACON, Anaikatty	FS	Seasonal stream; dry-deciduous forest	626	11°05'45.48"N & 76°46'46.32"E
Kondanur	FS	Seasonal stream; dry-deciduous forest	629	11°06'27.41"N & 76°47'37.27"E
Noyyal River basin				
Kovai Kutralam waterfall	FS	Moist deciduous forest	550	10°56'19.79"N & 76°43'13.9"E
Nandankarai checkdam	FS	Open stream clears into a checkdam surrounded by teak plantations	496	10°56'00.32"N & 76°43'22.26"E
Siruvani checkpost	FS	Mixed deciduous forest and teak plantations	469	10°56'36.0"N & 76°43'13.9"E
Madhampatty	R	Seasonal river, surrounded by agricultural fields	429	10°58'38.0"N & 076°51'29.0"E
Perur	R	Seasonal river, surrounded by agricultural fields	416	10°58'45.1"N & 076°54'52.0"E
Somayampalayam tank	T	Seasonal tank surrounded by agricultural fields	463	11°02'43.71"N & 076°53'43.61"E
Perur big tank	T	Seasonal tank surrounded by agricultural fields	411	10°58'08.15"N & 076°55'51.35"E
Nagarajapuram tank1	T	Rural tank surrounded by agricultural fields	425	10°59'58.73"N & 076°54'31.26"E
Nagarajapuram tank2	T	Rural tank surrounded by agricultural fields	426	11°00'05.62"N & 076°55'13.38"E
Paddy Breeding station	T	Paddy of different stages throughout the year	421	10°59'42.3"N & 076°55'02.2"E
TNAU- Wetlands	T	Paddy of different stages throughout the year	421	11°00'10.8"N & 076°55'19.3"E
Vedapatty lake 1	T	Seasonal tank surrounded by areca nut groves and other agricultural fields	420	10°59'03.08"N & 076°54'18.60"E
Vedapatty lake 2	T	Seasonal tank surrounded by areca nut groves and agricultural fields	417	10°59'06.1"N & 076°54'23.0"E
Muthanankulam 1	T	Perennial urban tank, highly polluted	426	11°00'12.8"N & 076°55'55.8"E
Muthanankulam 2	T	Perennial urban tank, highly polluted	422	11°00'11.4"N & 076°55'38.9"E
Kuruchi lake 1	T	Urban seasonal tank	405	10°58'11.4"N & 076°57'27.7"E
Kuruchi lake 2	T	Urban seasonal tank	402	10°57'56.06"N & 076°58'09.29"E
Ukkadam tank	T	Perennial urban tank, highly polluted	409	10°57'56.06"N & 076°58'09.29"E
Valankulam tank	T	Perennial urban tank, highly polluted	407	10°59'28.87"N & 077°57'04.01"E
Singanallur lake 1	T	Perennial urban tank, highly polluted	390	10°59'50.49"N & 077°01'15.59"E
Singanallur lake 2	T	Perennial urban tank, highly polluted	391	10°59'08.20"N & 077°01'30.72"E
Sulur lake	T	Perennial semi-urban tank surrounded by agricultural fields	364	11°01'38.91"N & 077°06'34.36"E
Pallapalayam lake	T	Perennial tank surrounded by agricultural fields	384	10°59'23.77"N & 077°04'25.42"E
Aliyar River basin				
Anaimalai town	R	Open river, surrounded by Coconut groves	251	10°34'48.92"N & 076°56'19.69"E
Ambarampalayam	R	Open river, surrounded by Coconut groves	226	10°38'15.22"N & 076°56'47.97"E
Athupollachi	R	Open river, surrounded by Coconut groves	221	10°39'28.75"N & 076°55'44.41"E
Kaliapakoundenpudur	R	Open river, surrounded by Coconut groves	204	10°38'15.22"N & 076°56'47.97"E
Uthukuli pond	T	Perennial tank surrounded by coconut groves- highly polluted	258	10°39'24.55"N & 076°58'37.82"E
Palayur pond	T	Seasonal rural pond	306	10°35'53.66"N & 077°03'18.16"E
D. Kalipalayam Wells	T	Seasonal rural pond	231	10°41'36.99"N & 076°57'04.01"E

