

ON THE COLLECTION OF ODONATA FROM ARUNACHAL PRADESH, INDIA

RAJA RAM and M. PRASAD

Zoological Survey of India, M-Block, New Alipore, Calcutta-700 053

INTRODUCTION

Arunachal Pradesh is situated on India's North-easternmost frontier and is almost horse-shoe shaped in area. It is considered as one of the most difficult mountainous region of the world. It lies between 27°.0-29°.30' latitude north and 91°.30'-97°.30' longitude east; bounded by Bhutan to the west, Tibet and China to the north and east, Assam to the south and Nagaland and Myanmar to the south-east and has capital at Itanagar. It covers an area of 83, 578 square kilometers. Arunachal Pradesh gets sun rays every day first on the Indian soil, and, therefore, has significantly the religious faith of the vast majority of the people based in the worship of the sun and moon, i.e., "DONYI" and "POLO" in the local dialects.

The land is mostly mountainous, with many great rivers viz., Tsangpo, Brahmaputra, Kameng, Subansiri, Siang, Lohit and Tirap etc., and large number of streams, Thus, the State is blessed with the rich, varied and colourful habitats of flora and fauna, There are green luxuriant forests right from the foot-hills to the snow-clad peaks which are the treasure houses of multitudinal biotypes remarkably coexisting in diverse environmental conditions. The monsoon starts here in April and continues upto October. The average rainfall amounts to about five metres per year.

FRASER (1933-1936) has reported several species of Odonata from Assam region but did not mention any place of Arunachal Pradesh. LAHIRI (1977, 1979, 1985 and 1987), LAHIRI & SINHA (1985, 1991), BHARGAVA (1989), MITRA (1994), PRASAD (1997) and PRASAD & VARSHNEY (1995) have listed 77 species of Odonata known from Arunachal Pradesh.

While examining the Odonata collections present in the National Collections of the Zoological Survey of India, Calcutta, the authors have come across some interesting specimens from this State. In this paper a total of 92 species of Odonata belonging to 49 genera under 11 families are reported from Arunachal Pradesh. Out of these 15 species are reported for the first time from Arunachal Pradesh.

A CONSOLIDATED LIST OF ODONATA FROM ARUNACHAL PRADESH

Order : ODONATA

Suborder : ZYGOPTERA

Superfamily : COENAGRIONOIDEA

Family : COENAGRIONIDAE

1. *Ceriagrion azureum* (Selys)
2. *Ceriagrion coromandelianum* (Fabricius)
3. *Ceriagrion fallax cerinomelas* Lieftinck
4. *Ceriagrion olivaceum* Laidlaw
5. * *Pseudagrion australasiae* Selys
6. *Pseudagrion rubriceps rubriceps* Selys
7. *Aciagrion azureum* Fraser
8. *Aciagrion olympicum* Laidlaw
9. *Aciagrion pallidum* Selys
10. *Aciagrion tillyardi* Laidlaw
11. *Enallagma parvum* Selys
12. *Ischnura aurora aurora* (Brauer)
13. *Ischnura rufostigma mildredae* Fraser
14. *Agriocnemis clauseni* Fraser
15. * *Agriocnemis lacteola* selys
16. * *Agriocnemis pieris* Laidlaw
17. *Agriocnemis pygmaea* (Rambur)
18. *Agriocnemis rubescens rubeola* Selys
19. *Onychargia atrocyana* Selys

Family : PLATYCNEMIDIDAE

20. *Calicnemia eximia* (Selys)
21. *Calicnemia Pulverulans* (Selys)
22. *Coeliccia bimaculata* Laidlaw
23. *Coeliccia pracritii* Lahiri

* Species marked with asterisk are recorded for the first time from the Arunachal Pradesh.

24. *Coelliccia renifera* (Selys)

25. *Copera vittata serapica* (Selys)

Superfamily : LESTOIDEA

Family : LESTIDAE

26. *Lestes dorothea* Fraser

27. * *Lestes praemorsus praemorsus* (Selys)

28. *Orolestes durga* Lahiri

Family : CHLOROLESTIDAE

29. *Megalestes lieftincki* Lahiri

30. *Megalestes Major* Selys

Superfamily : CALOPTERYGOIDEA

Family : CALOPTERYGIDAE

31. *Echo margarita margarita* Selys

32. *Matrona basilaris basilaris* Selys

33. *Matrona basilaris nigripecta* Selys

34. *Neurobasis chinensis chinensis* (Linn.)

35. *Vestalis gracilis gracilis* (Rambur)

Family : CHLOROCYPHIDAE

36. *Rhinocypha (Aristocypha) cuneata* Selys

37. *Rhinocypha (Aristocypha) immaculata* (Selys)

38. *Rhinocypha (Aristocypha) spuria* (Selys)

39. *Rhinocypha (Aristocypha) quadrimaculata* Selys

40. *Rhinocypha (Aristocypha) hilaryae miaoa* Lahiri and Sinha

41. *Rhinocypha (Aristocypha) fenestralla* (Rambur)

42. * *Rhinocypha (Rhinocypha) ignipennis* Selys

43. *Libellago lineata lineata* (Burmeister)

Family : EUPHAEIDAE

- 44. *Anisopleura lastoides* Selys
- 45. *Bayadera indica* (Selys)
- 46. *Euphaea ochracea ochracea* Selys

