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BEES FROM THE NORTHERN PENINSULA OF
MICHIGAN.

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The following report on bees collected by the Shiras Expeditions to Whitefish Point, Chippewa County, Michigan, in 1913 and 1914, and by the Bryant Walker Expedition to Schoolcraft, County, Michigan, in 1915, represent a first contribution to the knowledge of the bees of the northern peninsula of the state. The collection shows strong boreal affinities. It has seemed useful to throw the material into the form of a key, in order to assist subsequent workers in the field in the examination of their specimens. It is to be understood, of course, that all determinations based on the key will be checked by reference to specimens or to the full descriptions, since the key only undertakes to separate the listed species from one another.

A few abbreviations have been used: s.m.—submarginal cell; t.c.—transverse cubital nervure; r.n.—recurrent nervure.

a¹. *Anterior wings with two submarginal cells.*

b¹. *Small black species, with yellow spot on tubercles; stigma well developed.*

c¹. *Face of female almost wholly black; upper border of prothorax with yellow marks.*

***Prosopis gaigei* n. sp.**

Female. Length about 6 mm., black, the face without light markings except some microscopical yellow spots at sides; collar above with two slender yellow lines, tubercles with a large chrome yellow spot, hind tibiae broadly yellow at base; tegulae entirely black, minutely sculptured with concrete lines; wings smoky; second s. m. large, first r. n. meeting first t. c.; flagellum only obscurely dark reddish beneath. Head rather long; mesothorax and scutellum strongly punctured; area of metathorax rugose; first abdominal segment shining, impunctate, remaining segments very minutely roughened.

Floodwood, Schoolcraft Co., Michigan, July 26, 1915. (Gaige, 29, 30), 29 is the type; 30 unfortunately lacks the head. On account of the black face, this at once suggests *P. personatella* Ckll. from Colorado. *P. personatella* is however very distinct, having a shorter head, much more finely sculptured mesothorax, and dark tubercles. On account of the long face, this cannot be a variation of *P. modesta* Say. The minutely aciculate, sparsely and shallowly punctured clypeus of *P. gaigei* is 700 microns long and 370 microns wide at top, thus unusually long and narrow. The coarse irregular sculpture of area of metathorax and more sparsely (though very distinctly) punctured pleura indicate that *P. gaigei* is not a melanic *P. elliptica* Kirby.

- c². *Face of female with long yellow lateral marks, and a band across lower margin of clypeus, the last not always well developed; upper border of prothorax without yellow marks.*

Prosopis elliptica Kirby.

Floodwood, Schoolcraft Co., July 29, 1915, (Gauge 33).

- b². *Larger species, with hairy thorax; no yellow spots on tubercles, stigma small.*
- c¹. *Black, comparatively narrow and elongate in both sexes; male antennæ greatly modified, the flagellum thickened before the middle. Feet with pulvilli. Ventral scopa of female pale.*

Andronicus cylindricus Cresson.

Floodwood, Schoolcraft Co., July 13-14, (Gauge 19, 20). Both sexes. In his original description, based on a male from Connecticut, Cresson says that the first r. n. meets the first t. c., and second r. n. joins second s. m. "a little within its apex." He also states that the vertex is sparsely clothed with short pale hairs, and the upper surface of the thorax is sparsely hairy. In our male the pale hair of the vertex and thorax above is long and quite abundant, while in both sexes the first r. n. joins the second s. m. a moderate distance from its base, while the second joins it twice as far from the apex. Robertson's account of both sexes, as found in Illinois, appears to agree with the Michigan insect. I infer that Cresson's type was worn, and that the venation is variable, but it is just possible that there are two species.

- c². *Blue and green; male antennæ ordinary. Feet with pulvilli. Ventral scopa of female black.*

Osmia melanotricha Lovell & Cockerell.

Floodwood, Schoolcraft Co., July 14, 22, 29, (Gaige 20, 25, 26, 34). Four females. Previously known from Maine and Colorado.

c³. *Black; male antennæ ordinary. Feet without pulvilli.*

d¹. *Female with red ventral scopa, and segments 4 and 5 dorsally with white hair-bands; male with anterior legs much modified, anterior femora with the outer margin only black at end, where there is a short keel.*

Megachile vidua Smith.

