

SARCOPHAGID FAUNA (DIPTERA : SARCOPHAGIDAE)
OF MAHARASHTRA, INDIA

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INTRODUCTION

Senior-White (1924) reported a total of eight species, viz., *Sarcophaga peregrina* R. D., *Sarcophaga ruficornis* Fabricius, *Sarcophaga dux* Thomson, *Sarcophaga albiceps* Meigen, *Sarcophaga knabi* Parker, *Sarcophaga orchidea* Boettcher, *Sarcophaga futilis* Senior-White and *Sarcophaga krameri* Boettcher from Maharashtra. Nandi (1988) reported *Thyrsocnema (Pseudothyrsocnema) indica* Shinonaga and Lopes from Mahabaleshwar, Maharashtra. The author collected these flies from different parts of this state in 1990 and reported a total of twentyone species.

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*-post-alar 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.

The type materials will be deposited in the National Collection of Zoological Survey of India, Calcutta, in due course.

SYSTEMATIC ACCOUNT

Subfamily : SARCOPHAGINAE

Tribe : TEPHROMYIINI

1. *Blaesoxipha aldrichi* Nandi

1992. *Blaesoxipha aldrichi* Nandi, *Hexapoda*, 4(1) : 65.

Material examined : 2 ♂♂, Nagpur Seminary Hills, 350 m., 14. vi. 1990.

This species is recorded for the first time from this state.

Distribution : Karnataka ; Kaimara, Maharashtra ; Nagpur Seminary Hills.

Tribe : SARCOPHAGINI
Subtribe : PARASARCOPHAGINA

2. *Boettcherisca bengalensis* Nandi

1992. *Boettcherisca bengalensis* Nandi, *J. Beng. nat. Hist. Soc.*, 11 (1) : 35.

Material examined : 2 ♂♂, Nagpur Maharajabagh, 314 m., 13. vi. 1990 ; 1 ♂, Nagpur Seminary Hills, 350 m., 14. vi. 1990 ; 1 ♂, Aurangabad Siddhartha Garden, 350 m., 18. vi. 1990.

This species records for the first time from this state.

Distribution : Maharashtra ; Nagpur Seminary Hills, Nagpur Maharajabagh, Aurangabad Siddhartha Garden, West Bengal ; Bankura, Birbhum, Midnapore.

3. *Boettcherisca nathani* Lopes

1961. *Boettcherisca nathani* Lopes, *Mem. Inst. Oswaldo Cruz.*, 59 (1) : 79.

Material examined : 1 ♂, Khandala, 960 m., 21. vi. 1990.

This is the first record of this species from this state.

Distribution : Maharashtra ; Khandala, Tamil Nadu ; Karikal (Korumbagaram), West Bengal ; Darjeeling.

4. *Boettcherisca peregrina* (Robineau-Desvoidy)

1830. *Myophora peregrina* Robineau—Desvoidy, *Mém. Prés. Acad. Sci. Inst. Fr.*, (2) 2 : 356.

1992. *Boettcherisca peregrina* : Nandi, *J. Beng. nat. Hist. Soc.*, 11 (1) : 38.

Material examined : 1 ♂, Aurangabad Siddhartha Garden, 350 m., 18. vi. 1990.

5. *Parasarcophaga (Liopygia) ruficornis* (Fabricius)

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

1991. *Parasarcophaga (Liopygia) ruficornis* : Nandi, *J. Beng. nat. Hist. Soc.*, 10 (2) : 39.

Material examined : 1 ♂, Pune Rly. Station area, 559 m., 19. vi. 1990.

6. *Parasarcophaga (Liosarcophaga) brevicornis* (Ho)

1934. *Sarcophaga brevicornis* Ho, *Bull. Fan. meml. Inst. Biol.*, 5 : 23.

1991. *Parasarcophaga (Liosarcophaga) brevicornis* : Nandi, *J. Beng. nat. Hist. Soc.*, 10 (2) : 39.

