

SUMMARY

The thesis contains the results of a research work made on the systematics and the distribution of 29 species of the midges belonging to 10 genera under the subfamily Orthocladiinae, family Chironomidae (Order Diptera) from Eastern parts of India. The results are summarised as follows :

1. One species belonging to the genus Brillia Kieffer, Brillia kulti Singh, previously described from India is revised here on the basis of the type specimens of the author.
2. Two new species of the genus Ekiefferiella Thienemann, Ekiefferiella debilis and Ekiefferiella peculiaris from India are recorded and described.
3. Two species of genus Heterotriacodellus Spardk, Heterotriacodellus chandra Singh and Heterotriacodellus kulvansi Singh, from India are also revised here on the basis of the type specimens of the author.

4. One new species of the genus Metricnemus V.d. Wulp, Metricnemus longipalpus is reported and described from India. The species, Metricnemus callinotus Kieffer is reviewed on the basis of some fragmentary residues of the type specimen available at the Indian Museum.
  
5. Ten new species belonging to the genus Limnophyes Eab. such as Limnophyes brevis, Limnophyes medicaris, Limnophyes fuscimarginalis, Limnophyes montanus, Limnophyes flavus, Limnophyes distinctigenitalis, Limnophyes nasutus, Limnophyes puncticalus, Limnophyes seetheri and Limnophyes uniformis from different parts of Eastern India are recorded and described.
  
6. Two new species of the genus Parametricnemus Goetghebuer such as Parametricnemus nullus and Parametricnemus subrubilus from India are reported and described. One species of the same genus Parametricnemus fusiger Kieffer described previously from India is reviewed.
  
7. Three new species belonging to the genus Paraphaeocladus Thienemann, Paraphaeocladus albasulatus, Paraphaeocladus proprius and P. trichialis and two new

species of the genus Thienemannia Kieffer, Thienemannia fuscithaca and Thienemannia lutea are reported and described from India. The occurrence of these genera are also reported, for the first time, from the Oriental region.

8. Three new species of the genus Rheoricotopus Thienemannia and Karnish such as Rheoricotopus monogastri-  
chalis, Rheoricotopus himalayensis and Rheoricotopus  
yalgus are reported and described from India.

9. One species of the genus Trichocladius eriplexus Kieffer previously described from India is reviewed. Another species of the same genus, Trichocladus brevipila previously described by Singh (1958) from India has been found to belong to the subfamily Diamesinae and not to the subfamily Orthocladinae as already suggested by Sublette and Sublette (1973).

10. While describing new or old species, some important morphological features have been considered for the first time.

11. The morphological features which have been found to be of quantitative importance are mentioned (Table 2-4).

12. New dichotomous keys for facilitating identifications of genera as well as species under this study are also incorporated.

Table 2. Systematic list of *Limnocyges* Hal. and comparison of certain quantitative characters

