



Taxonomic studies on Indian species of genus *Hemipyrellia* Townsend (Diptera: Calliphoridae)

¹ Inderpal Singh Sidhu, ² Rashmi Gupta, ³ Devinder Singh

^{1,2} Department of Zoology, SGGS College, Chandigarh, Punjab, India

³ Department of Zoology and Environment Sciences, Punjabi University, Patiala, Punjab, India

Abstract

Indian species belonging to the genus *Hemipyrellia* Townsend have been studied and a detailed description has been written that includes synonymy, morphological attributes, colouration, chaetotaxy, wing venation, illustrations of male and female genitalia, material examined, distribution, holotype depository and remarks. A key to the species has also been provided.

Keywords: India, *hemipyrellia*, lucilinae, calliphoridae, diptera

1. Introduction

The genus *Hemipyrellia* is represented by four species from the Oriental region including two from India (Senior-White *et al.*, 1940; Bharti, 2011) both of which have been dealt with in this text. The genus is closely related to *Lucilia* Robineau-Desvoidy from which it can be differentiated on the basis of long upstanding hair on the supra-spiracular convexity. Other diagnostic characters of this genus include eyes holoptic or subholoptic in male and dichoptic in female; frons reddish brown to black; parafrontalis, face and genae covered with silver to golden tomentum; thorax grey dusted anteriorly; propleuron and prosternum hairy; suprasquamal ridge with posterior tuft.

2. Results and Discussion

Hemipyrellia pulchra (Wiedmann, 1830) (Figs. 1-7)

Musca pulchra Wiedemann, 1830. *Ausser, Zweifl. Ins.*, 2: 406

Lucilia ruficornis Macquart, 1847. *Mem. Soc. Nat. Sci. Agric. Arts Lille*, 1847:100 (1847: 84)

Musca phellia Walker, 1849. *List. Dipt. Brit. Mus.*, 4: 884.

Somomyia pagodina Bigot, 1877. *Ann. Soc. Ent. Fr.*, (5)7: 40

Hemipyrellia pulchra (Wiedemann) : Aubertin 1931. *Proc. Zool. Soc. Lond.*, 1931: 505

Male: Body length 5.0-6.0 mm

Head: Eyes bare, subholoptic, facets enlarged at anterior end; frons reddish brown, triangle shaped, almost of same width as parafrontalia, gets narrower as it approaches vertex, bare; parafrontalia reddish brown with silver tomentum; frontal bristles well developed; fronto-orbital bristles absent; ocellus with ocellar and postvertical bristles; vertical bristles present, prevertical and outervertical bristles absent; parafacialia reddish brown with silver tomentum, bare; face silvery grey, bare; facial carina absent; epistome yellowish brown; medianae reddish with silver tomentum, bare; jowls, genae and postgenae black with purple tinge, covered with black hair; vibrissae present well above oral margin; peristomal bristles not well developed; postorbit silver grey, bare; occiput

metallic black and heavily silver dusted at centre, covered with grey hair; 1st and 2nd antennal segments dark brown with apex of the 2nd orange, 3rd segment orange, length of 3rd segment about 3X that of 2nd; arista brown, plumose; palpi orange and bristles present all over.

Thorax: Metallic green with purple reflections, heavily silver dusted anteriorly, humerus and postalar callus concolorous with dorsum; prothoracic spiracle black; propleuron hairy; prosternum bare centrally and hair present at margins; postalar declivity hairy; supraspiracular convexity with long hair; suprasquamal ridge with posterior tuft.

Chaetotaxy (Fig. 4): Acrostichals 2+2; dorsocentrals 3+3; intra-alars 1+2; presutural present; humerals 3; post-alars 2; notopleurals 2; lateroscutellars 3; apicoscutellar and discoscutellar 1 each; sternopleurals 2+1; propleural and prostigmatic present.

Wings: Hyaline, veins brown; stem vein (R) bare; R1 bare; R4+5 setulose at basal node on both dorsal and ventral sides extending from basal node to R-M; first posterior cell (R5) open; epaulet and basicosta black; subcostal sclerite yellow with numerous hair; alar and thoracic squamae creamy white with yellowish marginal cilia; dorsal surface of both squamae bare; halteres brown.