Material examined : 2 ♂♂, Nagpur Maharajabagh, 314 m., 13. vi. 1990 ; 1 ♂, Nagpur Seminary Hills, 350 m., 14. vi. 1990 ; 1 ♂, Ellora, 370 m., 17. vi. 1990 ; 1 ♂, Aurangabad Siddhartha Garden, 350 m., 18. vi. 1990 ; 1 ♂, Lonavale, 950 m., 21. vi. 1990.

It is recorded for the first time from this state.

7. **Parasarcophaga (Liosarcophaga) dux** (Thomson)

1868. *Sarcophaga dux* Thomson, *K. svenska Fregatten Eugenies Resa.*, p. 534.

1991. *Parasarcophaga (Liosarcophaga) dux* : Nandi, *J. Beng. nat. Hist. Soc.*, 10 (2) : 39.

Material examined : 1 ♂, Nagpur Seminary Hills, 350 m., 14. vi. 1990 ; 3 ♂ ♂, Ajanta, 533 m., 16. vi. 1990 ; 1 ♂, Ellora, 370 m., 17. vi. 1990 ; 2 ♂ ♂, Aurangabad Siddhartha Garden, 350 m., 18. vi. 1990 ; 4 ♂ ♂, Panchgani, 380 m., 20. vi. 1990.

8. **Parasarcophaga (Pandelleisca) ballardi** (Senior-White)

1924. *Sarcophaga ballardi* Senior—White, *Rec. Indian Mus.*, 26 (3) : 254.

1977. *Parasarcophaga (Pandelleisca) ballardi* : Lopes, Kano, Shinonaga and Kurahashi, *Cat. Dipt. Orient. Region*, 3 : 570.

Material examined : 1 ♂, Daulatabad, 340 m., 17. vi. 1990.

It is new record for the state.

9. **Parasarcophaga (Pandelleisca) kurahashii** Nandi

1992. *Parasarcophaga (Pandelleisca) kurahashii* Nandi, *Hexapoda*, 4(1) : 71.

Material examined : 1 ♂, Nagpur Seminary Hills, 350 m., 14. vi. 1990 ; 1 ♂, Daulatabad, 340 m., 17. vi. 1990 ; 2 ♂ ♂, Panchgani, 380 m., 20. vi. 1990.

This is the first record of this species from this state.

Distribution : Karnataka ; Mysore Zoo., Maharashtra ; Nagpur Seminary Hills, Daulatabad, Panchgani.

10. **Parasarcophaga (Parasarcophaga) albiceps** (Meign)

1826. *Sarcophaga albiceps* Meigen, *Syst. europ. zweifl. Insekt.*, 5 : 22.

1991. *Parasarcophaga (Parasarcophaga) albiceps* : Nandi, *J. Beng. nat. Hist. Soc.*, 10 (2) : 39.

Material examined : 1 ♂, Nagpur Maharajabagh, 314 m., 13. vi. 1990 ; 1 ♂, Nagpur Seminary Hills, 350 m., 14. vi. 1990 ; 1 ♂, Aurangabad Siddhartha Garden, 350 m., 18. vi. 1990 ; 1 ♂, Pune Rly. Station area, 559 m., 19. vi. 1990 ; 3 ♂ ♂, Khandala, 960 m., 21. vi. 1990.

11. **Parasarcophaga (Parasarcophaga) hirtipes** (Wiedemann)

1830. *Sarcophaga hirtipes* Wiedemann, *Aussereurop. zweifl. Insekt.*, 2 : 361.

1990. *Parasarcophaga (Parasarcophaga) hirtipes* : Nandi, *J. Beng. nat. Hist. Soc.*, 9 (2) : 17.

Material examined : 1 ♂, Nagpur Maharajabagh, 314 m., 13. vi. 1990 ; 2 ♂ ♂, Nagpur Seminary Hills, 350 m., 14. vi. 1990 ; 2 ♂ ♂, Ajanta, 533 m., 16. vi. 1990 ; 2 ♂ ♂, Ellora, 370 m., 17. vi. 1990 ; 3 ♂ ♂, Daulatabad, 340 m., 17. vi. 1990 ; 4 ♂ ♂, Aurangabad Siddhartha Garden, 350 m., 18. vi. 1990 ; 1 ♂, Pune Rly. Station area,

559 m., 19. vi. 1990 ; 1 ♂, Mahabaleshwar, 1, 362 m., 20. vi. 1990 ; 2 ♂ ♂, Wai, 680 m., 20. vi. 1990.