Suborder : ANISOPTERA

Superfamily : AESHNOIDEA

Family : GOMPHIDAE

- 47. * *Anormogomphus heteropterus* Selys
- 48. *Phaenandrogomphus aureus* (Laidlaw)
- 49. *Onychogomphus biforceps* (Selys)
- 50. *Onychogomphus cacharicus* Fraser
- 51. *Onychogomphus risi* (Fraser)
- 52. *Onychogomphus schmidti* Fraser
- 53. *Paragomphus lineatus* (Selys)
- 54. *Ictinogomphus pertinax* (Selys)
- 55. *Ictinogomphus rapax* (Rambur)

Family : AESHNIDAE

- 56. *Anax quttatus* (Burmeister)

Superfamily : CORDULEGASTEROIDEA

Family : CORDULEGASTERIDAE

- 57. *Cordulegaster brevistigma bravistigma* (Selys)

Superfamily : LIBELLULOIDEA

Family : LIBELLULIDAE

- 58. *Hylaeothemis fruhstorferi apicalis* Fraser
- 59. * *Tetrathemis platyptera* Selys
- 60. * *Cratilla lineata calverti* Foerster

61. **Orthetrum anceps* (Schneider)
62. *Orthetrum brunneum brunneum* (Fonscolombe)
63. *Orthetrum glaucum* (Brauer)
64. *Orthetrum japonicum internum* Maclachlan
65. **Orthetrum luzonicum* (Brauer)
66. *Orthetrum puinosum neglectum* (Rambur)
67. *Orthetrum sabina sabina* (Drury)
68. **Orthetrum taeniolum* (Schneider)
69. **Orthetrum testaceum testaceum* (Burmeister)
70. *Orthetrum triangulare triangulare* (Selys)
71. *Lathrecista asiatica asiatica* (Fabricius)
72. **Potamarcha congener* (Rambur)
73. *Palpopleura sexmaculata sexmaculata* (Fabricius)
74. *Acisoma panorpoides panorpoides* Rambur
75. *Brachythemis contaminata* (Fabricius)
76. *Crocothemis servilia servilia* (Drury)
77. *Diplacodes trivialis* (Rambur)
78. *Indothemis limbata limbata* Selys
79. *Neurothemis fulvia* (Drury)
80. *Neurothemis intermedia intermedia* (Rambur)
81. **Neurothemis tullia tullia* (Drury)
82. *Sympetrum commixtum* (Selys)
83. *Sympetrum hypomelas* (Selys)
84. *Sympetrum orientale* (Selys)
85. *Trithemis aurora* (Burmeister)
86. *Trithemis festiva* (Rambur)
87. *Trithemis pallidinervis* (Kirby)
88. *Rhyothemis variegata variegata* (Linn.)
89. *Pantala flavescens* (Fabricius)

90. *Tholymis tillarga* (Fabricius)
 91. *Aethriamanta brevipennis* (Rambur)
 92. *Urothemis signata signata* (Rambur)

SYSTEMATIC ACCOUNT

Order : ODONATA
 Suborder : ZYGOPTERA
 Superfamily : COENAGRIONOIDEA
 Family : COENAGRIONIDAE
 Genus : *Ceriagrion* Selys

1. *Ceriagrion azureum* (Selys)

Material examined : 1M, 1F, Namdapha, Gibbon land, 10 kms. on Miao, Vijayanagar, 10.4.81, Coll. S. Biswas.

Distribution : India (Assam, Arunachal Pradesh, Meghalaya, Mizoram and West Bengal) and Myanmar.

Remarks : Pterostigma covers less than a cell in forewings and one cell in hindwings. 14-15 postnodal nervures in forewings and 12 in hindwings.

2. *Ceriagrion coromandelianum* (Fabricius)

Material examined : 1M, Kheram village, Bordumsa, West Kameng, 8.9.1986, Coll. R. N. Bhargava.

Distribution : Throughout India, Cambodia, China, Laos, Myanmar, Nepal, Pakistan, Sri Lanka, Thailand and Vietnam.

3. *Ceriagrion olivaceum* (Laidlaw)

Material examined : 1 M, 1 F, Elephant Flat, Kameng district, 23.12.1965, Coll. S. K. Bhattacharya and A. N. T. Joseph ; 1 M, Subansiri Bridge, Subansiri Division, 28.10.1966, Coll. S. K. Tandon and G. S. Arora; 2 MM, Bhalukpong, West Kameng district 28.10.1985, Coll. G.K. Srivastava; 4 MM, 2 FF, Pakhui Sanctuary, East Kameng district, 14.12.1985, Coll. R. N. Bhargava; 1M, Kalaktang, West Kameng district, 29.12.1985, Coll. R. N. Bhargava and 1 F, Khellong, West Kameng district, 7.1.1986, Coll. R. N. Bhargava.

Distribution : India (Assam, Arunachal Pradesh, Kerala, Manipur, Maharashtra, Meghalaya, Orissa, South Andaman, Uttar Pradesh and West Bengal), Cambodia, Laos, Malaysia, Myanmar, Thailand and Vietnam.

Remarks : During the field trips to Pakui Sanctuary, East Kameng district in December, 1985 one of the author (M.P.) has observed that adults of this species and *Aciagrion pallidum* were very common within the long grasses all along the forest road in the sanctuary. Specimens were fluttering above the long grasses and some times they sit on the body of the party members. 11-13 postnodal nervures are present in forewings and 10-11 in hindwings.

Genus : *Pseudagrion* Selys

4. *Pseudagrion australasiae* Selys

Material examined : 1F, Hapoli, Subansiri Division, 4.5.1966, Coll. A.N.T. Joseph and 1F, Sirman Bridge, Siang, 14.10.1966, Coll. S. K. Tandon and G. S. Arora.

Distribution : India (Assam, Manipur, Maghalaya and West Bengal), Australia, Indonesia, Malaysia, Myanmar and Thailand.