Floodwood, Schoolcraft Co., July 6, 8, 11, 21 (males), and 26 (female), (Gaige 3, 7, 11, 24). Whitefish Point, Chippewa Co., July 29, (Andrews, 20) female, and (Andrews 17) male.

d². *Female with red or black ventral scopa; dorsal segments 4 and 5 of abdomen without white hair-bands; male with anterior legs much modified, the anterior femora with a broad black stripe from base to apex on outer side, and no apical keel.*

Megachile melanophaea Smith.

Floodwood, Schoolcraft Co., July 11, 30, two females (Gaige 9, 35); July 11, 12, two males (Gaige 12, 14). Whitefish Point, Chippewa Co., July 29, one male (Andrews 18). None of these are typical *M. melanophaea*, which has the ventral scopa of female rich dark chocolate color throughout. The female No. 35 (July 30), which has the lower part of the pleura black-haired, and the ventral scopa bright red, black at base and to some extent at sides, is a slightly modified form of the western (Washington State) *M. melanophaea calogaster* (Ckll.). The other female (July 11), with the hair of pleura

all pale, and the scopa red and black, approaches the Rocky Mountain *M. melanophæa wootoni* (Ckll.). There are three subspecific forms, *melanophæa* of the northeastern part of America, *calogaster* of the northwest, and *wootoni* of the Rocky Mountains. In the middle regions of the north they appear to intergrade, and it will be very interesting to learn more about the variations occurring in Michigan and the adjacent states. The type locality of *M. melanophæa* is Nova Scotia. The type of *calogaster* is from Olympia, Washington; the type female has the lower part of the pleura black-haired, and a large patch of black hair on middle of mesothorax. The type of *wootoni* is from New Mexico.

d³. *Female with cream-colored ventral scopa; male with anterior legs not modified.*

Megachile decipiens Lovell & Cockerell.

Whitefish Point, Chippewa Co., July 29, one male (Andrews 21). Described from Maine. This is the most western record.

a². *Anterior wings with three submarginal cells.*

b¹. *Eyes hairy; marginal cell very long and narrow; abdomen fulvous and black.*

Apis mellifera ligustica Spinola.

Floodwood, Schoolcraft Co., July 26, (Andrews). The Italian honey-bee.

b². *Eyes not hairy.*

c¹. *Clypeus, V-shaped lateral face-marks, and supraclypeal band yellow in males; black bees, with hairy thorax; first discoidal cell longer than marginal. The female has red hair at apex of abdomen.*

Clisodon terminalis (Cresson).

Floodwood, Schoolcraft Co., July 12, one male (Gaige 13).
Whitefish Point, Chippewa Co., July 29, two males (Andrews
19).

c². *Clypeus not yellow.*

d¹. *Terra-cotta red bees with little hair; abdomen with yellow spots. Mandibles bidentate at end.*

Nomada bella Cresson.

Floodwood, Schoolcraft Co., July 27, two females (Gaige
1). The male is a very different looking insect, with yellow
bands on the abdomen.

d². *Small green bee; basal nervure strongly curved.*

Halictus pilosus Smith.

Floodwood, Schoolcraft Co., August 2, (Gaige 42). Wide-
ly distributed in the Eastern States.

d³. *Bees with black integument, though often with colored hair.*

e¹. *Second s. m. not far from square, the lower basal corner not strongly produced; color of hair not bright.*

f¹. *Lower part of basal nervure strongly bent or arched; abdomen with bands of white pubescence at bases of segments 2 to 4.*

Halictus craterus Lovell.

Floodwood, Schoolcraft Co., July 31, one female (Gaige
39). Whitefish Point, Chippewa Co., July 26-29, four males
(Andrews 23, 24, 40). Allied to *H. discus* Smith, but distinguished by the more closely punctured mesothorax. It is

readily distinguished from *H. parisus* (Lovell) and *H. gulosus* (Ckll.),—both described as varieties of *H. arcuatus*, Rob., but distinct species,—by the punctured apical part of the first abdominal segment and the smaller stigma. *H. craterus* was described from Maine; the present record greatly extends its known range.

f². *Basal nerve nearly straight; abdomen shining black, without hair-bands.*

Andrena vicina Smith.

Floodwood, Schoolcraft Co., July 12, 13, two females (Gaige 16, 18). Whitefish Point, Chippewa Co., July 26, one female (Andrews 22). All three females badly worn. Widely distributed in the Northern States.

e². *Lower basal corner of second s. m. produced and pointed; hair often brightly colored.*

f¹. *Abdomen with a broad band of bright ferruginous-red hair; yellow hair of scutellum more or less divided in the middle.*

Bombus ternarius Say.