FS - Forest Streams; R - Rivers; T - Tanks and Ponds

Image 1. Muthanankulam, Coimbatore - Urban perennial tank

Image 2. Singanallur Lake, Coimbatore - Urban perennial tank

Image 3. Vedapatty, Coimbatore - Rural seasonal tank

Image 4. Wetland Paddy fields, TNAU, Coimbatore

Image 5. Noyyal River - Madhampatti, Coimbatore

Image 6. Aliyar River - Athupollachi, Pollachi

Image 7. Bhavani River between Chavadiyur and Mulli, Athikadavu

Image 8. Anaikatty forest - Kondanur seasonal stream, Anaikatty

Image 9. Kallar tributary forest stream, Mettupalayam

Image 10. Nandankarai checkdam of Siruvani, Coimbatore

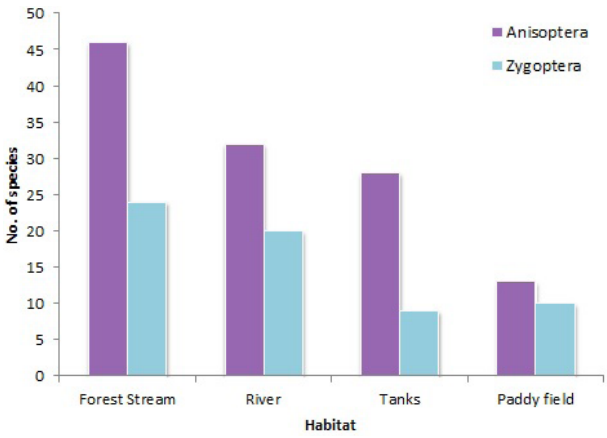

Figure 2. Odonate species richness in different aquatic habitats of Coimbatore

1933, 1934, 1936; Rao & Lahiri 1972; Verghese et al. 2014; Adarsh et al. 2015). Of the first time records, we were unable to authenticate the record of one species, belonging to the genus *Gomphidia*, which was sighted twice in the Bhavani river near Mettupalayam. The damselfly, *Euphaea dispar,* known for its high elevational distribution (900–1,500 m) (Kakkasery 2011) was recorded in the fast flowing cascade in Siruvani forest, Coimbatore (550m). Fraser (1924) attributes the presence of *E. dispar* at lower elevations due to its competition with *E. fraseri*, the latter driving the former to higher elevations. In the absence of *E. fraseri*, the species is known to occur in lower elevations. *Indothemis carnatica*, a Near Threatened IUCN Red list species (Dow 2009) was recorded in streams and tanks in the Siruvani and Anaikatty forests of Coimbatore. The IUCN cites that this species could be under recorded and