Legs: Brown except femora with metallic purplish tinge; fore- and hind femora with bristles on both dorsal and ventral sides while midfemur with bristles on ventral side only; foretibia with 1 bristle at middle and 3 at apex; midtibia with 3 bristles at middle and 2 at apex; hindtibia with 1 bristle at base, 2 at middle and 2 at apex.

Abdomen: Metallic green to purple; tergite 2 indigo blue, darker than others; tergites 2 and 3 with weak marginal bristles at posterior margins; tergites 4 and 5 with indigo bands at posterior margins; tergite 4 with strong marginal bristles; tergite 5 with long bristles entirely; sternites 1-5 with numerous black hair; sternite 2 with group of long hair

posteriorly; hypopygium inconspicuous.

Male genitalia: Fifth sternite (Fig. 5); Cerci and paralobi (Fig. 6); Aedeagus and parameres (Fig. 7)

Female: Body length 6.0-9.0 mm.

Similar to the male except: eyes dichoptic, frons much wider than male, brownish black, both sides parallel, fronto-orbital and outervertical bristles present abdomen thickly dusted especially on tergite 5. Sternites 1-5 (Fig. 3)

Female genitalia: Dorsal view of ovipositor (Fig. 1); Ventral view of ovipositor (Fig. 2)

Material examined : Himachal Pradesh : Chamba-996M (12♀♀) 17. VI.2000; Punjab : Patiala-300M (1♂♂, 1♀♀) 27.X.1990 (16♂♂, 21♀♀) 7.IX. 2000. Uttarakhand : Srinagar-

579M (3♂♂, 5♀♀) 3.VI. 2000; Kaladhungi-700M (1♂♂) 5.X.2001; Rishikesh-340M (11♂♂, 2♀♀) 16.VI. 2000. Coll. Inderpal Singh Sidhu.

Distribution: India (Bihar, Chandigarh, Himachal Pradesh, Pondicherry, Punjab, Tamil Nadu, Uttarakhand, Uttar Pradesh, West Bengal), North Africa, Egypt, Indonesia, Wide spread in Afrotropical region.

Holotype depository: NH Museum, Vienna, Austria.

Remark: This species is available in the Oriental and Afrotropical regions. According to Senior-White *et al.* (1940) it is ovoviviparous and breeds in decomposing animal remains and excrement. The adults are usually collected from flowers where they feed upon plant juices.

