

Redescription of three species of genus *Stomorhina* Rondani (Diptera: Calliphoridae) from India

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Abstract

Three Indian species of genus *Stomorhina* Rodani are redescribed in detail with illustrations of male and female genitalia, taxonomic history and updated distribution records.

Keywords: *Stomorhina*, Calliphoridae, Diptera, India

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Introduction

Senior White *et al.* (1940) recognized 15 species belonging to the genus *Stomorhina* from British India. However, lot of changes have occurred since then and now the genus is represented by 16 species from the Oriental region including 8 from India (Bharti, 2011) that includes 3 from the area under present investigations. The genus is not easy to distinguish from the genera *Idiella* Brauer *et* Bergenstamm and *Rhinia* Robineau-Desvoidy and according to Kano and Shinonaga (1968) 'There is no obvious reason for separating these three genera'. However, further interpretations can be made only after studying more material, including the types. The three species have been identified following the key given by Bharti (2016).

Abbreviations used

AC - Acrostichal bristles; ACP - Acrophalium; AP - Anterior paramere; AS - Apicoscutellar bristles; BM - Basal membrane; C - Cerci; DC - Dorsocentral bristles; DS - Discoscutellar bristles; H - Humeral bristles; HU - Humerus; IA - Intra-alar bristles; LS - Lateroscutellar bristles; NP - Notopleural bristles; PAB - Postalar bristles; PC - Postalar callus; PH - Posthumeral bristles; PL - Paralobi; PP - Posterior paramere;

PPH - Paraphallus; PS - Phallosome; PSB - Presutural bristles; S₁ - Sternite 1; S₂ - Sternite 2; S₃ - Sternite 3; S₄ - Sternite 4; S₅ - Sternite 5; S₆ - Sternite 6; S₇ - Sternite 7; S₈ - Sternite 8; S₉ - Sternite 9; SA - Supra-alar bristles; SCT - Scutellum; T₆ - Tergite 6; T₇ - Tergite 7; T₈ - Tergite 8; T₉ - Tergite 9; TH - Theca; TS - Transverse suture; V - Ventralia

Genus *Stomorhina* Rondani, 1861

Idia Meigen in Wiedemann, 1820. *Nova. Dipt. Gen.*: 21.

Stomorhina Rondani, 1861. *Dipt. Ital. Prod.* 4: 9. type species *Musca lunata* Fabricius, 1805.

Stomathorrhina Bezzi, 1906. *Z. Hym. Dipt.* 4:53.

Stomathorrhina Kertész, 1907. *Cat. Palae. Dip.* 3: 523.

Stomatorhina Malloch, 1926. *Ann. Mag. Nat. Hist.* (9) 18: 499.

Idiella Brauer *et* Bergenstamm, 1889. *Denkschr. Akad. Wiss. Wien.* 6: 154.

Idiellopsis Townsend, 1917. *Rec. Ind. Mus.* 13: 190.

Eudiella Townsend, 1917. *Rec. Ind. Mus.* 13: 192.

Stomorhina Rondani: Senior-White *et al.*, 1940. *Fauna Brit. India, Dipt.* 6: 190.

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Diagnostic characters: Eyes bare, subholoptic in male, upper facets slightly enlarged; parafacialia metallic black; facial carina present; epistome strongly projecting; genae metallic black anteriorly; arista plumose on dorsal side only; thorax variously coloured, black, olive or cupreous green, with piliferous spots; pleura with or without piliferous spots; propleuron, suprasquamal ridge and postalar declivity bare; mesopleuron with 2-5 posterior bristles; acrostichals 0+0-2; dorsocentrals 0+0-2; intra-alar 0+0-2; presutural present; humerals 1-3; posthumeral 1; supra-alar 2-3; post-alar 2; notopleurals 2; lateroscutellars 1-2; apicoscutellar 1; discoscutellar absent; sternopleurals 1+1; prostigmatic bristle absent; R1 bare; R4+5 setulose at least on basal node; first posterior cell (R5) slightly open or closed, not petiolate; thoracic squama bare dorsally; legs brown to black; hindtibia without row of short bristles, only 2-3 outstanding ones present; abdomen same coloured as thorax, in some species with yellow or reddish markings.

Distribution: Entire Oriental Region, most parts of Palaearctic, Afrotropical, Nearctic and Australian regions.