Remarks : It is recorded for the first time from Arunachal Pradesh.

5. *Pseudagrion rubriceps rubriceps* (Selys)

Distribution : Widely distributed throughout continental India, Indonesia, Malaysia, Myanmar, Nepal and Taiwan.

Remarks : One of the author (M.P.) while staying at Itanagar came across a male specimen of this species resting on the aquatic vegetation at the side of a permanent water body, Author was unable to collect the specimen.

Genus : *Aciagrion* Selys

6. *Aciagrion pallidum* (Selys)

Material examined : 1M, Bhalukpong, West Kameng district, 28.10.1985, Coll. G. K. Srivastava ; 1 F, Roing, Debang Valley, 8.11.1985, Coll. G. K. Srivastava, 4 MM, 5 FF, Pakhui Sanctuary, East Kameng district, 14.12.1985, Coll. R. N. Bhargava and 1M, 4 FF, Khellong, West Kameng district, 7.1.1988, Coll. R. N. Bhargava.

Distribution : India (Arunachal Pradesh, Assam (Dry Zone), Bihar, East Himalaya, Karnataka, Manipur, Maharashtra, Orissa, Tripura, Uttar Pradesh and West Bengal) Myanmar and Nepal.

Remarks : Labium, labrum, face, frons and vertex reddish brown. In specimens from Pakhui sanctuary face frons and vertex dark brown. In females abdominal segments 8th to 10th are pinkish brown. Tips of inferior anal appendages in male black. Pterostigma covers less than a cell. Nervure ab & ac present at one place in both pair of wings. Arc present at the level of second antenodal nervure. 10-11 postnodal nervures in forewings and 9-11 in hindwings.

Genus : *Enallagma* charpentier

7. *Enallagma parvum* (Selys)

Material examined : 1F, Jairampur, Tirap, 26.10.1971, Coll. G.S. Arora.

Distribution : Throughout India, Myanmar, Nepal and Sri Lanka.

Genus : *Ischnura* charpentier

8. *Ischnura aurora aurora* (Brauer)

Material examined : 1M, Tipi, West Kameng district, 11.9.1984, Coll. R. N. Bhargava; 14 MM, Dirang, West Kameng district, 17.9.1984, Coll. R. N. Bhargava, and 1M, Dedza, West Kameng district, 27.9.1984, Coll. R. N. Bhargava.

Distribution : Throughout India, Australia, China, Indonesia, Malaysia, Myanmar, Nepal, New Guinea, Newzealand, Pacific Islands, Papua, Philippines and Sri Lanka.

Genus : *Agriocnemis* Selys

9. *Agriocnemis lacteola* Selys

Material examined : 3FF, Namsai, 15.3.1969, Coll. S. K. Tandon and 2 FF, Namsai, 16.3.1969, Coll. S. K. Tandon.

Distribution : India (Assam, Bihar, Meghalaya, Orissa, Sikkim, South India, Tripura and West Bengal).

Remarks : It is recorded for the first time from Arunachal Pradesh.

10. *Agriocnemis pieris* Laidlaw

Material examined : 1M, Simi bridge Siang Division, 14.10.1966, Coll. S. K. Tandon & G. S. Arora and 1F, Jining, Siang Division, 14.10.1966, Coll. S. K. Tandon and G. S. Arora.

Distribution : South India, Madhya Pradesh and West Bengal.

Remarks : It is recorded for the first time from Arunachal Pradesh.

11. *Agriocnemis pygmaea* (Rambur)

Material examined : 1M, Bhalukpong, West Kameng district, 23.3.1973, Coll. S. K. Tandon; 3MM, 2FF, Tipi, West Kameng district, 10.9.1984, Coll. R. N. Bhargava ; 1M, Tipi, West Kameng district, 11.9.1984, Coll. R.N. Bhargava, 2MM, 1F, Dirang, West Kameng district, 17.9.1984, Coll. R.N. Bhargava and 2 MM, 2 FF, Dedza, West Kameng district, 27.9.1984, Coll. R.N. Bhargava.

Distribution : Throughout India, Afghanistan, Australia, Bangladesh, China, Hongkong, Indonesia, Japan, Kampuchea, Malaysia, Myanmar, New Guinea, Pacific Islands, Pakistan, Philippines, Seychelles, Singapore, Sri Lanka, Taiwan and Thailand.

Family : PLATYCNEMIDIDAE

Genus : *Calicnemia* Strand

12. *Calicnemia eximia* (Selys)

Material examined : 2MM, 1F, Pinjul, Kameng district, 4.5. 1966, Coll. A.N.T. Joseph; 1 M, Daparijo, Subansiri, 5.10.1966, Coll. S. K. Tandon and G. S. Arora; 1 M, Likhali, 6.10.1966, Coll. S. K. Tandon and G. S. Arora; 2 MM, Dalli village, Siang, 10.10.1966, Coll. S. K. Tandon and G. S. Arora; 1 F, Simi bridge, 14.10.1966, Coll. S. K. Tandon and G. S. Arora and 1 M, Dalli, 22.10.1966, Coll. S. K. Tandon and G. S. Arora.

Distribution : India (Assam, Arunachal Pradesh, Himachal Pradesh, Meghalaya, Uttar Pradesh and West Bengal), Afghanistan, Bangladesh, China, Myanmar, Nepal and Vietnam.

Genus : *Copera* Kirby

13. *Copera vittata serapica* (Selys)

Material examined : 1M, New Jining, Siang, 19.10.1966, Coll. S. K. Tandon and G. S. Arora.

Distribution : India (Arunachal Pradesh, Assam, Nicobar Islands, South India and West Bengal), Indonesia, Malaysia, Myanmar and Thailand.

