

7-1-1909

Descriptions and Records of Bees.—XXI.

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Recommended Citation

Cockerell, T. D. A., "Descriptions and Records of Bees.—XXI." (1909). *Ca*. Paper 412.
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Descriptions and Records of Bees.—XXI.

By T. D. A. COCKERELL, University of Colorado.

Agapostemon sulcatulus, sp. n.

♂.—Length 8 mm. or slightly over.

In Crawford's table (Pr. Nebraska Acad. Sci. 1901, p. 158) it runs to E, but does not resemble *A. nasutus* or *A. rhopalocera*; except for the small size it runs to C, and runs out because the head and thorax are brilliant green, not at all blue, and the yellow band on the clypeus is without any sign of a tooth or projection. Form slender; scape black, with a broad yellow stripe in front; flagellum dull ferruginous beneath, black above. Wings perceptibly dusky, with a yellow or orange tint; stigma dull amber-colour, nervures dark fuscous. Metathorax above shining and very coarsely wrinkled, the area not defined; posterior face with strong sharp edges; first four trochanters yellow with a little black, hind trochanters black. Legs yellow, a large black patch on apex of hind femora and a small spot on middle ones; middle and hind tibiae with a black band on outer side and a dark apical spot, anterior tibiae with a dusky mark behind. Abdomen with five yellow dorsal bands, that on first segment narrowed in the middle; venter with fuscous markings,

consisting of transverse bands on first four segments, dark only on fourth, a large triangular area on fifth, and the middle of sixth, the last being about evenly tripartite, the sides yellow; sixth segment with a delicate median sulcus on its apical half.

A. viridulus also occurs at Malcolm (*Oertel*), but that species has a keel instead of a sulcus on the last ventral segment and is much larger; it also has the anterior femora heavily marked with black behind, while in *sulcatus* they are entirely yellow. Compared with *A. texanus* the new species is smaller, with the stigma not so red, and the markings on the legs and ventral surface of abdomen very different. Compared with *A. fasciatus* it is separated by the black basal half of the first abdominal segment, the colour of the trochanters, &c.

Hab. Malcolm, Nebraska, September (*Birkmann*).

The bees of Malcolm, collected by Mr. Birkmann in September, include both eastern and western types, the former preponderating. Some of the more interesting are:—*Anthophora walshii*, Cress. (at flowers of *Salvia*), *Melissodes boltoniae*, Rob., *M. vernoniae*, Rob., *Tetralonia cressoniana*, Ckll., ♀, var. with black flagellum (at flowers of *Salvia*), *Megachile emoryi*, Ckll., *Panurginus piercei*, Crawford.

Megachile mucida semimucida, subsp. n.

♀.—Length about 15 mm.

Hair of head black, except some pale ochreous between antennæ and on front; of thorax above and at sides pale ochreous, with a silky appearance, but on underside black; of abdomen pale ochreous above on first segment and basal half of second, otherwise, including the scopa, wholly black; hair of legs black, more or less reddish on inner side of small joints of tarsi; hind basitarsi broad and flat. Wings strongly infuscated. Mandibles 3-dentate; clypeus very densely punctured, with a median shining ridge, lower margin shining and crenulate.

♂.—Agrees well with Cresson's description of *M. mucida*, but the coxal spines are only moderately long, above each is a large patch of fox-red pubescence; the anterior femora are pale yellowish suffused with red, marked with black apically. Wings dusky throughout. Apical joint of antennæ somewhat dilated and flattened.

There is a strong general resemblance to *M. wootoni* and its allies, but, among other things, the dense black hair on

upper outer edge of the tarsal boat-like scale is distinctive, as also the rectangular notch at apex of abdomen. In the female the wholly black ventral scopa, black hair of cheeks, &c. are good characters.

Hab. Fedor, Lee County, Texas, March 27, 1909 (Birkmann).

Prosopis digitata fedorica, subsp. n.

♂.—Length about 4 mm.

