

SIMULIIDAE (DIPTERA) FROM SIKKIM, INDIA

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ABSTRACT

Six species of Simuliidae (Diptera) are recorded from Sikkim, India, bringing the number of species in the State to seven, viz. *Simulium (Himalayum) indicum* Becher, *Simulium (Simulium) rufibasis* Brunetti, *S. (S.) himalayense* Puri, *S. (S.) dentatum* Puri, *Simulium (Gomphostilbia) melatarsale* Brunetti, *S. (G.) tenuistylum* Datta and *Simulium (Eusimulium)* species D of Datta, Dey and Paul, 1975.

INTRODUCTION

The simuliid fauna of Sikkim is one of the least known in India, despite the potential economic importance of this family as the blood-sucking pest of man and animals. Prior to the present report, only *Simulium (Himalayum) indicum* Becher (locally called pipsa) has long been known to represent the fauna (Cotes, 1894 ; Lewis, 1974). Recently, while examining a small collection of immature stages taken on bamboo leaves from a stream of Gangtok (altitude 1704 m.) on the 26th April, 1976, by Mr. T. K. Pal under the leadership of Mr. A. R. Bhowmik, Zoological Survey of India, Calcutta, the author encountered six species which are recorded here for the first time from the State. It appears fairly certain that the simuliid fauna of Sikkim is very similar to that of the Himalayan Darjeeling District of West Bengal (cf. Brunetti, 1911 ; Puri, 1932a & b ; Datta, 1973 ; 1974 ; Datta, Dey and Paul, 1975 ; Datta, Dey, Paul and Pal, 1975).

Subfamily SIMULIINAE Newman

Tribe SIMULIINI Newman

1. *Simulium (Simulium) rufibasis* Brunetti

Simulium rufibasis Brunetti, 1911, *Rec. Indian Mus.*, 4 : 285 ; Smart, 1945, *Trans. R. ent. Soc. Lond.* 95 : 513.

Simulium (Simulium) rufibasis Brunetti : Puri, 1932, *Indian J. med. Res.*, 19 : 899 ; Crosskey, 1969, *Bull. Brit. Mus. nat. Hist. (Ent.) Suppl.* 14 : 115 ; Lewis, 1973, *Bull. ent. Res.*, 62 : 455 ; Crosskey, 1973, *A Catalog of the Diptera of the Oriental Region*, 1 : 428 ; Datta, 1974, *Oriental Ins.* 8 : 19.

Material examined : 12 pupae (in alcohol).

Distribution : INDIA : West Bengal, Himachal Pradesh, Meghalaya, Manipur and Arunachal Pradesh ; PAKISTAN and ? JAPAN.

Remarks : Brunetti (1911) described the species from a single female collected from Kurseong in West Bengal and the type (Regd. no. 2307/20) in partly damaged con-

dition is in the collection of the Zoological Survey of India, Calcutta. A single specimen (Regd. no. 936/H6) of the species collected by Revd. Pettigrew from Manipur is also in the same collection. The distribution of this species in Arunachal Pradesh and Meghalaya is supplied from the author's unpublished records. The species was also recorded from Japan (Ogata and Sasa, 1954), but recently Dr. H. Takahasi (*in litt.*, 1974), after a careful comparison of the Japanese form with the Indian one, has come to the conclusion that these two forms are quite different and obviously the Japanese form requires a new name.

2. *Simulium* (*Simulium*) *himalayense* Puri

Simulium (*Simulium*) *himalayense* Puri, 1932, *Indian J. med. Res.*, **19** : 885 ; Crosskey, 1969, *Bull. Br. Mus. nat. Hist. (Ent.) Suppl.* **14** : 115 ; Lewis, 1973, *Bull. ent. Res.*, **62** : 455 ; Crosskey, 1973, *A Catalog of the Diptera of the Oriental Region.* **1** : 427 ; Datta, 1974, *Oriental Ins.*, **8** : 20.

Simulium himalayense Puri : Smart, 1945, *Trans. R. ent. Soc. Lond.* **95** : 506.

Material examined : 7 pupae (in alcohol).

Distribution : INDIA : Himachal Pradesh, West Bengal, Bihar, Arunachal Pradesh, Manipur ; and PAKISTAN.

Remarks : Puri (1932a) described the species from material collected from different localities around Simla in Himachal Pradesh and from Kurseong and Darjeeling in West Bengal and the type is in the collection of the National Institute of Communicable Diseases, Delhi (Lewis, 1974). The distribution of this species in Arunachal Pradesh and Manipur is supplied from the author's unpublished records.