Image 11. *Anaciaeschna jaspidea*

Image 12. *Anax immaculifrons*

Image 13. *Gynacantha dravida*

Image 14. *Burmagomphus laidlawi*

Image 15. *Ictinogomphus rapax*

Image 16. *Onychogomphus nilgiriensis*

Image 17. *Paragomphus lineatus*

Image 18. *Acisoma panorpoides*

Image 19. *Aethriamanta brevipennis*

Image 20. *Brachydiplax chalybea*

Image 21. *Brachydiplax sobrina*

Image 22. *Bradinopyga geminata*

Table 2. List of dragonflies and damselflies recorded in Coimbatore

Family / Common name	Habitat	Records of distribution	Recorded by
Aeshnidae			
Anaciaeschna jaspidea Burmeister, 1839	T	Crepuscular species also recorded in the urban areas to light source	MP
Anax guttatus Burmeister,1839	F,R,T	Throughout Coimbatore	AG[3], MP
Anax immaculifrons Rambur, 1842	F,T	Throughout Coimbatore	TK, AB, MP
Anax parthenope Selys, 1839	T	Crepuscular species recorded in tanks	F[3]
Gynacantha dravida Leiftinck,1960	F	Crepuscular species also recorded in the urban areas to light source	F[2,3], AG[3], MP
Hemianax ephippiger Burmeister,1839	P	Paddy field	TK, AB, AG[3]
Gomphidae			
Asiagomphus nilgiricus Laidlaw, 1922**	R	Bhavani River	F[3]
Burmagomphus laidlawi Fraser, 1924**	R	Bhavani River	F[3], MP
Gomphidia kodaguensis Fraser,1923**	F	Boluvampatti Forest	F[2], MP
Gomphidia sp (cf)	R	Bhavani River	MP
Heliogomphus promelas Selys,1873**	F	Boluvampatti Forest	F[3]
Ictinogomphus rapax Rambur, 1842	F,R,T	Throughout Coimbatore	F[2], TK, AB, AG[2], MP
Megalogomphus superbus Fraser, 1931**	F	Boluvampatti Forest	F[2]
Microgomphus souteri Fraser, 1924**	F	Boluvampatti Forest	F[2]
Onychogomphus nilgiriensis Fraser 1922**	F,R	Boluvampatti Forest, Bhavani River	F[3], MP
Paragomphus lineatus Selys, 1850	F	Anaikatty Forest, Kallar, Boluvampatti Forest	F[3], MP
Libellulidae			
Acisoma panorpoides Rambur, 1842	F,R,T,P	Forest streams, rivers, rural tanks and paddy fields	AG[3], MP
Aethriamanta brevipennis Rambur, 1842	F	Boluvampatti Forest	MP
Brachydiplax chalybea Brauer, 1868	R,T	River rural and urban tanks	MP
Brachydiplax sobrina Rambur, 1842	R,T	River and tanks	MP
Brachythemis contaminata Fabricius, 1793	F,R,T,P	Throughout Coimbatore	AB,G, AG[2,3], MP
Bradinopyga geminata Rambur, 1842	F,R,T	Throughout Coimbatore	F[1], K, AG[3], MP
