

## SARCOPHAGID FLIES (DIPTERA : SARCOPHAGIDAE) FROM BHUTAN

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### INTRODUCTION

The knowledge of Bhutanese Sarcophagidae is meagre. The author has collected Sarcophagid flies from different parts of Eastern Bhutan in 1978 and this paper presents the result of the study of these flies. Eleven species under six genera are reported here. The type material will be deposited in the National Collection of Zoological Survey of India, Calcutta in due course.

### ABBREVIATIONS USED IN THE TEXT

*ac*- acrostichal bristles, *dc*- dorsocentral bristles, *ia*- intra-alar bristles, *h*- humeral bristles, *ph*- posthumeral bristles, *np*- notopleural bristles, *sa*- supra-alar bristles, *pa*- postalar bristles, *st*- sternopleural bristles, *mpl*- mesopleural bristles, *hpl*- hypopleural bristles.

### ABBREVIATIONS USED IN THE FIGURES

*ap*- apical plate of paraphallus, *lp*- lateral plate of paraphallus, *p*- paraphallus, *s*- styli of glans, *t*- theca of penis, *v*- ventralia of penis.

### SYSTEMATIC ACCOUNTS

Subfamily SARCOPHAGINAE

Tribe SARCOPHAGINI

Subtribe PARASARCOPHAGINA

#### *Bercaea haemorrhoidalis* (Fallen)

1816. *Musca haemorrhoidalis* Fallen, *Sevensk. vet. Akad. Handl.*, p. 236.

1982. *Bercaea haemorrhoidalis* (Fallen) : Nandi, *Rec. zool. Surv. India*, 79 : 457.

*Material* : 50 ♂♂, Bhutan : Thimpu, 2,405 m., 20.x.1978; 5 ♂♂, Paro, 2,408 m., 28.x.1978; 6 ♂♂, Phuntsholing, 209 m., 18.x.1978; 12 ♂♂, Ha, 2,273 m., 31.x.1978; 7 ♂♂, Wangdiphodrong, 1,575 m., 25.x.1978; 5 ♂♂, Punakha, 1,576 m., 24.x.1978.

*Distribution* : Austria, Baluchistan, Bhutan, Bulgaria, China, Denmark, England, France, Germany, Hawaii, Hungary, India, Ireland, Italy, Japan, Madagascar, Nepal, North America, Portugal, Rumania, Seychelles, South America, Spain, Sweden, U.S.S.R., Yugoslavia.

**Boettcherisca (s. str.) peregrina (Robineau-Desvoidy)**

1830. *Myophora peregrina* Robineau - Desvoidy, *Essai, Myodaires*, 1 : 356.

1982. *Boettcherisca* (s.str.) *peregrina* (Robineau-Desvoidy) : Nandi, *Rec. zool. Surv. India*, 79 : 457.

*Material* : 3♂♂, Bhutan : Phuntsholing, 209 m., 18.x.1978 ; 2♂♂, Punakha, 1,576 m., 27.x.1978.

*Distribution* : Austria, Bhutan, Bonin Islands, Borneo, Burma, China, Fiji, Formosa, Gilbert Islands, Hainan Island, Hawaii, India, Islands, Japan, Java, Korea, Madagascar, Malaysia, Micronesia, Nepal, New Britain, New Guinea, Philippine Islands, Samoa, Seychelles, Society Islands, South Mariana Islands, Sri Lanka, South China, U.S.S.R., Volcano Islands.

**Boettcherisca (Coesica) khasiensis (Senior-White)**

1924. *Sarcophaga khasiensis* Senior-White, *Rec. Indian Mus.*, 26(3) : 246.

1982. *Boettcherisca* (Coesica) *khasiensis* (Senior-White) : Nandi, *Rec. zool. Surv. India*, 79 : 458.

*Material* : 1♂, Bhutan : Thimpu, 2,405 m., 20.x.1978.

*Distribution* : Bhutan, India.

**Parasarcophaga (s.str.) albiceps (Meigen)**

1825. *Sarcophaga albiceps* Meigen, *System. Besch.*, 5 : 22.

1982. *Parasarcophaga* (s.str.) *albiceps* (Meigen) : Nandi, *Rec. zool. Surv. India*, 80 : 118.

*Material* : 18♂♂, Bhutan : Phuntsholing, 209 m., 18.x.1978.

*Distribution* : Australia, Bismarck Islands, Bhutan, Borneo, Europe, Formosa, Hawaii, India, Japan, Java, Korea, Lombok, Nepal, New Britain, New Guinea, North China, Philippine Islands, Poland, Solomon Islands, Sumatra, U.S.S.R.

