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Some Bees of the Genus *Melissodes* from the Rocky Mountain Region

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LXVIII.—*Some Bees of the Genus Melissodes from the Rocky Mountain Region.* By T. D. A. COCKERELL.

The following table separates a series of comparatively large females, all 12 mm. or more in length:—

Hair on inner side of basal joint of hind tarsi black or almost	1.	
Hair on inner side of basal joint of hind tarsi red.	4.	
1. Smaller, with more convex, black, very shiny abdomen; hair of labrum pale reddish; middle of thorax above naked; eyes pale greenish grey		<i>glenwoodensis</i> , Ckll.
Larger, with flatter, less conspicuously shining abdomen; pubescence of thorax more ochreous	2.	
2. Hair on labrum pale; thorax hairy, or overlapped with hairs, in middle above; eyes pale reddish; abdomen conspicuously banded. Hair of labrum dark or brownish.		<i>Mizeæ</i> , Ckll.
3. Smaller, hair of pleura all light	3.	
Larger, hair of lower part of pleura dark		<i>blakei</i> , Ckll.
4. Size very large; facial quadrangle not broader than long		<i>chrysothamni</i> , Ckll.
		<i>helianthelli</i> , Ckll.*.

* The following characters are also useful:—

Wings strongly yellowish; stigma entirely ferruginous.

Second submarginal cell much broader above than its height.

Second submarginal cell much narrower above than its height.

Wings not strongly or not yellowish; stigma with at least the lower part darkened

helianthelli.

Martini.

all the other species in the table

- Size smaller; facial quadrangle broader than long 5.
5. Hair of thorax above bright orange-fulvous .. 6.
 Hair of thorax above not orange-fulvous;
 abdominal bands narrow and white; eyes
 pale green..... *Martini*, Ckll.
6. Hair on middle abdominal segments white .. *thelypodii*, Ckll.
 Hair on middle abdominal segments fulvous .. *Hewetti*, Ckll.

Melissodes glenwoodensis, sp. n.

♀.—Length about 12 mm.

Shining black, with greyish-white pubescence (not at all fulvous or ochraceous) on head and thorax; middle of thorax nude, without black hair; flagellum dark, obscurely reddened beneath; hair of apex and venter of abdomen black or sooty; the abundant scopa on outside of hind tibiæ and tarsi whitish, with a strong reddish tinge. This is a species of the group of *M. desponsa*, and is very closely allied to *M. mysops*, Ckll., from which it is distinguished by the shorter abdomen, and particularly by the eyes distinctly diverging above (in *mysops* they are practically parallel); also by the larger and therefore less numerous punctures of the clypeus, the redder tegulæ, and the largely pale hair on the four anterior legs. The hind femora are clothed with black hair in *mysops*, but with light hair in *glenwoodensis*. From *M. cnici*, Rob., the new species differs at once by the conspicuous white abdominal bands, narrow and widely interrupted on the second segment, broader and very narrowly interrupted on the third, and very broad and not or very slightly interrupted on the fourth; it also differs by the more shining surface, the colour of the eyes, &c.

Hab. Glenwood Springs, Colorado, Sept. 15, 1903, "only a few specimens seen"; collected by Prof. C. P. Gillette.

This is so close to *M. mysops* that I should be inclined to ascribe the various little differences to variation, were it not for the evidently different set of the eyes. The abdomen appears more globose and convex, but this is no doubt largely due to retraction.

Melissodes Mizeæ, sp. n.

♀.—Length a little over 15 mm.

Black, robust, with a broad and rather flat abdomen; hair of head and thorax long and rather silky, pale ochreous (quite without black) on vertex, occiput, and thoracic dorsum, white on face, cheeks, and under part of thorax; eyes pale reddish, becoming grey or blackish posteriorly; head broad,