Stomorhina xanthogaster (Wiedemann, 1820)

(Figs.1-7)

Idia xanthogaster Wiedemann, 1820. *Nov. Dipt.*

Gen., p. 21. type loc., Java, Indonesia.

Idia australis Walker, 1849. *List. Dipt. Brit.*

Mus. 4: 809.

Idelliopsis similis Townsend, 1917. *Rec. Ind.*

Mus. 13(4): 190.

Idiella xanthogaster (Wiedemann) : Seguy,

1928. *Encycl. Ent. (A)* IX: 183.

Rhinia majuscula Villeneuve, 1932. *Bull. Ann.*

Soc. Ent. Belg. 71 :245.

Stomorhina xanthogaster (Wiedemann): Bezzi,

1927. *Bull. Ent. Res.* 17: 234.

Rhinia xanthogaster (Wiedemann): Peris 1952.

An. Aula Dei. 3(1): 39.

Idiellopsis xanthogaster (Wiedemann): James,

1977. *Cat. Dipt. Orient. Reg.* 3: 546.

Stomorhina xanthogaster (Wiedemann):

Kurahashi, 1987. *Occ. Publ. Ent. Soc.*

Japan 1: 84.

MALE : Body length 8.0 - 9.5 mm.

Head: Eyes bare, subholoptic, upper facets enlarged; frons dark brown to black, wider than parafrontalia; parafrontalia white, with shining black spots; frontal bristles well developed; fronto-orbital bristles absent; ocellus with ocellar and postvertical bristles; vertical and outervertical bristles present, prevertical bristles absent; parafacialia metallic black; face shining black, bare; facial carina present; epistome, medianae and jowls shining brown, bare, except jowls with brownish hair; genae and postgenae shining black with black hair; vibrissae present well above oral margin; peristomal bristles well developed; postorbit black with silver tomentum, bare; occiput metallic black, with thick golden hair; antennae brown; 1st segment setulose while 2nd segment with one long bristle; length of 3rd segment about 4X that of 2nd; arista brown, long plumose; palpi black with bristles present all over.

Thorax: Dark green with greyish white dusting; humerus and postalar callus concolorous with dorsum; prothoracic spiracle yellow; propleuron bare and prosternum hairy; postalar declivity bare; supraspiracular convexity bare; suprasquamal ridge with anterior tuft.

Chaetotaxy (Fig. 4): Acrostichals 0+1; dorsocentrals 0+2; intra-alar 0+1; presutural present; humerals 3; posthumeral 1; supra-alar 3; post-alar 2; notopleurals 2; lateroscutellars 2; apicoscutellar 1; discoscutellar absent; sternopleurals 1+1; propleural present and prostigmatic absent.

Wings: Yellow, slightly infuscated at base; veins brown; stem vein (R) setulose; R1 bare; R4+5 setulose at basal node on both dorsal and ventral sides; first posterior cell (R5) closed; epaulet and basicosta dark brown; subcostal sclerite reddish brown, bare; alar and thoracic squamae deep yellow with yellowish marginal cilia, bare dorsally; halteres yellow.

Legs: Brown to black; tibiae and tarsi pale brown; fore- and hind femora with bristles on both dorsal and ventral sides while midfemur with bristles on ventral side only; fore tibia with 2 bristles at middle and 3 at apex; midtibia with one bristle at middle and 2 at apex; hindtibia with 3 bristles at middle and 2 at apex.

