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Two new species of genus *Coelioxys* LATR. from northern India (Insecta, Hymenoptera, Apoidea: Megachilidae)

With 8 Figures

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Abstract. Two new species of genus *Coelioxys* LATREILLE namely, *C. rajasthaniensis* and *C. pasteeli*, both collected from the regions of northern India, have been described. *C. rajasthaniensis* is closely related to *C. latus* CAMERON and *C. pasteeli* to *C. fuscipennis* SMITH.

Coelioxys rajasthaniensis sp. n. (Figs. 1-4)

F e m a l e :

Integument completely black; punctures on face, terga 4-6 and legs fine and close, on vertex coarse but sparse, on scutum coarse but running in striations, on scutellum and axillae reticulated; pubescence snowy-white; on face, occiput, thorax laterally and tergal fasceae erect and two patches at the base of scutum on either sides of midline, one behind tegulae, two at the base of scutellum and at shallow-laterally confined gradular concavities of tergite 2 & 3 and tergal sclerites onto lateral surface, ferruginous.

Head wider than median length; eyes bare slightly convergent below, carina prominent onto inner margin; clypeal basal width equal to median length, flat, apical margin laterally angulate than medially transverse with dense erect fringe, surface finely pubescent; supraclypeus resembling clypeus; antennal sockets finely carinate, depressed laterally, apical flagellar segment of antennae slightly shorter than the scape, filament with golden fimbria; parocular area deeply concave; subocellar area almost flat, finely rugose, midfacial line elevated and on a narrow carina; ocellar triangle not elevated in profile; distance of lateral ocelli-equidistant to eye, to occipital margin and to each other; vertex deeply incurved and margin incarinate; gena narrowed above, maximum width about half of that of eye in lateral view; mandible acutely bidentate, inner angles obtuse.

Pronotal lobe laterally carinate and produced to spine below the anterior margins of tegulae, maximum width of scutum more than median length; lateral margin distinctly carinate and recurved up; tegulae very finely striated, shining; scutellum broadly rounded medio-posteriorly with a fine tubercle at centre; axillae very feebly produced posteriorly, much limited upto the triangle; fore wing clear hyaline, slightly fuscous at apex, veins dark piceous, both recurrent veins equidistant from the base and apex of the second cuboital cell; fore coxae with fine protuberance at anterior margin, legs normal unmodified.

Metasoma much conical; basal tergal concavity margin incarinate, laterally with dense erect pubescence; all tergal apical margins fasciate; gradual concavities on 2nd to 5th terga shallowly confined to lateral extremities, pubescent and with anterior margins well defined, posterior surface to these concavities slightly elevated like broad smooth-impunctate tubercle; tergum 6 with two

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pairs of lateral spines, first at base, another preapically close to the either sides of apically produced spine at centre of the apex, the spine extends upto the apex of the sternum 6th, carina forming this spine, originate right from the base of the 6th tergum either sides of whom (at apical half) deeply concave and pubescent; basal sternum shining smooth, apical margin broadly evaginated, sterna 2nd with margin transverse and of 3rd to 5th slightly incurved; all sternal apical margins finely fasciate and surface doubly punctured; 6th sternum with spatulate apex slightly broadening towards apex which is finely notched at centre and dorsally with distinct fringe, originating from the groove formed in between the subapical carina and apical margin, fringe do not projects beyond the apical margin.

Measurements (in mm): Total length 11.0; median length of face 2.5 and maximum width 4.0; clypeus: basal width 0.80 and median length 0.76; eye: length 2.8 and lateral width 1.2; scutum: median length 2.2 and maximum width 3.8; total wing length 12.5, length of cuboital cell 2.2; median widths of terga 1 to 6 - 3.8, 3.2, 2.6, 2.0, 1.0 (at basal pair of lateral spines in 6th tergum).

Male: Not known.

Material examined: Holotype ♀, Rajgarh, Alwar on 06. IX. 1990, Coll. Rajiv K. Gupta; paratype ♀ (same data as that of holotype; presently both types with author himself, shall be submitted to NPC, IARI, N. Delhi, shortly).

Flower record: *Crotalaria juncea* L.

Etymology: Named after the state of collection, Rajasthan.