| Name of the Sps.                        | PS | CS    | Preoc-<br>tals | Acros-<br>tibial | Lh             | L.ps  | Pre-<br>alars | WL<br>(mm) | Wb<br>(mm) | Sq.S | CR   | VR   | AR   | L/W  | TR   | SHc          | L.Spc. | HR   | HV   |
|---|----|-------|----------------|------------------|----------------|-------|---------------|------------|------------|------|------|------|------|------|------|--------------|--------|------|------|
| 1. <i>Limnocyges<br/>brevia</i> n.sp.   | 1  | 12    | 5-6            | 0                | 0              | 2     | 4-6           | 0.33       | 0.1        | 3    | 0.85 | 1.33 | 0.18 | 5.3  | 2.1  | 8            | 0.019  | 1.66 | 3.5  |
| <i>L. antioquia</i><br>n.sp.            | 2  | 16-18 | 3              | 0                | 1              | 0     | 5-6           | 0.99       | 0.32       | 2    | 0.94 | 1.34 | 0.25 | 3.0  | 1.9  | 9-10<br>(10) | 0.019  | 1.47 | 2.7  |
| <i>L. fuscinervis-<br/>halis</i> n.sp.  | 3  | -     | 5              | 0                | 3              | 3     | 5             | 0.95       | 0.35       | 0    | 0.94 | 1.26 | 0.17 | 2.75 | 2.0  | 9            | 0.012  | 1.65 | 2.5  |
| <i>L. montanus</i> n.sp.                | 2  | 14    | 5              | 4-5              | 0              | 0     | 3-4           | 1.36       | 0.39       | 6    | 0.97 | 1.28 | 1.05 | 3.5  | 2.0  | 11           | 0.012  | 2.0  | 2.6  |
| <i>L. clayton</i> n.sp.                 | 3  | 12-13 | 4              | 5-6              | 0              | 0     | 4             | 1.42       | 0.42       | 4    | 0.95 | 1.26 | 0.8  | 2.45 | 1.92 | 11           | 0.019  | 1.81 | 1.75 |
| <i>L. distinctio-<br/>nitatis</i> n.sp. | 2  | 14    | 5              | 8                | 2              | 2     | 5-6           | 1.25       | 0.36       | 4    | 0.96 | 1.36 | 0.51 | 2.7  | 2.0  | 10(10)       | 0.011  | 1.79 | 2.4  |
| <i>L. magna</i> n.sp.                   | 4  | 18    | 4              | 6                | 4              | 5     | 0             | 1.24       | 0.37       | 5    | 0.97 | 1.31 | 0.58 | 4.0  | 2.0  | 11           | 0.019  | 1.7  | 2.9  |
| <i>L. puncticellus</i><br>n.sp.         | 3  | 12    | -              | 0                | 19-21<br>(8-9) | 18-19 | 6             | 1.18       | 0.42       | 1    | 0.92 | 1.24 | -    | 3.4  | 2.1  | 10           | 0.008  | 1.82 | 2.4  |
| <i>L. antheri</i> n.sp.                 | 4  | 12    | 5              | 0                | 18-19<br>(13)  | 12    | 8             | 1.18       | 0.40       | 1    | 0.93 | 1.34 | 0.19 | 2.14 | 2.0  | 11           | 0.015  | 2.2  | 2.4  |
| <i>L. uniformis</i><br>n.sp.            | 2  | 14    | 5              | 0                | 0              | 0     | 6             | 1.03       | 0.35       | 4    | 0.91 | 1.34 | 0.34 | 2.2  | 2.0  | 10           | 0.015  | 1.75 | 3.0  |

Explanation of the abbreviations used :

PS - postocular setae, CS - Clypeus setae, Lh - lanceolate humerals, L.ps - lanceolate prescutellars, WL - wing length, Wb - wing breadth, Sq.S - squamal setae, CR - costal ratio, VR - venarum ratio, AR - antennal ratio, L/W - palpal ratio, TR - tarsal ratio of hind leg, SHc - setae in hind tibial comb, L.Spc. - length of the spine in the penis cavity, HR - hypopygeal ratio and HV - hypopygium value.

Figures in first brackets indicate the number in females.

Table 3. Systematic list of Paraphanocladus Thien. and comparison of certain quantitative characters

| Name of the Sps.     | PS | CS | Frontals | Acro-<br>tibial | Dorso-<br>centra | Pre-<br>alar | WL<br>(mm) | Wb<br>(mm) | Sq.S | CR   | VR  | AR   | L/W  | TR   | SHc | HR   | HV  |
|----------------------|----|----|----------|-----------------|------------------|--------------|------------|------------|------|------|-----|------|------|------|-----|------|-----|
| <i>P. albualetus</i> | 13 | 10 | 0        | 23-24           | 16               | 8            | 1.46       | 0.58       | 5    | 0.81 | 1.2 | 0.51 | 4.4  | 2.0  | 9   | 2.23 | 2.7 |
| <i>P. proxius</i>    | 18 | 7  | 1        | 14              | 19-20            | 7            | 1.38       | 0.41       | 3    | 0.81 | 1.3 | 0.48 | 4.4  | 2.08 | 8   | 2.2  | 3.7 |
| <i>P. trichialis</i> | 14 | 11 | 3        | 16-18           | 23-25            | 8            | 1.54       | 0.47       | 5    | 0.83 | 1.1 | 0.45 | 4.15 | 2.2  | 9   | 2.22 | 2.5 |

