

ON A COLLECTION OF ODONATA FROM MANIPUR WITH NEW RECORDS

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(With 1 Text-figure)

INTRODUCTION

Manipur state of the Indian Union is situated on the Indo-Burma frontier. The state is mostly covered with hill ranges having an average altitude of 200 M, surrounding a large central basin. Present study is based on a fairly good collection of odonata from the state present in the Eastern Regional Station, Zoological Survey of India, made in two successive years 1974 and 1975. Collection localities are mostly around Loktak lake in the south-east corner of the central basin and in the hilly regions further south around Churachandpur and Singant.

The only odonate (sub) species so far reported from Manipur is *Ischnura rufostigma annandalei* Laidlaw by Bhasin (1953). Present study reveals the existence of 22 odonate species and subspecies in the state, 11 of which are Oriental, the rest, having four Ethiopian representatives, have a wider distribution in Palaeartic and Australian regions. Collection localities and distribution of all the 22 species and subspecies have been given in the text along with taxonomic notes for some of them and additional description of the inadequately known subspecies *Ischnura rufostigma annandalei* Laidlaw.

SYSTEMATIC ACCOUNT

Suborder ZYGOPTERA

Family PLATYCNEMIDIDAE

Copera annulata (Selys, 1863)

Material examined.—1 ♂; 11 Km from Moirang on Churachandpur road, coll. A. R. Lahiri, 19.iii.1974.

Length : ♂ abd.+app. 36.5, hindwing 23.0 mm; postnodals: forewing 16, hindwing 14.

A teneral specimen with dark areas on dorsum of head not properly developed.

Distribution.—Manipur (present record). Extends from Eastern India (Assam) to Malaysia.

Family COENAGRIONIDAE

Pseudagrion australasiae Selys, 1876

Material examined.—1 ♂, Fagakchaokhia, coll. A. R. Lahiri, 19.iii. 1974.

Length: ♂ abd.+app. 32.5, hindwing 22.5 mm; postnodals: forewing 12, hindwing 10.

The specimen agree with the description of Javan specimens (Fraser, 1933) in the markings of the Postclypeus and that of the 2nd abdominal segment. Fraser (op. cit.) recorded this species as *P. bengalense* Laidlaw, which has been synonymised with *P. australasiae* Selys (Lieftinck, 1954).

Distribution.—Manipur (present record). Extends from Eastern India (Bengal and Assam) through Burma and Malaysia to Australia.

Ceriagrion fallax cerinomelas Lieftinck, 1927

Material examined.—1 ♂, 4 Km south of Singnat coll. A. R. Lahiri, 26.iii.1974.

Length : ♂ abd.+app. 32.0, hindwing 21.5; postnodals; forewing 14, hindwing 12.

Distribution.—Manipur (present record). The subspecies is recorded from Western Himalayas (Simla), Nepal and China (Yunan).

Enallagma parvum Selys. 1876.

Material examined—2 ♂, Nongthukong and Fagakchaokhia, coll. A. R. Lahiri, 16 and 19.iii. 1974.

Length: ♂ abd.+app. 18.0, hindwing 12.0 mm; postnodals: forewing 7, hindwing 6.

Distribution.—Manipur (present record). Recorded distribution of the species is from Ceylon through India to Burma.

Aciagrion tillyardi Laidlaw, 1919.

Material examined.—2 ♂, 4 Km south of Signat, coll. A. R. Lahiri, 26.iii.1974.

Length: ♂ abd.+app. 25.0—26.0, hindwing 15.0—17.0 mm; postnodals: forewing 11, hindwing 10—11.

Distribution.—Manipur (present record). Originally described from Cherrapunji (Meghalaya), the species is also reported from Malaysia.

***Ischnura aurora aurora* Brauer, 1865.**

Material examined.—8 ♂, Tahmu fish Farm near Moirang, Nungthukong, Fagakchaokhai, Churachandpur and 3 Km. north of Signat, coll. A. R. Lahiri, 15-28.iii. 1974, 1♂, Tobungbasti, coll. M. Dutta, 27.iii. 1975.

Length: ♂ abd.+app. 19.5—21.5, hindwing 11.0—12.0 mm; postnodals: forewing 7, hindwing 5—6.

Distribution.—Manipur (present record). This is a wind-borne species scatteredly distributed throughout Indo-Australian and Pacific regions.