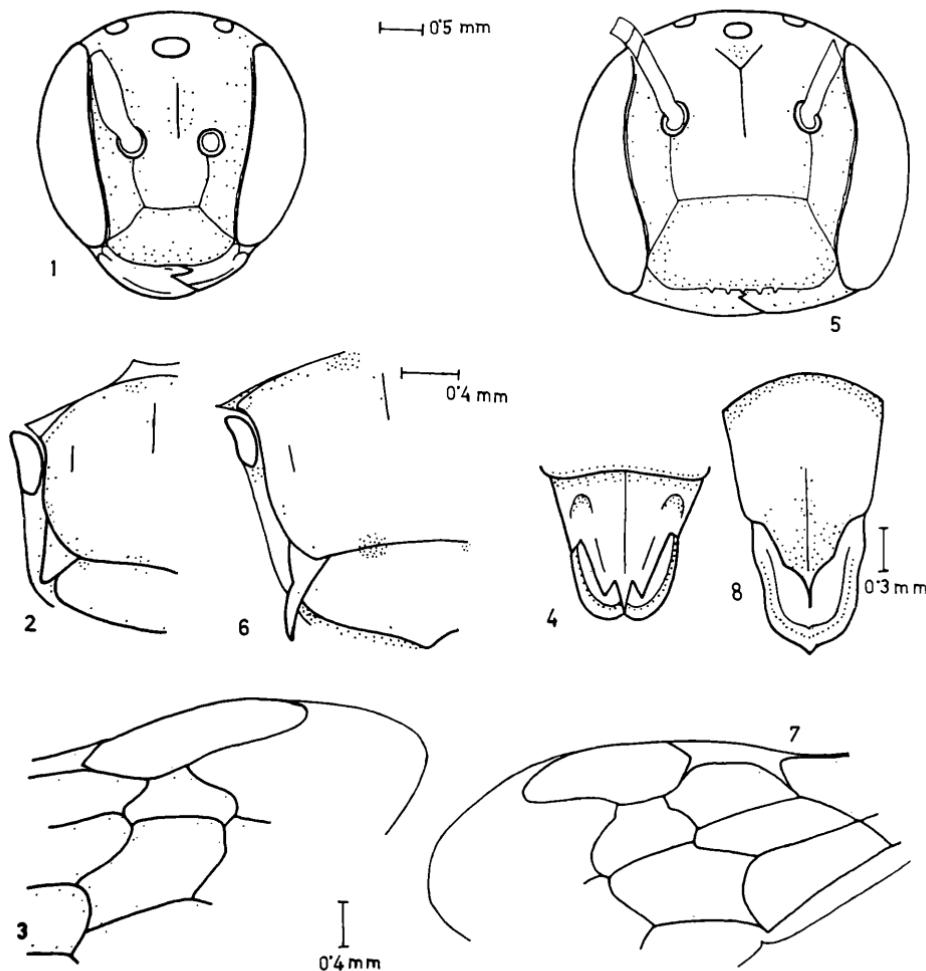
Remarks: This species seems to have originated from the same stalk which gave rise to the subgenus *Hemicoelioxys* PASTEELS, 1968 (later upgraded to the genus rank in 1977, by the same authority, with type-species: *H. gracillima* PASTEELS), if consider the axillar projection at the grade of completely rounded posteriorly; however, the new species has almost unproduced axillae but not rounded posteriorly, meeting with scutellar crest. Among the known Indian and neighbouring species this new species comes quite close to *C. latus* CAMERON but with distinct differences as follows: integument with red lustre; antennae, legs, tegulae and sternites brownish red; legs dorsally, terga laterally, first sternum and broad apical fasceae on 2-5 sterna ferruginous; eyes hairy, axillar spine stoutly produced, scutellar crest much produced over metanotum; tergum 6 without lateral spines and spinose projection at apex lacking; sternum 6 much produced beyond the corresponding terga.

Coelioxys pasteeli sp. n. (Figs. 5-8)

Female:

Integument black, dorsal surface with red lustre and ventral much brownish-red on sterna, legs and tegulae; punctures on vertex and mesosoma above quite coarse and on metasoma and face fine; pubescence on face and mesosoma below erect and rest of the body including apical tergal fasceae, ferruginous; tarsal fringe golden, rest from white to pale, tergal and sternal fasceae at apical margins complete.

Head slightly wider than median length; eyes convergent below, inner margin carinate; complete face densely hairy; clypeus flat but slightly elevated in profile, apical margin laterally angulate but medially incurved with 2+1+2 fine tubercles, basal width greater than median length and equals with the distance to antennal sockets; supraclypeus resembling clypeus; parocular area acutely depressed close to antennal sockets; antennal sockets - distance to eye about half of that to midocellus, lesser than their own distance; subocellar area acutely carinate at midface, then midfacial carina moves upward and get bifurcated near midocellus, thus a triangled area below midocellus is formed which is slightly concave and finely punctured as well as pubescent; lateral ocelli with shallow independent concavities towards occipital margin, these concavities are pubescent; distance of lateral ocelli - equidistant to eyes and to occipital margin, close to eye than to each other; vertex



Figs. 1-4: *C. rajasthaniensis* sp. n., and 5-8: *C. pasteeli* sp. n. 1,5 - head, front view; 2,6 - dorsal view of posterior mesosoma; 3,7 - fore wing in part; 4,8 - apical metasomal segment in dorsal view (dots indicate pubescence).

unevenly flat, margin incurved and incarinate; genal width much less than eye width in lateral view, neither narrowed above nor below, margin below carinate, surface densely pubescent, hypostomal angle below acutely protuberant and surface shallowly concave; mandibles red, acutely tridentate, inner angle far from second tooth, surface with deep grooves which are hairy; labial palpi segment 1 and 2 equal in length, complete rostrum exceeding fore coxae in length, while in repose.