facial quadrangle broader than long; front and vertex shining; flagellum beyond the first joint deep ferruginous beneath; clypeus densely punctured; *labrum densely covered with very pale ochreous hair*; mandibles stout, with a large orange subapical patch; mesothorax shining, with large well-separated punctures posteriorly, and small closer ones anteriorly; tegulæ very dark brown. Wings rather dusky, nervures dark; first recurrent nervure entering second submarginal cell *near the beginning of its last fourth*. Legs black, with the small joints of tarsi mainly ferruginous; pubescence of legs mainly pale, black on inner side of basal joint of middle and hind tarsi, shining more or less orange or reddish on inner side of anterior and middle tibiæ and anterior tarsi, grey on outer side of anterior tarsi; scopa of hind legs large, in the type full of orange pollen. Abdomen shining; the first segment with the usual ochreous hair, the second with basal and median hair-bands, the third with a broad band, and the fourth with a broader one, covering its apical margin, but giving way to some black basally; these abdominal bands all yellowish white; the two apical segments covered with purplish-black hair; hair of venter grey-brown, light at extreme sides. The absence of black hair on vertex and thorax separates it from *M. montana*, *confusa*, *grindeliæ*, &c. The black hair on inner side of hind tarsi separates it from *M. menuacha*, *gilensis*, &c.

Hab. Las Vegas, New Mexico, Aug. 11, 1899, at flowers of *Grindelia inornata*, Greene; collected by Miss S. L. Mize.

Melissodes blakei, sp. n.

♀.—Length about 14 mm.

The abdomen narrower, and with much narrower bands, than that of *M. Mizeæ*; vertex, occiput, and thoracic dorsum with very pale ochreous pubescence, without any black; face, cheeks, and under part of thorax with white or nearly white hair; head broad, facial quadrangle broader than long; *eyes pale grey with a faint greenish tinge*; flagellum, except at base, deep chestnut-red beneath; *labrum covered with pale greyish-brown (as if dirty) hair*; mandibles shining, *apically rather slender*, with an orange subapical streak; posterior middle of mesothorax nude, shining, with large widely separated punctures; middle of scutellum also nude, with smaller, closer punctures; tegulæ piceous, reddish posteriorly. Wings slightly dusky; first recurrent nervure entering second submarginal cell *about or before the beginning of its last third*. Legs black, the tarsi becoming reddish apically; hair of legs

mostly pale, but black or dark fuscous on inner side of middle and hind tarsi, shining fulvous on inner side of anterior tarsi; scopa of hind legs abundant, in the type full of orange pollen. Abdomen shining, but not excessively so, with narrow median white hair-bands on segments 2 to 4, and indications of a second (basal) band on 2; the two apical segments with dark fuscous hair; hair of venter dark reddish fuscous. By the colour of the hair on the legs and thorax &c. this resembles *M. Mizeæ*, but it is evidently a distinct species. In addition to the characters cited, the third antennal joint is shorter than that of *Mizeæ*. Compared with *M. pallidicincta*, the abdominal bands of *blakei* are narrower, the vertex is not so broad, and the black hair on the scutellum is lacking. The insect is considerably larger than *M. grindeliæ*, and otherwise different.

Hab. Beulah, New Mexico, end of August (Cockerell).

The name commemorates the Blake ranch, the entomological headquarters at Beulah during several seasons. The width of the abdomen of *blakei* is 5 mm., of *Mizeæ* nearly 6. The locality of *M. Mizeæ* is in the Upper Austral zone, that of *M. blakei* in the Canadian zone.

Melissodes chrysothamni, sp. n.

♀.—Length almost 18 mm.

Large and robust, black, with pale ochreous pubescence, tinged with fulvous on scutellum and anterior part of mesothorax; *without black on thoracic dorsum* or vertex, or with a few black hairs at each extreme side of vertex, above top of eye; *hair of labrum, lower part of pleura, base of legs, and ventral surface of thorax generally, black or sooty*, perhaps best described as brown-black; hair of venter of abdomen, of middle tarsi and inner side of hind ones black; hair of legs generally dark, but the middle femora, anterior femora behind, and basal half of anterior tibiæ on outer side have light hair in considerable quantity; the anterior tibiæ have dark red hair on inner side; the copious scopa of the hind legs (in the specimens seen filled with orange pollen) is light. Abdomen dullish, broadened towards the apex; apical margin of first segment rather broadly reddened in one specimen, but not in the other; first two segments not obviously banded; third and fourth with dull yellowish-white hair-bands, that on third inclined to be interrupted, that on fourth very broad and entire; bases of third and fourth segments with black hairs; the two apical segments with black hair. Eyes silver-grey; facial quadrangle broader than long, but

not very greatly so; mandibles stout, simple, more or less reddened, the orange streak minute; clypeus densely and confluent punctured; tegulæ very dark red-brown. Wings moderately dusky; first recurrent nervure joining second submarginal cell about the beginning of its apical fourth; flagellum dark, only slightly reddened beneath. Of the general build and appearance of *M. machærantheræ*, but easily distinguished by the black legs, dark antennæ, &c. It is also related to *M. Smithii* (D. T.).

