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New Species of Andrena From North America

T. D. A. Cockerell

New Mexico Agricultural Experiment Station

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ripens, becomes parched up and more or less bleached in the hot rays of the summer sun, points to *Aira cæspitosa*, the food of *arcuosa*.

Folkestone, November 4th, 1897.

NOTE.—In reading Mr. Morris's description, his meaning will be much simplified by bearing in mind that by "the wings" he meant *all four wings*, so that "the upper part of the wings" = *the upper wings*, just as "the wings underneath" (or "the under part of the wings") = *the under wings*.—H. G. K.

NEW SPECIES OF *ANDRENA* FROM NORTH AMERICA.

By T. D. A. COCKERELL, N. M. Agr. Exp. Sta.

THE bees of the genus *Andrena* are very numerous in North America, but up to the present time they have received comparatively little attention. Mr. F. Smith, many years ago, described a number of species from Canada and the Eastern United States, as well as five from Vancouver's Island. Mr. Cresson described several from Texas, and one from New Mexico. Mr. Ashmead described four collected by the present writer in Colorado. L'Abbé Provancher made known some new species from Canada, and two from California. From Mexico six have been described by Smith, and one by Gribodo.

Subsequent to most of the above-mentioned publications, Mr. Robertson made a careful study of the *Andrenæ* of Illinois, and Miss J. E. Casad and the present writer studied those of New Mexico, and in each of these regions most of the species were found to be still undescribed.

So far, one hundred and fourteen species of *Andrena* have been described from North America (including Mexico). The European list is much longer.

(1.) *ANDRENA PASCOENSIS*, n. sp.

♀. Length about 15 mm., head and thorax black, legs and abdomen mostly rufous. Pubescence greyish white. Face about as broad as long, its sides covered with greyish white pubescence. Clypeus with a diffused central yellow patch; end of scape, and first flagellar joint, ferruginous beneath. Mesothorax moderately shiny, microscopically tessellate, with large punctures, becoming extremely dense at sides; enclosure of metathorax ill-defined. Tegulae amber colour, transparent; wings strongly suffused with yellowish, except the apical cells; apex dusky with a slight violaceous lustre; nervures and stigma pale ferruginous. Legs ferruginous; the coxae, anterior femora behind, middle femora except apical third, and posterior femora except extreme tip, black; pubescence of basal joints of tarsi ferruginous. Abdomen rather shiny,

broad, strongly and closely punctured, bright ferruginous; base and part of sides of first segment, and spot on each side of second, black; third and following segments suffused with black dorsally and ventrally, the apex quite dark. The second to fourth segments have dense creamy-white apical hair-bands, that on the second being slightly interrupted in the middle; fifth segment and apex covered with glittering very pale orange hair.

Hab. Pasco, Washington State, May 25th, 1896 (T. Kincaid).

A. pascoensis differs from *A. argemonis* by the broader abdomen with less parallel sides, the broader face, the greyish white (instead of fulvous) pubescence, the pale nervures, &c. From *A. fastuosa* it differs by having more red on the abdomen and legs, and the colour of the pubescence.

(2.) *ANDRENA TREVORIS*, n. sp.

♂. Length about 9 mm.; black with thin greyish white pubescence; clypeus yellow with two black spots; the four hindmost tarsi pale ferruginous. This closely resembles *A. bipunctata*, differing as follows:—Size larger; clypeus higher and less produced at sides, chrome yellow instead of lemon yellow; flagellum dark, scarcely brownish beneath; area between eyes and ocelli finely longitudinally striate; vertex shiny and more distinctly punctured; abdomen shiny, with small and sparse but distinct punctures; four hind tarsi light ferruginous; abdomen rather more hairy; nervures and stigma dark reddish brown; stigma smaller relatively to the size of the insect; third submarginal cell longer.

Hab. Olympia, Washington State, June 12th, 1895 (T. Kincaid).

(3.) *ANDRENA APACHEORUM*, n. sp.

♀. Length 10 mm.; black, with rather thin but tolerably long cream-coloured pubescence. *Abdominal segments 1 to 4 with thin apical bands of long hair, not interrupted; fifth segment and apex with fuscous hair.* Process of labrum broad and truncate; clypeus strongly punctured, with an ill-defined impunctate line; facial quadrangle about as broad as long, area between eyes and ocelli minutely lineolate or striatulate; vertex dull with sparse shallow punctures; antennæ dark, slightly ferruginous beneath towards tip; mesothorax and scutellum dull, minutely tessellate, practically impunctate; enclosure of metathorax ill-defined, minutely roughened, the areas on each side of it distinctly punctured; abdomen minutely tessellate, impunctate; tegulæ black; wings dusky hyaline, nervures piceous, stigma light brown with a dark margin; first submarginal cell hardly as long as second and third together; legs black with pale pubescence, that of the tarsi fuscous.