Super family : LESTOIDEA

Family : LESTIDAE

Genus : *Lestes* Leach

14. *Lestes praemorsus praemorsus* (Selys)

Material examined : 6 MM, Sunlouru, Subansiri, 3.3.1969, Coll. S. K. Tandon.

Distribution : India (Andaman Islands, Assam, West Bengal and Western Himalaya), Malaysia, Myanmar and Philippines.

Remarks : It is recorded for the first time from Arunachal Pradesh.

Genus : *Orolestes* MacLachlan

14a. *Orolestes durga* Lahiri

Distribution : India (Arunachal Pradesh and Meghalaya)

Remarks : It is recorded for the first time from Arunachal Pradesh.

Remarks : Paratype a male Present in the National Collections, Zoological Survey of India, Calcutta from Arunachal Pradesh was examined.

Superfamily : CALOPTERYGOIDEA

Family : CALOPTERYGIDAE

Genus : *Echo* Selys

15. *Echo margarita margarita* Selys

Material examined : 2 MM, Khonsa, Kethi, Tirap, 7.11.1971, Coll. G. S. Arora.

Distribution : India (Arunachal Pradesh, Manipur and Meghalaya) and distribution in china is doubtful (Fraser, 1934).

Genus : *Matrona* Selys

16. *Matrona basilaris basilaris* Selys

Material examined : 1F, Kambang, Siang, 15.10.1966, Coll. S. K. Tandon and G. S. Arora; 1 M, Daparijo, Subansiri, 27.10.1966, Coll. S. K. Tandon and G. S. Arora; 2 MM, Basar, 31.10.1966, Coll. S. K. Tandon and G. S. Arora; 2MM, Dalli Village, Siang, 31.10.1966, Coll. S.K. Tandon and G. S. Arora and 1 M, Deomali forest, Namsong, Tirap, 5.11.1971, Coll. G. S. Arora.

Distribution : India (Arunachal Pradesh and Meghalaya) and Myanmar.

17. *Matrona basilaris nigripectus* Selys

Material examined : 1 M, Konsa longding Road, Tirap, 5.11.1971, Coll. G. S. Arora and 2 FF, Konsa, 7.11.1971, Coll. G. S. Arora,

Distribution : India (Meghalaya and Mizoram) and Myanmar.

Genus : *Neurobasis* Selys

18. *Neurobasis Chinensis chinensis* (Linn.)

Material examined : 1F, Pyring village, Siang, 15.10. 1966, Coll. S. K. Tandon and G. S. Arora; 2 MM, 1 F, Daparijo, Subansiri, 27.10.1966, Coll. S. K. Tandon and G. S. Arora; 3 FF, Deomali forest, Namsang Road, 28.10.1966, Coll. G. S. Arora and 1 M, Namsang, Tirap, 28. 10.1966, Coll. G. S. Arora.

Distribution : India (Assam, Bihar, Himachal Pradesh, Karnataka, Kerala, Maharashtra, Manipur, Meghalaya, Mizoram, Tamil Nadu, Uttar Pradesh and West Bengal), Indonesia, Malaysia, Myanmar Nepal, Sri Lanka and Thailand.

Genus : *Vestalis* Selys

19. *Vestalis gracilis gracilis* (Rambur)

Material examined : 1 M, Tipi, West Kameng district, 6. 5. 1966, Coll. A.N.T. Joseph and 1 M, Bamo Village, Siang, 30.10.1996, Coll. S. K. Tandon and G. S. Arora.

Distribution : India (Andhra Pradesh, Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Bihar, Gujarat, Karnataka, Kerala, Maharashtra, Manipur, Meghalaya, Tamil Nadu, Tripura and West Bengal), Malaysia, Myanmar, Thailand and Vietnam.

Family : CHLOROCYPHIDAE

Genus : *Rhinocypha* Rambur

Subgenus : *Aristocypha* Laidlaw

20. *Rhinocypha (Aristocypha) cuneata* Selys

Material examined : 2 MM, Pinjali, West Kameng, 4.5.1966, Coll. A. N. T. Joseph; 1 M, 1 F, Tamen, Subansiri, 6.5.1966, Coll. A. N. T. Joseph; 2 MM, Tamen, Subansiri, 18.5.1966, Coll. A. N. T. Joseph; 2 MM, Dalli village, Siang, 10.10.1966, Coll. S. K. Tandon and G. S. Arora; 3 MM, 1 F, Tipi, West Kameng, 23.10. 1966, Coll. S. K. Tandon and G. S. Arora; 1 M, Daparijo, Subansiri, 27.10.1966, Coll. S. K. Tandon and G. S. Arora and 2 MM, 2 FF, Bamo village, Siang, 30.10.1966, Coll. S. K. Tandon and G. S. Arora.

Distribution : India (Arunachal Pradesh, Assam and West Bengal) and Tibet.

21. *Rhinocypha (Aristocypha) spuria* (Selys)

Material examined : 1 M, Tipi, West Kamen district, 10.9.1984, Coll. R. N. Bhargava.

Distribution : India (Assam, Meghalaya, Mizoram, Nagaland and Uttar Pradesh) and Myanmar.

Remarks : It is recorded for the first time from Arunachal Pradesh.

22. *Rhinocypha (Aristocypha) quadrimaculata* (Selys)

Material examined : 1 M, 2FF, Nampong, Tirap, 28.10.1971, Coll. G. S. Arora and 1 M, on way to upper Subansiri district, 25.10.1981, Coll. S. K. Gupta and M. Prasad.

Distribution : India (Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Nagaland, Orissa, Sikkim, Uttar Pradesh and West Bengal), Bangladesh, Myanmar, Nepal and Thailand.

