

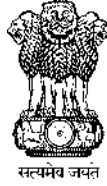


Conservation Area Series, 59

Fauna of Phansad Wildlife Sanctuary

Maharashtra

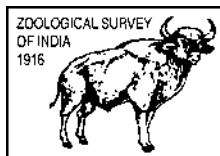
ZOOLOGICAL SURVEY OF INDIA



Conservation Area Series, 59

**FAUNA OF PHANSAD
WILDLIFE SANCTUARY
Maharashtra**

*Edited by
The Director, Zoological Survey of India, Kolkata*



**Zoological Survey of India
Kolkata**

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Fauna of Phansad Wildlife Sanctuary, Maharashtra

Conservation Area Series

No. 59

2017

Pages 1-204

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INSECTA : ODONATA

PRIYANKA DUTTA SAHA* AND K.A.SUBRAMANIAN**

**Zoological Survey of India, Western Regional Centre, Pune*

*** Zoological Survey of India, Southern Regional Centre, Chennai*

INTRODUCTION

The order Odonata (dragonflies and damselflies) are important insect predators of wetland ecosystems. The order comprises of 3 suborders Zygoptera, Anisozygoptera and Anisoptera. They are predaceous, hemimetabolous insects. The larvae are aquatic and adults are terrestrial. Odonates are very sensitive to disturbances, because of their specific breeding habits and thus are valuable indicators for rapid assessment of quality of ecosystem and impact of climate change. The order Odonata globally comprise of 5,740 species, of which 476 species under 139 genera and 19 families exist in India. In the Western Ghats it is especially diverse with 186 species and 69 endemics (Subramanian *et al.*, 2008, Subramanian, 2014, Babu *et al.*, 2013).

The Odonata fauna of northern Western Ghats was earlier explored by Fraser (1924, 1932, 1933, 1934, 1936). Prasad (1996) published an account of Odonata from Maharashtra state. Odonates have been documented from various places in Maharashtra like Ujani Wetlands (dist. Pune and Sholapur), Kulkarni and Prasad (2002); Pench National Park (Dist. Nagpur), Kulkarni *et al.*, (2004); Melghat Tiger Reserve (Dist. Amaravati), Kulkarni and Prasad (2005); Tadoba-Andhari Tiger Reserve (Dist. Chandrapur), Kulkarni *et al.*, (2006); Sanjay Gandhi National Park (Mumbai), Kulkarni *et al.*, (2006); other studies on Odonates includes Kulkarni and Talmale (2008), Kulkarni *et al.*, (1999), Prasad *et al.*, (2000), Sharma *et al.*, (2000), Talmale and Kulkarni (2003). Recently Khorpade *et al.*, (2014, 2015), Tiple *et al.*, (2013) documented Odonata diversity of northern Western Ghats and Vidharbha region.

Recent studies on the Odonate fauna of northern Western Ghats are species checklists based on field surveys (Prasad *et al.*, (2004); Kulkarni *et al.*, 2006; Kulkarni and Talmale, 2009 provide updated information on Odonata of the region.

However, there were no specific studies on Odonata diversity of Phansad wildlife sanctuary and this study was carried out as part of Fauna of Phansad Wildlife Sanctuary by Western Regional Centre, Zoological Survey of India, Pune during the years 2011-2013.

MATERIALS AND METHODS

Adult Odonata were collected from different habitats like streams, forest, reservoir banks of the sanctuary by different survey teams with insect sweep net. Some representative samples were collected for identification and were identified by following Fraser (1933, 1934 and 1936). Taxonomy and classification follows Dijkstra *et al.*, 2013. Species which are very common and easily identifiable in the field were not collected but were recorded.

RESULTS AND DISCUSSION

A total of 162 (approx.) adult odonates were collected and studied. The Odonata fauna of the sanctuary comprise of 33 species under 23 genera, 9 families and 2 suborders. The family Libellulidae dominated the Odonata fauna with 11 genera and 15 species. Of the 33 species two Western Ghats and one peninsular Indian endemic odonates were recorded. Rest of the 30 species are very widespread in the Oriental region. Species such as *Caconeura ramburi*, *Heliocypha bisignata*, *Euphaea fraseri*, *Vestalis gracilis*, *Vestalis apicalis*, *Disparoneura quadrimaculata* and *Hylaeothemis indica* breed in streams and others in lentic habitats such as marshes and pools. Phansad wildlife sanctuary forms the northern distribution limit of Western Ghats endemic species such as *Hylaeothemis indica* and *Euphaea fraseri*.

SYSTEMATIC LIST

Order ODONATA

Suborder ZYGOPTERA

Superfamily COENAGRIONOIDEA

Family COENAGRIONIDAE

Subfamily PSEUDAGRIONINAE

Genus *Pseudagrion* Selys, 1876

1. *Pseudagrion microcephalum* (Rambur, 1842)

Genus *Ceriagrion* Selys, 1876

2. *Ceriagrion coromandelianum* Fabricius, 1798

Subfamily AGRIOCNEMIDINAE

Genus *Agriocnemis* Selys, 1877

3. *Agriocnemis femina* Brauer, 1868
4. *Agriocnemis splendidissima* Laidlaw, 1919
5. *Agriocnemis pygmaea* (Rambur, 1842)

Subfamily ISCHNURINAE

Genus **Aciagrion** Selys, 1891

- 6.
- Aciagrion pallidum*
- Selys, 1891

Family PLATYCNEMIDIDAE

Subfamily PLATYCNEMIDINAE

Genus **Copera** Kirby, 1890

- 7.
- Copera marginipes*
- Rambur, 1842

- 8.
- Copera vittata*
- Selys, 1863

Subfamily DISPARONEURINAE

Genus **Disparoneura** Selys, 1860

- 9.
- Disparoneura quadrimaculata*
- Rambur, 1842

Genus **Caconeura** Kirby, 1890

- 10.
- Caconeura ramburi*
- (Fraser,1922)