It is a new record for the state.

12. *Parasarcophaga (Parasarcophaga) sericea* (Walker)

1853. *Sarcophaga sericea* Walker, *Ins. Saunders., Dipt.*, 4 : 326.
 1917. *Sarcophaga knabi* Parker, *Proc. U. S. natn. Mus.*, 54 : 96.
 1990. *Parasarcophaga (Parasarcophaga) knabi* : Nandi, *J. Beng. nat. Hist. Soc.*, 9 (2) : 17.
 1989. *Parasarcophaga (Parasarcophaga) sericea* : Lopes, *Cat. Dipt. Australasia and Oceania Regions*, p. 728.

Material examined : 1 ♂, Ajanta, 533 m., 16.vi. 1990 ; 1 ♂, Ellora, 370 m., 17.vi. 1990 ; 1 ♂, Daulatabad, 340 m., 17.vi. 1990 ; 1 ♂, Aurangabad Siddhartha Garden, 350 m., 18.vi. 1990 ; 1 ♂, Pune Rly. Station area, 559 m., 19.vi. 1990 ; 1 ♂, Khandala, 960 m., 21.vi. 1990.

13. *Parasarcophaga (Parasarcophaga) misera* (Walker)

1849. *Sarcophaga misera* Walker, *List. Dipt. Brit. Mus.*, 4 : 829.
 1913. *Sarcophaga orchidea* Böettcher, *Annls hist-nat. Mus. natn. Hung.*, 11 : 375.
 1990. *Parasarcophaga (Parasarcophaga) orchidea* : Nandi, *J. B. ng. nat. Hist. Soc.*, 9 (2) : 18.
 1989. *Parasarcophaga (Parasarcophaga) sericea* : Lopes, *Cat. Dipt. Australasia and Oceania Regions*, p. 728.

Material examined : 2 ♂ ♂, Nagpur Seminary Hills, 350 m., 14.vi. 1990 ; 2 ♂ ♂, Ajanta, 533 m., 16.vi. 1990 ; 2 ♂ ♂, Ellora, 370 m., 17.vi. 1990 ; 2 ♂ ♂, Lonavale, 950 m., 21.vi. 1990.

Subtribe : HELICOPHAGELLINA

14. *Pierretia (Ascelotella) calicifera* (Böettcher)

1912. *Sarcophaga calicifera* Böettcher, *Ent. Mitt.*, 1 : 169.
 1988. *Pierretia (Ascelotella) calicifera* : Nandi, *J. Beng. nat. Hist. Soc.*, 7 (1) : 21.

Material examined : 1 ♂, Nagpur Seminary Hills, 350 m., 14.vi. 1990. It records for the first time from this state.

15. *Thyrsocnema (Pseudothyrsocnema) indica* Shinonaga and Lopes

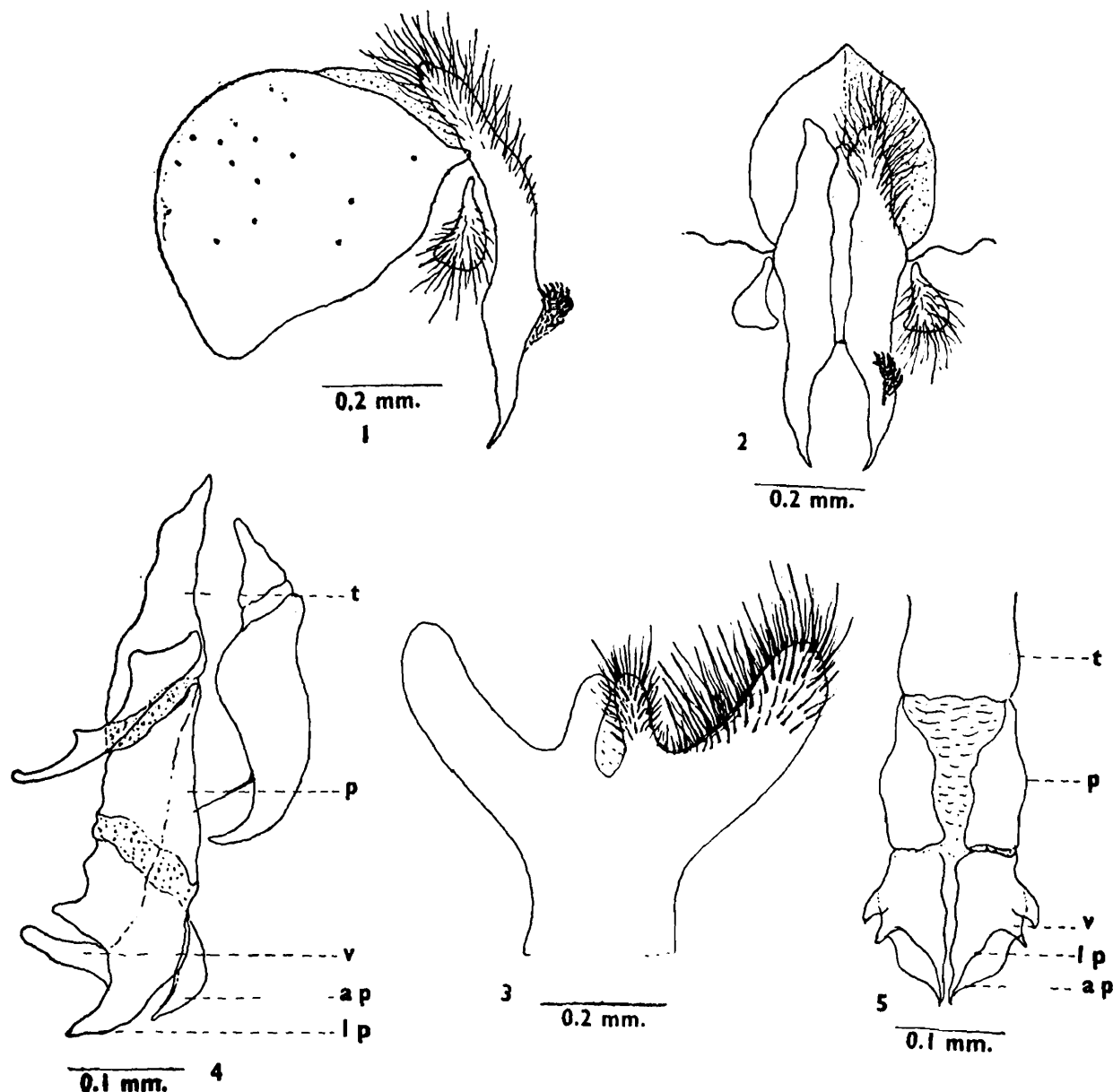
1975. *Tnyrsocnema (Pseudothyrsocnema) indica* Shinonaga and Lopes, *Pacif. Insects*, 16 (4) : 459.

Material examined : 1 ♂, Ellora, 370 m., 17.vi. 1990 ; 1 ♂, Daulatabad, 340 m., 17.vi. 1990 ; 3 ♂ ♂, Panchgani, 1, 132 m., 20.vi. 1990.

16. *Kozlovea vervesi* sp. nov. (Figs. 1-5)

Male : Body length 8-10 mm.

Head : Width of frons about half that of one eye ; frontal vitta black, its width at narrowest point of frons about more than twice that of each parafrontal ; parafrontal and parafacial black with silvery pollen, the former with short scattered hairs, the latter with a row of 7 hairs near the eye margin ; antennae blackish-brown, reaching to about 0.85 distance to vibrissae, 1st and 2nd segments black with short black hairs and



Figs. 1-5. *Kozlovea vervesi* sp. nov.

1, inner and outer forceps, lateral view ; 2, same, posterior view ; 3, fifth sternite ; 4, penis, lateral view ; 5, same, ventral view.

spines, 3rd brownish with silvery pollen, its length about twice that of the 2nd ; arista long plumose along basal two-thirds ; facial ridge brownish with silvery pollen

and long hairs ; vibrissae long, distance between vibrissae equal to the parafacial width ; frontal bristles 10, upper 2 reclinate, lower 3 below base of antennae and reaching to about half of the 2nd antennal segment, rest cruciate and directed forwards ; gena black with long hairs ; post gena black with long hairs ; ocellar triangle black with short black hairs ; outer vertical moderately developed ; inner vertical well developed ; post vertical equal to the ocellar and about one-third the inner vertical ; two rows of regular postocular setae besides postocular cilia, rest of the area with short brownish hairs ; palpi slender, blackish ; proboscis black.

Thorax : Blackish with three black longitudinal stripes ; *ac* 0+1 ; *dc* 5+4 ; *ia* 1+3 ; *ps* 1 ; *h* 3 ; *ph* 2 ; *np* 4 ; *sa* 3 ; *pa* 2 ; *st* 1+1+1 ; *mpl* 7 ; *hpl* 6 ; upper part of propleura bare ; prostigmatic and propleural bristles well developed and accompanied with short hairs ; pro-and mesothoracic spiracles brown ; apicoscutellar bristles well developed, 1 pair ; discoscutellar bristles wanting ; lateroscutellar bristles well developed, 2 pairs.

Wings : Hyaline with brown veins ; R_1 bare ; R_{4+5} with a row of short setae located dorsally and extending up to two-thirds the distance from the basal node r-m and 5 short setae present on ventral surface of basal node of R_{4+5} ; 3rd costal segment greater than 5th, the latter with short spines along more than basal half of its anterior margin ; costal spines stout ; epaulet yellowish with short spines ; basicostal scale brownish ; squama whitish ; halter brownish.

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 a row of 3 bristles along basal one-third of anterodorsal surface and 1 bristle on posterodorsal surface at about one-third the distance from the distal end ; mid femur with a row of bristles along anterolateral surface, a row of bristles along basal half of anteroventral surface and with comb-like spines along distal half of anteroventral and posteroventral surfaces, a row of long hairs along basal two-thirds of posteroventral surface and 1 bristle each on posterodorsal, posterolateral and posteroventral surfaces at about one-third the distance from the distal end ; mid tibia with 1 bristle each on anterodorsal surface at about one-third and two-thirds the distances from the distal end, a row of bristles along basal half of posterolateral surface and 1 bristle on posteroventral surface at about one-third the distance from the distal end ; hind femur with 2 rows of bristles along anterolateral surface, a row of bristles along anteroventral surface at about one-third the distance from the distal end, 1 bristle each on posterodorsal and posterolateral surfaces at about one-fifth the distance from the distal end and with long hairs along ventral surface ; hind tibia with 1 bristle each on anteroventral and posteroventral surfaces at about one-third and two-thirds the distances from the basal end, 3 bristles along posterodorsal surface at about three-

fourths the distance from the basal end, 1 bristle on anteroventral surface at about one-third the distance from the distal end and with numerous long hairs along anterior and posterior margins of ventral surface.

Abdomen : Black with silvery checkered pattern ; median marginal bristles on 2nd and 3rd abdominal tergites absent but 2nd with 2 and 3rd with 1 lateral marginal bristles ; 4th tergite with 2 median marginal bristles ; 5th with a row of 16 marginal bristles ; 1st to 4th sternites with short hairs ; 5th sternite v-shaped with long hairs and bearing two knob-like projections basally ; 1st and 2nd genital segments brownish and without marginal bristles ; inner forcep elongated, slightly curved and pointed at end ; outer forcep slightly elongated ; anterior paramere elongated with slight projection at the middle ; posterior paramere deeply curved at end, pointed and with single hair ; theca shorter than paraphallus, both are sclerotised ; apical plate of paraphallus curved, pointed at end ; lateral plate of paraphallus blunt at end ; ventralia elongated and membranous.

Female : Unknown.

Holotype : 1 ♂, Nagpur Seminary Hills, 350 m., 14.vi. 1990 ; *Paratype* : 1 ♂, Khandala, 960 m., 21.vi. 1990.

Remarks : This species closely resembles *Kozlovea cavangarei* Nandi but differs from it by the structures of apical plate of paraphallus and ventralia as well.

Bionomics : This species was collected from bushes underneath the hill trees.

This species is named after Yu. G. Verves of U.S.S.R.

Subtribe : HARPAGOPHALLINA

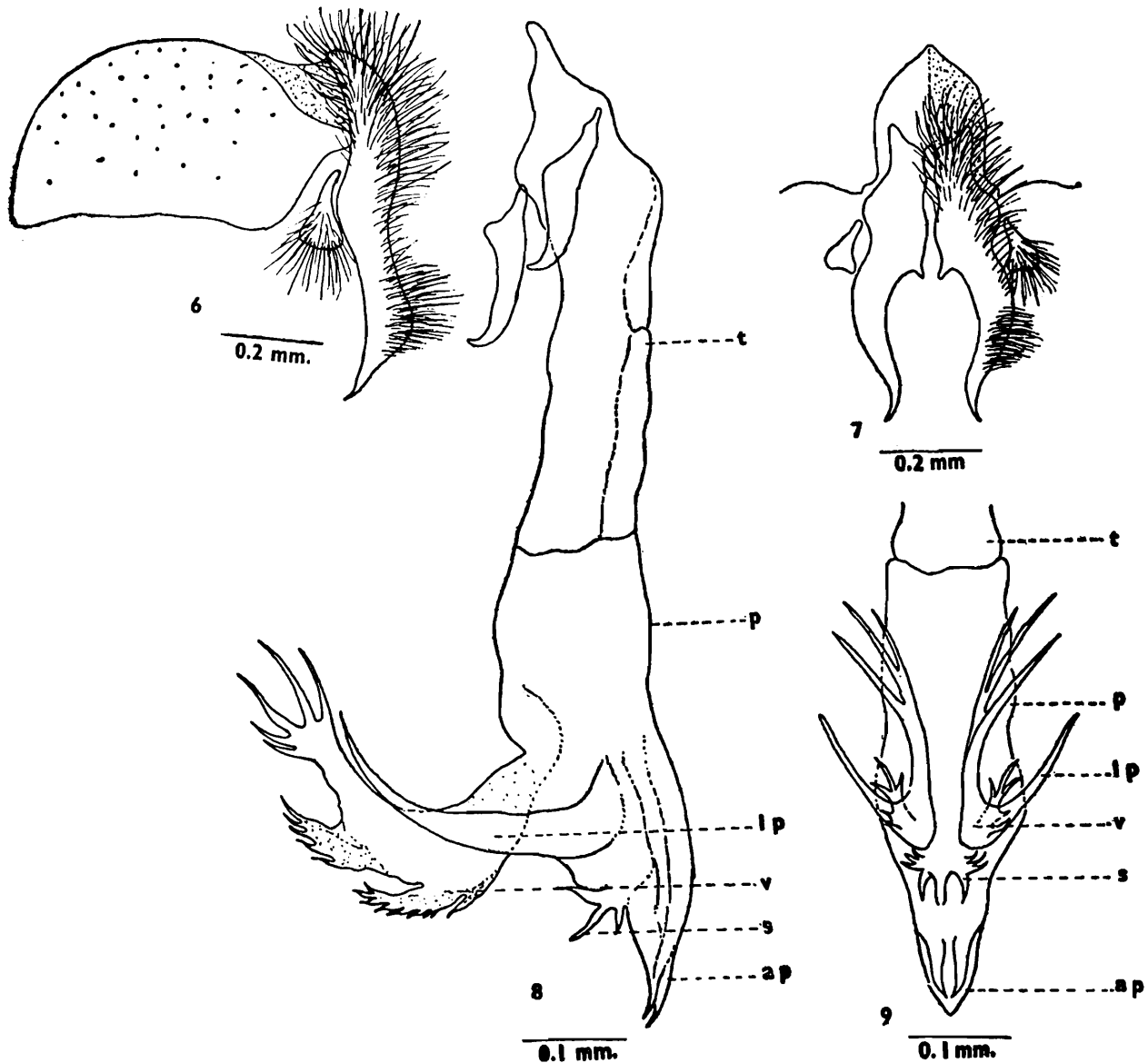
17. *Harpagophalla panchganiensis* sp. nov.