Subgenus : *Rhinocypha* Rambur

23. *Rhinocypha (Rhinocypha) ignipennis* (Selys)

Material examined : 1F, Tipi, West Kameng district, 6.5.1966, Coll. A.N. Joseph and 1 F, Tamen, Subansiri, 20.5.1966, Coll. A.N.T. Joseph.

Distribution : India (Meghalaya) and Myanmar.

Remarks : It is recorded for the first time from Arunachal Pradesh.

Family : EUPHAEIDAE

Genus : *Euphaea* Selys

24. *Euphaea ochracea ochracea* (Selys)

Material examined: 2 MM, Jairampur, Tirap, 27.10.1971, Coll. G. S. Arora and 1M, Nampong, Tirap, 28.10.1971, Coll. G. S. Arora.

Distribution : India (Arunachal Pradesh, Assam, Manipur, Meghalaya and West Bengal), Annam, Indonesia, Thailand and West Malaysia.

Suborder : ANISOPTERA

Superfamily : AESHNOIDEA

Family : GOMPHIDAE

Genus : *Anormogomphus* Selys

25. *Anormogomphus heteropterus* (Selys)

Material examined : 1 F, Jairampur, Tirap, 25.10.1971, Coll. G. S. Arora.

Distribution : India (Bihar, Himachal Pradesh, Orissa, and Uttar Pradesh) and Pakistan.

Remarks : It is recorded for the first time from Arunachal Pradesh.

Genus : *Ictinogomphus* Cowley

26. *Ictinogomphus rapax* (Rambur)

Material examined: 1 M, Likhabali, Siang, 14.10.1981, Coll. S. K. Gupta and M. Prasad.

Distribution : India (Bihar, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Sikkim, Uttar Pradesh and West Bengal), Nepal, Malaysia, Myanmar and Sri Lanka.

27. *Ictinogomphus pertinax* (Selys)

Material examined : 1 M, Likhabali, Siang, 14.10.1981, Coll. S. K. Gupta and M. Prasad.

Distribution : India (Arunachal Pradesh, and West Bengal), China, Indochina, Malaysia and Myanmar.

Remarks : Discoidal cell in the right forewing made up of 4 cells, subtrigone in forewing 2 celled, anal triangle 5 celled.

Family : LIBELLULIDAE

Genus : *Tetrathemis* Brauer

28. *Tetrathemis platyptera* (Selys)

Material examined: 1 M, Sekha camp, Subansiri, 26.10.1966, Coll. S. K. Tandon and G. S. Arora and 1 M, Namsong, Deomali forest, Tirap, 10.10.1971, Coll. G. S. Arora.

Distribution : India (Karnataka, Kerala, Maharashtra, Meghalaya, Tamil Nadu, West Bengal and Western Himalaya), Indonesia, Malaysia, Myanmar and Thailand.

Remarks : It is recorded for the first time from Arunachal Pradesh.

Genus : *Cratilla* Kirby

29. *Cratilla lineata calverti* Foerster

Material examined : 1 M, Chandan forest, 24.3.1973, Coll. S. K. Tandon and 1 M, Elephant Flate, 22.3. 1973, Coll. S. K. Tandon.

Distribution : India (Orissa, Uttar Pradesh, West Bengal and Western Ghats), Indonesia, Malaysia, Myanmar, Philippines, New Guinea, Sri Lanka and Thailand.

Remarks : It is recorded for the first time from Arunachal Pradesh.

Genus : *Orthetrum* Newman

30. *Orthetrum anceps* (Schneider)

Material examined : 1 M , Hapoli, 15.5.1996. Coll: A.N.T; Joseph; 1 M, Pamir bridge, Subansiri, 17.5.1966, Coll. A.N.T. Joseph; 1 M , Siji, 20.10.1966, Coll. G. S. Arora; 2 MM, Likhabali, Siang, 2.11.1966, Coll. G. S. Arora and 1 M, Likhabali, Siang, 6.11.1966; Coll. G. S. Arora.

Distribution : India (Himachal Pradesh, Mizoram and West Bengal), Asia minor, Europe, North African Coast, Pakistan and Persia.

Remarks : It is recorded for the first time from Arunachal Pradesh.

31. *Orthetrum brunneum brunneum* (Fonscolombe)

Material examined : 1F, Kimin, 9.5.1966, Coll. A.N.T. Joseph; 2 FF, Ziro, Subansiri, 13.5.1966, Coll. A.N.T. Joseph; 2 FF, Ziro, Subansiri, 14.5.1966, Coll. A.N.T. Joseph and 4 MM, Dajoo, 10.5.1966, Coll. A.N.T. Joseph.

Distribution : India (Arunachal Pradesh, Bihar, Uttar Pradesh and Western Himalaya), Afghanistan, Iraq, North Africa, Myanmar, Pakistan, South Europe and West Asia.

32. *Orthetrum glaucum* (Brauer)

Material examined : 2 MM, Hapoli, 15.5.1966, Coll. A.N.T. Joseph; 1 M, Tamen, Subansiri, 19.5.1966, coll. A.N.T. Joseph; 1M, Tamen, 4.10.1966, Coll. A.N.T. Joseph; 1 F, Piring, 15.10.1966, Coll. S. K. Tandon and G. S. Arora; 4 MM, 2 FF, Tachidoni, Coll. S.K. Tandon and G. S. Arora; 2 MM, Dalli Camp, 22.10.1966, Coll. S. K. Tandon and G. S. Arora; 1 F, Daparijo, 28.10.1966, Coll. S.K. Tandon and G.S. Arora; 1 M, Khonsa, Tirap, 4.11.1971, Coll. Arora; 3 MM, Khonsa, Tirap, 5.11.1971, Coll. G. S. Arora and 7 MM, Talika, Subansiri, 18.11.1974, Coll. J. M. Julka.