Very many specimens taken in July at Floodwood, Schoolcraft Co., in July (Gaige) and at Whitefish Point, Chippewa Co. (Andrews). It is apparently the commonest *Bombus* of the region.

f². *Abdomen without a red band.*

g¹. *Hind tibiae hairy on outer side; face and front of males with hair entirely black.*

h¹. *Thorax above without a black band; abdomen with black hair, a little yellow at sides of third segment.*

Psithyrus laboriosus (Fabricius).

Whitefish Point, Chippewa Co., June 27, one female (Andrews 2). Fabricius bestowed the specific name, supposing that he had a *Bombus* before him; it is scarcely appropriate for a *Psithyrus*.

h². *Thorax above with a black band of hair.*

i¹. *Vertex with a patch of yellow hair; pleura with much light hair.*

Psithyrus insularis (Smith).

Floodwood, Schoolcraft Co., July 6, 15, two females (Gauge 1, 22). Whitefish Point, Chippewa Co., July 24, one male (Andrews 9). The male is much smaller than the female.

i². *Vertex without a patch of yellow hair; only upper part of pleura with yellow hair.*

Psithyrus ashtoni (Cresson).

Floodwood, Schoolcraft Co., July 6, 8, 15, three females (Gauge 2, 6, 22). Whitefish Point, Chippewa Co., July 23, one male (Andrews 10).

g². *Hind tibiae with a smooth, shining, pollen-collecting surface on outer side in queens and workers, which alone are represented in the collection.*

h¹. *First abdominal segment with light hair.*

i¹. *A tuft of yellow hair near bases of antennæ; malar space rather long; black band on thorax extremely broad; yellow hair of scutellum interrupted in the middle.*

Bombus ternarius Say var. **expallidus** n. var.

Female (queen) with hair of first four segments of abdomen reddish tawny, without any bright ferruginous; the first and fourth segments are tawny like the second and third, not clear pale yellow as in the typical form.

Floodwood, Schoolcraft Co., July 20, one female (Gauge 22). Franklin speaks of the red color of *Bombus* "fading out," producing pallid forms. Experimental evidence on this point is wanting, but I believe that the pale varieties, which seem to occur in almost all the species with bright red hair, are true varieties, probably recessive to the normal forms. Thus in the present collection there is one *expallidus*, among a great number of *ternarius*, which do not present various degrees of "fading out." In other localities the pale forms occur in some numbers, and appear to be practically uniform. Thus Mr. Kenoyer took four examples of *B. edwardsii* v. *kenoyeri* Ckll., a variety entirely analogous with *expallidus*, at Tolland, Colorado, along with typical examples of the form having red hair (*bifarius* Cresson). It must also be noted that the first and fourth segments of *expallidus* have a redder shade than the typical form, and this cannot well be due to fading.

i². Hair of face and front all black; yellow hair of scutellum not divided.

j¹. Hair of abdomen tawny yellow on first four segments, black beyond. Malar space long.

Bombus fervidus (Fabricius).

Whitefish Point, Chippewa Co., June 27, one queen (Andrews 1).

j². Hair of abdomen yellow (not tawny) on first two segments, black beyond.

Bombus pleuralis Nylander.

Whitefish Point, Chippewa Co., July 24, a small worker (Andrews 7). A very puzzling specimen. It looks like *B. flavifrons dimidiatus* (Ashm.), but the malar space is much too short. The general coloration is like *B. consimilis*, but it cannot be a melanic variety of that, the malar space being too short; it is also much too short for *B. kirbyellus*. The face is too narrow and the malar space too long for *B. affinis*. The specimen agrees well enough with Franklin's account of *B. pleuralis* (though the light hair has none of the tawny tint of Friese's figure), but *pleuralis* has not previously been found nearer than Alaska. It is possible that a complete series of all forms will indicate a new species or subspecies, but at present there are apparently no grounds for separating the insect from *B. pleuralis*. The abdomen is entirely black-haired beyond the second segment.

h². *First abdominal segment with black hair; malar space short.*

Bombus terricola Kirby.

Floodwood, Schoolcraft Co., July 8, 10, 25, three workers (Gage 5, 8, 27). Whitefish Point, Chippewa Co., July 26-7, eleven workers (Andrews).