Superfamily CALOPTERYGOIDEA

Family CALOPTERYGIDAE

Subfamily CALOPTERYGINAE

Genus **Vestalis** Selys, 1853

- 11.
- Vestalis gracilis*
- Rambur, 1842

- 12.
- Vestalis apicalis*
- Selys, 1873

Family CHLOROCYPHIDAE

Genus **Heliocypha** Fraser, 1949

- 13.
- Heliocypha bisignata*
- Hagen in Selys, 1853

Superfamily LESTOIDEA

Family LESTIDAE

Subfamily LESTINAE

Genus **Lestes** Leach,1815

- 14.
- Lestes elatus*
- Hagen in Selys, 1862

- 15.
- Lestes umbrinus*
- Selys, 1891

- 16.
- Lestes viridulus*
- Rambur, 1842

Family EUPHAEIDAE

Genus **Euphaea** Selys, 1840

- 17.
- Euphaea fraseri*
- (Laidlaw, 1920)

Suborder ANISOPTERA

Superfamily AESHNOIDEA

Family AESHNIDAE

Subfamily AESHNINAE

Genus ***Gynacantha*** Rambur, 1842

18. *Gynacantha bayadera* Selys, 1891

Superfamily LIBELLULOIDEA

Family LIBELLULIDAE

Subfamily LIBELLULINAE

Genus ***Orthetrum*** Newman, 1833

19. *Orthetrum luzonicum* Brauer, 1868

20. *Orthetrum pruinosum* Burmeister, 1839

21. *Orthetrum sabina* Drury, 1770

Genus ***Potamarcha*** Karsch, 1890

22. *Potamarcha congener* (Rambur, 1842)

Subfamily TRAMEINAE

Genus ***Pantala*** Hagen, 1861

23. *Pantala flavescens* Fabricius, 1798

Subfamily TRITHEMISTINAE

Genus ***Trithemis*** Brauer, 1868

24. *Trithemis aurora* Burmeister, 1839

25. *Trithemis festiva* Rambur, 1842

26. *Trithemis pallidinervis* (Kirby, 1889)

Subfamily SYMPETRINAE

Genus ***Diplacodes*** Kirby, 1889

27. *Diplacodes trivialis* Rambur, 1842

Genus ***Neurothemis*** Brauer, 1867

28. *Neurothemis intermedia* Rambur, 1842

Genus ***Brachythemis*** Brauer, 1868

29. *Brachythemis contaminata* Fabricius, 1793

Genus ***Crocothemis*** Brauer, 1868

20. *Crocothemis servilia servilia* (Drury, 1770)

Subfamily TETRATHEMISTINAE

Genus *Hylaeothemis* Ris, 190931. *Hylaeothemis indica* Fraser, 1946Genus *Tetrathemis* Brauer, 186832. *Tetrathemis platyptera* Selys, 1878*Material examined* : Nil. Photographic record from stream in Chikalgan, Phansad WLS,Genus *Bradinopyga* Kirby, 189333. *Bradinopyga geminata* (Rambur, 1842)*Material examined* : Nil. Photographic record from Phansad Forest Guest House.

SYSTEMATIC ACCOUNT

Order ODONATA

Suborder ZYGOPTERA

Superfamily CALOPTERYGOIDEA

Family CALOPTERYGIDAE

Subfamily CALOPTERYGINAE

Genus *Vestalis* Selys, 18531. *Vestalis apicalis apicalis* Selys1873. *Vestalis apicalis* Selys, *Bull. Acad. Belg.*, (2)36 : 612.1921. *Vestalis apicalis* Fraser, *J. Siam. Soc.*, 4: 164.1933. *Vestalis apicalis apicalis* Fraser, *Fauna Brit. India: Odon.*, 2: 128-130.1995. *Vestalis apicalis apicalis* Prasad & Varshney, *Oriental Ins.*, 29: 397.*Material examined* : Ent.4/2068, 1 female, 13.ii.2011, Chikhal Gan, Coll: P.D. Rane.*Distribution* : India: Assam, Goa, Maharashtra, Western and Eastern Ghats, West Bengal.
Elsewhere : Myanmar, Thailand.*Remarks* : Commonly found along hill streams and rivulets in forests.2. *Vestalis gracilis* Rambur, 18421842. *Calopteryx gracilis*, Rambur, *Ins. Neurop.*, 224.1934. *Vestalis gracilis gracilis*, Fraser, *Fauna Brit. India, Odon.*, 2: 126-128.1988. *Vestalis gracilis gracilis* Prasad & Varshney. *Rec. Zool. Surv. India, Occ. Paper No.*, 110: 13-14.*Material examined* : Ent. 4/2089, 1 female, 24.xi.2011, Chikhalagan, Coll. P.S. Bhatnagar;
Ent. 4/2100, 1 male, 2 female, 30.xi.2011, Dharnacha Gan, Coll. P.S. Bhatnagar; Ent.4/2133,

1 female, 9.i.2012, Savrat Talab, Coll. R. Bano; Ent.4/2134, 3 males, 2 females, 10.i.2012, Dharanacha Gan and around, Coll. R. Bano; Ent.4/2150, 1 male, 1 female, 5.i.2012, Chikhhal Gan, Coll. R. Bano; Ent.4/2251, 2 males, 18.ii.2013, Hele Gan, Compartment no 67, Coll. P.S. Bhatnagar; Ent. 4/2252, 1 female, 14.ii.2013, Chikhala Gan and around, Coll. P.S. Bhatnagar; Ent.4/2261, 2 females, 22.i.2013, Ghunyacha Mal, Coll. R. Bano.

Distribution : India: Assam, Bihar, Maharashtra, Eastern and Western Ghats, West Bengal.
Elsewhere : Myanmar, Thailand, Vietnam.