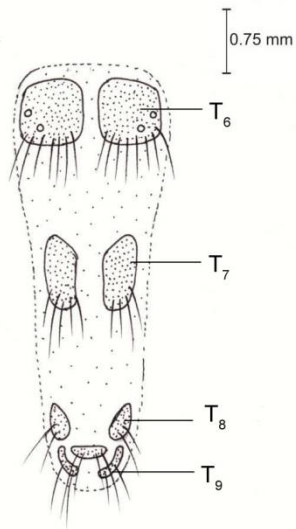


FIG. 1

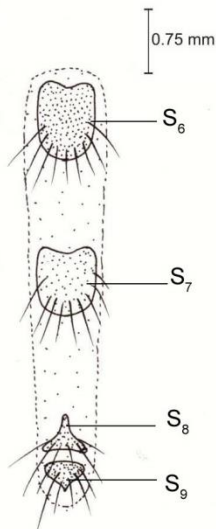


FIG. 2

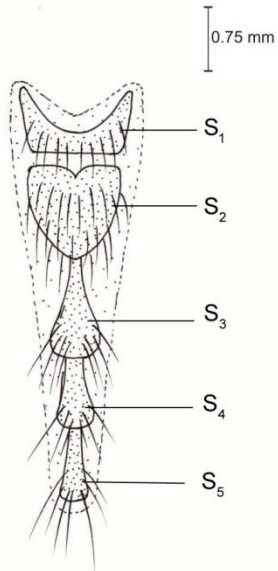


FIG. 3

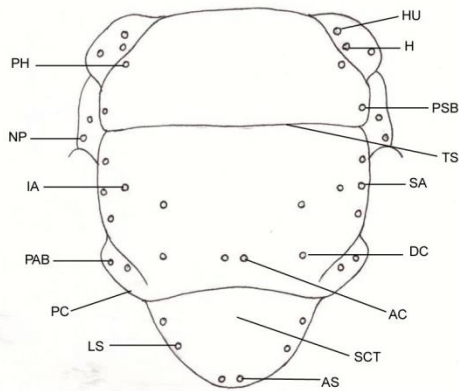


FIG. 4

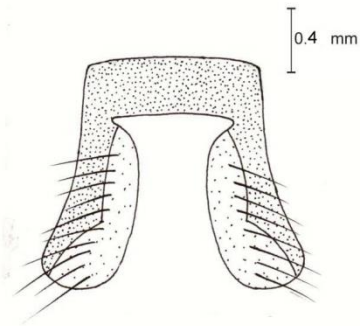


FIG. 5

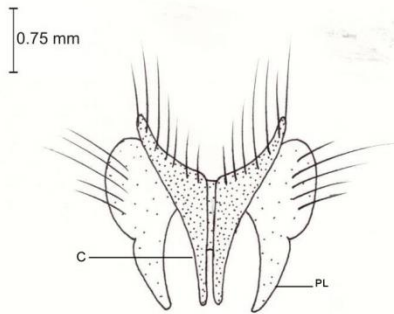


FIG. 6

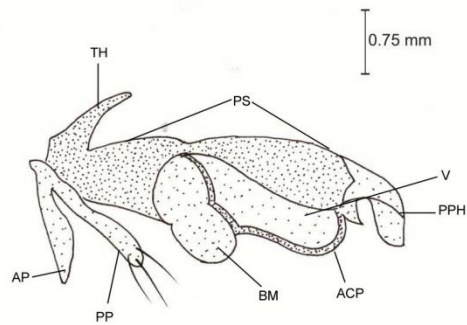


FIG. 7

Figs. 1-7. *Stomorhina xanthogaster*: **1.** Dorsal view of ovipositor; **2.** Ventral view of ovipositor; **3.** Sternites I-V of female; **4.** Dorsal view of chaetotaxy of thorax (Diagrammatic). **5.** Sternite V of male; **6.** Cerci and paralobi; **7.** Aedeagus and parameres.

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Abdomen: Reddish orange, with a black median stripe; tergites 4 and 5 blackish at posterior end; tergites 2-5 with strong marginal bristles; sternites 1-5 with long black hair; hypopygium conspicuous.

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

FEMALE: Body length 9.0 - 10.0 mm.

Similar to the male except: eyes dichoptic, frons wider, fronto-orbital bristles present, abdomen without black median stripe, tergites 4 and 5 without black band at posterior margin, midtibia with series of posterior marginal bristles. Sternites 1-5 (Fig. 3).

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

Material examined: Uttaranchal: Almora-1650m (5♂♂, 11♀♀) 10.x.2001. Coll. Inderpal Singh Sidhu.

Distribution: India (Assam, Bihar, Madhya Pradesh, Sikkim, Uttaranchal), Celebes, Indonesia, Malaysia, Nepal, Sri Lanka, Taiwan, Saudi Arabia, China, Australia and New Guinea.

Holotype depository: ZSI, Calcutta, India.

Remarks: This species is different from the other species of the genus *Stomorhina* because of having first posterior cell (R5) petiolate and sternopleura densely yellow dusted. It has been reported from many Indian states and is widely distributed in the Oriental region.

Stomorhina discolor (Fabricius, 1794)

(Figs. 8-14)

Musca discolor Fabricius, 1794. *Entom. Syst.*, 4: 320. type loc., India Orient.