***Ischnura rufostigma annandalei* Laidlaw 1919.**

(Text-fig. 1 A-I)

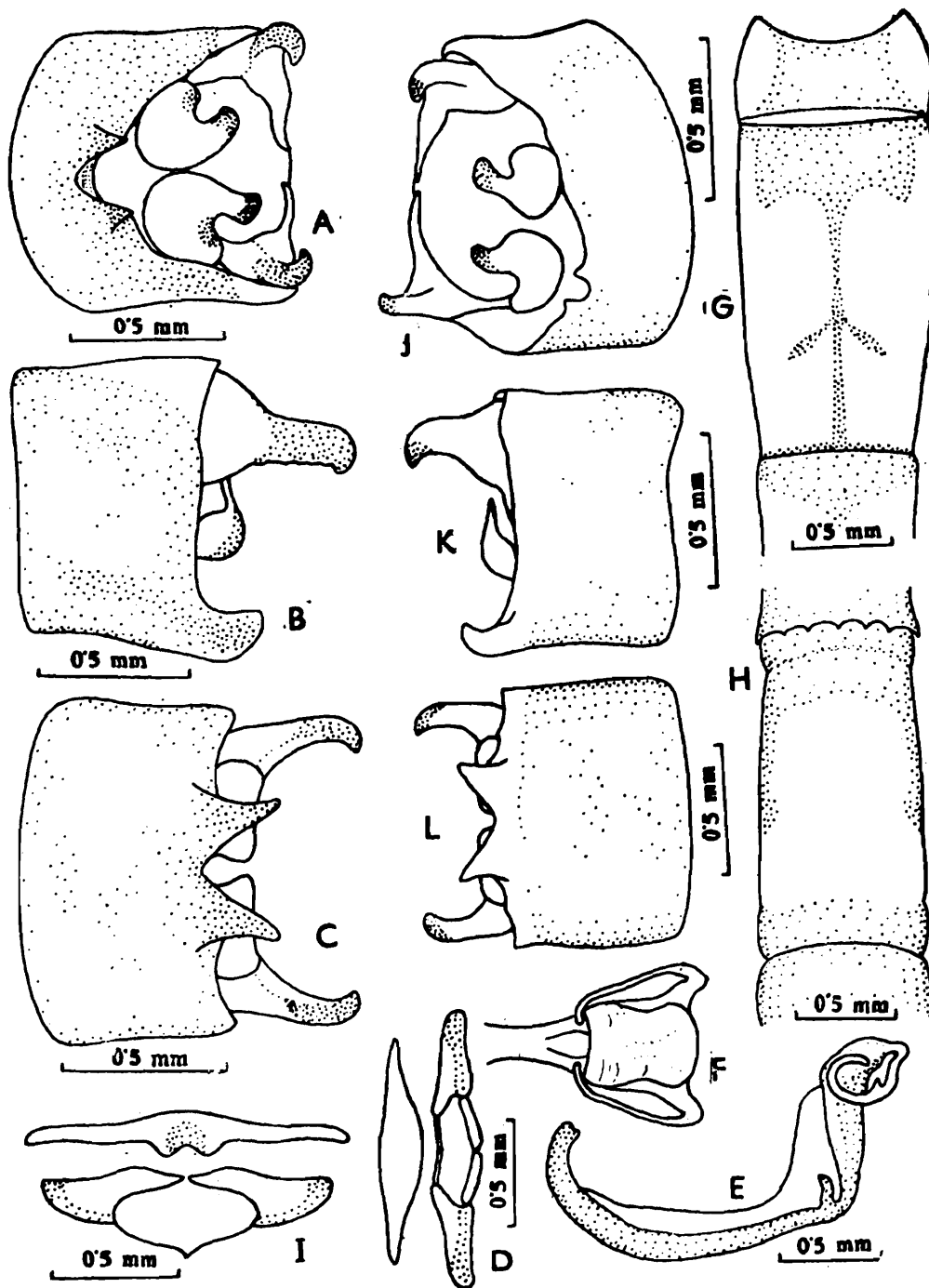
Material examined.—20 ♂, 14 ♀, Tahmu Fish Farm, Moirang and Loktak lake near this spot "Over Floating humous vegetation", Coll. A. R. Lahiri, 15-20.iii. 1974; 1 ♂, Nongthukong village, Coll. M. Dutta, 21.iii. 1975.

Length: ♂ abd.+app. 22.5—25.0, hindwing 14.5—15.5; ♀, 24.0, 16.0—16.5 mm; postnodals: ♂ forewing 8-9, hindwing 6-7; ♀ 8-9, 7.