**Parasarcophaga (s.str.) orchidea (Boettcher)**

1913. *Sarcophaga orchidea* Boettcher, *Ann. Hist. Mus. Nat. Hung.*, 11 : 375.

1982. *Parasarcophaga* (s.str.) *orchidea* (Boettcher) : Nandi, *Rec. zool. Surv. India*, 80 : 119.

*Material* : 7♂♂, Bhutan : Phuntsholing, 209 m., 18.x.1978 ; 1♂, Wangdiphodrong, 1,575 m., 24.x.1978.

*Distribution* : Australia, Bismarck Islands, Bhutan, Borneo, Burma, Caroline islands, China, Formosa, Hainan Island, India, Japan, Java, Korea, Lombok, Malaysia, Mariana Islands, Micronesia, Nepal, New Guinea, Philippine Islands, Sri Lanka, Sumatra, Thailand, U.S.S.R.

**Parasarcophaga (s. str.) knabi (Parker)**

1917. *Sarcophaga knabi* Parker, *Proc. U.S. natn. Mus.*, 54 : 96.

1982. *Parasarcophaga (s.str.) knabi* (Parker) : Nandi, *Rec. zool. Surv. India*, 80 : 118.

*Material* : 5 ♂♂, Bhutan : Phuntsholing, 209 m., 18.x.1978 ; 1 ♂, Wangdiphodrong, 1,575 m., 24.x.1978.

*Distribution* : Australia, Bangladesh, Bali, Bismarck Islands, Bhutan, Borneo, Burma, China, Caroline Islands, Hainan Island, Japan, Korea, Malaysia, Mariana Islands, Marshal Islands, Micronesia, Nepal, New Guinea, Philippine Islands, Sri Lanka, Society Islands, U.S.S.R.

**Parasarcophaga (Liopygia) ruficornis (Fabricius)**

1794. *Musca ruficornis* Fabricius, *Ent. Syst.*, 4 : 314.

1982. *Parasarcophaga (Liopygia) ruficornis* (Fabricius) : Nandi, *Rec. zool. Surv. India*, 80 : 119.

*Material* : 1 ♂, Bhutan : Wangdiphodrong, 1,575 m., 23.x.1978:

*Distribution* : Africa, Australia, Bhutan, Brasil, Chagos Archipelago, China, Hawaii, Hong Kong, India, Japan, Madagascar, Malaysia, Mariana Islands, Micronesia, Moluccas, Philippine Islands, Sri Lanka, Samoa, Socotra Islands.

**Parasarcophaga (Liosarcophaga) dux (Thomson)**

1868. *Sarcophaga dux* Thomson, *Kongl. Seven. Frea. Eugeg. Resa.*, p. 534.

1982. *Parasarcophaga (Liosarcophaga) dux* (Thomson) : Nandi, *Rec. zool. Surv. India*, 80 : 119.

*Material* : 3 ♂♂, Bhutan : Wangdiphodrong, 1,575 m., 25.x.1978.