Remarks : Commonly found along hill streams but sometime they disperse to non forest areas during wet season.

Family CHLOROCYPHIDAE

Genus *Rhinocypha* Rambur, 1842

3. *Rhinocypha bisignata* Hagen in Selys, 1853

1853. *Rhinocypha bisignata*, Selys, *Bull. Acad. Belg. 20(Annexe) Syn. Calopt.* : 214

Material examined : Ent. 4/2281, 1 male, 20.iii.2013, Phansad Dam and around, Coll: S.S. Kamble.

Distribution : India: Andhra Pradesh, Karnataka, Kerala, Orissa, Maharashtra, Central India, South India (Cochin, Coorg, Nilgiris, Palnis, Silent Valley).

Remarks : This is a stream breeding species and is endemic to India.

Superfamily COENAGRIONOIDEA

Family COENAGRIONIDAE

Subfamily AGRIOCNEMIDINAE

Genus *Agriocnemis* Selys, 1877

4. *Agriocnemis femina* Brauer, 1868

1868. *Agriocnemis (Ischnura) femina*, Brauer, *Verh. Zool. Bot. Wein.* **18**: 554.

1877. *Agriocnemis incisa*, Selys, *Bull. Acad. Belg.* (2)**43**: 143-149.

1933. *Agriocnemis femina*, Fraser, *Fauna Brit. India, Odon.* **1**: 402-404.

1975. *Agriocnemis femina*, Mitra, *j. Zool. Soc. India, B.S. Chauhan Com. Vol.* p. 406.

Material examined : Ent. 4/2254, 1 female (teneral), 24.i.2013, Forest Rest House, Coll: R. Bano.

Distribution : India: Assam, Great Nicobar, Manipur, Maharashtra, West Bengal.
Elsewhere : Australia, Bangladesh, Cuba, China, Formosa, Myanmar, New Guinea, Philippines, Singapore, Thailand, Vietnam.

Remarks : This species breeds on variety of shallow weedy habitats. It has also been reported from polluted drains and canals of cities.

5. *Agriocnemis splendidissima* Laidlaw, 1919

1919. *Agriocnemis splendidissima* Laidlaw, *Rec. Indian Mus.*, **16**: 180-182.

1933. *Agriocnemis splendidissima* Fraser, *Fauna Brit. India, Odon.*, **1**: 392-394.

Material examined : Ent. 4/2259, 1 male, 19.i.2013, Savrat Talab, Coll: R. Bano.

Distribution : India: Madhya Pradesh, Maharashtra, South India and West Bengal. *Elsewhere* : Australia, China, Indonesia, Myanmar, Nepal, Philippines, Papua, Sri Lanka, Singapore.

Remarks : This damselfly is closely associated with streams and lakes which have emergent aquatic vegetation.

6. *Agriocnemis pygmaea* (Rambur, 1842)

1842. *Agriocnemis pygmaea*, Rambur, *Ins. Neurop.*,: 278.

1933. *Agriocnemis pygmaea*, Fraser, *Fauna Brit. India, Odon.*, **1**: 398-401.

1988. *Agriocnemis pygmaea*, Prasad and Ghosh, *Rec. zool. Surv. India.*, **85**(2) : 203.

Material examined : Ent. 4/2147, 1 male, 27.xi.2011, Mazgaon and around, Coll: P.S. Bhatnagar; Ent. 4/2148, 1 female, 27.xi.2011, Mazgaon and around, Coll: P.S. Bhatnagar; Ent. 4/2255, 1 female (subadult), 19.i.2013, Savrat Talab, Coll: R. Bano.

Distribution : India: Assam, Chennai, Himachal Pradesh, Maharashtra, Malabar, Manipur, Nicobar, Punjab, Rajasthan, Uttar Pradesh, West Bengal. *Elsewhere* : Australia, China, Formosa, Java, Myanmar, Malaysia, Manila, North Guinea, Philippines, Singapore, Sri Lanka and Seychelles.

Remarks : It is a common species found in all manmade and natural habitats like grassy marshland throughout the year.

Subfamily PSEUDAGRIONINAE

Genus *Pseudagrion* Selys, 1876

7. *Pseudagrion microcephalum* (Rambur, 1842)

1842. *Agriocnemis microcephalum* (Rambur). *Ins. Neurop.*, : 25.

1876. *Pseudagrion microcephalum*, Selys *Bull. Acad. Belg.*, **29**(13): 504.

1933. *Pseudagrion microcephalum* Fraser, *Fauna Brit. India, Odon.*, **1**: 278-280.

Material examined : Ent. 4/2262, 2 males, 28.xi.2011, Vihoor Dam, Coll: P.S. Bhatnagar.

Distribution : Throughout the plains in India. *Elsewhere* : Myanmar and Sri Lanka, extending to Australia.

Remarks : Dwells near vegetation covered banks of permanent and temporary water bodies. Variations in color markings in males are recorded.

Genus *Ceriagrion* Selys, 1876

8. *Ceriagrion coromandelianum* Fabricius, 1798

1798. *Agrion coromandalianum*, Fabricius, *Entr. Syst. Suppl.*: 287.

1933. *Ceriagrion coromandelianum*, Fraser, *Fauna Brit. India, Odon.*, 1: 315-316.

Material examined : Ent.4/2077, 1 male, 16.ii.2011, Upper bank of Phansad Gan, Coll: P.D. Rane; Ent. 4/2145, 1 male, 1.xii.2011, Phansad Dam, Coll. P.S. Bhatnagar; Ent. 4/2146, 1 male, 27.xi.2011, Savrat Talab, Coll. P.S. Bhatnagar; Ent.4/2270, 1 female, 17.iii.2013, Savrat Talab, coll: S.S. Kamble.