Hab. Embudo, on the Rio Grande, New Mexico, Sept. 26, at flowers of *Chrysothamnus*, two specimens (Cockerell).

M. comptoides, Rob., also has the pubescence of thorax with no black dorsally, but fuscous or black beneath; it is a much smaller species (12-13 mm.) and occurs in Illinois.

Melissodes helianthelli, sp. n.

♀.—Length almost 18 mm.

Even more robust than *M. chrysothamni*, the thorax being larger, and the abdomen broader basally; pubescence of head and thorax dense, erect, pale fulvous, quite bright orange-fulvous on vertex (where there is no black) and anterior part of mesothorax, white on face and cheeks, pale orange on labrum and underside of mandibles; pallid, but by no means white, on lower part of pleura and metathorax; hind part of mesothorax with a rather small, strongly punctured exposed area, having a few black hairs; *scutellum, except the margins exposed, dull and densely punctured, this area fringed with coarse black hair; hair of legs pale fulvous, without any black*; the pale fulvous scopa of posterior legs very strongly plumose; hair on inner side of tarsi and of hind tibiæ bright ferruginous; small joints of tarsi ferruginous. Abdomen dullish; hair on first segment whitish and rather short, without any black (in *M. chrysothamni* the hair at the base of the first segment is strongly mixed with black); second, third, and fourth segments with the portions overlapped by the segment before covered with dense tomentum, which on the second is white, on the third pale ferruginous, on the fourth dark purplish fuscous; basal part of second segment, narrowing medially, with appressed white hair, apical part glittering with microscopic golden hairs; third and fourth segments with broad white hair-bands, faintly stained with yellowish, that on third more or less failing in the middle, these bands separated from the basal tomentum in each case by a stripe of dark fuscous; apical segments with the hair reddish chocolate, extreme base of fifth black; venter with dark reddish hair.

Facial quadrangle about square, perhaps a trifle longer than broad; eyes light yellowish green; flagellum, except at base, deep red beneath; mandibles stout, with a large orange stripe; tegulæ light ferruginous. Wings strongly yellowish on basal half, nervures ferruginous; second submarginal cell very broad, receiving the first recurrent nervure a considerable distance from its end. Differs from *M. comanche*, Cresson, by the duller abdomen, with white bands, the light (apricot-coloured) tegulæ, &c. It is a stouter insect than *M. machærantheræ*, and differs in the colour of the eyes (pale blue-green in ♀ *machærantheræ*), the dark (not red) scape, femora, &c.; it is, however, closely allied.

Hab. Mesilla, New Mexico, at flowers of the small sunflower *Helianthus ciliaris*, June 26 (Cockerell).

Melissodes Martini, sp. n.

♀.—Length about $13\frac{1}{2}$ mm.

Black, with a broad but convex abdomen, which has a dullish surface; pubescence of head and thorax pale, dull whitish below, more ochreous above, but nowhere bright-coloured; posterior part of mesothorax, and scutellum except hind margin, bare, these bare areas fringed with black hair, most abundant on scutellum laterally; bare area of mesothorax shining, with large well-separated punctures, that of scutellum closely punctured; clypeus very densely punctured; hair of labrum pale reddish; mandibles reddish in middle, the subapical orange streak minute; vertex with a few black hairs, directed forwards and easily overlooked; eyes light sea-green; facial quadrangle considerably broader than long; flagellum, except at base, dark red beneath; tegulæ dark, posterior part reddened. Wings strongly yellowish smoky throughout; first recurrent nervure joining second submarginal cell (which is comparatively narrow) near the beginning of its last third. Hair of legs mainly pale, ferruginous on inner sides of tarsi, sooty on outer side of anterior tarsi and the apex of their tibiæ, and more or less sooty or brown on outer side of middle tarsi; tuft on hind knees fuscous; scopa of hind legs (in type full of creamy-white pollen) yellowish white. Hind margin of first abdominal segment narrowly white; base of first segment with erect white hair (no black intermixed); extreme base of second with white hair; median narrow snow-white hair-bands on segments 2 to 4, that on 2 linear and interrupted in the middle, those on 3 and 4 slightly angled in the middle, or that on 4 may extend to the hind margin of the segment, thus becoming

very broad; basal part of fourth segment with a few long black bristles; the two apical segments and the venter, clothed with black hair. Easily known from *M. gilensis* by the black abdomen with narrow white bands; from *M. petulca* by hair on occiput not fulvous, the dark tegulæ, the short second submarginal cell, &c.; from *M. communis* by the yellowish wings, the light scopa of hind legs, the larger size, &c.