Pronotal lobes lateral to tegulae - broadly but acutely produced, carinate, complete pronotum densely hairy; scutum much wider than median length, punctures arranged in semilunar pattern, median line and parapsidial lines distinct; anterior margin of scutum thinly hairy but onto either sides of midline densely patched, posterior angles to tegulae and either sides of midposterior margin also with obscure patches of ferruginous hairs; scutellar surface with punctures reticulated,

slightly above in profile than the posterior margin of scutum, anterior margin with 2 patches of ferruginous hairs meeting those of scutum, medio-posterior carina obscure but slightly evident crest is broadly rounded steep posteriorly but narrowly joining metanotum, thus hardly projects over metanotum and propodeum, posterior slope to crest densely hairy and with a fine tubercle at centre, slightly upturned than the rest of the crest surface; axillar posterior spine broadly obtuse, complete surface including spine punctured like scutellum, short spine demolishes before the transverse line if drawn at the level of crest; mesepisternal carina distinct but both separated surface densely hairy as well punctured; surface of metepisternites resembling the mesepisternites; fore coxal protuberance markable but not produced, surface hairy; legs brownish red and surface smooth onto inner sides, outer surface of legs densely pubescent, otherwise legs are unmodified and normal. Forewing slightly paler towards apex, veins brownish testaceous, 1st recurrent vein is far from the base, than the 2nd, which is slightly close to the apex of second cubital cell.

Basal tergal concavity margin incarinate, surface posterior-laterally densely pubescent; punctures on the postgradular area of basal tergum coarse but close, on 2nd & 3rd coarse but sparse and on the rest of terga much finer and closely placed; gradular concavity on terga 2 complete and on terga 3 interrupted medially, however, both tergal gradular grooves with pubescence confined to lateral sides, broadening then meeting with the fasceae of apical tergal margin at extreme lateral angles, thus a fine transverse line near the base of the terga is left bare laterally; apical margins of gradular concavities defined anteriorly on 2nd and 3rd terga, foveal area on these two terga filled with a few punctures arranged in a circle; terga 3 & 4 with a feebly markable lateral gradular groove, pubescent at lateral extremities; basal margins of 3rd to 6th terga strongly depressed; biangularly narrowed upto produced spine at apex, more than apical half pubescent onto either sides of midline, midline carina slightly markable from 1/3 rd of apical area becoming shining acute spine at apex, but do not exceed the preapical carina of apical sternum in length; surface close to spine shallowly concave and with thick bristles projecting beyond the margins of and close to apex; basal sternum slightly protuberant medio-basally, pubescent; apical margins of sterna 1-5 transverse, 2-5th sterna with dense fringe covering complete rim area and joining with tergal lateral pubescence, narrow exposed pregradular areas are bare; all sterna strongly convex; sterna 6th yellowish-brown basally, becoming finely punctured and thinly pubescent towards apex, apex with a fine acute projection at centre, either sides of which are distinctly fringed with golden hairs projecting from the subapical carina dorsally.

Measurements (in mm): Total length 12.0; median length and maximum width of face 2.2 and 3.0; clypeus: basal width 1.0, median length 0.8; eye: length 2.6, lateral width 1.0; scutum: median length and maximum width 1.8 and 2.8; total wing length 7.0, length of cubital cell 1.8; median widths of terga 1-6: 3.0, 3.0, 2.8, 2.4, 2.0 and 1.2.

Male: Not known.

Material examined: Holotype ♀, Dharamsala, 15. V 1982, Coll. Rajiv K. Gupta; paratypes 2 ♀ ♀, (1 from the locality of holotype and another from Alwar on 20. XI. 1990). Presently both types with author himself, shall be submitted to NPC, IARI, N. Delhi, shortly.

Flower record: *Crotalaria juncea* L. (at Alwar).

Remarks: *C. pasteeli* sp. n. is a close relative of *C. fuscipennis* SMITH with respect of narrowing spatulate sternum 6th and general mesosomal characters, however, following distinct characters can separate the species *fuscipennis* from the new species: face not so densely pubescent, clypeal margin without fine tubercles, shape of clypeus subtriangular; subocellar area not subdivided near midocellus, midline slightly carinate, obscure in facial pubescence; tergum 6th apex subacute not produced in a spinose projection, slightly exceeded by 6th sternum in length; terga 2 and 3 with gradular groove complete at midline, sides of whom are bare and smooth.

A c k n o w l e d g e m e n t s

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R e f e r e n c e s

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