Distribution : Throughout India. *Elsewhere* : Indonesia, Myanmar, Malaysia, South China, Sri Lanka.

Remarks : A widespread species inhabiting disturbed habitats. Breeds in weedy ponds and tanks and are found almost all throughout the year. Also recorded as a very common species from Estuarine areas of Eastern India (Prasad and Ghosh, 1988, Mitra, 1992)

Subfamily ISCHNURINAE

Genus *Aciagrion* selys, 1891

9. *Aciagrion pallidum* Selys, 1891

1891. *Aciagrion pallidum* Selys, *Ann. Mus. Civ. Genova*, 10(30): 512-513.

1933. *Aciagrion pallidum*, Fraser, *Fauna Brit. India : Odon.*, 1: 344-345.

Material examined : Ent. 4/2257, 1 female, 8.i.2013, Ghunyacha Mal, Coll: R. Bano.

Distribution : India: Assam, Bihar, Eastern and Western Himalayas, Karnataka, Kerala, Maharashtra, Orissa, Uttar Pradesh, Western Ghats. *Elsewhere* : Bangladesh, China, Myanmar, Thailand, Vietnam.

Remarks : This species appears to prefer drier areas, and to occur seasonally in the wetter parts. It inhabits marshes, and the weedy margins of ponds, lakes and streams.

Family PLATYCNEMIDIDAE

Subfamily PLATYCNEMIDINAE

Genus *Copera* Kirby, 189010. *Copera marginipes* Rambur, 1842

1842. *Platycnemis marginipes* Rambur *Ins. Neurop.* : 240

1993. *Copera marginipes*, Fraser, *Fauna Brit. India. Odon.*, 1: 192-197.

Material examined : Ent. 4/2240, 1 male, 27.xi.2011, Mazgaon and around, Coll: P.S. Bhatnagar; Ent. 4/2241, 1 male, 30.xi.2011, Dharanacha Gan, Coll: P.S. Bhatnagar.

Distribution : India: Assam, Bihar, Chandigarh, Madhya Pradesh, Maharashtra, Rajasthan, South Andaman Islands, West Bengal, Western Ghats and Western Himalayas. *Elsewhere* : Indonesia, Malaysia, Nepal, Sri Lanka and Thailand.

Remarks : Found along ponds, canals, streams and puddles.

11. *Copera vittata deccanensis* Laidlaw, 1917

1914. *Copera vittata* Laidlaw, *Rec. Indian Mus.*, 8: 342.

1917. *Copera vittata deccanensis* Laidlaw, *F.F. Rec. Indian. Mus.*, 13: 342.

1923. *Copera vittata deccanensis*, Laidlaw, *Rec. Indian Mus.*, 13: 322.

1995. *Copera vittata deccanensis*, Prasad and Varshney, *Oriental Ins.*, 29: 393.

2004. *Copera vittata deccanensis* Kulkarni *et al.*, *Insecta: Odonata in Fauna of Pench Nat. Park. Conservation Area Series*, 20: 184-185.

Material examined : Ent. 4/2168, 1 male, 27.xi.2011, Savrat Talab, Coll: P.S. Bhatnagar.

Distribution : India: Karnataka, Kerala, Maharashtra, and Tamil Nadu.

Subfamily DISPARONEURINAE

Genus *Disparoneura* Selys, 186012. *Disparoneura quadrimaculata* Rambur, 1842

1842. *Argia quadrimaculata*, Ramb. *Ins. Neurop.* : 255.

1859. *Disparoneura quadrimaculata*, Selys, *Bull. Acad. Belg.*, (2) x, 446.

1931. *Chloroneura quadrimaculata*, Fraser, *Fauna Brit. India. Odon.*, 1: 246-248.

1995. *Disparoneura quadrimaculata*, Prasad & Varshney. *Oriental Ins.*, 29: 494.

Material examined : Ent. 4/2149, 1 male, 1.xii.2011, Phansad Dam, Coll. P.S. Bhatnagar.

Distribution : India: Central India, Delhi, Maharashtra, Uttar Pradesh and Western Ghats.

Remarks : The species is endemic to India and found perching on emergent aquatic plants of streams and rivers in submontane areas. Mostly recorded up to 1,500 elevation.

Genus *Caconeura* Kirby, 189013. *Caconeura ramburi* (Fraser, 1922)

1922. *Indoneura ramburi* Fraser, *Rec. Indian Mus.*, **24**: 2-3.

1984. *Caconeura ramburi*, Davies & Tobin, *The Dragonflies of the World: A systematic list of the extant species of Odonata*, **1**: 108.

Material examined : 1 Male, 16.ix.2009, Stream in Chikalgan, Phansad WLS, Coll: K.A. Subramanian.

Distribution : India: Western Ghats of Kerala, Karnataka, Maharashtra, Pench Tiger Reserve and Simlipal National Park (Odisha).

Remarks : Found in submontane areas. Mostly recorded up to 1, 500 elevation.

Family EUPHAIDAE

Genus *Euphaea* Selys, 184014. *Euphaea fraseri* (Laidlaw, 1920)

1920. *Pseudophaea fraseri* Laidlaw, *Rec. Indian Mus.*, **21**: 23-27.

1929. *Indophaea fraseri*, Fraser, *J. Bombay nat. Hist. Soc.*, **33**: 296-298.

2000. *Euphaea fraseri*, Tsuda, *A distributional list of World Odonata*, p. 81.

Material examined : 4 Males and 2 Females, 16.ix.2009, Stream in Chikalgan, Phansad WLS. Coll: K.A. Subramanian.

Distribution : India: Endemic to the Western Ghats. Found in the hill streams of Kerala, Tamil Nadu, Karnataka, Goa and Maharashtra.

Superfamily LESTOIDEA

Family LESTIDAE

Subfamily LESTINAE

Genus *Lestes* Leach, 181515. *Lestes elatus* Hagen in Selys, 1862

1858. *Lestes elata* Hagen, *Verh. Zool.-bot. Ges. Wein.* **18**: 478.