Laidlaw (1919) described *Ischnura annandalei* from Upper Burma (Inle Lake) as a district species, but Lieftinck (in litt.) considered it a subspecies of *Ischnura rufostigma* Selys, which it resembles markedly in general built, shape and colouration of the pterostigma and that of the anal appendages. A close study of long series of both sexes in present collection revealed that the subspecies is inadequately described, moreover, the use of the abdominal markings to separate it from *I. mildredae* Fraser (see Fraser, 1933) is erroneous. As such additional description of *I. r. annandalei* Laidlaw and its distinguishing characters from allied species and subspecies is provided here:

Male.—Prothorax with posterior lobe (Text-fig. 1 D) simple and rounded. Mesostigmal plate (Text-fig. 1 D) with each lamina triangular and tilted up at postero-outer margin. Abdomen with segment 1 black on dorsum, the sides as well as apical annule greenish yellow (Text-fig. 1 G). Intermediate segments (2-6) bright reddish orange, with intersegmental joints and a dorsal marking on segment 2 black, the latter shaped as in Text-fig. 1 H. Remaining segments as well as tubercles black, broadly marked with blue on segment 8 (Text-fig. 1 H), while segment 10 is yellowish on sides and beneath. Anal appendages (Text-fig. A-C) ochreous, the superiors tipped with black, the inferiors more broadly so; superiors much shorter than inferior, rounded and extended ventrally and slightly outwardly into a blunt flattened projection; inferiors more than half the length of segment 10, broad at base,

narrow thereafter, broadly pointed at its tip, where it turns inwards and slightly upwards. Penis (Text-fig. 1 E-F) with its apex produced into a short coiled flagella on either side.



Text-fig. 1. A-I. *Ischnura rufostigma annandalei*, A-C male anal appendages; A, postero dorsal, B, lateral, C, dorsal view; D, male, posterior lobe of prothorax and mesostigmal plate; E-F penile organ; E, lateral view, F, apex more magnified in dorsal view; G-H male abdominal markings; T, segments 1-3; G, segment 8; I, Female posterior lobe of prothorax and mesostigmal plate; J-L, *Ischnura rufostigma rufostigma*, male anal appendages; J, postero dorsal, K, lateral, L, dorsal view.

Female.—Prothorax with posterior lobe (Text-fig. 1 J) tripartite, the mid lobe squarely produced backwards and is arched. Mesostigmal plate (Text-fig. 1, I) with laminae similar to male, but broader and

broadly connected with anterior carina. Abdomen similar to male in isochromatic form, but in heterochromatic form, pale greenish yellow on sides and beneath; segment 1 and 2 somewhat reddish on dorsum, the latter bearing a pear shaped black mark; remaining segments broadly marked with black dorsal stripe, constricted at base on segments 3-6.

Remark.—From the nominate species. *I. r. annandalei* Laidlaw differs in having the blue marking on segment 8, black markings on segment 2, 8 and the tubercles and finally in having more robust anal appendages, the inferiors being more extensively marked with black. From *I. mildredae* Fraser, *I. r. annandalei* differs in having very broad (vs small and rounded) blue markings on segment 8. (also see Fraser, 1933).

In Loktak Lake *I. r. annandalei* Laidlaw was found in large numbers swarming across the ridges grown over scattered and floating humous vegetation, which are employed as fishing spots by the local fishermen. However the subspecies was all-together absent in the hilly regions further south, where the nominate species was collected.

Distribution.—Manipur (present record), Imphal; also Burma, Mamyo and Inle lake.

***Ischnura rufostigma rufostigma* Selys 1876**

(Text-fig. 1, J-L)

Material examined.—1 ♂, 4 Km south of Singnat, Coll. A. R. Lahiri, 26.iii.1974.

Length: ♂ abd.+app. 19.0, hindwing 13.5 mm; postnodals: forewing 8, hindwing 6—7.

The specimen under study agrees well with existing description of the species (Fraser, 1933), but is considerably smaller (abdomen 19.0 vs 23.0 mm) and the 2nd segment is marked with a narrow mid-dorsal carinal stripe falling short of apex. The tubercles as well as apical border of segment 10 is unmarked with black. Anal appendages (Text-fig. 1J-L) specially the inferiors are comparatively shorter and less robust than *I. r. annandalei* Laidlaw.

Distribution.—Manipur (present record). The subspecies is confined to North India(?) Kashmir, Bihar, Bengal and Assam.

***Ischnura senegalensis* (Rambur, 1842)**

Material examined.—1 ♂, 1 ♀, Fagakehaokhiaj, Coll. A. R. Lahiri, 19.iii.1974.

Length: ♂ abd.+app. 23.0, hindwing 15.0; ♀ 23.5, 16.0 mm; postnodals: ♂, ♀ forewing 7.8, hindwing 6.