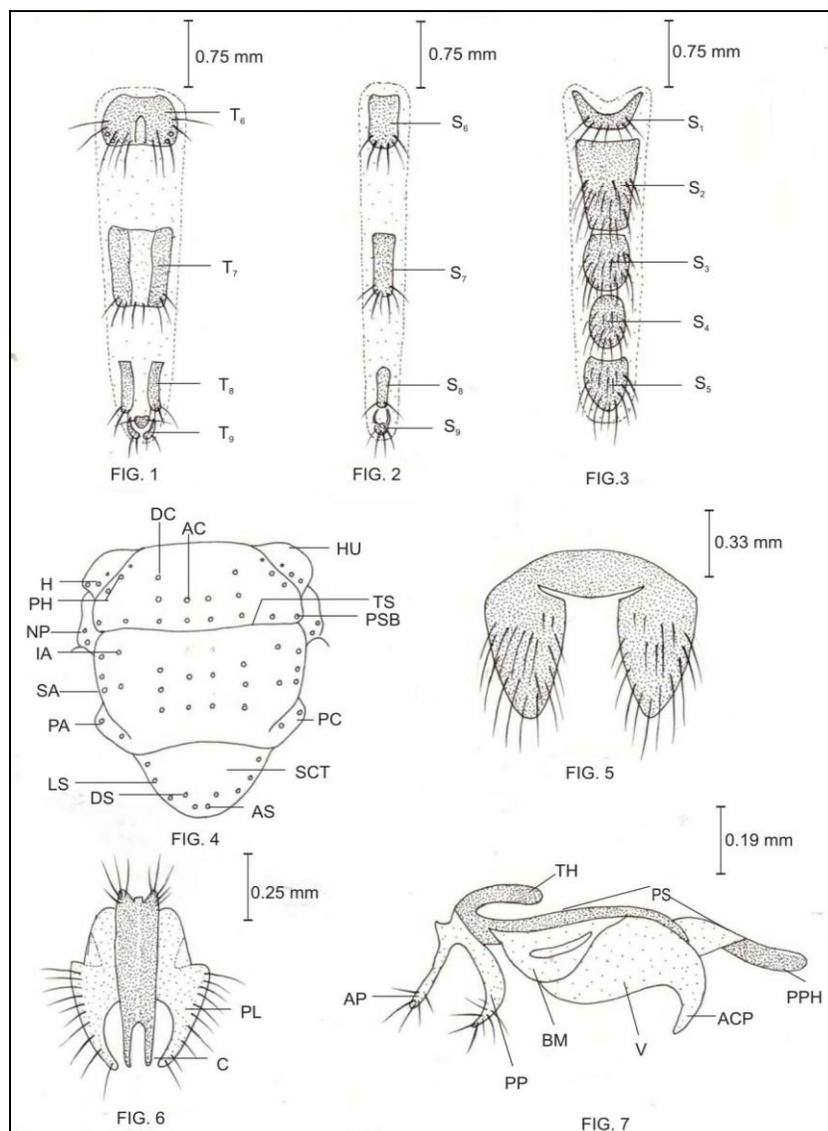


Fig 1: Dorsal view of ovipositor, **Fig 2:** Ventral view of ovipositor, **Fig 3:** Sternites I-V of female, **Fig 4:** Dorsal view of chaetotaxy of thorax (Diagramatic), **Fig 5:** Sternite V of male, **Fig 6:** Cerci and paralobi, **Fig 7:** Aedeagus and parameres

***Hemipyrellia ligurriens* (Wiedemann, 1830)** (Fig. 8-14)

Musca ligurriens Wiedemann, 1830. *Ausse. Zweifl. Ins.*, 2: 655.

Musca solaia Walker, 1849. *List. Dipt. Birt. Mus.*, 4: 887.

Musca fortunate Walker, 1860. *J. proc. Linn. Soc.*, 4: 137.

Somomyia coeruleolimbata Bigot, 1887. *Bull. Soc. Zool. Fr.*, 12: 599.

Lucilia ballardi Patton, 1922. *Indian J. Med. Res.*, 9: 573.

Lucilia albopilosa Senior-White, 1926. *Rec. Ind. Mus.*, 28: 130.

Hemipyrellia cyaneomarginata Malloch, 1927. *Proc. Linn. Soc. N.S. Wales* 52: 320.

Hemipyrellia orientalis Townsend, 1927. *Trans. Suppl. Ent.*, 16: 56.

Hemipyrellia ligurriens (Wiedemann) : Aubertin, 1931. *Proc. Zool. Soc. Lond.*, 2: 504.

Male: Body length 6.0-8.0 mm.

Head: Eyes bare, subholoptic, facets uniform; frons reddish brown, triangale shaped, gets narrower as it approaches vertex; parafrontalia black with silver tomentum, hairy, narrower than frons; frontal bristles well developed; fronto-orbital bristles present; ocellus with ocellar bristles and 1 pair of postvertical bristles; vertical bristles present, prevertical and outervertical bristles absent; upper part of parafacialia black with silver tomentum and hairy while lower part reddish brown and bare; face yellowish brown with silver tomentum, bare; facial carina absent; epistome yellowish brown; medianae greyish black with silver tomentum and bare; jowls, genae and postgenae blackish grey with silver tomentum and black hair; vibrissae present just above oral margin; peristomal bristles well developed; postorbit silver grey, bare; occiput metallic black and heavily silver dusted at centre and covered with grey hair; 1st and 2nd antennal segments dark brown and reddish at apex, 3rd segment orange at base while dark brown at apex, length of 3rd segment about 4X that of 2nd; arista dark brown, plumose; palpi orange with bristles present all over.