1933. *Lestes elata*, Fraser, *Fauna Brit. India. Odon.*, **1**: 37-40.

1995. *Lestes elatus* Prasad and Varshney, *Oriental Ins.*, **29**: 395.

Material examined : Ent. 4/2185, 1 female, 8.i.2012, Ghunyacha Mal, Coll: R. Bano.

Distribution : India: Goa, Kerala, Maharashtra, Orissa, Southern India (Coorg, Nilgiris, Cochin, Kanara, Bangalore), Tamil Nadu. *Elsewhere* : Asia, Sri Lanka, Thailand.

Remarks : Common throughout the year and found usually among dry long grasses.

16. *Lestes umbrinus* Selys, 1891

1891. *Lestes umbrina* Selys, *Ann. Mus. Civ. Genova*, (2), Vol. **10**(30): 497-498.
 1920. *Lestes umbrina*, Laidlaw, *Rec. Ind. Mus.*, **19**: 150-151.
 1930. *Lestes umbrina*, Fraser, *J. Bombay Nat. Hist. Soc.*, **34**: 89-90.
 1996. *Lestes umbrinus*, Prasad and Varshney, *Oriental Ins.*, **29**: 395.
 1996. *Lestes umbrinus*, Prasad, *Rec. zool. Surv. India.*, **95**(3-4): 323.
 2003. *Lestes umbrinus*, Talmale and Kulkarni, *Bionotes*, **5**(3): 67-68.

Material examined : Ent. 4/2143, 1 female, 10.i.2011, Chakacha Mal, Coll. P.S. Bhatnagar; Ent. 4/2144, 1 female, 13.i.2011, Nirikshyan Manora, Coll. P.S. Bhatnagar; Ent. 4/2169, 1 male, 8.i.2011, Bhandwacha Mal, Coll: P.S. Bhatnagar; Ent. 4/2170, 1 male, 1 female, 26.xi.2011, Bhandwacha Mal, Coll: P.S. Bhatnagar; Ent. 4/2171, 1 male, 8.i.2011, Gadgyacha Mal, Coll: P.S. Bhatnagar; Ent. 4/2242, 1 female, 26.xi.2011, Ghunyacha Mal, Coll: P.S. Bhatnagar; Ent. 4/2243, 1 female, 8.i.2012, Ghunyacha Mal, Coll: R. Bano.

Distribution : India: Central India, Maharashtra, West Bengal. *Elsewhere* : Java; Philippines

17. *Lestes viridulus* Rambur, 1842

1842. *Lestes viridula* Rambur, *Hist. Nat. Ins. Neurop.*, 252-253.
 1890. *Lestes viridulus*, Kirby. *Cat. Odon.*, 163.
 1995. *Lestes viridulus*, Prasad and Varshney, *Oriental Ins.*, **29**: 395.

Material examined : Ent. 4/2069, 1 female, 13.ii.2011, Chikhala Gan, Coll: P.D. Rane; Ent. 4/2070, 1 female, 13.ii.2011, Chikhala Gan, Coll: P.D. Rane; Ent. 4/2071, 1 female, 7.i.2011, Forest Rest House, Coll. P.S. Bhatnagar; Ent.4/2072, 1 female, 7.i.2011, Forest Rest House, Coll. P.S. Bhatnagar; Ent. 4/2073, 1 male, 1 female, 8.i.2011, Trail near Bhandwacha Mal, Coll. P.S. Bhatnagar; Ent. 4/2074, 2 females, 8.i.2011, Gadvyacha Mal, Coll. P.S. Bhatnagar; Ent. 4/2075, 2 males, 16.ii.2011, Upper bank of Phansad Gan, Coll: P.D.Rane; Ent. 4/2101, 1 female, 8.i.2011, Bhandwacha Mal, Coll: P.S. Bhatnagar; Ent. 4/2132, 1male, 9.i.2012, Savrat Talab, Coll: R. Bano; Ent. 4/2244, 2 females, 5.i.2012, Forest Rest House, Coll: R. Bano; Ent. 4/2256, 2 males, 7 females, 19.i.2013, Forest Rest House, Coll: R.Bano; Ent. 4/2258, 1 female, 24.i.2013, Forest Rest House, Coll: R. Bano; Ent. 4/2274, 1female, 14.ii.2013, Forest Rest House, Coll: P.S. Bhatnagar; Ent. 4/2275, 1 male, 2 females, 19.ii.2013, Forest Rest House, Coll: P.S. Bhatnagar; Ent. 4/2276, 2 female, 19.ii.2013, Satarde, tal: Roha, Coll: P.S. Bhatnagar; Ent. 4/2277, 2 female, 18.i.2013, Chikhala Gan, Coll: R. Bano; Ent.4/2278, 1 female, 8.i.2011, Bhandwacha Mal, Coll: P.S. Bhatnagar.

Distribution : Throughout India. *Elsewhere* : Thailand.

Remarks : Common in dry season usually among dry long grasses.

Suborder ANISOPTERA
 Superfamily AESHNOIDEA
 Family AESHNIDAE
 Subfamily AESHNINAE

Genus **Gynacantha** Rambur, 1842

18. **Gynacantha bayadera** Selys, 1891

1851. *Gynacantha bayadera* Selys, *Ann. Mus. Civ. Stor (x) Nat. Giacomo Doria, Genova*, **30**: 47.

1925. *Gynacantha lytoni*, Fraser, *J Darjeeling Nat. Hist. Soc.*, **9**: 31-33.

1995. *Gynacantha bayadera*, Prasad and Varshney, *Oriental Ins.*, **29**: 404.