Crocothemis servilia Drury, 1770	F,R,T	Throughout Coimbatore	TK, AB, G, AG[1,2,3], MP
Diplacodes nebulosa Fabricus, 1793	F	Boluvampatti Forest	MP
Diplacodes trivialis Rambur, 1842	F,R,T,P	Throughout Coimbatore	F[2], TK, AB, G, AG[1,2,3], MP
Hydrobasileus croceus Brauer, 1867	F,T	Boluvampatti Forest and rural wetlands	F[3], MP
Indothemis carnatica Fabricius, 1798	F	Boluvampatti Forest, Anaikatty Forest	MP
Lathrecista asiatica Fabricius, 1798	F,T	Forest stream and rural ponds	MP
Macrodiplax cora, Brauer,1867	F,R,T	Throughout Coimbatore	F[3]
Neurothemis fulvia Drury, 1773		Exact location of record unknown	TK, AB
Neurothemis tullia Drury, 1723	R, T	Aliyar River	F[1,] TK, AB, G, AG[2], MP
Onychothemis testacea Ris,1912	R	Aliyar and Bhavani River	F[2], MP
Orthetrum chrysis Selys, 1891	F,R,P	All river and forested streams; also noted in rice fields	G, AG[3], MP
Orthetrum glaucum Brauer, 1865	F,R,T	Forest streams, rivers and rural tanks	MP
Orthetrm luzonicum Brauer, 1868	F,R	All river and forested streams	F[3], MP
Orthetrum pruinosum Rambur, 1842	F,R	All river and forested streams	F[2], MP
Orthetrum sabina Drury, 1770	F,R,T,P	All aquatic bodies	F[2], TK, AB, G, AG[1,2,3], MP
Orthetrum taeniolatum Schneider, 1845	F,R	All river and forested streams	F[2],MP
Orthetrum triangulare Selys,1878	F	Anaikatty and Boluvampatti Forest	MP
Palpoleura sexmaculata Fabricus,1787	F	Boluvampatti forest	MP
Panatala flavescens Fabricius, 1798	F,R,T,P	Throughout Coimbatore	F[2], TK, AB, G, AG[2,3], MP
Potamarcha congener Rambur, 1842	F,R,T,P	Throughout Coimbatore	AG[2,3], MP
Rhodothemis rufa Rambur, 1842	F,R,T	Forest streams, rivers and rural tanks	AG[2], MP
Rhyothemis variegata Linnaeus, 1763	F,R,T	Throughout Coimbatore	AB, MP
Tetrathemis platyptera Selys, 1878	F	Anaikatty Forest	F[2], MP
Tholymis tillarga Fabricius, 1798	F,T,P	Throughout Coimbatore	F[2], TK, AB, AG[2,3], MP
Tramea basilaris Kirby, 1889	F,T	Throughout Coimbatore	F[2], TK, AB, G, AG[2,3], MP
Tramea limbata Rambur, 1842	F,R,T,P	All aquatic bodies	F[2], TK, AB, AG[2,3], MP
Trithemis aurora Burmeister, 1839	F,R,P	All river and forested streams; also recorded in rice fields	F[2], TK, AB, G, AG[2,3], MP

