Some New Records of Odonata (Insecta) fauna from Sikkim Himalaya, India

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Introduction:
Among the insects, order Odonata is highly sensitive to changes in environmental conditions such as temperature, oxygen levels, the amount of forest cover and act as an important tool for habitat quality assessment and monitoring (Clark & Samways, 1996; Samways et al., 1996). Globally, 9522 species of odonates under 652 genera have been reported, of which 477 species, under 142 genera and 18 families are known from India (Subramanian, 2014; Nair & Subramanian, 2014; Kiran et al., 2015; Emiliyamma & Palot, 2016). According to Mitra (2004), Odonata fauna of Sikkim comprises of 74 species and subspecies, within the present boundaries of the state geographic area. The present paper reports 23 species of Odonates representing 8 families and with confirmation on the occurrence of 3 species for the first time from state Sikkim.

Oursurvey record:
During a field visit in Sikkim, between 17th July 2015 to 26th 2015 July Odonata fauna were surveyed from three above given locations. Odonates were photographed in the field using Nikon D3200 Camera and identified with the help of photographic guide book (Subramanian, 2009) and taxonomic keys (Fraser 1933,1934,1936; Mitra, 2002).

A total of 23 species belongs to 8 families, were observed during the survey. Among these 23 species, Caliphaea confusa Hagen in Sélys, 1859 and Zygonyx iris Kirby, 1869 were recorded for the first time in Sikkim whereas the occurrence status of Rhinocypha unimaculata, Zygonyx iris, Rhinocypha unimaculata, was recorded from Jorethung. It was perching on a twig about 1 m above the ground, near the streamside vegetation. This species is widely distributed and it has been known to occur from Northeastern India to China and Borneo (Sharma, 2010). These species are often seen in fast flowing hill streams and regarded as a good indicator of unpolluted fast flowing water and habitat quality (Nair, 2011). In India, till date, it was recorded from North Eastern and Eastern India (Mitra, 2002; Nair, 2011), Central India (Tiple & Koparde, 2015) and Western Ghats (Fraser 1934), but no record from Sikkim. Thus, our present record claim its first evidence of occurrence in Sikkim.

Rhinocypha unimaculata Selys, 1853 (Chlorocyphidae) (Fig 1 e): this species is widely distributed in the Himalayan belt thus known from India, Bhutan and Nepal (Subramanian, 2010). In India, earlier it was reported from West Bengal, Assam, Himachal Pradesh, Chandigarh and Uttarakhand (Mitra, 2002; Fraser, 1934; Tyagi, 1984). Fraser (1934) mentioned the distribution of R.unimaculata from Sikkim based on the collection from Mungpoo and at present the locality (Mungpoo) comes under the geographic boundary of West Bengal. Therefore R.unimaculata has been omitted from the Odonata checklist of Sikkim by Mitra (2004). During the present survey, we encountered 2 male individuals of R.unimaculata from Jorethung while they were perching on rocks and shrubs of the stream perimeters. In addition to our report, there were some other recent records of R.unimaculata from Sikkim, viz: Kunte (2017) recorded it from the Legship of West Sikkim and from Rangli of East Sikkim; respectively. Raju (2017) recorded it from the Legship of West Sikkim and from Rangli of East Sikkim respectively. Raju (2017) recorded it from the Legship of West Sikkim and from Rangli of East Sikkim respectively. Hence these present records validate the occurrence of R. unimaculata in Sikkim.

Further, in addition to above three species, a detailed account on the observation of other odonates from targetted study sites are mentioned below.

Yuksum (19th to 20th July): 10 σ & 2 Φ of Calicnemia eximia (Selys, 1863) (Platycnemididae); 1 Φ of Anotogaster sp. (Cordulegasteridae); 1 σ of Diplacodes trivialis (Rambur, 1842) (Libellulidae); 1 σ & 1 Φ of Orthetrum japonicum (Uhler, 1858) (Libellulidae); 1 σ of Orthetrum pruinosum (Burmeister, 1839) (Libellulidae); 3 σ of Orthetrum triangulare (Selys, 1878) (Libellulidae); 1 σ & 2 Φ of Palpopleura sexmaculata (Fabricius, 1787) (Libellulidae)

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From Sikkim. Sikkim, Odonata diversity counts now 77. However, of the occurrence of for the State records of and validation been far less explored. With the addition of the new faunal diversity. However, Odonata fauna of Sikkim has alpine Zones. The State is endowed with rich floral and of the state divided into the tropical, temperature and (Rambur, 1842) (Libellulidae); 1 & 1 of (Libellulidae); 1 & 2 of (Gomphidae); 2 of (Drury, 1770) sp. (Gomphidae); 1 of sp. (Euphaeidae) and 6 & 3 of (Selys, 1886) (Platycnemididae).

Figure-1: a- Caliphaea confusa (Male); b- C. confusa (Female); c- Rhinocypha unimaculata (Male); d- Zygonyx iris (Male) and 1 σ of Sympretrum hypomelas (Selys, 1884) (Libellulidae).

Kanchenjunga Falls (21st July) - 5♂ & 1 ♀ of Anisopleura sp. (Euphaeidae) and 6 ♂ & 3 ♀ of Calicnemia miniata (Selys, 1886) (Platycnemididae).

Jorethung (22nd to 24th July) - 1 σ of Neurobasis chinesis (Linnaeus, 1758) (Calopterygidae); 1 σ of Aristocnemis quadrimaculata Selys, 1853 (Chlorocyphidae); 1 ♂ & 1 ♀ of Anisopleura lestoides Selys, 1853 (Euphaeidae); 1 ♀ & 2 ♀ of Bayadera indica (Selys, 1853) (Euphaeidae); 1 σ of Gynacantha sp. (Aseshnidae); 6 ♂ & 1 ♀ of Onychogomphus sp. (Gomphidae); 1 σ of Onychogomphus sp. (Gomphidae); 2 ♀ of Crocothemis servilia (Drury, 1770) (Libellulidae); 3 σ of Diplacodes trivialis (Rambur, 1842) (Libellulidae); 1 ♀ & 2 ♀ of Neurothemis intermedia (Rambur, 1842) (Libellulidae); 1 ♂ & 1 ♀ of Orthetrum glaucum (Brauer, 1865) (Libellulidae).

Conclusion:
The topography of the Sikkim state is kind of varied and also the elevation ranges from 200 to 8598m. The climate of the state divided into the tropical, temperature and alpine Zones. The State is endowed with rich floral and faunal diversity. However, Odonata fauna of Sikkim has been far less explored. With the addition of the new records of Caliphaea confusa, Zygonyx iris and validation of the occurrence of Rhinocypha unimaculata for the State Sikkim, Odonata diversity counts now 77. However, further surveys will identify more species of Odonates from Sikkim.

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References: