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SHORT COMMUNICATION

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NEW RECORDS OF THE SUBFAMILY STRATIOMYINAE (DIPTERA: STRATIOMYIDAE) FROM PAKISTAN

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Abstract: Based on collected specimens from the Narowal, Rawalpindi and Jhelum districts of (Punjab Province) Pakistan, three species were recognised in two genera, under the subfamily Stratiomyinae (Diptera: Stratiomyidae). *Odontomyia ochropa* Thomson, 1869, *Oplodontha minuta* (Fabricius, 1794) and *Oplodontha rubrithorax* (Macquart, 1838) are recorded for the first time from Pakistan. Photographs, diagnostic characters, descriptions, geographical distributions and identification keys of the described species are provided.

Keywords: Diptera, new records, Pakistan, Stratiomyidae, Stratiomyinae.

Soldier flies (Stratiomyidae) belong to the suborder Brachycera, infraorder Stratiomyomorpha and are the sister group of the Xylomyidae (James 1981). Stratiomyidae encompasses 2,690 described species, 385 genera and 12 subfamilies, which are distributed worldwide (Pape et al. 2011). The adult soldier flies usually prefer to live near the larval habitats mostly found in wetlands, damp places, under bark, on animal excreta and decaying organic matter. The larvae of many species live in aquatic environments, in dung and decaying organic matter and under bark; a few are dependent on grasses (James 1968; Sheppard 1983; Samson 2001; Woodley 2001). This family has important diagnostic characters of strong anterior veins on their wings and a small discal cell in the anterior half of the wings. The antennae have many structural variations and are used for the identification

of different genera. Scutellum is often adorned with spines and this may be the reason for the common name 'soldier flies'. Their body size varies from 2–20 mm with different colourations, some are wasp mimics, marked with different colourations such as black and yellow or green and sometimes metallic (Woodley 2001; Kovac & Rozkošný 2004).

James (1975) provided a detailed list of 79 species of family Stratiomyidae from India in the Oriental Catalogue of Diptera. Later, Woodley (2001) published the world catalogue of soldier flies. Wang et al. (2007) described a new species of genus *Odontomyia* from Taiwan. Ting et al. (2009) worked on the genus *Oplodontha* with the description of three new species, and also constructed the local key to the known species of the genus from China. Kazerani & Khaghaninia (2013) reported the genus *Oplodontha* for the first time from Iran. Nerudová et al. (2015) gave the first detailed description of both larvae and puparium of *Oplodontha rubrithorax* (Macquart, 1838) from the Oriental Region. Roy et al. (2016) reported nine from the Sunderban Biosphere Reserve of India. Besides establishing a checklist of 84 species under 35 genera in seven subfamilies of Indian stratiomyid fauna, Wachkoo et al. (2017) also reported five species belonging to two subfamilies namely Clitellariinae and Sarginae from Pakistan. So the current study was planned to explore the fauna of subfamily Stratiomyinae from Pakistan.

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MATERIALS AND METHODS

The studied specimens were collected during the months of May, June and July (2016–17) from different localities of the Narowal, Rawalpindi and Jhelum districts of (Punjab Province) Pakistan. The adult specimens were collected using a sweep net from grasses, a maize field, wild flowers and flowers of *Parthenium hysterophorus*. The collected specimens were killed by placing them in a killing jar having Potassium cyanide for 20–30 minutes. Later, the pinned specimens were identified under an Olympus SZX7, Model SZ2-ILST light stereoscope and photographs were prepared under a Nikon SMZ 1500 Binocular stereoscope, with a Nikon Digital Sight DS-Fi1 camera attached. The following literature were used: Brunetti (1920), Dutta et al. (1997), Wang et al. (2007), Tkoč & Rozkošný 2014 and Roy et al. (2016) for the identification of the species. The identified specimens were deposited at the National Insect Museum, Islamabad, Pakistan.