Hab. At flowers of *Bigelovia graveolens*, Tularosa Creek (near Blazer's Mill), New Mexico, August 23rd, 1897 (E. O. Wooton).

A. apacheorum is closely related to *A. fimbriata*, but the pubescence is not so yellow, that on the four hindmost tibiae is

pale instead of fuscous or black, and the face is not so broad. The *fimbriata* used for comparison is from Hartford, Ct., September 15th, 1895 (S. N. Dunning). *A. electrica*, the other New Mexico species having dark hair at the apex of the abdomen, differs at once by the pale pubescence of the tarsi, and the distinct though minute and sparse punctures of the abdomen.

(4.) *ANDRENA MENTZELIÆ*, n. sp.

♀. Length $12\frac{1}{2}$ mm.; black, the pubescence pale yellow, rather long and dense, whitish on thorax beneath, legs, and abdomen. Clypeus naked except at extreme sides, very shiny, impunctate in middle, punctured at sides; flagellum dark, with the faintest coffee-brown tint beneath; facial depressions covered by minute appressed pubescence; vertex sparsely but distinctly punctured; hair of occiput and cheeks long and abundant; process of labrum broad and truncate; mesothorax dull, minutely tessellate, practically impunctate; enclosure of metathorax minutely roughened, ill-defined; tegulae obscure testaceous, appearing black in some lights; wings dull hyaline, apical margin somewhat dusky; stigma ferruginous with a dark margin; nervures fuscous; legs black, small joints of tarsi rufescent; abdomen only feebly shiny, minutely tessellate, with minute very sparse punctures; margins of all the segments with bands of long pale hairs; apex with slightly yellowish hair. Venter with white hair.

Hab. At flowers of *Mentzelia nuda*, Santa Fé, New Mexico, August 3rd (Ckll., 4132).

Cresson's description of *A. miserabilis* nearly applies to *A. mentzeliae*, but the nervures of *miserabilis* are honey-yellow, and the abdomen is "shining, extremely minutely punctured." Provancher, who recognized *miserabilis* in a female caught at Ottawa, says the abdomen is "brilliant," and that the hair bands on the second and third segments are more or less interrupted. *A. hirticincta* differs from *mentzeliae* by the brown pubescence of the tibiae and tarsi and the black hairs of the end of the abdomen. *A. permitis* differs at once by the densely punctured abdomen. *A. texana* is only known in the male, but it is not likely to belong with our insect, on account of its shining abdomen. From *A. apacheorum* the present species is known by its larger size, and the light pubescence at the end of the abdomen.

(5.) *ANDRENA GRANDIOR*, n. sp.

♀. Length 11 mm.; black, with short sparse ochraceous pubescence. Belongs to Robertson's second group (Tr. Am. Ent. Soc., 1891, p. 50). Facial quadrangle about as broad as long; lateral facial depressions well-marked, covered with appressed pubescence; a patch of white hair on each side of the antennae; clypeus exposed, shining, strongly and closely punctured, with no distinct smooth line; vertex with extremely large punctures; mesothorax with very large and strong, close punctures; scutellum and postscutellum with very large punctures; enclosure of metathorax very distinct, very strongly longi-

tudinally ridged, bounded behind by more or less of a rim; tegulæ piceous; wings smoky hyaline, barely darker at apex; nervures and stigma piceous; legs black; abdomen shining, rather finely but strongly and closely punctured; dorsal surface of first four segments practically nude, except for a well-marked patch of white hair on the lateral margins of the second to the fourth, some scattered glistening yellowish hairs across the middle of the third and fourth, and an indistinct fringe of very short hairs on the extreme margins of the second and third; fifth segment and apex clothed with orange-fulvous hairs; ventral segments with rather long fringes of white hair.

Hab. Olympia, Washington State, June 18th, 1895 (T. Kincaid).

A. grandior is related to *A. rugosa*, but it is larger, and the stigma is quite differently coloured. The base of the metathorax is similar in the two species.

(6.) *ANDRENA STRIATIFRONS*, n. sp.