3. *Simulium* (*Simulium*) *dentatum* Puri

Simulium (*Simulium*) *dentatum* Puri, 1932, *Indian J. med. Res.*, **19** : 1135 ; Crosskey, 1968, *Bull. Br. Mus. nat. Hist. (Ent.) Suppl.* **14** : 115 ;

Crosskey, 1973, *A Catalog of the Diptera of the Oriental Region.* **1** : 426 ; Datta, 1974, *Oriental Ins.* **8** : 21.

Simulium dentatum Puri : Smart, 1945, *Trans. R. ent. Soc. Lond.*, **95** : 503.

Material examined : 2 pupae (in alcohol).

Distribution : INDIA : West Bengal and Meghalaya.

Remarks : Puri (1932b) described the species from the material collected from Bengal Terai and Kurseong in West Bengal and from Tura in Meghalaya, and the type is in the collection of the National Institute of Communicable Diseases, Delhi (Lewis, 1974). The author, while collecting simuliid specimens from Arunachal Pradesh, came across this species or its ally.

4. *Simulium* (*Gomphostilbia*) *metatarsale* Brunetti

Simulium metatarsalis Brunetti, 1911, *Rec. Indian Mus.*, **4** : 284 ; Smart, 1945, *Trans. R. ent. Soc. Lond.*, **95** : 509.

Simulium metatarsale Brunetti : Edwards, 1934, *Archiv. Hydrobiol. Suppl.*, **13** : 119.

Simulium (*Gomphostilbia*) *metatarsale* Brunetti : Crosskey, 1967, *J. nat. Hist.*, **1** : 38 ; Crosskey, 1973, *A Catalog of the Diptera of the Oriental Region.* **1** : 425.

Material examined : 1 pupa (in alcohol).

Distribution : INDIA : West Bengal ; MALAYSIA and INDONESIA.

Remarks : Brunetti (1911) described the species from a single male specimen collected from Kurseong in West Bengal and deposited the type in the Indian Museum (the entire collection of which is now in the Zoological Survey of India, Calcutta). While dealing with the simuliids of the Darjeeling area, Datta (1973) left a mention that the type is in the collection of the Zoological Survey of India, on the basis of the literature. Despite careful searches in

the depository, the author could not trace out the type material but the label of the type is still in the cabinet. It is, therefore, almost certain that the type has become lost.

5. *Simulium* (*Gomphostilbia*) *tenuistylum* Datta

Simulium (*Gomphostilbia*) *tenuistylum* Datta, 1973, *Oriental Ins.*, 7 : 377.

Material examined : 1 pupa and 1 larva (in alcohol).

Distribution : INDIA : West Bengal.

Remarks : This species was described by Datta (1973) from Darjeeling (West Bengal) and the type is now in the collection of the Zoological Survey of India. This species has not so far been recorded from far North-East India or other parts of India.

6. *Simullum* (*Eusimulium*) species D

Simulium (*Eusimulium*) species D, Datta, Dey and Paul, 1975, *Proc. Indian Acad. Sci. (B)*, 82 : 97.

Material examined : 1 pupa and 2 larvae (in alcohol).

Distribution : INDIA : West Bengal.

Remarks : This species was reported by Datta *et al.* (1975) from Darjeeling (West Bengal). The description of the species will be possible only when reared adults, larvae and pupae are available for study and comparison with *Simulium* (*Eusimulium*) *praelargum* Datta with which it apparently resembles very closely.

Key to species of *Simulium* known from Sikkim

Since the Sikkimese simuliids are mainly known from the pupal stages, the following key is based only on pupae. The identity of other stages of these species can be confirmed by published descriptions of the authors cited in the text.

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|---|--------------------|
| 1. Gill filaments 6 | 2 |
| —Gill filaments 8 | 5 |
| 2. Abdominal segments 7 and 8 invariably with spine-combs dorsally ; cocoon without neck..... | 3 |
| —No spine-combs on segments 5-9 ; cocoon with neck. | <i>indicum</i> |
| 3. Gill as long as or longer than pupal body ; filaments gradually divergent | Species D |
| —Gill shorter than pupal body ; filaments with convergent ends.. | 4 |
| 4. Filaments of middle pair distinctly arising from common stalk of upper pair of filaments | <i>rufibasis</i> |
| —Filaments of middle pair distinctly arising beside base of common stalk of upper pair of filaments | <i>himalayense</i> |
| 5. Gill filaments arranged in 2+2+2+2 ; cocoon closely woven and with large lateral aperture anteriorly | <i>dentatum</i> |
| —Gill filaments arranged in 3+3+2 ; cocoon loosely woven but without large lateral aperture | 6 |
| 6. Petiole of dorsal triplet comparatively long | <i>metatarsale</i> |
| —Petiole of dorsal triplet comparatively short | <i>tenuistylum</i> |

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