RESULTS AND DISCUSSION

During the current study three species—*Odontomyia ochropa* Thomson, 1869, *Oplodontha minuta* (Fabricius, 1794), and *Oplodontha rubrithorax* (Macquart, 1838)—were recorded for the first time from Pakistan. Wachkoo et al. (2017) reported five species belonging to two subfamilies namely Clitellariinae and Sarginae, viz., *Adoxomyia heminopla* (Wiedemann, 1819), *Microchrysa flaviventris* (Wiedemann, 1824), *Ptecticus melanurus* (Walker, 1848), *Sargus gemmifer* Walker, 1849, and *Sargus mactans* Walker, 1859 from Pakistan without mentioning the exact locality in Pakistan.

Subfamily Stratiomyinae

Diagnostic Characters: Abdomen with five visible abdominal tergites; scutellum with two straight and moderately long or short spines; cell dm present; four veins arising from cell dm; antennal flagellum comprising six flagellomeres, branches of M often weakened; antennae with dorsal stylate or aristate (James 1981; Brunetti 1920).

Key to the genera of subfamily Stratiomyinae

1. First antennal segment (scape) twice as long as the second segment (pedicel); discal cell very small; eyes bare or with short hairs
..... *Oplodontha* Rondani
- Ratio of scape to pedicel usually not more than 1.5: 1; discal cell of normal size, not small as above; eyes bare *Odontomyia* Meigen

Genus *Odontomyia* Meigen, 1803

Diagnostic Characters: Male eyes holoptic while female dichoptic, eyes bare; antennae with six flagellomeres, ratio of scape to pedicel usually not more than 1.5: 1, last two flagellomeres forming a short but distinct stylus; scutellum with a pair of distinct spines; wings with cross-vein m-cu present; branches of M often weakened (Dutta et al. 1997; Wang et al. 2007; Roy et al. 2016).

Odontomyia ochropa Thomson, 1869

Image 1 A–C

Material Examined: Registration number: 100. Punjab (Pakistan), Shakargarh, 282m, 13 males, 13.vii.2016, leg. M.A. Hassan.

Distribution: India, Pakistan (new record), Philippines, Singapore, Thailand, USA (Wachkoo et al. 2017).

Description: Male: Head blackish (Image 1A); eyes bare, contiguous in male, upper facets large; vertical triangle black, ocelli brownish, frontal triangle and face orange, face with distinct bare tubercle, face below with greyish hairs; proboscis black, papillae yellow; antennae orange, flagellomeres slightly brownish, four annulations with narrow long pointed style; thorax black, scutum with short close golden yellow pubescence, which, except along the lateral sides, having longer hairs, scutum with distinct transverse suture separated from the centre, post-pronotum and postalar callus yellow, scutellum yellow with basal blackish spot in the centre, apical spines yellow slightly pointed at tip, fringe of yellow hairs along the hind margin of scutellum; pleuron mostly yellow with yellow hairs, sternopleuron on lower side black, area between fore and mid legs broadly black with distinct longitudinal suture, yellowish pubescence; legs orange, tip of tarsi slightly brownish; halteres yellow, basally black, discal cell of normal size, wings clear, basal veins yellow (Image 1C); abdomen pale yellow, first tergite with elongated black spot in the middle, second, third and fourth each with a large black spot in the middle reaching from anterior to hind margins, broader in front, fifth tergite more or less similar spot but not reaching to the margin, ventrally yellowish or brownish-yellow (Image 1B).

Genus *Oplodontha* Rondani, 1863

Diagnostic Characters: Discal cell very small, cross vein r-m absent, vein Cu₁ at most touching the discal cell or separated from it by a cross-vein, R₁ and R₂₊₃, fused; eyes either bare or with short hairs; scape at most twice as long as the pedicel, rarely slightly longer, flagellum consisting of 5–6 flagellomeres; posterior margin of scutellum with a pair of spines (Dutta et al. 1997; Ting-Ting et al. 2009; Kazerani & Khaghaninia 2013; Tkoč & Rozkošný 2014; Roy



Image 1. *Odontomyia ochropa* Thomson, 1869, male: A - head; B - abdominal view; C - wing. © Muhammad Asghar Hassan

et al. 2016).

Oplodontha minuta (Fabricius, 1794)

Image 2 A–C

Material Examined: Registration number: 101. Punjab (Pakistan): Shakargarh, 282m, 1 male, 12.vii.2016, 1 male, 14.vii.2016, leg. M.A. Hassan.

Distribution: Afghanistan, Egypt, India, Israel, Pakistan (new record), Sri Lanka, Thailand, United Arab Emirates, Yemen (Tkoč & Rozkošný 2014; Wachkoo et al. 2017).

Description: Male: Head: Head black (Image 2A); eyes covered with short hairs; frons v shape, black in colour; ocelli brownish, slightly produced; antennae yellowish-orange except apical three segments blackish, scape longer than pedicel; face yellowish with distinct central knob covered with short yellow hairs; proboscis long, black; post-pronotum yellowish, scutum black with yellowish pubescence, comparatively denser on sides, a few or absent in centre, scutellum more than basal half blackish, apically yellowish, covered with yellowish pubescence, the apical spines on scutellum

are yellow, sub-scutellum distinct, black; pleuron black, wholly covered with yellowish pubescence, yellowish colouration above fore coxa and apico-laterally, a yellow spot on the postero-apical side of sternopleuron (Image 2B); wings transparent brownish, discal cell small, discal cell veinlets almost invisible, halteres yellowish; legs mostly yellow, coxa black, trochanter yellowish, femora with broad black median spots, femur in hind legs mostly black or with relatively large black spots, tibia and tarsus of fore and mid legs yellowish, hind tibia basally yellowish remaining black, tarsus yellowish, legs covered with small yellowish pubescence; abdomen yellowish, but dorsum with large rounded or somewhat diamond shaped black spot spread over middle of tergite 2, 3, 4 and 5. Black spot on tergite 2 mostly reached at the posterior margin, tergite 3 antero-laterally with a small black spot, median with heart shaped black spot not reached at margin, tergite 4 with broad median black spots like an inverted triangle slightly straight at posterior side, antero-lateral with a large black spot, tergite 5 with anterior half black, abdomen with short yellowish pubescence slightly longer



Image 2. *Oplodontha minuta* (Fabricius, 1794), male: A - head; B - lateral view; C - dorsal view. © Muhammad Asghar Hassan



Image 3. *Oplodontha rubrithorax* (Macquart, 1838), female: A - head; B - lateral view; C - dorsal view. © Muhammad Asghar Hassan

along the sides, ventrally yellowish (Image 2C).

Oplodontha rubrithorax (Macquart, 1838)

Image 3 A–C

Material Examined: Registration number: 102. Punjab (Pakistan): Jhelum, 320m, 1 female, 27.v.2017, leg. Z. Iqbal; Rawalpindi (Ayub Park), 543m, 6 female, 28.vi.2017, 1 female, 1.vii.2017, 2 females, 5.vii.2017, leg. M.A. Hassan.

Distribution: India, Indonesia, Japan, Pakistan (new record), Philippines, Sri Lanka, Thailand, Zaire (Wachkoo et al. 2017).

Description: Female: Head: Head black (Image 1A); eyes widely separated in female, parallel from vertex to base of antennae, ocellar triangle narrow at vertex, ocelli greyish, a central line from median ocellus to centre of antennae, frons with greyish hairs except the broad shiny comma shape originating from base of antennae, lateral sides from base of antennae shiny black, face below antennae shiny black, facial tubercle slightly brownish, face along the lateral sides of facial tubercle and gena with greyish hairs; proboscis black, normal size covered with short greyish hairs; antennae blackish except scape and pedicel which are brownish, scape longer than pedicel, first three flagellomeres blackish with distinct small greyish spots, remainder without greyish spots, tip forming slightly narrow; occiput distinct, covered with short greyish hairs; scutum black with distinct transverse suture, little arc not meeting in the centre, three greyish stripes from base not reaching to transverse suture, greyish pubescence along the sides, centre with microscopic pubescence, scutum near scutellum forming distinct suture and slightly produced, scutellum black, spines yellowish green; post-pronotum and posterior callus slightly brownish, pleuron black with greyish pubescence; legs green, fore femur ventro-centrally black, middle femur ventro-centrally broad black spot, coxa black, mid trochanter black (Image 3B); halteres yellow, wings colourless, discal cell small, discal cell veinlets almost invisible; abdomen entirely yellowish-green (Image 3C).

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