Thorax: Metallic green with coppery reflections, grey dust anteriorly; humerus and postalar callus concolorous with dorsum; prothoracic spiracle black; propleuron and prosternum hairy; postalar declivity with fine hair; supraspiracular convexity with long hair; suprasquamal ridge with posterior tuft.

Chaetotaxy (Fig. 11) : Acrostichals 2+2; dorsocentrals 3+3; intra-alars 1+2; presutural present; humerals 3; posthumerals 3; supra-alars 3; post-alars 2; notopleurals 2; lateroscutellars 3; apicoscutellar and discoscutellar 1 each; sternopleurals 2+1; propleural and prostigmatic present.

Wings: Hyaline, slightly infuscated at base; veins dark brown; stem vein (R) bare; R1 bare; R4+5 setulose at base on both

dorsal and ventral sides, extending 2/3rds from basal node to R-M; first posterior cell (R5) open; epaulet balck; basicosta brown; subcostal sclerite yellow with numerous hair; alar squama white with yellowish marginal cilia; thoracic squama pale with yellowish white marginal cilia; dorsal surface of both squamae bare; halteres brown.

Legs: Brown except femora with metallic purplish tinge; fore- and hind femora with bristles on both dorsal and ventral sides while midfemur with bristles on ventral side only; foretibia with 1 bristle at middle and 2 at apex; midtibia with 1 bristle at base, 2 at middle and 3 at apex; hindtibia with 2 bristles at middle and 3 at apex.

Abdomen: Metallic green with coppery reflections, tergite 2 darker than others; tergite 3 with weak marginal bristles; tergites 3 and 4 with indigo band on posterior margin; tergite 4 with strong marginal bristles; tergite 5 with long bristles entirely; sternites 1-5 with numerous black hair; sternite 2 without long hair posteriorly; hypopygium conspicuous.

Male genitalia: Fifth sternite (Fig. 12); Cerci and paralobi (Fig. 13); Aedeagus and parameres (Fig. 14)

Female: Body length 6.0-9.0 mm.

Similar to the male except: eyes dichoptic, frons dark brown, wider than male, fronto-orbital bristles present, thoracic squama paler than that of male, abdomen uniformly covered with thin dust. Sternites 1-5 (Fig. 10)

Female genitalia: Dorsal view of ovipositor (Fig. 8); Ventral view of ovipositor (Fig. 9)

Material examined: Himachal Pradesh: Malan-1200M (3♂♂) 17.IX.2000; Kothi-2530M (3♂♂) 6VI. 2001; Nalagarh-450M (2♂♂, 6♀♀) 1.VI.2001. Uttarakhand: Srinagar-579M (11♂♂, 7♀♀) 4.VI.2000; Nainital-1238M (7♂♂, 1♀♀) 7.X.2001; Kaladhungi-700m (2♂♂) 5.X.2001; Mukteshwar-2290M (1♂, 1♀) 8.X.2001. Coll. Inderpal Singh Sidhu.

Distribution: India (Himachal Pradesh, Uttarakhand, West Bengal), Celebes, Indonesia, Malaysia, Philippines, Singapore, Sri Lanka, Thailand, China, Japan, Korea and Australia.

Holotype depository: Not traceable, co-types in RNH Museum, Leiden, Netherlands.

Remarks: Distributed in the Oriental and Australian regions, this species was recorded for the first time from North-West India by Singh and Sidhu (2004). Though very similar to *H. pulchra* (Wiedemann) it is easily separated from the latter as shown in the key as well as on the basis of external male and female genitalia.