Material examined : Ent. 4/2066, 1 male, 8.i.2011, Gadvyacha Mal, Coll. P.S. Bhatnagar;
 Ent. 4/2067, 1 female, 8.i.2011, Gadvyacha Mal, Coll. P.S. Bhatnagar.

Distribution : India : Karnataka, Maharashtra, Meghalaya, Orissa, Sikkim, and West Bengal.
Elsewhere : Myanmar, Malaysia, and Indo China.

Remarks : A crepuscular dragonfly which fly over reed covered ponds and tanks almost throughout the year.

Superfamily LIBELLULOIDEA
 Family LIBELLULIDAE
 Subfamily TETRATHEMISTINAE
 Genus **Hylaeothemis** Ris, 1909

19. **Hylaeothemis indica** Fraser, 1946

1924. *Hylaeothemis fruhstorferi apicalis* Fraser, *Rec. Indian Mus.*, **26**: 430

1946. *Hylaeothemis indica*, Fraser, *Proc. Roy. Ent. Soc. Lond.*, (B) **15**(7/8): 97-100.

2000. *Hylaeothemis fruhstorferi apicalis*, Tsuda, *A Distributional List of World Odonata*, p. 158.

Material examined : 1 male. 16.ix.2009, Chikalgan Stream, Phansad WLS., coll: K. A. Subramanian.

Distribution : Endemic to the Western Ghats. Found in the hill streams of Kerala, Tamil Nadu, Karnataka, Goa and Maharashtra.

Subfamily LIBELLULINAE
 Genus **Orthetrum** Newman, 1833
 20. **Orthetrum luzonicum** Brauer, 1868

1868. *Libellua luzonica* Brauer, *Verch. Zool.-bot. Ges. Wein*, **18**: 169, 732.

1936. *Orthetrum chryseostigma luzonicum*, Fraser, *Fauna Brit. India, Odon.*, **3**: 298-300.

1976. *Orthetrum chryseostigma luzonicum*, Singh & Prasad, *Rec. zool. Surv. India*, **70**: 21-38.

1995. *Orthetrum luzonicum*, Prasad & Varshney, *Oriental Ins.*, **29**: 409.

Material examined : Ent. 4/2106, 1 male, 1.xii.2011, Phansad Dam, Coll: P.S. Bhatnagar; Ent. 4/2107, 27.xi.2011, Savrat Talab, Coll: P.S. Bhatnagar; Ent.4/2172, 1 male (teneral), 1 female, 1.xii.2011, Phansad Dam, Coll: P.S. Bhatnagar.

Distribution : Throughout India. *Elsewhere* : Java, Sumatra, Sri Lanka.

Remarks : Commonly seen perched around marshes, ponds, paddy fields, stagnant pools and on ground. Singh & Prasad (1976) noted some color difference than described by Fraser (1936).

21. *Orthetrum pruinosum* Burmeister, 1839

1842. *Libellula neglecta*, Rambur, *Ins. Neurop.* : 86.

1936. *Orthetrum pruinosum neglectum*, Fraser, *Fauna Brit. India, Odon.*, **3**: 311-313.

Material examined : Ent. 4/2078, 1 female, 7.i.2011, Chikhal Gan, Coll: P.S. Bhatnagar; Ent. 4/2079, 1 male, 27.xi.2011, Savrat Talab, Coll: P.S. Bhatnagar; Ent.4/2080, 2 males, 27.xi.2011, Savrat Talab, Coll: P.S. Bhatnagar.

Distribution : India: Bihar, Himachal Pradesh, Maharashtra, Uttar Pradesh, Uttaranchal. *Elsewhere* : Hong Kong, Nepal, Myanmar, Malaya, Sri Lanka, Thailand.

Remarks : A common dragonfly found flying over ponds, ditches, tanks and rivers. Males are very conspicuous. It is recorded from altitude of 7,250 from Ooty, Nilgiris. Variation in nodal index has been recorded.

22. *Orthetrum sabina* Drury, 1770

1770. *Libellula sabina*, Drury, *III. Exot. Int.*, **1**: 114.

1936. *Orthetrum sabina*, Fraser, *Fauna Brit. India, Odon.*, : **3**: 300-302.

1995. *Orthetrum sabina sabina*, Prasad and Varshney, *Oriental Ins.*, **29**: 409.

Material examined : Ent. 4/2083, 1 male, 25.xi.2011, Forest Rest House, Coll: P.S. Bhatnagar; Ent.4/2084, 1 male, 1.xii.2011, Phansad Dam, Coll: P.S. Bhatnagar; Ent. 4/2093, 1 male, 27.xi.2011, Savrat Talab, Coll: P.S. Bhatnagar; Ent.4/2098, 1 male, 23.xi.2011, Forest Rest House, Coll: P.S. Bhatnagar; Ent.4/2099, 2 males, 26.xi.2011, Bhandwacha Mal, Coll: P.S. Bhatnagar; Ent.4/2135, 1 male, 11.i.2012, Phansad Dam, Coll: R. Bano; Ent.4/2260, 1 male, 19.i.2013, Savrat Talab, Coll: R. Bano; Ent.4/2269, 1 male, 17.iii.2013, Savrat Talab, Coll: S.S. Kamble.

Distribution : India: Bihar, Himachal Pradesh, Jharkhand, Maharashtra, Uttar Pradesh, Uttaranchal. *Elsewhere* : Australia, Egypt, Indonesia, Iran, Iraq, Myanmar, Nepal, Papua, Sri Lanka, Thailand.

Remarks : Widely distributed in India. One of the most predaceous species which also shows cannibalism.

Genus *Potamarcha* Karsch, 1890

23. *Potamarcha congener* (Rambur, 1842)

1842. *Libellula obscura* Rambur, Ins. *Neurop.*:64.

1842. *Libellula congener* Rambur, Ins. *Neurop.* :70.

1890. *Potamarcha obscura* Karsch. *Ent. Zeit*, **33**: 371.

