

# CHARACTERS SEPARATING THE SPECIES OF THE BEE GENUS *CÆLIOXYS* OCCURRING IN ONTARIO.

BY F. W. L. SLADEN,

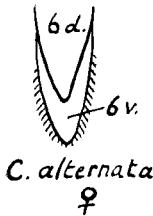
Apiarist, Central Experimental Farm, Ottawa.

(The author has availed himself of a kind offer made by Prof. T. D. A. Cockerell to look over any tables of bees he had prepared. Prof. Cockerell's valuable notes are followed by his initials.)

## MALES.



*C. ribis*, ♀



*C. alternata*  
♀

Fig. 24

In all the following species the fore coxæ bear teeth:

1. *Second dorsal segment with a pair of transverse foveæ*, posterior to the transverse depression (interrupted or continuous) that crosses the segment. Tooth on either side of segment 5 well developed. ....3.

*No foveæ present*, tooth on side of segment 5 rudimentary (apex of ventral segment 4 not emarginate) .....2.

[No foveæ, place where they would be very densely covered with minute punctures; tooth on side of segment 5 fairly large. Tegulæ bright apricot colour. (Indiana) . *immaculata* Ckll. (I suppose this might extend to Canada.—T. D. A. C.)]

2. *Transverse depression on segment 2 uninterrupted in middle*; segment 1 well clothed with long hair, abdomen comparatively finely and closely punctured; postgenæ with large groove at lower end, the groove densely clothed with hair like rest of hind cheek. Apex of 4th ventral segment short, rounded; abdomen short and wide, *no carina on frons*, legs black. .... *ribis* Ckll. (*C. ribis kincaidii* Ckll., from Olympia, Wash., also runs here.—T. D. A. C.)

*Transverse depression of segment 2 widely interrupted in middle*; segment 1 clothed scantily, the hair very short and adpressed, abdomen coarsely and remotely punctured, *postgenæ without groove*, apex of 4th ventral segment bispinose, abdomen elongate; *frons with Y-shaped carina*, the forks flattened

out, enclosing the middle ocellus.....*alternata* Say  
(= *texana* Cr.)

3. *Foveæ on segment 2 linear or very small*, legs more or less red; teeth on sides of segment 5 large, rudimentary teeth on sides of segment 4. Apical margin of 4th ventral segment lamellate and minutely emarginate.....4.

*Foveæ comparatively large and wide* (though often shallow), legs usually black, teeth on sides of segment 5 rather small, no trace of teeth on sides of segment 4.....7.

4. *Foveæ linear, each about  $\frac{1}{2}$  mm. long, with a narrow impunctate margin completely surrounding it*; (Good character!—T. D. A. C.); the hair on head and thorax rather longer, insect larger; length 8 to 10 mm.....*rufitarsus* Sm.

*Foveæ rudimentary, not more than  $\frac{1}{4}$  mm. long*, sometimes minute, resembling a large puncture, hair on head and thorax rather shorter, insect smaller; length 7 to 9 mm..*octodentata* Say.

7. *Foveæ and the region anterior to it very closely punctured, the elevation posterior to it impunctate*; transverse grooves on segments 2 to 4 widely interrupted in middle, apical felt bands on segments 1 to 4 wide at sides, on segment 1 widely interrupted in middle, on segments 2 to 4 very narrow across middle; segments 2 to 4 more coarsely and remotely punctured; punctures on mesonotum far enough apart to give it a slight shine; hair on base of segment 1 adpressed.....*lucrosa* Cr.

*The anterior region of each fovea not closely punctured, the elevation posterior to it remotely punctured*; transverse grooves on segments 2 to 4 uninterrupted in middle; apical felt bands on segments 1 to 4 less wide at sides, less narrow in middle, on segment 1 not interrupted in middle; segments 2 to 4 more finely and more closely punctured; mesonotum so closely punctured as to appear dull; hair on base of segment 1 upstanding.....*moesta* Cr.

#### FEMALES.

1. *Last ventral segment with a small notch on each side near the tip*. 3.  
*Last ventral segment not notched*.....2.