Distribution.—Manipur (present record). Extends from Africa through India, Ceylon, Burma and Malaysia to Japan.

***Agriocnemis femina femina* (Brauer, 1868)**

Material examined.—2 ♂, 3 ♀, Moirang, Nongthukong and Fago-kchaokhaij, coll. *A. R. Lahiri*, 16—19.iii.1974; 3 ♂, 1 ♀, Kangrai, Coll. *M. Dutta*, 22.iii.1975.

Length: ♂ abd.+app. 17.5—18.0, hindwing 10.5; ♀ 19.0—20.0, 12.5—13.0 mm; postnodals: ♂ forewing 6, hindwing 5; ♀ 7-9, 6-7.

Distribution.—Manipur (present record). The subspecies extends from Ceylon, through eastern India (Assam) and Burma to the Pacific Islands.

***Agriocnemis pygmaea* (Rambur, 1842)**

Material examined.—5 ♂, Moirang, Nongthukong and Churachandpur; Coll. *A. R. Lahiri*, 16—24.iii.1974. 4 ♂, 3 ♀, Keibul, Sendra and Gulzang, Coll. *M. Dutta* 20—25.iii. 1975.

Length: ♂ abd.+app. 17.5—19.5, hindwing 11.0—12.0, ♀ 18.0—20.0, 12.0—13.0 mm; postnodals: ♂ forewing 6—7, hindwing 5—6, ♀ 8, 6.

The specimens under study agrees with Shillong forms as described by Pinhey (1974), but the males are larger in size from all forms described by Pinhey (op. cit.), (abdomen without appendages 17.0—19.0 vs 16.0—17.0 mm). The females correspond in size with those described from Mahe.

Distribution.—Manipur (present record). The species is widely distributed from Africa through India, Ceylon, Burma and Malaysia to Australia and the Pacific islands.

Family CALOPTERYGIDAE

***Neurobasis chinensis chinensis* (Linnaeus, 1758)**

Material examined.—2 ♂, Likhai village, Coll. *A. R. Lahiri*, 27.iii.1974.

Length: ♂ abd.+app. 44.0—49.0, hindwing 34.0 mm; antenodales: forewing 35—39, hindwing 33—38, postnodals: forewing 54—58, hindwing 62—68.

Distribution.—Manipur (present record). Extends from Ceylon through North India to Indochina, Thai, Malaya and Sumatra; Nepal.

Family LIBELLULIDAE

***Orthetrum glaucum* (Brauer, 1865)**

Material examined.—1 ♂, Kangrai, Coll. *M. Dutta*, 22.iii.1975.

Length: ♂ abd.+app. 28.0, hindwing 31.0 mm; antenodals: forewing 13, hindwing 10; postnodals: forewing 10, hindwing 11—12.

Distribution.—Manipur (present record). The species is distributed from Western India and Ceylon to Malaysia; Nepal.

***Orthetrum pruinatum neglectum* (Rambur, 1842).**

Material examined.—1 ♂, Bughmang, Coll. *A. R. Lahiri*, 22.iii.1974, 2 ♂, Saikot, Coll. *M. Dutta*, 23.iii.1975.

Length: ♂ abd.+app. 29.0, hindwing 35.0 mm; antenodals: forewing 7½, hindwing 6; postnodals: forewing and hindwing 6.

Distribution.—Manipur (present record). The range of distribution of this species extends from Ceylon and India through Burma, Malaysia to China and Taiwan; Nepal.

***Orthetrum sabina sabina* (Drury, 1770)**

Material examined.—1 ♂, Churachandpur, Coll. *A. R. Lahiri*, 24.iii.1974.

Length: ♂ abd.+app. 31.0, hindwing 33.5 mm; antenodals: forewing 13, hindwing 9—10; postnodals: forewing 9, hindwing 11.

Distribution.—Manipur (present record). Extends from northeast Africa eastward across Asia to Australia and Pacific islands; Nepal.

***Potamarcha congener* (Rambur, 1842)**

Material examined.—1 ♀, Likhai village, Coll. *A. R. Lahiri*, 22.iii.1974.

Length: ♀ abd.+app. 27.5, hindwing 31.5 mm; antenodals: forewing 13½, hindwing 11—12; postnodals: forewing 10—11, hindwing 11—12.

Distribution.—Manipur (present record). The species extends from Ceylon and India to Burma and Malaysia.

***Acisoma panorpodes panorpoides* Rambur, 1842.**

Material examined.—1 ♀, Sendra, Coll. *M. Dutta*, 20.iii.1975.