1891. *Potamarcha congener*, Selys, *Ann. Soc. Espan*, **20**: 221.

1936. *Potamarcha obscura*, Fraser, *Fauna Brit. India, Odon.*, **3**: 289-291.

1995. *Potamarcha congener*, Prasad and Varshney, *Oriental Ins.*, **29**: 410.

Material examined : Ent. 4/2088, 1 male, 25.xii.2011, Rice field, 2 Km. from forest rest house, Coll: P.S. Bhatnagar;

Distribution : India: Andhra Pradesh, Bihar, Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Tamil Nadu, Uttar Pradesh, Uttaranchal, and West Bengal. *Elsewhere* : North Australia, Indonesia, Myanmar, Malaya Archipelago, Nepal, Philippines, Sri Lanka, Taiwan, Thailand.

Remarks : Common species in India and breeds in small weedy ponds and marshes.

Subfamily SYMPETRINAE

Genus *Brachythemis* Brauer, 1868

24. *Brachythemis contaminata* (Fabricius, 1793)

1793. *Libellula contaminata*, Fabricius, *Ent. Syst.*, **2**: 382.

1936. *Brachythemis contaminata*, Fraser, *Fauna Brit. India, Odon.*, **3**: 365-366.

Material examined : Ent.4/2104, 1 female, 1.xii.2011, Phansad Dam , Coll: P.S. Bhatnagar; Ent. 4/2271, 1 female, 18.iii.2013, Mashadigaon, Coll: S.S. Kamble.

Distribution : India: Bihar, East Himalaya, Himachal Pradesh, Madhya Pradesh, Maharashtra, Uttar Pradesh, and West Bengal. *Elsewhere* : China, Indonesia, Malaysia, Myanmar, Nepal, Philippines, Singapore, Sri Lanka and Thailand.

Remarks : It is a common species in India and found in large numbers flying over sluggish streams, weedy ponds, contaminated tanks and lakes throughout the year.

Genus *Crocothemis* Brauer, 186825. *Crocothemis servilia* (Drury, 1770)

1770. *Libellula servilia*, Drury, *Ill. Ex. Ins.*, **1**: 16

1936. *Crocothemis servilia servilia*, Fraser, *Fauna Brit. India, Odon.*, **3**: 345-347.

Material examined : Ent.4/2076, 1 female, 16.ii.2011, Upper bank of Phansad Gan, Coll: P.D. Rane; Ent. 4/2094, 1 female, 26.xi.2011, Bhandwacha Mal, Coll: P.S. Bhatnagar; Ent.4/2097, 1 female, 26.xi.2011, Ghunyacha Mal, Coll: P.S. Bhatnagar; Ent. 4/2264, 1 male, 1 female, 16.ii.2013, Savrat Talab and around, Coll: P.S. Bhatnagar.

Distribution : India: Bihar, Himachal Pradesh, Maharashtra, Uttar Pradesh, and West Bengal. *Elsewhere* : Australia, Iraq, Indonesia, Japan, Myanmar, Nepal, Philippines, Sundaic Archipelago, and Sri Lanka.

Remarks : It is common species in India and adults are found throughout the year. Teneral male and females are similar in color (pale straw-yellow) and differs from mature adults which may cause confusion in identification of the species.

Genus *Diplacodes* Kirby, 188926. *Diplacodes trivialis* Rambur, 1842

1842. *Libellula trivialis*, Rambur, *Ins. Neurop.*; 115.

1936. *Diplacodes trivialis*, Fraser, *Fauna Brit. India, Odon.*, **3**: 336-338.

Material examined : Ent. 4/2061, 1 male, 8.i.2011, Gadvyacha Mal, Coll: P.S. Bhatnagar; Ent. 4/2062, 2 male, 9.i.2011, Ghunyacha Mal, Coll: P.S. Bhatnagar; Ent. 4/2063, 1 female, 13.i.2011, Nirikshyan Manora, Coll: P.S. Bhatnagar; Ent.4/2064, 1 male, 16.ii.2011, Upper bank of Phansad Gan, Coll: P.D. Rane; Ent. 4/2085, 1 male, 1.xii.2011, Phansad Dam, Coll: P.S. Bhatnagar; Ent. 4/2086, 1 female, 27.xi.2011, Mazgaon and around, Coll: P.S. Bhatnagar; Ent.4/2090, 1 male, 1 female, 28.xi.2011, More, Tal: Murud, Coll: P.S. Bhatnagar; Ent.4/2091, 1 male, 25.xi.2011, Rice field, 2 Km. from Forest rest house, Coll: P.S. Bhatnagar; Ent. 4/2092, 1 male, 27.xi.2011, Savrat Talav, Coll: P.S. Bhatnagar; Ent. 4/2095, 5 males, 2 females, 26.xi.2011, Bhandwacha Mal, Coll: P.S. Bhatnagar; Ent.4/2096, 1 male, 29.xi.2011, Rice field, 2.4 Km. S.W. of Forest rest house, Coll: P.S. Bhatnagar; Ent.4/2109, 1 male, 2 females, 29.xi.2011, Chikhal Gan, Coll: P.S. Bhatnagar; Ent. 4/2136, 1 male, 11.i.2012, Phansad Dam, Coll: R. Bano; Ent.4/2141, 2 males, 2 females, 24.xi.2011, Chikhala Gan and around, Coll: P.S. Bhatnagar; Ent.4/2142, 1 female, 27.xi.2011, Mazgaon and around, Coll: P.S. Bhatnagar; Ent. 4/2173, 1 male, 2 females, 26.xi.2011, Ghunyacha Mal, Coll: P.S. Bhatnagar; Ent. 4/2186, 1 female, 8.i.2012, Ghunyacha Mal, Coll: R. Bano; Ent. 4/2263, 2 females, 20.ii.2013, Kajuwadi and around, Bohighar, Coll: P.S. Bhatnagar.