Table 4. Systematic list of Paramestricoccus Thien. and comparison of certain quantitative characters

|                      |    |    |   |    |    |     |      |      |   |      |     |      |     |      |    |      |     |
|----------------------|----|----|---|----|----|-----|------|------|---|------|-----|------|-----|------|----|------|-----|
| <i>P. milna</i>      | 9  | 12 | 1 | 8  | 10 | 4   | 1.47 | 0.45 | 4 | 0.94 | 1.1 | 1.06 | 3.7 | 2.25 | 11 | 2.3  | 3.9 |
| <i>P. subnubilus</i> | 11 | 9  | 3 | 13 | 12 | 5-6 | 1.69 | 0.49 | 7 | 0.89 | 1.2 | 1.2  | 4.3 | 1.7  | 12 | 2.05 | -   |

Explanation of the abbreviations used :

PS - postocular setae, CS - clypeus setae, WL - wing length, Wb - wing breadth, Sq.S. - Squassal setae, CR - costal ratio, VR - venarum ratio, AR - antennal ratio, L/W - palpal ratio, TR - tarsal ratio of hind leg, SHc - setae in hind tibial comb, HR - hypopygeal ratio, and HV - hypopygium value.

Table 5. Systematic list of *Phanacictonus* Thion and Hantush and comparison of certain quantitative characters

| Name of the Spc.                        | PS         | CS | Frontals | Acro-<br>tichal | Dorso-<br>centrals | Pre-<br>alar | WL<br>(mm) | Wb<br>(mm) | Sq.S  | CR   | VR   | AR   | L/W | TR  | SHc | HR   | HV  |
|---|------------|----|----------|-----------------|--------------------|--------------|------------|------------|-------|------|------|------|-----|-----|-----|------|-----|
| <i>P. yalou</i> n.sp.                   | 2          | 18 | 3        | 12-14           | 12                 | 3            | 1.95       | 0.62       | 9     | 0.98 | 0.18 | 1.2  | 3.8 | 2.0 | 12  | 2.8  | 3.4 |
| <i>P. nuroacrosti-<br/>chalis</i> n.sp. | 5          | 8  | 3-4      | 0               | 7-8<br>(8)         | 3            | 1.61       | 0.51       | 14-16 | 0.93 | 1.18 | 0.81 | 3.2 | 1.3 | 9   | 3.57 | 3.1 |
| <i>P. himalayensis</i><br>n.sp.         | 4-5<br>(4) | 8  | 2        | 13-15<br>(14)   | 10-12<br>(10)      | 3            | 1.63       | 0.48       | 5     | 0.95 | 1.1  | 0.63 | 3.5 | 1.9 | 11  | 2.35 | 4.1 |

Table 6. Systematic list of *Thionemus* Kief and comparison of certain quantitative characters

|                       |    |       |   |       |       |       |      |      |              |      |     |      |     |     |               |     |     |
|-----------------------|----|-------|---|-------|-------|-------|------|------|--------------|------|-----|------|-----|-----|---------------|-----|-----|
| <i>T. fuscitarsis</i> | 11 | 11-12 | 5 | 23-25 | 18-20 | 12-13 | 1.63 | 0.51 | 12-13        | 0.91 | 1.3 | 0.92 | 5.7 | 2.0 | 13            | 3.3 | 2.9 |
| <i>T. lutea</i>       | 11 | 14    | 4 | 19-22 | 20    |       | 1.71 | 0.50 | 9-10<br>(10) | 0.98 | 1.2 | 0.89 | 5.3 | 2.8 | 12-13<br>(12) | 2.4 | 3.7 |

Explanation of the abbreviations used :

PS - postocular setae, CS - clypeus setae, WL - wing length, Wb - wing breadth, Sq.S - squamal setae, CR - costal ratio, VR - venarum ratio, AR - areolar ratio, L/W - palpal ratio, TR - tarsal ratio of hind leg, SHc - setae in hind tibial comb, HR - hypopygeal ratio and HV - hypopygium value.

Figures in first brackets indicate the number in females.