Length: ♀ abd.+app. 19.0, hindwing 23.0 mm; antenodals: forewing 7—8, hindwing 6; postnodals: forewing and hindwing 7.

Distribution.—Manipur (present record). Widely spread from Western India and Ceylon to China, southern Japan and Taiwan; southwards to Celebes and the Moluccan islands.

***Diplacodes trivialis* (Rambur, 1842)**

Material examined.—1 ♀, Sendra, Coll. *M. Dutta*, 20.iii.1975.

Length: ♀ abd.+app. 21.0 hindwing 20 mm; antenodals: forewing $7\frac{1}{2}$, hindwing 6; postnodals: forewing and hindwing 6.

Distribution.—Manipur (present record). Extends from the Seychelles through Ceylon and India to Australia and Western Pacific; Nepal.

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

Material examined.—4 ♂, 2 ♀, Saikot, Sendra road, 5 Km. east of Moirang and 4 Km. south of Singnat, Coll. *A. R. Lahiri*, 21—27.iii. 1974.

Length: ♂ abd.+app. 25.0—26.0, hindwing 29.5—30.5, ♀ 23.0, 29.0 mm; antenodals: ♂ forewing $11\frac{1}{2}$, hindwing 9, ♀ $9\frac{1}{2}$ — $11\frac{1}{2}$, 9; postnodals: ♂ forewing 9-10, hindwing 10-11; ♀ 9-10, 10.

Distribution.—Manipur (present record). The subspecies extends from Mesopotamia through Ceylon, India, Burma and Malaysia to Australia and Japan; Nepal.

***Palpopleura sexmaculata sexmaculata* (Fabricius, 1787).**

Material examined.—2 ♂, 1 ♀, Churachandpur and Singnat, Coll. *A. R. Lahiri*, 24 and 25.iii.1974; 1♂, 1 ♀, Kongvai, Coll. *M. Dutta*, 22.ii.1975.

Length: ♂ abd.+app. 14.0—15.0, hindwing 17.5—18.5, ♀ 15.0, 18.5—19.5 mm; antenodals: ♂ forewing 9— $11\frac{1}{2}$, hindwing 7-8, ♀ $10\frac{1}{2}$ —13, 7-8; postnodals: ♂ forewing 5-6, hindwing 4-5, ♀ 5, 4-5.

About half of the specimens in both sexes exhibited complete distal antenodals in either of the wings. Similar admixture of complete and incomplete antenodal nervures have been reported for *Brachythemis contaminata* (Fabricius), *Diplacodes trivialis* (Rambur) and *Crocothemis s. servilia* (Drury) by Raychaudhuri *et al* (1969) and Lahiri *et al*. (1970).

Distribution.—Manipur (present record). Extends from Ceylon and India through Malaysia, Indochina to China; Nepal.

***Trithemis aurora* (Burmeister, 1839)**

Material examined.—1 ♂, 1 ♀, Saikot, Coll. *M. Dutta*, 23.iii.1975.

Length: ♂ abd.+app. 24.0, hindwing 29.0, ♀ 20.5, 25.5 mm; antenodals: ♂ forewing $11\frac{1}{2}$ — $12\frac{1}{2}$, hindwing 10, ♀ $11\frac{1}{2}$ — $12\frac{1}{2}$, 9; postnodals: ♂ forewing 9, hindwing 10-11, ♀ 7-8, 9-10.

Distribution.—Manipur (present record). The species extends from Ceylon and India through Burma as far as Philippines, Celebes and Timor; Nepal.

Trithemis festiva (Rambur, 1842).

Material examined.—1 ♀, Kangraj, Coll. M. Dutta, 22.iii.1975.

Length: ♀ abd. + app. 23.0, hindwing 29.5 mm; antenodals: forewing $10\frac{1}{2}$ — $11\frac{1}{2}$, hindwing 7; postnodals: forewing 6, hindwing 6-7.

Distribution.—Manipur (present record). Extends from Ceylon and India through Burma to New Guinea; Nepal.

ACKNOWLEDGEMENTS

The author is thankful to the Director, Zoological Survey of India, Calcutta, for providing opportunity to do this work, to the officer-in-Charge, Eastern Regional Station, Zoological Survey of India, Shillong for providing working facilities and to Dr. M.A. Lieftinck for confirming identification of some of the species dealt with in this paper.

SUMMARY

21 odonate species and subspecies have been recorded for the first time from Manipur state of the Indian Union. Additional description has been provided for *Ischnura rufostigma annandalei* Laidlaw, the only odonate subspecies which was so far recorded from the state. Necessary collection data and distribution of all the 22 odonate species and subspecies have been provided along with taxonomic notes for some of them.

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