Idia metallica Macquart, 1835. *Hist. Nat. Ins. Dipt.*, 2: 246.

Idia quadrimaculata Macquart, 1851. *Mem. Soc. Agric. Lille* 1851: 213.

Idia aequalis Walker, 1859. *J. Proc. Linn. Soc. Lond. Zool.* 3: 103.

Idia cincta Bigot, 1874. *Ann. Soc. Ent. Fr.*, (5) 4: 258.

Stomorhina muscina Rondani, 1875. *Ann. Mus. Civ. Stor. Nat. Giacomo Doria*, 7: 429.

Stomorhina scalaris Bigot, 1887. *Bull. Soc. Zool. Fr.* 12: 591.

Euidilla discolor var. *nigripes* Senior-White, 1922. *Mem. Dept. Agric. Ind. (Ent. Ser.)* 7: 167.

Stomatorrhina discolor (Fabricius) : Wu, 1940. *Cat. Ins.Sin.*, 5: 375.

Stomorhina discolor (Fabricius) : Senior-White et al., 1940. *Fauna Brit. India, Dipt.*, 6 : 192.

Stomatorrhina muscina Rondani : Henning, 1941. *Ent. Beih.* 8: 181.

Rhinia discolor (Fabricius): Peris, 1952. *An. Aula Dei*, 3(1) : 32.

Stomorhina discolor (Fabricius): James, 1977. *Cat. Dipt. Orient. Reg.*, 3: 557.

MALE: Body length 5.4 - 6.5 mm.

Head: Eyes bare, subholoptic, facets larger at anterior end than posterior end; frons reddish brown, bare, wider than parafrontalia, forms a thin line as it approaches vertex; parafrontalia silvery grey with shining black spots; frontal bristles weak; fronto-orbital bristles absent; ocellus with weak ocellar and postvertical bristles; vertical and outervertical bristles absent, prevertical bristles present; parafacialia shining metallic black, bare; face, epistome, medianae and jowls shining black, bare; facial carina present; epistome strongly projecting; genae metallic black anteriorly; postgenae golden, covered with golden hair; vibrissae present well above oral margin; persitomal bristles very weak; postorbit golden, bare; upper part of occiput shining black, bare, lower part golden with golden hair; 1st and 2nd antennal segments orange, 2nd with one long bristle, 3rd segment orange with silver dusting, length of 3rd segment about 4X that of 2nd; arista light brown, plumose on dorsal side only; palpi brown, bare.

Thorax: Ground colour green, thickly grey dusted, covered with black small spots; pleura with golden yellow hair; humerus and postalar callus concolorous with dorsum; prothoracic spiracle yellow; propleuron bare; prosternum with yellow fine hair; postalar declivity bare; supraspiracular convexity bare; suprasquamal ridge bare.

Chaetotaxy (Fig. 11) : Acrostichals 0+1; dorsocentrals 0+2; intra-alar 0+1; presutural

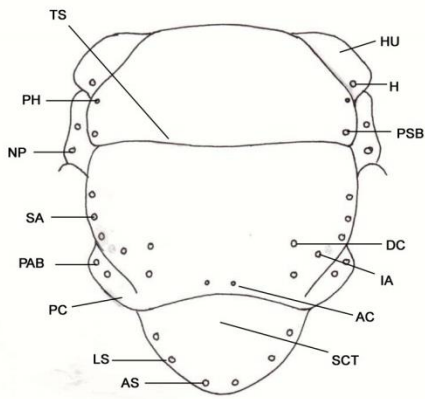
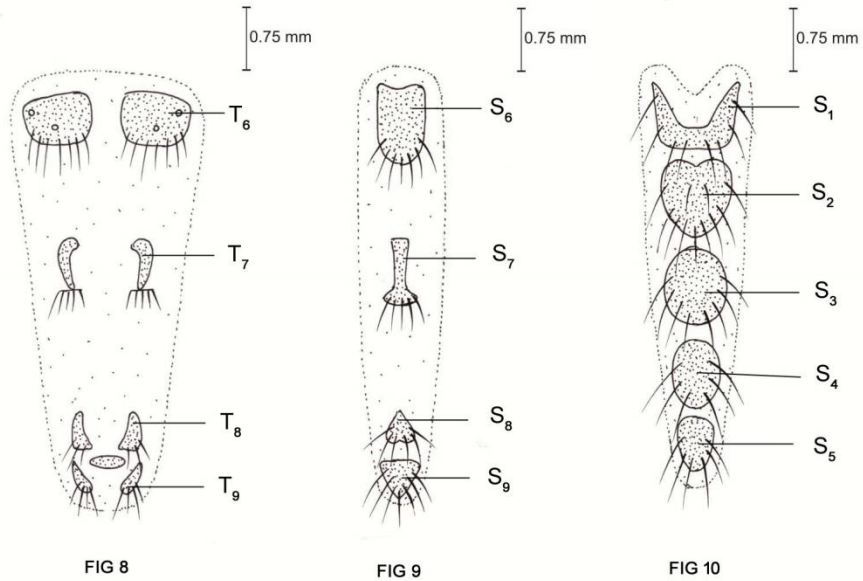