Distribution : Throughout India, China, Hongkong, Indonesia, Japan, Malaya Archipelago, Malaysia, Myanmar, Nepal, New Guinea, Papua, Philippines, Sri Lanka, Taiwan, Thailand and Vietnam.

33. *Orthetrum luzonicum* (Brauer)

Material examined : 2 MM, Kimin, Subansiri, 9.5.1966, Coll. A.N.T. Joseph and 1 F, Hapoli, 15.5.1966, Coll. A.N.T. Joseph.

Distribution : India (Andhra Pradesh, Assam, Himachal Pradesh, Tamil Nadu, Uttar Pradesh, West Bengal and West Coast of India), Indonesia, Myanmar, Nepal, Philippines and Sri Lanka.

Remarks : It is recorded for the first time from Arunachal Pradesh.

34. *Orthetrum purinosum neglectum* (Rambur)

Material examined : 3 MM, Kimin, Subansiri, 9.5.1966, Coll. A.N.T. Joseph; 1 M, Dajoo, 10.5.1966, Coll. A.N.T. Joseph; 1 M, Tamen, 20.5.1966, Coll. A.N.T. Joseph; 1 M, Dalli village, 12.10.1966, Coll. S. K. Tandon and G. S. Arora; 2 FF, Tachidoni, 24.10.1966, Coll. S. K. Tandon and G. S. Arora; 2 MM, 1 F, Bela village, 27.10.1966, Coll. S. K. Tandon and G.S. Arora; 1 M, Daparijo, 28.10.1966, Coll S. K. Tandon and G. S. Arora; 1M, 1F, Daparijo, 31.10.1966, Coll. S. K. Tandon and G. S. Arora; 1 M, Likhali, Siang, 2.11.1966, Coll. S.K. Tandon and G.S. Arora; 1M, Deomali, Tirap, 10.11.1971, Coll. G. S. Arora and 1 M, Jairampur, Tirap, 26.10.1971, Coll. G. S. Arora.

Distribution : Throughout India, Afghanistan, Bangladesh, China, Hongkong, Indonesia, Japan, Laos, Malaysia, Myanmar, Nepal, Philippines, Singapore, Sri Lanka, Taiwan, Thailand, Tibet and Vietnam.

35. *Orthetrum sabina sabina* (Drury)

Material examined : 5 MM, Dejoo, Subansiri, 10.5.1966, Coll. A.N.T. Joseph; 1 M, Hapoli, 15.5.1966, Coll. A.N.T. Joseph; 1 M, Baliwari, 2.10.1966, Coll. S. K. Tandon and G. S. Arora;

1 M, Bholi gaon, 2.10.1966, Coll. S. K. Tandon and G. S. Arora and 1 M, Likhali, Siang, 7.10.1966, Coll. S. K. Tandon and G. S. Arora.

Distribution : Throughout India, Afghanistan, Algeria, Angola, Australia, China, Cyprus, Egypt, Hongkong, Indonesia, Iran, Iraq, Laos, Malaysia, Micronesia, Myanmar, most of the African continent, New Guinea, Nepal, Papua, Philippines, Qatar, Samoa Islands, Singapore, Sri Lanka, Sudan Thailand, Tunisia, Turkey and Vietnam.

36. *Orthetrum taeniolum* (Schneider)

Material examined : 1 M, Rupa camp, 20.12.1965, Coll. S. K. Bhattacharya and A.N.T. Joseph.

Distribution : India (Bihar, Himachal Pradesh, Madhya Pradesh, Sikkim and West Bengal), countries bordering mediterranean and Nepal.

Remarks : It is recorded for the first time from Arunachal Pradesh.

37. *Orthetrum testaceum testaceum* (Burmeister)

Material examined : 1 M, Ziro, Subansiri, 14.5.1966, Coll. A.N.T. Joseph.

Distribution : India (Assam and Orissa), Indonesia, Myanmar, Philippines and Formosa (Taiwan).

Remarks : It is recorded for the first time from Arunachal Pradesh.

38. *Orthetrum triangulare triangulare* (Selys)

Material examined : 1 M, Pamir Bridge, Subansiri, 17.10.1966, Coll. A.N.T. Joseph; 3MM, Tachidoni, 24. 10.1966, Coll. S. K. Tandon and G. S. Arora and 3 MM, Khonsa, Tirap, 4.11.1971, Coll. G. S. Arora.

Distribution : India (Arunachal Pradesh, Assam, Bihar, Haryana, Meghalaya, Mizoram, South Indian Hills, Tamil Nadu, West Bengal, and Western Himalaya), Afghanistan, China, Laos, Myanmar, Nepal, Sri Lanka, Thailand and Vietnam.

39. *Lathrecista asiatica asiatica* (Fabricius)

Material examined : 1 F, Pedding, Siang 11.10.1966, Coll. S. K. Tandon G. S. Arora.

Distribution : India (Arunachal Pradesh, Bihar, Manipur and Orissa (Mitra, 1994) Indonesia, Malaysia, New Guinea, Philippines, Sundaic Archipelago and Thailand.

40. *Potamarcha congener* (Rambur)

Material examined : 1 M, Sunpura, 3.3.1966, Coll. S. K. Tandan.

Distribution : India (Assam, Bihar, Himachal Pradesh, Kerala, Nagaland, Orissa, South Andaman Islands, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal), Australia, Bangladesh,

Indonesia, Malaysia, Myanmar, Nepal, New Guinea, Papua, Philippines, Sri Lanka, Taiwan and Thailand.