Family / Common name	Habitat	Records of distribution	Recorded by
Trithemis festiva Rambur, 1842	F,R	All river and forested streams	F[2], MP
Trithemis kirbyi Selys, 1891	F	Anaikatty Forest	F[3], MP
Trithemis pallidinervis Kirbyi, 1889	F,R,T,P	Throughout Coimbatore	F[2], AG[2], MP
Urothemis signata Rambur, 1842	F,R,T,P	All aquatic bodies	AG[3], MP
Zygonyx iris malabarica Selys 1869**	F	Kovai Kutralam falls in Boluvampatti Forest	AG[3], MP
Zyxomma petiolatum Rambur, 1842	F,R,T	Crepuscular species recorded to light source	MP
Macromiidae			
Epophthalmia vittata Burmeister, 1839*	F	Walayar Forest, Coimbatore	F[3]
Epophthalmia frontalis Selys, 1871**	F	Walayar Forest ; Light Source	F[3], AG[3]
Macromia cingulata Rambur, 1842		Coimbatore district	F[3]
Calopterygidae			
Neurobasis chinensis Linnaeus, 1758	F,R	All river and forested streams	F[2], MP
Vestalis apicalis Rambur, 1873**	F,R	All river and forested streams	F[2], TK, AG[3], MP
Vestalis gracilis Rambur, 1842*	F,R	Boluvampatti Forest, Aliyar and Bhavani River	F[2], TK, AG[3], MP
Chlorocyphidae			
Libellago lineata Burmeister, 1839	F,R	All river and forested streams	F[2], AG[1], MP
Rhinocypha bisignata Selys, 1853*	F,R	All river and forested streams	F[2], AB, AG[1], MP
Coenagrionidae			
Aciagrion occidentale Laidlaw, 1919	F	Boluvampatti forest	F[2]
Agriocnemis femina Brauer, 1868	F,R,T	All aquatic bodies	MP
Agriocnemis pygmaea Rambur, 1842	F,R,T,P	All aquatic bodies	F[2], G, AG[2,3], MP
Agriocnemis splendidissima Laidlaw 1919*	F,R	Boluvampatti forest and Bhavani River	MP
Argiocnemis rubescens Selys, 1877	P	Paddy fields	G
Coeragrion cerinorubellum Brauer, 1865	P	Paddy fields	G
Ceriagrion coromandelianum Fabicius, 1798	F,R,T,P	All aquatic bodies	F[2], G, AG[2,3], MP
Ennalagma parvum Selys, 1876	F	Boluvampatti Forest	MP
Ischnura aurora Brauer, 1865	F,R,T,P	All aquatic bodies	F[2], AB, G, AG[2,3], MP
Ischnura senegalensis Rambur, 1842	F,R,T,P	Tanks and ponds	G, AG[2,3], MP
Pseudagrion decorum Rambur, 1842	F,R,T,P	All aquatic bodies	TK, AG[2], MP
Pseudagrion indicum Fraser, 1924**	F	Boluvampatti forest	MP
Pseudagrion microcephalum Rambur, 1842	F,R,T,P	All aquatic bodies	AG[2], MP
Pseudagrion rubriceps Selys, 1876	F,R,T	Forest streams, rivers and rural tanks	F[2], MP
Platystictidae			
Protosticta gravelyi Laidlaw, 1915*	R	Bhavani River	F[2], MP
Protosticta sanguinostigma Fraser, 1922*	F	Mettupalayam Ghat	F[3]
Euphaeidae			
Dysphaea ethela Fraser, 1924*	R	Bhavani River	MP
Euphaea dispar Rambur, 1842**	F	Kovai Kutralam falls in Boluvampatti Forest	MP
Lestidae			
Lestes elatus Hagen in Selys, 1862	F,T,P	Tanks, Paddy fields and Forested areas	AG[2,3,] MP
Lestes viridulus Rambur, 1842	P	Paddy fields of Coimbatore	TK, G
Platynemididae			
Copera marginipes Rambur, 1842	F,R	All river and forested streams	F[2], MP
Copera vittata deccanensis Laidlaw 1917*	F,R	All river and forested streams	AG[1], MP
Protoneuridae			
Caconeura t-coerulea Fraser, 1931**	F	Boluvampatti Forest	F[3]
Prodasineura verticalis Selys, 1860**	F,R	Bhavani, Noyyal and Aliyar river	F[2],AG[1], MP