FIG 11

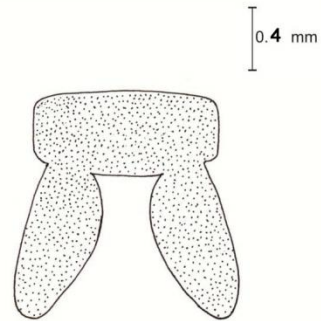


FIG 12

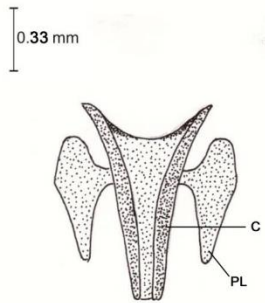


FIG 13

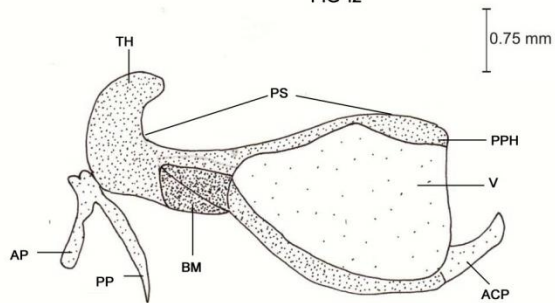


FIG 14

Figs. 8-14. *Stomorhina discolour*: **8.** Dorsal view of ovipositor; **9.** Ventral view of ovipositor; **10.** Sternites I-V of female; **11.** Dorsal view of chaetotaxy of thorax (Diagrammatic); **12.** Sternite V of male; **13.** Cerci and paralobi; **14.** Aedeagus and parameres.

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present; humeral 1; posthumeral 1; supra-alars 3; post-alars 2; notopleurals 2; lateroscutellars 2; apicoscutellar 1; discoscutellar absent; sternopleurals 1+1; propleural present; prostigmatic absent.

Wings: Slightly hyaline with yellowish tinge; veins yellowish; stem vein (R) setulose; R1 bare, R4+5 setulose at basal node only; first posterior cell (R5) slightly open; epaulet brown; basicosta yellow; subcostal sclerite brown with fine black pubescence; alar squama brown on dorsal side, golden on ventral side, bare; thoracic squama golden, bare; both squamae with yellowish marginal cilia; halteres brown.

Legs: Brownish yellow except femora and tarsi which are brown; foretibia with 2 bristles at middle and 2 at apex; midtibia with 3 bristles at middle and 2 at apex; hindtibia with 2 bristles at middle and 1 at apex.

Abdomen: Ovoid, brown bands at posterior margin of each segment; tergites 2 and 3 yellow with brownish posterior bands and weak marginal bristles; tergites 4 and 5 shining dark brown with weak marginal bristles; sternites 1-5 with golden hair; hypopygium conspicuous.

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

FEMALE : Body length 6.0 - 6.3 mm.

Similar to male except: frons wider and parallel sided, fronto-orbital bristles present, outervertical bristles present. Sternites 1-5 (Fig. 10).

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

Material examined: Haryana: Kalka-370m (3♂♂, 2♀♀) 3.x.1999; Himachal Pradesh: Shimla-2208m (1♂, 5♀♀) 28.iii.2002.

Distribution: India (Chandigarh, Haryana, Himachal Pradesh), Bangladesh, Fiji, Indonesia, Malaysia, Nepal, Phillipines, Sri Lanka, Thailand, Taiwan, China, Hong Kong, Japan and Australia.

Holotype depository: BMNH, London, England.