Runs in my table of *Prosopis* ('Entomologist,' 1898, p. 186) to *P. subdigitata*, but differs as follows:—Supraclypeal mark large and broad, truncate and not at all elongated above; lateral marks with the upward finger-process very short, ending at same level as top of supraclypeal mark; sides of lateral marks forming an acute angle with orbit above, the point where they leave the orbit being lower than their upper edge mesad of the finger-like process; scape with a light yellow stripe; area of metathorax strongly rugose-wrinkled in the basal middle, but otherwise nearly smooth though dull, the sides very well defined by a curved sulcus. Flagellum dull ferruginous beneath; thorax wholly without light markings; markings of face very pale yellow. Wings greyish, iridescent. Legs with the yellow rather more extended than in *P. digitata*.

This is a southern member of the group of species or races called *P. digitata*, *subdigitata*, and *rudbeckiæ* (see 'Psyche,' June 1896, p. 31).

Hab. Fedor, Lee County, Texas, March 17, 1909 (Birkmann).

At the same time and place Mr. Birkmann took a variety of *P. georgica*, Ckll., smaller than the type, with the face-markings pale instead of bright yellow, and a black spot on the hind tibiæ within. This insect, which is easily known from *P. zizicæ* and its allies by the very narrow lower part of face, may stand as *P. georgica*, var. *leana*, nov. The scape is broad, with the anterior half light yellow. It is interesting to find at one spot in Texas two forms of *Prosopis*, one a modified representative of a Rocky Mountain group, the other a variety or subspecies of a type belonging to the South-eastern States. At the same time and place there also occurred an example of *P. sayi*, Rob., a species characteristic of the Northern States east of the plains.

Robertsonella crategina, sp. n.

♂.—Length $7\frac{1}{2}$ –8 mm.

Black, with white pubescence; abdominal segments 1 to 4 with conspicuous white apical hair-bands, that on 1 broadly interrupted; segments 5 and 6 conspicuously hairy; six ventral segments visible, the last strongly emarginate, the second concave and shining, the third with a patch of white hair on middle of apical margin.

This species is in nearly all respects like *M. gleasoni*, Titus, the only previously known member of the genus, but is considerably larger, and the second recurrent nervure ends much nearer to the apex of the second submarginal cell, while the basal nervure fails to reach the transverso-medial. The characteristic appearance of the face and antennæ and the fine sculpture are quite the same.

Hab. Lee County, Texas, March 15, 1907, and Fedor, April 14, 1901 (*Birkmann*).

It occurred at flowers of *Cratægus*.

Calliopsis coloratipes fedorensis, subsp. n.

♀.—Similar to *C. coloratipes*, but a little larger, and with the disk of the first abdominal segment quite densely beset with very minute punctures, very similar to those on the second (in *coloratipes* this part is smooth and shining, with a few scattered punctures). Eyes ochreous; clypeus with two broad black bars, not reaching the summit; lateral face-marks ending in a point above, their upper inner margin wavy; dog-ear marks represented by small spots; hair of vertex and thorax above pale fulvous.

I should consider this a distinct species were not the forms of the *C. coloradensis* group so variable. The insect is superficially very much like the S.-American *Parafriesia prinii* (Holmbg.).

Hab. Fedor, Texas, Sept. 21, 1897 (*Birkmann*).

At Fedor Mr. Birkmann also takes (April, June) *C. andreniformis*, Smith; the females rather large and less distinctly banded than usual.

Panurginus polytrichus, sp. n.

♂.—Length about 6 mm.

Black, head and thorax densely clothed with coarse dull whitish hair; thorax without light markings; pale colour of face confined to clypeus, which is broad, shining, and very pale yellowish, a sort of ivory tint; labrum and mandibles

black ; head broad ; antennæ rather short and stout, flagellum bright ferruginous beneath except at extreme base and apex ; mesothorax and scutellum shining, rather feebly punctured ; area of metathorax rugose basally ; tegulæ shining pale reddish, fuscous anteriorly. Wings only faintly dusky, strongly iridescent, nervures and stigma ferruginous ; first recurrent nervure meeting first transverse cubital or entering extreme base of second submarginal cell. Legs black, all the tarsi pale reddish, anterior tibiæ in front and mark on anterior knees pale yellow. Abdomen broad for a male, black, the hind margins of the segments broadly testaceous ; sixth ventral segment broadly emarginate, the angles dentiform.

Compared with *P. cressoniellus*, Ckll., this is easily distinguished by the larger head, broad clypeus, pallid tegulæ, and other characters. Compared with *P. verus*, Ckll., it differs conspicuously by the shorter antennæ, red stigma, and other features. From *P. malvastri*, Sw. & Ckll., it is easily known by its smaller size, pallid clypeus, &c.