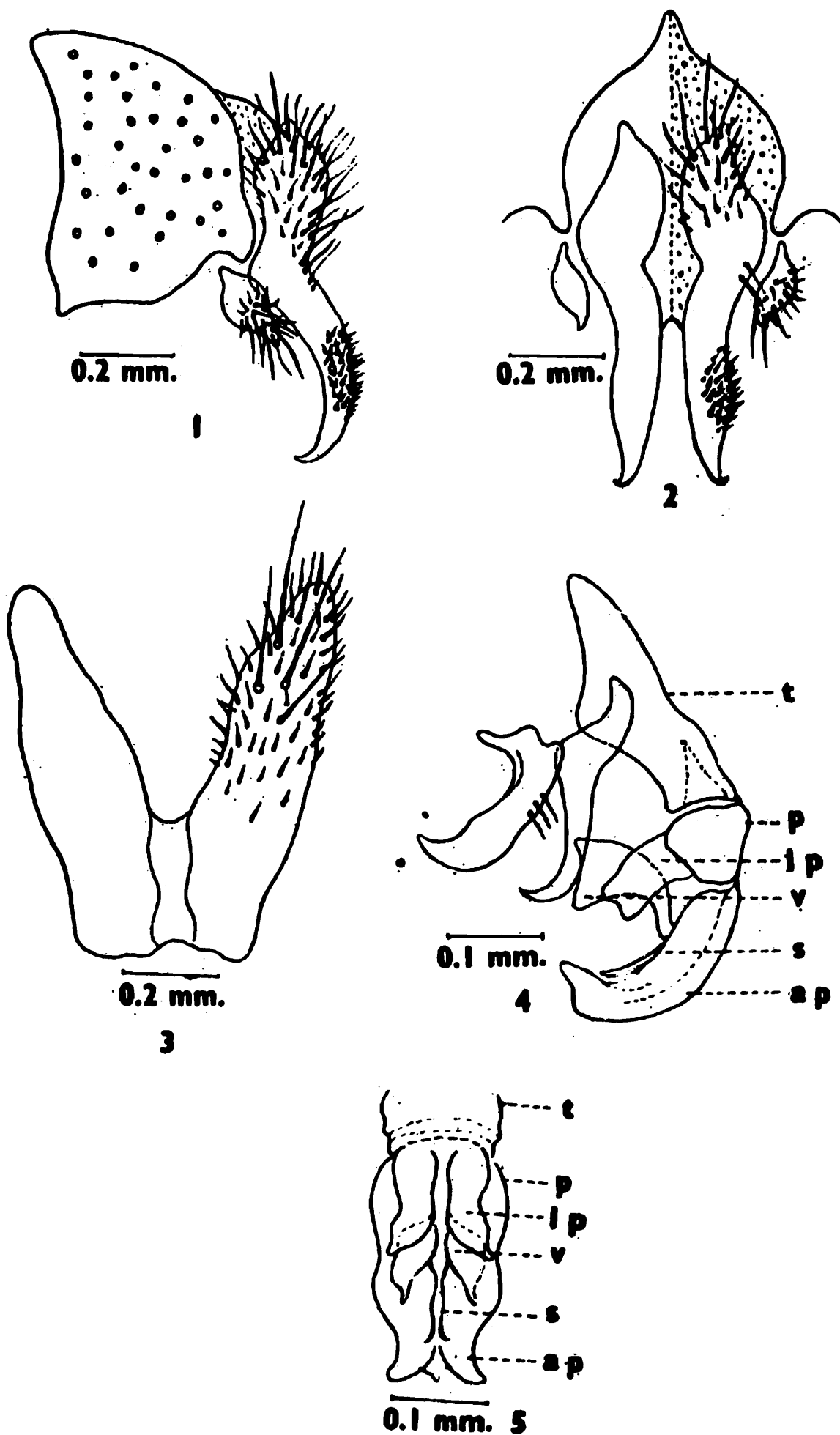
*Distribution* : Africa, Australia, Bali, Bhutan, Fiji, Guam, Hawaii, India, Japan, Java, Malaysia, Mozambique, Philippine Islands, Solomon Islands, Sri Lanka, Sudan, Taiwan, U.S.S.R.

**Subtribe Blaesoxiphina****Blaesoxipha (s. str.) bhutanensis sp. nov.**

(Text figs. 1-5).

*Male* : Body length 6.5 mm.

*Head* : Width of frons about two-fifths that of eye ; frontal vitta brownish, its length at narrowest point of frons about twice that of parafrontal ; parafrontal and parafacial brownish-black with white pollen, the former with short scattered hairs, the latter with a row of 4-5 short black hairs near the eye margin ; antennae brownish-black, reaching to about 0.85 distance to vibrissae ; 1st and 2nd segments brownish-black with black hairs, the latter with long hairs, 3rd segment brownish with numerous white pollen, length about four and half times that of the 2nd segment : arista long plumose in the basal three-fifths ; facial ridge brownish with silvery pollen and with short black hairs at the lower half ; vibrissae long, distance between vibrissae is greater than one parafacial width ; frontal bristles 13, arranged in a row on parafacial. upper four reclinate, lower three below the base of antennae,



Figs. 1-5 *Blaesoxipha (s. str.) bhutanensis* sp. nov. : 1. cercus, lateral view ; 2. cercus, dorsal view ; 3. v-th sternite ; 4. penis, lateral view ; 5. penis, ventral view.

reaching to about more than half of 2nd antennal segment, rest cruciate and directed forwards; gena black with long black hairs; ocellar triangle black with short black hairs; outer vertical not differentiated; inner vertical well developed; post vertical half the length of inner vertical; ocellar bristles short; post ocellar longer than the ocellars, almost half the inner vertical; one row of regular post ocular setae besides postocular cilia; rest of the area with brownish hairs.

**Thorax** : Black with three black longitudinal stripes; *ac*- 2+3; *dc* 4+4; *ia* 1+2; *ps* 1; *h* 3; *np* 4; *sa* 2 *pa* 2; *st* 1+1+1; *mpl* 8; *hpl* 8; propleura black with silvery pollen; prostigmatic and propleural bristles black, well developed and accompanied with black hairs; pro- and mesothoracic spiracles brown; apicoscutellar and discoscutellar bristles one pair each, the former short; lateroscutellar bristles 2 pairs.