Remarks : This species is widely distributed in

the Oriental, Palaearctic and Australian regions. Senior-White *et al.* (1940) reared it from the nest of an ant *Camponotus angusticollis*. Males often hover around under shady trees. According to Kurahashi and Fauran (1980), the larvae are predaceous upon immature stages of other insects.

Stomorphina melastoma (Wiedemann, 1830)

(Figs.15-21)

Idia melastoma Wiedemann, 1830. *Ausser. Zweifl. Insekt.* 2: 193. type loc., Buitonzorg, Indonesia.

Idia melanostoma Wiedemann, 1830. *Ausser. Zweifl. Insekt.* 2: 353.

Idiella purpurea Townsend, 1917. *Rec. Ind. Mus.* 13: 193.

Euidiella purpurea Townsend, 1917. *Rec. Ind. Mus.* 13: 193.

Idiella melanostoma Wiedemann: Malloch, 1926. *Ann. Mag. Nat. Hist.* (9) 18: 509.

Stomorphina melanostoma (Wiedemann): Senior-White *et al.*, 1940. *Fauna Brit. India, Dipt.* 6: 202.

Rhinia melanostoma melanostoma (Wiedemann) : Peris, 1952. *An. Aula Dei.* 3(1): 42.

Stomorphina melastoma (Wiedemann) : Dear, 1977. *Austr. J. Zool.*, 25: 795, figs. 24, 31, 39.

Rhinia melastoma (Wiedemann): James, 1977. *Cat. Dip. Orient. Reg.*, 3: 552.

Stomorphina melastoma (Wiedemann): Fan *et al.*, 1992. *Key Common Flies China*, 560pp.

MALE : Body length 7.5 - 8.0 mm.

Head: Eyes bare, subholoptic, facets slightly enlarged at anterior end; frons blackish, hairy; parafrontalia brownish with yellow tomentum, hairy; frontal bristles weak; fronto-orbital bristles present; ocellus with ocellar and postvertical bristles; vertical bristles present, outervertical bristles absent, prevertical bristles present; parafacialia blackish with silvery yellow band at upper part extending upto anterior part of face; face metallic black; facial carina present; epistome, medianae and jowls shining black, bare except jowls, with pale hair; genae and postgenae blackish with yellow tomentum with golden hair; vibrissae present well above oral margin; peristomal bristles well developed; postorbit silvery grey, bare; occiput shining