(Figs. 6-9)

Male : Body length 8 mm.

Head : Width of frons about two-fifths that of one eye ; frontal vitta black, its width at narrowest point of frons about less than each parafrontal ; parafrontal and parafacial black with golden pollen, the former with short scattered hairs, the latter with a row of 6 short black hairs near the eye margin ; antennae blackish-brown, reaching to about 0.8 distance to vibrissae, 1st and 2nd segments black with black hairs, the latter with 1 long hair, 3rd segment black with silvery pollen, its length about three times that of the 2nd ; arista long plumose along basal two-thirds ; facial ridge brownish with golden pollen and with few short hairs ; frontal bristles 10, upper 2 reclinate, lower 2 below base of antennae and reaching to about half of the 2nd antennal segment, rest cruciate and directed forwards ; gena black with very short black hairs and with golden pollen ; post gena black with long greyish hairs ; outer

vertical absent ; inner vertical well developed ; post vertical short, half the length of inner vertical ; ocellar triangle black with short black hairs ; two rows of regular postocular setae besides postocular cilia, rest of the area with black and white hairs ; palpi slender, black ; proboscis blackish.



Figs. 6-9. *Harpagophalla panchganiensis* sp. nov.

6, inner and outer forceps, lateral view ; 7, same, posterior view ; 8, penis lateral view ; 9, same, ventral view.

Thorax : Black with three black longitudinal stripes ; *ac* 0+1 ; *dc* 5+5 (post. *dc* stout) ; *ia* 0+2 ; *ps* 1 ; *h* 3 ; *ph* 3 ; *np* 3 ; *sa* 3 ; *pq* 2 ; *st* 1+1+1 ; *mpl* 6 ; *hpl* 9 ; upper part of propleura bare with silvery pollen ; prostigmatic and propleural bristles well developed and accompanied with short hairs ; pro-and mesothoracic spiracles brownish ; apicoscutellar and discoscutellar bristles well developed, 1 pair each, the former is longer ; lateroscutellar bristles 2 pairs.

Wings : Hyaline with brown veins ; R_1 bare ; R_{4+5} with a row of short setae located dorsally and extending up to two-thirds the distance from the basal node to r-m and 4 short setae present on ventral surface of basal node of R_{4+5} ; 3rd costal segment greater than the 5th, the latter with spines along basal half of its anterior margin ; costal spines almost stout ; basicostal scale yellowish ; epaulet black with short spines ; squama whitish ; 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 a row of 3 short bristles along basal one-third of anterodorsal surface, 1 short bristle on posterodorsal surface and 1 on posterolateral surface at about one-third the distance from the distal end ; mid femur with a row of 3 short bristles along one-third of anterolateral surface from basal end ; a row of short setae along anteroventral and posteroventral surfaces at about one-third the distance from the distal end, 2 long bristles each on posterodorsal and posterolateral surfaces on distal end and with long hairs posteroventrally along basal half ; mid tibia with 2 bristles medially on anterolateral surface, 3 bristles along posterodorsal surface on basal one-third, 1 bristle each on posterodorsal, anteroventral and posterolateral surfaces at about one-third the distance from the distal end ; hind femur with 2 rows of bristles along anterolateral surface, a row of bristles along anterior and posterior margins of ventral surface and 1 bristle on distal part of posterodorsal surface ; hind tibia with a row of bristles along anterodorsal surface, 3 bristles along posterodorsal surface on two-thirds the distance from the basal end, 1 bristle on anteroventral surface at about one-fourth the distance from the distal end and with long hairs along anterior and posterior margins of ventral surface.