Remarks : It is recorded for the first time from Arunachal Pradesh.

Genus : *Palpoleura* Rambur

41. *Palpoleura sexmaculata sexmaculata* (Fabricius)

Material examined : 2 MM, Ziro, Subansiri, 14.5.1966, Coll. A.N.T. Joseph; 3 FF, Hapoli, Subansiri, 15.5.1966, Coll. A.N.T. Joseph; 1 M, Pamer bridge, 17.5.1966, Coll. A.N.T. Joseph; 1 M, 1 F, Bela village, 27.10.1966, Coll. S. K. Tandon and G. S. Arora; 8 MM, 4 F, Basar Village, 31.10.1966, Coll. S. K. Tandon and G. S. Arora; 1 M, Daparijo, 28.10.1966, Coll. S. K. Tandon and G. S. Arora; 1 M, Changlong, Tirap, 2.11.1971, Coll. G. S. Arora and 1M, Chandan Forest, 24.3.1973, Coll. S. K. Bhattacharya.

Distribution : Throughout India, China, Malaysia, Myanmar, Sri Lanka and Vietnam.

Genus : *Acisoma* Rambur

42. *Acisoma panorpoides panorpoides* Rambur

Material examined : 1 F, Bela Village, Subansiri, 27.10.1966, Coll. S. K. Tandon and G. S. Arora.

Distribution : India (Arunachal Pradesh, Assam Bihar, Chandigarh, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Orissa, Punjab, Rajasthan, South India, Uttar Pradesh and West Bengal), China, Indonesia, Japan, Malaya Archiplago, Myanmar, Nepal, Philippines, Sri Lanka, Taiwan and Thailand.

Genus : *Diplacodes kirby*

43. *Diplacodes trivialis* (Rambur)

Material examined : 1 F, Tipi, West Kameng, 3.5.1966, Coll. A.N.T. Joseph; 1F, Likhabali, Siang, 6.10.1966, Coll. S. K. Tandon and G. S. Arora; 1 M, Pedding Village, 11.10.1966, Coll. S. K. Tandon and G. S. Arora and 1 M, Kimin, 4.11.1981, Coll. S.K. Gupta and M. Prasad.

Distribution : Throughout India, Australia, China, Fiji, Hongkong, Indonesia, Iraq, Japan, Laos, Malaysia, Myanmar, Nepal, New Guinea, Pacific Islands, Papua, Philippines, Ryudyus, Seychelles, Sri Lanka, Thailand and Vietnam.

Genus : *Crocothemis* Brauer

44. *Crocothemis servilia servilia* (Drury)

Material examined : 1M, 1F, Likhabali, Siang, 6.10.1966, Coll. S. K. Tandon and G. S. Arora; 1 M, Tipi, West Kameng, 23.10.1966, Coll. S. K. Tandon and G.S. Arora; 2MM, 1F, Bela village,

Subansiri, 27.10.1966, Coll. S.K. Tandon and G.S. Arora; 1 M, Ziro, Siang, 14.10.1966, Coll. S.K. Tandon and G.S. Arora and 1 M, Bamo village, 30.10.1966, Coll. S.K. Tandon and G.S. Arora.

Distribution : Throughout India, Bangladesh, China, Indonesia, Iran, Iraq, Japan Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Taiwan and Thailand.

Genus : *Neurothemis* Brauer

45. *Neurothemis fulvia* (Drury)

Material examined : 1 M, Daparijo, Subansiri, 28.10.1966, Coll. S. K. Tandon and G. S. Arora; 1 F, Deomali, Tirap, 10.10.1971, Coll. G. S. Arora and 1 M, Gara, Siang, 10.1.1981, Coll. S. K. Gupta and M. Prasad.

Distribution : Throughout India, Australia, Bangladesh, China, Hongkong, Indonesia, Iraq, Kampuchia, Malaysia, Myanmar, Nepal, Philippines, Seychelles, Sri Lanka, Taiwan, Thailand and Vietnam.

46. *Neurothemis intermedia intermedia* (Rambur)

Material examined : 1 M, Pinjali, 21.3.1964, Coll. S. K. Bhattacharya and A.N.T. Joseph; 1 M, Chandan forest, 27.10.1965, Coll. S. K. Bhattacharya and A.N.T. Joseph; 1 F, Namsang, Tirap, 11.11.1971, Coll. G. S. Arora.

Distribution : Throughout India, China and Southeast Asia.

47. *Neurothemis tullia tullia* (Drury)

Material examined : 1 M, Dapabhum Expedition, Glo-village, 11.12.1969, Coll. J. M. Julka and 1 M, Miao Reserve forest, Miao, Tirap, 1.12.1983, Coll. S. Biswas.

Distribution : India (Assam, Bihar, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, South India, Tripura, Uttar Pradesh and West Bengal), China, Malaysia, Myanmar, Nepal, Sri Lanka, Thailand, Tibet and Vietnam.

Remarks : It is recorded for the first time from Arunachal Pradesh.

Genus *Sympetrum* Newman

48. *Sympetrum commixtum* (Selys)

Material examined : 2 MM, Near Tenga river, Tenga, West Kameng, 19.12.1965, Coll. S. K. Bhattacharya and A.N.T. Joseph; 1 F, Rupa, Kameng, 20.12.1965, Coll. S.K. Bhattacharya and A.N.T. Joseph and 1 M, Hapoli; Ziro, Lower Subansiri, 28.10.1981, Coll. S. K. Gupta and M. Prasad.

Distribution : India (Arunachal Pradesh, Gujarat, North West India and West Bengal).