Distribution : Throughout India. *Elsewhere* : Indonesia, Malaysia, Myanmar, Nepal, Sri Lanka, Thailand.

Remarks : One of the most common species found throughout the year near water bodies and also in grassy vegetation and agricultural fields far from water.

Genus *Neurothemis* Brauer, 1867

27. *Neurothemis intermedia* Rambur, 1842

1842. *Libellula intermedia*, Rambur, *Ins. Neurop.*, 91.

1936. *Neurothemis intermedia intermedia*, Fraser, *Fauna Brit. India, Odon.*, **3**: 357-358.

2006. *Neurothemis intermedia intermedia* Kulkarni, *et al.*, *Insecta: Odonata in Fauna of Tadoba-Andhari Tiger Reserve. Conservation Area Series, Zool. Surv. India*, **25** : 217-218.

Material examined : Ent. 4/2266, 1 male, 19.ii.2013, Forest Rest House, Coll: P.S. Bhatnagar; Ent. 4/2273, 1 female, 24.i.2013, Forest Rest House, Coll: R. Bano.

Distribution : India: Bihar, Himachal Pradesh, Kangra, Madhya Pradesh, Maharashtra, Uttar Pradesh and West Bengal. *Elsewhere* : China, Myanmar, Nepal, Sri Lanka, and West Malaysia.

Remarks : Pattern of marking on wings differentiates this species from all others within the genus.

Subfamily TRAMEINAE

Genus *Pantala* Hagen, 1861

28. *Pantala flavescens* Fabricius, 1798

1798. *Libellula flavescens*, Fabricius, *Ent. Syst. Suppl.*, 285.

1936. *Pantala flavescens*, Fraser, *Fauna Brit. India, Odon.*, **3**: 414-416.

Material examined : Ent. 4/2087, 1 male, 27.xi.2011, Mazgaon and around, Coll: P.S. Bhatnagar.

Distribution : Circumtropical and subtropical in distribution; throughout India. *Elsewhere* : China, Indonesia, Malaysia, Morocco, Myanmar, Sri Lanka, and Thailand.

Remarks : Common species, breeds in marshes and weedy tanks. Large number of specimens emerges out and takes to swarming from September to November/December.

Subfamily TRITHEMISTINAE

Genus *Trithemis* Brauer, 1868

29. *Trithemis aurora* Burmeister, 1839

1839. *Libellula aurora* Burmeister, *Handb Ent.*, **2**: 859.

1936. *Trithemis aurora*, Fraser, *Fauna Brit. India, Odon.*, **3**: 383-385.

Material examined : Ent.4/2065, 1 male, 8.i.2011, Bhandwacha Mal, Coll: P.S. Bhatnagar; Ent. 4/2081, 1 male, 27.xi.2011, Savrat Talab, Coll: P.S. Bhatnagar; Ent.4/2082, 1 male, 27.xi.2011, Savrat Talab, Coll: P.S.Bhatnagar; Ent. 4/2108, 1 male (teneral), 29.xi.2011, Rice field, 2.4 Km. S.W. from Forest rest house, Coll: P.S. Bhatnagar; Ent.4/2137, 1 male, 6.i.2012, Chikhal Gan and around, Coll: R. Bano; Ent. 4/2253, 1 male, 20.ii.2013, Kajuwadi and around, Bohighar, Coll: P.S. Bhatnagar; Ent.4/2265, 1 male, 16.ii.2013, Savrat Talab and around, Coll: P.S. Bhatnagar; Ent. 4/2272, 1 male, 17.ii.2013, Sigra, tal: Murud, Coll: P.S. Bhatnagar.

Distribution : Throughout India. *Elsewhere* : Indonesia, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka.

Remarks : It is a common species found near hill streams and has also been recorded from plains in Maharashtra.

30. *Trithemis festiva* Rambur, 1842

1842. *Libellula festiva*, Rambur, *Ins. Neurop*, 92.

1936. *Trithemis festiva*, Fraser, *Fauna Brit. India, Odon.*, **3**: 387-389.

Material examined : Ent.4/2104, 1 male, 27.xi.2011, Savrat Talab, Coll: P.S. Bhatnagar.

Distribution : India: Assam, Himachal Pradesh, Maharashtra, Uttar Pradesh, and West Bengal. *Elsewhere* : Indonesia, Nepal, Myanmar, Philippines, Singapore, Sri Lanka, and West Malaysia.

Remarks : It is a common species near hill streams. Adults breed in still waters or streams with sluggish current.

31. *Trithemis pallidinervis* (Kirby, 1889)

1889. *Sympetrum pallidinervis* Kirbi, *Trans. Zool. Soc. India.*, **12**: 327.

1937. *Trithemis pallidenervis* Fraser, *Fauna. Brit. India, Odon.*, **3**: 389-391.

1985. *Trithemis pallidenervis* Prasad and Ghosh, *Rec. zool. Surv. India*, **85**(2): 209.

Material examined : Ent.4/2102, 2 males, 26.xi.2011, Vihoor Dam, Taluka, Murud, Coll: P.S. Bhatnagar; Ent. 4/2103, 3 males, 28.xi.2011, Vihoor Dam, Taluka, Murud, Coll: P.S. Bhatnagar.

Distribution : India: Assam, Bihar, Himachal Pradesh, Maharashtra, Punjab, Uttar Pradesh, West Bengal. *Elsewhere* : Formosa, Myanmar, Philippines, and Sri Lanka.

Remarks : This species is mostly found along stagnant water and sometimes near sea shore.

SUMMARY

The present study of Phansad Wildlife Sanctuary, District Raigad recorded 31 species of Odonata belonging to 21 genera, 9 families and 2 suborders. The family Libellulidae dominated the Odonata fauna with 9 genera and 13 species.

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