2. *Last ventral segment with apical portion narrowed to form a process about twice as long as wide and not more than one-third as wide as wider portion of segment; clypeus without basal depression, transverse depression on segment 2 uninterrupted, segment 1 well clothed with long hair, abdomen short and wide, comparatively finely and closely punctured, no longitudinal carina on frons.....ribis* Ckll.  
 [*C. ribis kincaidii* Ckll. (Olympia, Wash.), runs here. It is larger than typical *ribis*, and has tawny hair on head and thorax. It will doubtless be found in B. C.—T. D. A. C.]  
*Last ventral segment with sides convex, tapering to blunt point with a fringe of fuscous hair, clypeus with a depression on each side of its upper margin, transverse depression on segment 2 widely interrupted in middle; segment 1 scantily clothed, hair very short and adpressed; abdomen elongate; segments 2 to 4 coarsely and remotely punctured; frons with Y-shaped carina with the central ocellus between its forks.....alternata* Say.
3. *Legs more or less red.....4.*  
*Legs not red; depressions on segments 2 and 3 always shallow, especially towards middle, where they are widely interrupted on segment 3; segments 1 to 5 more evenly and finely punctured.....6.*
4. *Segment 6  $1\frac{1}{4}$  times as long as wide, slightly rounded at apex; depression on segments 2 and 3 narrow, deep and rugose, punctures on segments 1 to 5 large and close, an impunctate line immediately behind depressions on segments 2 and 3 and behind their vestiges on segments 4 and 5.....5.*  
*Segment 6  $1\frac{3}{4}$  times as long as wide, pointed at apex..Cael. 11.*  
 (*C. deplanata*, which occurs in Washington State, would come in about here, but it has the 6th dorsal segment obtuse at apex—on looking at other specimens it seems variable and may be fairly pointed. The 6th segment is quite broad in *deplanata* seen from above, its width is about three-quarters its length.—T. D. A. C.)
5. *Sixth dorsal segment strongly angulated at sides so that its apical half is narrowed; larger insect; length up to 12 mm.....rufitarsus* Sm.

- Sixth dorsal segment not or only slightly angulated at sides, smaller insect; length up to 10 mm. . . . . *octodentata* Say.
6. *Transverse depression on segment 2 widely interrupted in middle*; apical felt bands on segments 2 to 4 wide at sides, very narrow across middle on segment 1, very wide and triangular at sides and widely interrupted in middle; punctures on segments 2 to 4 larger and less close; punctures on mesonotum far enough apart to give it a slight shine; hair on basal part of segment 1 adpressed; last dorsal segment about  $1\frac{1}{4}$  times as long as wide; *tibial spurs more or less ferruginous*. . . *lucrosa* Cr.
- Transverse depression on segment 2 not or scarcely interrupted in middle*; apical felt bands on segments 2 to 4 less wide at sides, less narrow in middle; on segment 1 much less wide at sides and uninterrupted in unrubbed specimens; punctures on segments 2 to 4 smaller and closer; mesonotum so closely punctured as to appear dull; hairs on basal part of segment 1 upstanding; last dorsal segment about twice as long as wide, *tibial spurs black*. . . . . *moesta* Cr.

## A CONTRIBUTION TOWARDS THE TAXONOMY OF THE DELPHACIDÆ.

BY F. MUIR.

Hawaiian Sugar Planters' Experiment Station, Honolulu, T.H.

When working out some Malayan Delphacidæ the writer found it expedient to tabulate as many of the genera of the family as possible; unfortunately many of these genera are unknown to him except through the descriptions, which, in many instances, do not give characters necessary to locate them with accuracy. For this reason the present table has many defects, well recognized by the writer, but as it has been of great use to him he believes it will be of use to others, and for this reason alone he publishes it.

*The Spur.* As this organ is the characteristic feature of the family it is not surprising that its shape should be of taxonomic value; unfortunately many species have been described with only a mere reference to its existence. The writer is not aware of anyone making a primary use of it for dividing the family into divisions or subfamilies before Kirkaldy, who was followed by Crawford.

July, 1915