♀. Length $11\frac{1}{2}$ mm.; black, with moderately long and dense fulvous pubescence. Belongs to Robertson's second group. Facial quadrangle slightly broader than long; lateral facial depressions with appressed pubescence; clypeus hairy, but surface visible, shining, closely and strongly punctured, *no smooth line; front below ocelli strongly longitudinally striate*; vertex dull, with shallow obscure punctures; flagellum wholly dark; mandibles dark; basal process of labrum broad and rounded at end; mesothorax rather dull, with very large and close punctures, lacking in the centre; scutellum shiny, with very large punctures; sides of metathorax strongly rugoso-punctate; the enclosure strongly longitudinally wrinkled, bounded behind by a sharp edge; tegulæ piceous; pubescence of thorax a lively orange-fulvous; wings hyaline, faintly clouded at apex; nervures and stigma ferruginous; in the type specimen there are on one side only two submarginal cells, on the other three, but even here the second transversocubital nervure is incomplete below; legs black, with pale fulvous pubescence, hind tibiæ ferruginous suffused with black, *hind tarsi wholly ferruginous*; abdomen shining, punctures scattered, minute and hardly visible, *except the bases of the segments, which are very distinctly though rather sparsely punctured*; second to fourth segments with lateral patches of pale fulvous hair, representing very broadly interrupted bands; fifth segment clothed with fulvous hair at apex and sides; anal fimbria dark rufous. The longitudinal wrinkles of the metathoracic enclosure, while strong, are much weaker than those of *grandior*, and the intervals between them are granular.

Hab. Olympia, Washington State, April 19th, 1894 (T. Kincaid).

(7.) *ANDRENA MACGILLIVRAYI*, n. sp.

♀. Length 10 mm.; black, pubescence fulvous on occiput and thoracic dorsum, otherwise whitish or dull white. Facial quadrangle somewhat broader than long; lateral facial depressions with appressed pubescence; sides of face and area between antennæ with long pale

yellowish grey pubescence; clypeus with the surface not concealed, shiny but *minutely tessellate*, strongly and rather closely punctured, with a low median longitudinal ridge; front below ocelli strongly striate; vertex with irregular weak punctures; first joint of flagellum longer than second and third together; last joint feebly ferruginous; mandibles dark; *process of labrum strongly produced, narrow, rounded at end, shaped like the end of a finger*; thorax with long rather dense hair; mesothorax dull, *minutely rugulose, with shallow punctures*; enclosure of metathorax *minutely rugulose, poorly defined*; tegulae shining dark brown; wings yellowish hyaline; nervures (except black subcostal nervure) and stigma ferruginous; first submarginal cell on cubital nervure about as long as the two others together; legs black, with whitish pubescence, becoming shining fulvous on the tarsi; *hind tarsi fusco-ferruginous*; abdomen fairly shiny, *minutely tessellate, the sparse weak punctures hardly noticeable*; hind margins of segments very narrowly testaceous; abdominal dorsum with thin scattered pubescence; hind margins of the second to fourth segments at sides with white pubescence, representing broadly interrupted hair-bands; *margin of fifth segment, and apex, thickly clothed with sooty or purplish fuscous hair*; ventral segments fringed with white hair.

Hab. Ithaca, N. Y., April 21st, 1890 (A. D. MacGillivray).

An ordinary-looking species, best distinguished by the clypeus and process of labrum. It is related to *A. salicis*, Rob., but is larger, and differs in the process of labrum and the abdomen without continuous bands.

(8.) *ANDRENA NIGROCÆRULEA*, n. sp.

♀. Length $10\frac{1}{2}$ to $11\frac{1}{2}$ mm.; dark blue, pubescence of thoracic dorsum ochraceous, elsewhere black; face covered with black hair; clypeus strongly punctured; antennæ black; mesothorax with shallow punctures; enclosure of metathorax minutely roughened, triangular, not bounded by a ridge; tegulae shining black; wings dusky; nervures and stigma piceous; pleura with black hair; legs black, with black pubescence; abdomen minutely tessellate, impunctate, *apex densely clothed with black hair*.

♂. Length 9 mm., much more slender; antennæ very long, wholly black; wings clearer; pubescence long and thin, *all yellowish white, except black at sides of face and sides of occiput*. Vertex and mesothorax dull.

Hab. Olympia and Seattle, Washington State, in May (T. Kincaid). Many specimens.

Differs at once from *A. cerasifolii* by the impunctate abdomen. From *A. cærulea* and *A. geranii* it differs by the black hair at the apex of the abdomen.

Mesilla, New Mexico, U.S.A., October 24th, 1897.