Abdomen : Black with silvery checkered pattern ; median marginal bristles on 2nd and 3rd abdominal tergites absent but each with 1 lateral marginal bristle ; 4th tergite with a pair of median and 3 lateral marginal bristles ; 5th tergite with a row of 18 marginal bristles ; 1st to 3rd sternites with tuft of short hairs ; 4th and 5th sternites with short hairs basally and numerous short spines distally ; 1st and 2nd genital segments brown and without marginal bristles ; inner forcep almost straight, curved at end, beak-shaped and provided with long hairs on subbasal end ; outer forcep elongated with long hairs ; anterior paramere slightly curved at end ; posterior paramere slightly curved at end and without hairs ; theca shorter than paraphallus, both are sclerotised ; apical plate of paraphallus elongated ; ventralia long, broad with five elongated branched processes and two subbasal spinous projections ; styli of glans short and trilobed.

Female : Unknown.

Holotype : 1 ♂, Panchgani, 1,732 m., 20. vi. 1990.

Remarks : This species closely resembles *Harpagophalla talonata* (Senior-White) but differs from it by the structures of apical plate of paraphallus and ventralia. The structure of lateral plate of paraphallus is also quite different.

Bionomics : This species was collected from bush-sweeping.

18. *Iranihindia futilis* (Senior-White)

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

1990. *Iranihindia futilis* : Nandi, *J. Beng. nat. Hist. Soc.*, 9 (2) : 19.

Material examined : 1 ♂, Nagpur Seminary Hills, 350 m., 14. vi. 1990 ; 8 ♂ ♂, Ellora, 370 m., 17. vi. 1990 ; 14 ♂ ♂, Daulatabad, 340 m., 17. vi. 1990 ; 1 ♂, Aurangabad Siddhartha Garden, 350 m., 18. vi. 1990 ; 3 ♂ ♂, Lonavale, 950 m., 21. vi. 1990.

19. *Iranihindia martellata* (Senior-White)

1924. *Sarcophaga martellata* Senior-White, *Rec. Indian Mus.*, 26 (3) ; 47.

1992. *Iranihindia martellata* : Nandi, *Hexapoda*, 4(1) : 77.

Material examined : 1 ♂, Nagpur Seminary Hills, 350 m., 14. vi. 1990 ; 1 ♂, Lonavale, 950., 21. vi. 1990.

It is recorded for the first time from this state.

20. *Iranihindia martellatoides* (Baranov)

1931. *Sarcophaga martellatoides* Baranov, *Konowia*, 10 : 114.

1992. *Iranihindia martellatoides* : Nandi, *Hexapoda*, 4(1) : 77.

Material examined : 1 ♂, Ellora, 370 m., 17. vi. 1990 ; 1 ♂, Daulatabad, 340 m., 17. vi. 1990 ; 1 ♂, Aurangabad Siddhartha Garden, 350 m., 18. vi. 1990.

This is the first record of this species from this state.

Subtribe : SENIORWHITEINA

21. *Seniorwhitea reciproca* (Walker)

1856. *Sarcophaga reciproca*, Walker, *J. Proc. Linn. Soc. Lond.*, Zool., 1 : 22.

1912. *Sarcophaga krameri* Böettcher, *Ent. Mitt.*, 1 : 165.

1990. *Seniorwhitea krameri* : Nandi, *J. Beng. nat. Hist. Soc.*, 9 (2) : 20.

1989. *Seniorwhitea reciproca* : Lopes, *Cat. Dipt. Australasia and Oceania Regions*, p. 730.

Material examined : 1 ♂, Khandala, 960 m., 21. vi. 1990.

SUMMARY

Systematic position of twentyone species are dealt with. Two new species, *viz.*, *Kozlovea vervesi* and *Harpagophalla panchganiesis* are described and figured. Ten species are recorded for the first time from this state.

ACKNOWLEDGEMENTS

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