49. *Sympetrum hypomelas* (Selys)

Material examined : 1 M, Sessa, West Kameng, 29.10.1984, Coll. R. N. Bhargava.

Distribution : India (Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Manipur, Meghalaya, Mizoram, Sikkim, Uttar Pradesh, West Bengal and Western Ghats), China, Myanmar, Nepal and Tibet.

Genus : *Trithemis* Brauer

50. *Trithemis aurora* (Burmeister)

Material examined : 1 M, Likhali, Subansiri, 6.10.1966, Coll. S. K. Tandon and G. S. Arora; 3 MM, Likhali, Subansiri, 7.10.1966, Coll. S. K. Tandon and G. S. Arora; 1 M, Likhali, Subansiri, 16.10.1966, Coll. S. K. Tandon and G. S. Arora; 3 MM, 1 F, Dali Camp, 12.10.1966, Coll. S.K. Tandon and G. S. Arora; 3 MM, Deomali, Tirap, 9.11.1971, Coll. G.S. Arora and 3 MM, 3 FF, Seji, Siang; 15.10.1981, Coll. S. K. Gupta and M. Prasad.

Distribution : Throughout India, China, Hongkong, Indonesia, Japan, Kampuchia, Laos, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Singapore, Sri Lanka, Taiwan, Thailand, Tibet and Vietnam.

51. *Trithemis festiva* (Rambur)

Material examined : 1 M, Pinjuli, Kameng, 24.12.1965, Coll. S. K. Bhattacharya and A.N.T. Joseph and 2 MM, Dali camp, Siang, 12.10.1966, Coll. S. K. Tandon and G. S. Arora.

Distribution : Throughout India, Afghanistan, Africa, China, Cyprus, Hongkong, Indonesia, Iraq, Kampuchia, Laos, Pakistan, Papua, Philippines, New Guinea, Singapore, Sri Lanka, Taiwan, Thailand, Turkey and Vietnam.

52. *Trithemis pallidinervis* (Kirby)

Material examined : 1 M, 1F, Seji, Siang, 15.10.1981, Coll. S. K. Gupta and M. Prasad.

Distribution : Throughout India, Indonesia, Malaysia, Myanmar, Nepal, Philippines, Singapore, Sri Lanka, Taiwan, Thailand and Tibet.

Genus : *Pantala* Hagen

53. *Pantala flavescens* (Fabricius)

Material examined : 1 F, Purha Camp, Subansiri, 12.10.1966, Coll. S. K. Tandon and G. S. Arora; 1 M, Likhali, Siang, 17.10.1981, Coll. S. K. Gupta and M. Prasad and 1 M, Daparizo, 24.10.1981, Coll. S. K. Gupta and M. Prasad.

Distribution : Casmopolitan.

Genus : *Rhyothemis* Hagen

54. *Rhyothemis variegata variegata* (Linn.)

Material examined : 1 M, Dejoo, Subansiri, 10.5.1966, Coll. A.N.T. Joseph.

Distribution : India (Bihar, Himachal Pradesh, Madhya Pradesh, Maharashtra, Manipur, Karnataka, Orissa, Uttar Pradesh and West Bengal), Malaysia, Myanmar, Nepal and Sri Lanka.

SUMMARY

A total of 92 species and subspecies of Odonata belonging to 49 genera under 11 families are studied from Arunachal Pradesh, of which 15 species are new records for the state.

ACKNOWLEDGEMENTS

Authors are thankful to Director, Zoological Survey of India, Calcutta for providing facilities and permission to undertake this study.

REFERENCES

- Bhargava, R. N. 1989. On a collection of Odonata from West Kameng district, Arunachal Pradesh. *Indian Odonatol*, **2** : 45-46.
- Fraser, F. C. 1933-1936. Fauna of British India, including Ceylon and Burma. Odonata Vols, 1-3. Taylor & Francis, London.
- Lahiri, A. R. 1977. New records of Odonata from Tripura and Arunachal Pradesh. *Proc. Zool. Soc. Calcutta*, **30** : 45-49.
- Lahiri, A. R. 1979. Odonata (Insecta) from different states of Northeastern India. *Oriental Ins.*, **13** : 119-132.
- Lahiri, A. R. 1985. Fauna of Namdapha : Arunachal Pradesh (Insecta : Odonata). *Rec. zool. Surv. India*, (Special Issue). **82** : 61-67.
- Lahiri, A. R. 1987. Studies on the Odonata fauna of Meghalaya. *Rec. zool. Surv. India, occ. pap.*, No. 99 : 1-402.
- Lahiri, A. R. & Sinha, C. 1985. A new synonym in Indian *Rhinocypha* Rambur, with a review of the species groups *fnestrella* and *bifasciata* (Odonata : Chlorocyphidae). *Bull. zool. Surv. India*, **7** (1) : 33-36.

- Lahiri, A. R. & Sinha, C. 1991. A review of Indian Chlorocyphidae (Insecta : Odonata) with additional notes on taxonomy and distribution for some species and description of a new subspecies. *Rec. zool. Surv. India*. **89** : 259-268.
- Mitra, T. R. 1994. Observations on the habits and habitats of adult dragonflies of eastern India with special reference to fauna of West Bengal. *Rec. zool. Surv. India, Occ. Pap. No. 166* : 1-40.
- Prasad, M. 1997. Further additions to the Odonate fauna of Arunachal Pradesh, eastern India. *Opusc. zool. flumin.*, **154** : 1-6.
- Prasad, M. & Varshney, R. K. 1995. A check list of the Odonata of India including data on larval studies. *Oriental Ins.* , **29** : 385-428.