Hab. Gallinas River at Las Valles, New Mexico, Aug. 6, two specimens (*T. D. A.* & *W. P. Ckll.*).

Named after my little son, who accompanied me on the expedition that led to its discovery.

Melissodes thelypodii, sp. n.

♀.—Length about 15 mm.

General appearance and markings of abdomen like *M. Martini*, but differing as follows:—*Pubescence of thorax above bright fulvous, without any black*, and covering more of mesothorax; black hairs of vertex more conspicuous, being long and erect; eyes not so green, the lower part perhaps reddish in life; face more hairy, the hair faintly yellowish; clypeus more closely punctured; flagellum brighter red beneath; *tegulæ apricot-colour*. Wings larger, more dusky, and less yellow; first recurrent nervure joining second submarginal cell near its end; outer side of third submarginal cell rounded (angled in *Martini*); hair on first abdominal segment pale fulvous, that at base of second more or less of the same colour. In both species, the small joints of the middle and hind tarsi are red.

Hab. La Cueva, Organ Mts., New Mexico, about 5300 ft., at flowers of *Thelypodium linearifolium*, Sept. 4 (*C. H. T. Townsend*).

A pretty species, from the contrast between the black of the abdomen, with whitish bands, and the red of the thorax and hind tarsi.

Melissodes Hewetti, sp. n.

♀.—Length about or nearly 15 mm.

Of robust build, with a broad abdomen; vertex and thorax above with bright fulvous hair; posterior part of mesothorax and scutellum except hind margin bare, these bare areas not surrounded by black hairs, except that there are a very few at sides of scutellum; bare area of mesothorax shining, with strong rather close punctures (closer and rather smaller than

in *Martini*); sides of vertex with erect dark hairs, not very numerous; face and cheeks with rather dull white hair; facial quadrangle broader than long, but not very greatly so; eyes very pale greenish; flagellum, except at base, dark red beneath; tegulæ dark red-brown. Wings very little dusky, much clearer than in *M. thelypodii*; first recurrent nervure joining second submarginal cell about the beginning of its last third; second submarginal cell nearly as broad above as high. Hair of legs pale; dark grey on outer side of anterior tibiæ; tuft on hind knees rufo-fulvous; scopa of hind legs fulvous, hair on inner side of their tarsi bright ferruginous; small joints of tarsi ferruginous. Abdomen broad (broader than in *thelypodii*), with the hair on the first four segments ochreous tinged with fulvous, the arrangement of the hair as in *thelypodii*; hair of two apical segments very dark purplish brown; hair of venter fulvous (in *thelypodii* less abundant, and black, with some dull white laterally). By the colour and appearance of the abdominal bands this resembles *M. gilensis*, but it is larger, and the pubescence of the thorax is quite different, much more resembling that of *M. menuacha*. In many respects, *M. Hewetti* resembles *M. texana*, but it differs in having the hair on the face white and the abdominal bands fulvo-ochraceous.

Hab. Santa Fé, New Mexico, Aug. 2, 1894, at flowers of *Cleome serrulata*; collected by myself. It was accompanied on the flowers by *Nomia Foxii*, D. T.

Named after Mr. E. L. Hewett, in recognition of his educational and scientific work in New Mexico.

Melissodes paroetæ, sp. n.

♂.—Length about 9 mm.

Antennæ very long (about $8\frac{1}{2}$ mm.), flagellum bright fulvo-ferruginous beneath; clypeus, labrum, and a large patch on mandibles lemon-yellow; second joint of maxillary palpi swollen, third long and cylindrical, last minute; facial quadrangle longer than broad, narrowing below; hair of face and cheeks white, of vertex and occiput ochraceous; eyes silver-grey with a green tint; hair of mesothorax fulvous; scutellum with much black hair; tegulæ dark brown, hairy. Wings almost clear, stigma and nervures dark ferruginous; second submarginal cell large, receiving first recurrent nervure about the beginning of its last fourth. Hair of legs white, orange-fulvous on inner side of tarsi, which are red; abdominal bands creamy white; hair of venter pale. Looks much like a small ♂ of *M. grindeliæ*, but easily separated

by the much longer antennæ, red tarsi, &c. From *M. agilis* it is known by the black hair on scutellum, red tarsi, &c.; from *M. floris* by the longer antennæ, wings not yellowish, &c.; from *M. montana* by the much smaller size, abdomen less covered with hair, &c.