Hab. Fedor, Texas, April 16, 1903 (*Birkmann*) ; also Lee Co., Texas, April 10 (*Birkmann*).

Neopasites eamia, sp. n.

♂.—Length 6 mm.

Very robust ; head and thorax very densely punctured, black, with only the mandibles and tubercles red ; pale scale-like pubescence as usual ; eyes very pale purplish grey ; flagellum bright ferruginous beneath ; scutellum moderately bigibbous ; tegulæ bright orange-ferruginous. Wings dusky, nervures and stigma black, first r. n. meeting first t.-c. Knees, anterior and middle tibiæ, hind tibiæ at extreme base and apex, and anterior tarsi all red ; middle tarsi reddish. Abdomen broad, of a fine deep red colour, the segments with a transverse median black cloud, practically absent on the first, becoming stronger towards the apex, and involving practically the whole of the sixth ; apical plate large ; pale pubescence forming subdorsal patches, but the spotting is not nearly so conspicuous as in *N. pulchellus* (Cress.).

Nearest to *N. heliopsis* (Rob.), but easily distinguished by the very robust form and the much redder abdomen.

Hab. Lee County, Texas, May 1908 (*Birkmann*).

Stelis birkmanni, sp. n.

♂.—Length about 6 mm.

Rather robust, black, with no light markings on the head,

thorax, or legs, but with very pale yellowish (ivory-coloured) bands, very slightly interrupted in the middle, on the first five abdominal segments; spurs dark. Wings infuscated, violaceous in the marginal cell and beyond, outer marginal field with crimson and green iridescence.

This looks almost exactly like *Microstelis fæderalis* (Smith), but differs in several important characters, as follows:—Second recurrent nervure meeting second transverse cubital; apex of third ventral segment with a median, oval, shining, button-like tubercle; band on first abdominal segment scarcely or not interrupted; flagellum entirely black.

Hab. Lee County, Texas, April 10, at flowers of *Phacelia*; collected by the Rev. G. Birkmann.

Osmia botitena, sp. n.

♀.—Length about 9 mm.

Rather robust, bluish green; head and thorax densely punctured, abdomen less densely; clypeus normal, rather projecting; mandibles 3-dentate; antennæ and tegulæ black. Wings broadly pale reddish smoky in marginal cell and on outer margin. Legs black, more or less tinged with blue-green, the anterior femora behind brilliantly coloured; hair on inner side of hind basitarsus pale orange; hair of head and thorax white; abdomen subfasciate, with white hair at sides of first two segments; ventral scopa yellowish white.

Closely related in all respects to *O. subfasciata*, Cresson (which I have from Plano, Texas, collected in June by Mr. E. S. Tucker), but the abdomen is conspicuously broader and the punctures on the posterior segments are not large and coarse as they are in *subfasciata*. In both the basal nervure falls a trifle short of the transverso-medial. The head in *O. botitena* is somewhat broader than long; in *subfasciata* the reverse is the case. Compared with *O. conjuncta*, Cresson, the new species is larger and much greener, with the abdomen longer and more strongly punctured. Compared with *O. pumila* it is larger, more brightly coloured, and has the second and third abdominal segments conspicuously constricted near the base, which is not at all the case in *pumila*.

Hab. Lee County, Texas, April 23, 1906 (*Birkmann*, no. 99).

The name *botitena* (from the Malay) has reference to the white ventral scopa.

Augochlora sumptuosa bolliana, subsp. n.

♀.—Compared with true *A. sumptuosa*, Sm. (Florida, *Robertson*), the Texan form is smaller (anterior wing 7 mm.) and bluer, with the tarsi dark; hair on outer side of hind basitarsi blackish, on inner side not brightly coloured; basal area of metathorax longer, not so well defined, rather coarsely granular; head smaller and rounder. The abdomen has a dullish satiny surface, and the vibrissæ are very short, white, and inconspicuous. Hind spur pectinate, with few teeth.

Probably this will be separated as a distinct species when the males are known.

Hab. Lee County, Texas, June, 2 ♀ (*Birkmann*).

Named after the well-known collector who first took *A. sumptuosa* in Texas.