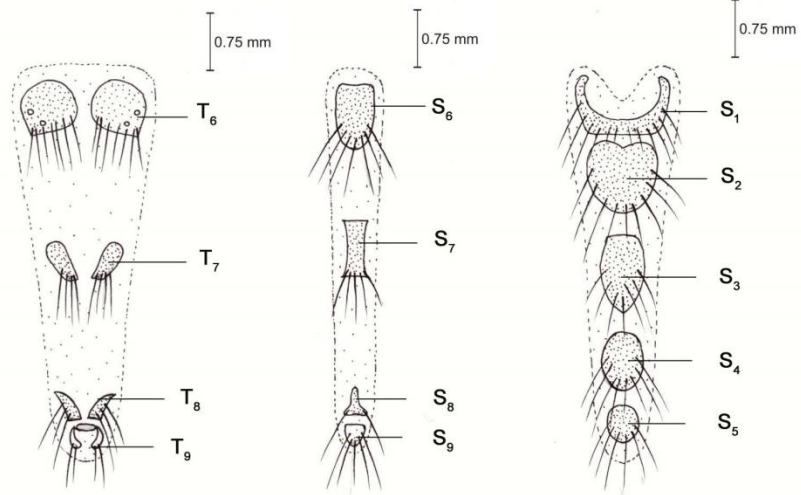


FIG 15

FIG 16

FIG 17

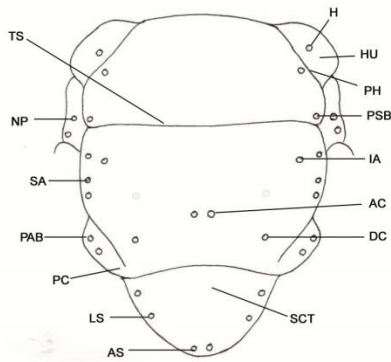


FIG 18

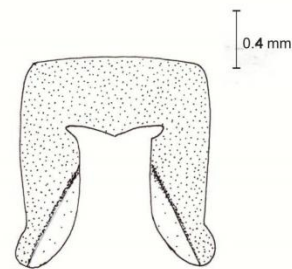


FIG 19

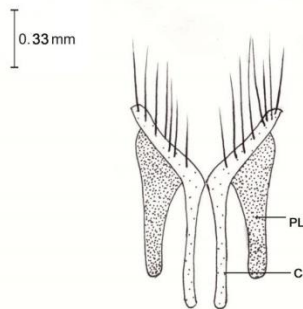


FIG 20

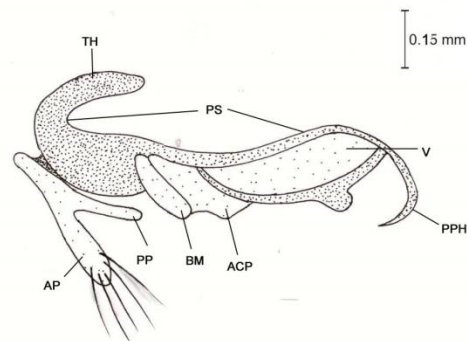


FIG 21

Figs. 15-21: *Stomorhina melastoma*: **15.** Dorsal view of ovipositor; **16.** Ventral view of ovipositor; **17.** Sternites I-V of female; **18.** Dorsal view of chaetotaxy of thorax (Diagrammatic); **19.** Sternite V of male; **20.** Cerci and paralobi; **21.** Aedeagus and parameres

black with black and pale hair; antennae light brownish; 2nd segment with one long bristle; length of 3rd segment about 3.5X that of 2nd;

arista light brown, long, plumose on dorsal side only; palpi brown with bristles present all over.

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Thorax: Metallic green with light golden tomentum; humerus and postalar callus concolorous with dorsum; prothoracic spiracle yellow; propleuron bare with golden dusting; prosternum hairy; postalar declivity bare; supraspiracular convexity bare; suprasquamal ridge bare.

Chaetotaxy (Fig. 18): Acrostichals 0+1; dorsocentrals 0+1; intra-alar 0+1; presutural present; humeral 1; posthumeral 1; supra-alar 3; post-alar 2; notopleurals 2; lateroscutellars 2; apicoscutellar 1; discoscutellar absent; sternopleurals 1+1; propleural present; prostigmatic absent.

Wings: Hyaline, slightly infuscated at base and apex; veins brown; stem vein (R) setulose; R1 bare; R4+5 setulose near base on both dorsal and ventral sides; first posterior cell (R5) open; epaulet and basicosta black; subcostal sclerite brown with fine pubescence; alar and thoracic squamae smoky yellow with yellowish marginal cilia, bare on dorsal surface; halteres brown.

Legs: Femora black with purplish tinge; tibiae and tarsi yellowish; tips of tarsi darkened; fore- and hind femora with bristles present on both dorsal and ventral sides while midfemur with bristles on ventral side only; fore- and mid tibiae each with 2 bristles each at middle and apex; hindtibia with 1 bristle at middle and 2 at apex.

Abdomen: Purplish with coppery reflections; tergites 2-3 with dark posterior band and weak marginal bristles; tergites 4 and 5 with strong marginal bristles; sternites 1-5 with golden hair; hypopygium conspicuous.

Male genitalia: Fifth sternite (Fig. 19), Cerci and paralobi (Fig. 20), Aedeagus and parameres (Fig. 21).

FEMALE: Body length 8.5 - 9.0 mm.

Similar to the male except : eyes dichoptic, frons wider and parallel sided, fronto-orbital bristles present, tergites 2-3 with strong marginal bristles. Sternites 1-5 (Fig. 17).

Female genitalia: Dorsal view of ovipositor (Fig. 15), Ventral view of ovipositor (Fig. 16).

Material examined: Himachal Pradesh: Manali-2050m (11♂♂, 3♀♀) 9.ix.2000; Coll. Inderpal Singh Sidhu.

Distribution: India (Himachal Pradesh, Tamil Nadu, Kerala, West Bengal), Indonesia, Nepal, Sri Lanka, China, Australia and New Guinea.

Holotype depository: ZSI, Calcutta, India.

Remarks: This species is distributed in the Oriental and Australian regions. There has been lot of shifts in the generic and specific combination as is depicted in the given synonymy. Adults have been collected from flowers and nothing is known about the bionomics of this species.

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