Hab. Mesilla, New Mexico, at flowers of *Parosela scoparia*, July 25 (Cockerell).

University of Colorado,
Boulder, Colorado, U.S.A.,
March 16, 1905.

LXIX.—*The Systematic Arrangement of the Fishes of the Genus Arges.* By C. TATE REGAN, B.A.

IN my monograph* of the Loricariidæ I included nineteen species in the genus *Arges*. Messrs. Evermann and Kendall†, who have received some fishes of this genus from Ecuador, have written a short paper in which they consider the characters which I have used for the distinction and arrangement of the species as of very little value.

With regard to the structure of the adipose fin, Messrs. Evermann and Kendall, describing the specimens they have received, write: "When first received these examples revealed no trace of an adipose fin excepting what was soon discovered to be a short spine, sometimes naked but in most cases concealed under the skin, evidenced only by a slight elevation, which was at first regarded as a 'short adipose fin'; but in alcohol there gradually appeared on the back a low, thick, fleshy fold which increased in resemblance to a thick adipose fin with their continuance in the preservative, and, in the smaller individuals, became thin and very much like an adipose fin in appearance." They proceed to quote Steindachner's descriptions of the adipose fin in *Arges sabalo*, *A. longifilis*, *A. prenadilla*, and *A. peruanus*, and they then state: "These descriptions show conclusively that what has been so regarded is not a true adipose fin, which conclusion our specimens substantiate. It is evident that the presence of the supposed adipose fin on the different species is simply due to the action of the preservative and that there is no true adipose; and the smaller the individual and the longer

* Trans. Zool. Soc. xvii. pt. iii. pp. 191-324, pls. ix.-xxi. (1904).

† Proc. Biol. Soc. Washington, xviii. pp. 91-106 (1905).

its stay in the preservative, the more like an adipose fin the fold may become.

Sufficient has been said to show that Messrs. Evermann and Kendall regard the structure of the adipose fin as of little value for the distinction of species. They state that their specimens undoubtedly belong to one species, and yet that individuals fall respectively into several of my main divisions (based on the structure of the adipose fin), the only condition unrepresented being that of a well-developed adipose fin without trace of a spine, which they would hardly expect to find in specimens which have been only so recently submitted to the action of alcohol.

The position of the ventral fins is a character to which I have attached considerable importance for the distinction of species, but the authors quoted above state that in the males the ventrals are inserted farther forward than in the females, and they give figures of a male fish in which the insertion of the ventrals is below the origin of the dorsal, and of a female with the ventrals inserted below the middle of the dorsal. They continue: "In the males, as already remarked, the ventrals are inserted farther forward than in the females; therefore, comparison of extent of pectorals with ventrals or ventrals with proximity to vent is of no value. In fact, there is such a range of variation in these characters, suggested by Regan as showing specific differences; that there arises a serious distrust of the value of any of them for that purpose."

They conclude that the number of species should be considerably reduced, suggesting that the five alleged Peruvian species may be one, or at the most two. They consider *A. prenasella* and *A. Eigenmanni* to be synonyms of *A. cyclopus*, suggest that *A. homodonta* may be the same as *A. Guadalupe*, and think that the characters given for the distinction of *A. Whymperi*, *A. finlayi*, *A. sabalo*, *A. Taconensis*, and *A. Paulseni* are scarcely sufficient.

On receiving Messrs. Evermann and Kendall's interesting paper I at once proceeded to re-examine all the specimens of *Arges* in the British Museum Collection, with the result that I must entirely adhere to my original arrangement. Messrs. Evermann and Kendall's views being evidently the result of a hasty study of insufficient material.

I continue my grouping of the species according to the structure of the adipose fin. The first division to which the *Pimelodus cyclopus* of Linnaeus most certainly

(all specimens representing 10 or 17 species, from Lima, Foucau, Colombia, and Venezuela)