**Wing** : Hyaline with brownish veins;  $R_1$  bare;  $R_{4+5}$  with a row of short setae located dorsally and extending to about half the distance from the basal node to  $r-m$  3 setae present on ventral surface of the basal node of  $R_{4+5}$ ; third costal segment equal to the fifth, the latter with short spines only on the basal one-third; costal spines not stout; epaulet black with short spines; basicostal scale and squama white; halter brown.

**Legs** : Black; fore femur with two rows of bristles along posterodorsal surface and a row of bristles along posterior margin of ventral surface; fore tibia with short bristles along the basal half of anterodorsal surface at about one-third the distance from the distal end; mid femur with 1 bristle on the middle portion of anterodorsal surface, a row of bristles along the basal half of anterodorsal surface and a row of 5 bristles along the basal half of pasteroventral surface; mid tibia with a row of short bristles along the posterodorsal surface at about one-third the distance from the distal end; hind femur with a row of bristles along anterodorsal surface, a row of bristles along anteroventral surface, 1 bristle on posterodorsal surface at about one-fifth the distance from the distal end and a row of short hairs along the posterior margin of ventral surface; hind tibia with 2 bristles on posteroventral surface, 1 bristle on posterodorsal and 1 on anteroventral surfaces at about one-third the distance from the distal end and a row of short hairs along the posterior margin of ventral surface at about three-fifths the distance from the distal end.

**Abdomen** : Black with silvery coloured; median marginal bristles on 2nd and 3rd abdominal tergites absent, but 2nd with a pair of lateral marginal bristles; 4th tergite with a pair of median and 3 lateral marginal bristles; 5th sternite v-shaped with 2-4 marginal bristles; 1st genital segment blackish with 4 marginal bristles; inner forcep elongated, curved at the end with marginal seta at the sub apical end, strongly curved at the middle; outer forcep slightly elongated with few hairs; posterior paramere elongated and curved strongly at the end; anterior paramere elongated, slightly curved at the end with few hairs on the middle; theca shorter than paraphallus, both are sclerotised; apical plate of paraphallus long and almost blunt at the end; lateral plate of paraphallus short and blunt; styli of glans long, without serration and reaching to about sub terminal end of paraphallus; ventralia long without serration at the end.

**Female** : Unknown.

*Holotype* : 1 ♂, Bhutan : Thimpu, 2,405 m., 21.x.1978.

*Discussion* : This species is quite similar to *Blaesoxipha (s.str.) aspinata* (Senior-White) but differs from it by the structure of apical and lateral plate of paraphallus. The structure of ventralia is also quite distinguishable from *aspinata*.

*Distribution* : Bhutan.

#### Subtribe Raviniina

##### *Ravinia striata* (Fabricius)

1794. *Musca striata* Fabricius; *Ent. Syst.*, 4 : 315.

1826. *Sarcophaga haematodes* Meigen, *Syst. Besch.*, 5 : 29.

1967. *Ravinia striata* (Fabricius) : Kano, Field and Shinonaga, *Fan. Japo.*, p. 130.

*Material* : 6♂♂, Bhutan : Thimpu, 2,405 m., 20-21.x.1978; 3♂♂, Paro, 1,675 m., 27-28.x.1978; 1♂, Wangdiphodrong, 1,575 m., 25.x.1978.

*Distribution* : Bhutan, China, Europe, India, Japan, Korea, N. Africa, U.S.S.R.

#### Subtribe Seniorwhiteina

##### *Seniorwhitea krameri* (Boettcher)

1912. *Sarcophaga kra.neri* Boettcher, *Ent. Mitt.*, 1 : 166.

1982. *Seniorwhitea kra.neri* (Boettcher) : Nandi, *Rec. zool. Surv. India*, 79 : 460.

*Material* : 14♂♂, Bhutan : Phuntsholing, 209 m., 18.x.1978; 1♂, Wangdiphodrong, 1,575 m., 25.x.1978.

*Distribution* : Bhutan, Borneo, Burma, Formosa, Hainan Island, Hawaii, India, Laos, Malacca, Malaysia, Nepal, Singapore, Sri Lanka, Thailand, U.S.S.R.

#### SUMMARY

This paper reports eleven species under six genera, all of which are recorded for the first time from Bhutan. One species *Blaesoxipha (s.str.) bhutanensis* is new to science.

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#### REFERENCE

Senior-White, R. 1924. A revision of the subfamily Sarcophaginae in the oriental Region. *Rec. Indian Mus.*, 26(3) : 193-283.