Record references: F[1] - Fraser 1924; F[2] - Fraser 1931; TK - Ayyar & Ayyar 1933; F[3]- Fraser - (1933-36); AB - Abraham 1959; G - Gunathilagaraj et al 1999; AG[1] - Arulprakash & Gunathilagaraj 2009; AG[2] - Arulprakash & Gunathilagaraj 2010a; AG[3]- Arulprakash & Gunathilagaraj 2010b; MP- Muhil & Pramod (Present survey).

* Endemic to India; ** Endemic to Western Ghats; F - Forest Streams; R - Rivers; T - Tanks and Ponds; P - Paddy fields.

Image 23. *Crocothemis servilia*

Image 24. *Diplacodes trivialis*

Image 25. *Lathrecista asiatica* female

Image 26. *Neurothemis tullia*

Image 27. *Onychothemis testacea*

Image 28. *Orthetrum luzonicum*

Image 29. *Orthetrum chrysis*

Image 30. *Orthetrum glaucum*

Image 31. *Orthetrum pruinosum*

Image 32. *Orthetrum taeniolatum* female

Image 33. *Potamarcha congener*

Image 34. *Rhodothemis rufa*

Image 35. *Rhyothemis variegata*

Image 36. *Tetrathemis platyptera*

Image 37. *Tramea basilaris*

Image 38. *Trithemis aurora*

Image 39. *Trithemis festiva*

Image 40. *Trithemis kirbyi*

Image 41. *Trithemis pallidinervis*

Image 42. *Urothemis signata* female

Image 43. *Neurobasis chinensis*

Image 44. *Vestalis apicalis*

Image 45. *Vestalis gracilis*

Image 46. *Libellago lineata*

Image 47. *Rhinocypha bisignata*

Image 48. *Agriocnemis splendidissima*

Image 49. *Agriocnemis femina*

Image 50. *Agriocnemis pygmaea*

Image 53. *Ischnura senegalensis*

Image 57. *Pseudagrion rubriceps*

Image 51. *Ceriagrion coromandelianum*

Image 54. *Pseudagrion decorum*

Image 55. *Pseudagrion indicum*

Image 58. *Dysphaea ethela*

Image 59. *Euphaea dispar*

Image 52. *Ischnura aurora*

Image 56. *Pseudagrion microcephalum*

Image 60. *Lestes elatus*

Image 61. *Copera marginipes*

Image 62. *Copera vittata*

Image 63. *Prodasineura verticalis*

its population size uncertain (Dow 2009).

Species like *Vestalis apicalis* and *V. gracilis* which are known only from forest and riverine areas in our survey have been observed far inland in the Tamil Nadu Agricultural University Campus (Arulprakash & Gunathilagaraj 2010b); the authors suggest that these stream dependent species spread far inland when aestivating. Similarly, *Trithemis aurora* a species predominantly found in streams and rivers are occasionally observed in paddy fields (Arulparakash & Gunathilagaraj 2010b).

Of the 69 species previously recorded from the region, 16 species were not observed during the study period (Fraser 1931, 1933, 1934, 1936; Ayyar & Ayyar 1933; Gunathilagaraj et al. 1999; Arulprakash & Gunathilagaraj 2010b). Some of the species, which Fraser had observed in the 1930s but were not observed in the present survey include *Asiogomphus nilgiricus, Heliogomphus promelus, Megalogomphus superbus, Microgomphus souteri*, *Macromia cingulata, Macrodiplax cora*, *Protosticta sanguinostigma*, *Caconeura t-coerulea* (Fraser 1931, 1933, 1934, 1936). The species *Megalogomphus superbus* recorded in the Coimbatore forest and *Caconeura t-coerulea* in the Mettupalayam ghats and Nilgiris remain to be the only record of these species (Fraser 1933). *Macrodiplax cora* a species recorded mostly in coastal areas and occasionally inland was found nearly in every bush in Coimbatore District by Fraser (1936). However this species was not recorded in over three years of our study.

In the present study, we have attempted to cover a wide range of aquatic habitats in the district. Our survey however, did not cover the Anaimalai hills which lies in the southern part of the district. Though earlier records are available (Fraser 1931), we were not able to demarcate species distribution records between the wide range of the Anaimalai and Mudi Hills, hence they are not presented here. Moreover, the Anaimalai ranges as a whole have a rich odonate entity, which at present requires a rigorous assessment. Similarly, an extensive list of odonates has been recorded from the Kallar and Buraliyar rivers (tributaries of Bhavani, Nilgiri District). Some of the species recorded here include, *Idionyx buraliyaarensis, Idionyx nilgiriensis* (Fraser, 1926), *Euphaea fraseri* (Fraser, 1931; Abraham, 1959), *Onychogomphus striatus*, *Hylaeothemis indica* (Fraser, 1931).

The Palghat gap in our study area is known to be a geographic barrier for many taxa, in the mountains either side of the gap (Daniels 1992; Robin et al. 2010; Klaus et al. 2014). The same status was established in high altitude odonate assemblage study by Fraser (1923), who indicated that the gap distinctly divides the odonate faunal group into northern and southern groups. Fraser (1931) also reported that the direction of flow of rivers in this region could influence the segregation of odonates into eastern and western groups. Considering this, studies can be intensified in the rivers flowing east and west of Coimbatore District and also in the high altitudes to establish the above observations. The consolidated list of 87 species, indicate the rich odonate diversity in Coimbatore. More species can be expected from this region; given the fact that the region supports varied landscapes and drainages. This region along with core areas of Siruvani hills may hold additional species, which needs to be revisited. Along with the knowledge in the distributional range of species, an understanding of species and their suitable habitats will help in the conservation implication of fresh water sources.

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