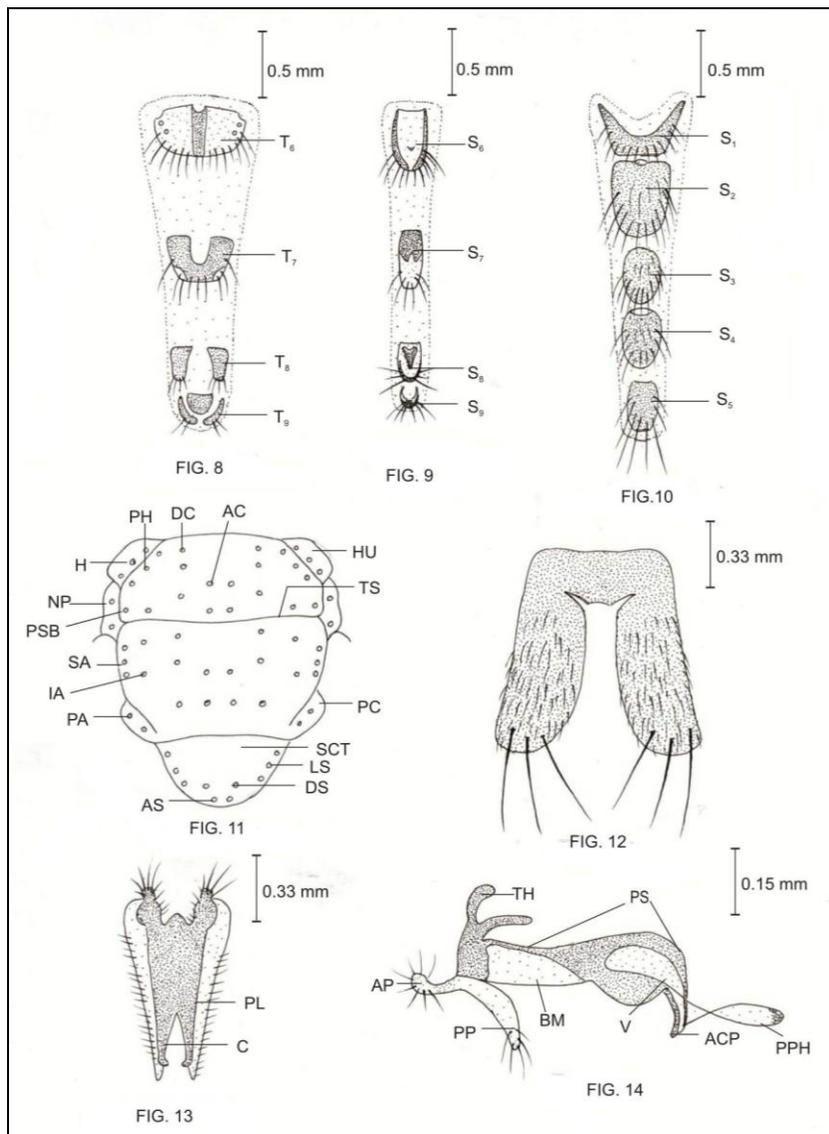


Fig 8: Dorsal view of ovipositor, **Fig 9:** Ventral view of ovipositor, **Fig 10:** Sternites I-V of female, **Fig 11:** Dorsal view of chaetotaxy of thorax (Diagramatic), **Fig 12:** Sternite V of male, **Fig 13:** Cerci and parolobi, **Fig 14:** Aedeagus and parameres

Key to the Indian species of genus *Hemipryellia* Townsend

1. Frons as wide as parafrota; 3rd antennal segment entirely orange, its length 3X that of 2nd; male sternite 2 with group of long hair posteriorly; female abdomen thickly dusted especially on tergite 5..... *H. pulchra* (Wiedemann)
2. Frons wider than parafrota; 3rd antennal segment dark brown with orange base, its length 4X that of 2nd; male sternite 2 without long hair posteriorly; female abdomen uniformly covered with thin dust..... *H. ligurriens* (Wiedemann)

3. Singh D, Sidhu IS. A checklist of blow flies (Diptera: Calliphoridae) from north-west of India. Uttar Pradesh J. Zool. 2004; 24(1): 63-71.

3. References

1. Bharti M. An updated checklist of blowflies (Diptera: Calliphoridae) from India. Halteres. 2011; 3:34-37.
2. Senior-White R, Aubertin D, Smart J. The Fauna of British India, including the remainder of the Oriental region, Diptera Vol. VI, Family Calliphoridae, 1940, Taylor and Francis, London.