

Key to sexes of *Lasioglossum*

1. Flagellomeres 10; metasomal terga 6, tergum five *usually* with distinct longitudinal pseudopygidial area ... female

- Flagellomeres 11; metasomal terga 7, tergum five never with longitudinal pseudopygidial area ... male

Key to *Lasioglossum* subgenera in Canada

Modified from Michener (2007), McGinley (1986), and Gibbs *et al.* (2013).

Females

1. Head and mesosoma dull metallic (green, blue, or golden); the coastal species *L. (Lasioglossum) pavonotus* (Cockerell, 1925) is metallic blue-green, but only occurs north to Washington State ... *L. (Dialictus)*

- Head and mesosoma black-brown ... 2

2. Second submarginal crossvein (1rs-m) as strong as first (second abscissa of Rs) ... 3

- Second submarginal crossvein (1rs-m) weaker than first (second abscissa of Rs) ... 4

3 (2). Propodeum with lateral carina well developed, reaching dorsal surface; metapostnotum coarsely sculptured, shorter than scutellum; T1 without basal tomentose band; head long (length/width ratio = 0.88–1.0) ... *L. (Leuchalictus)*

- Propodeum with lateral carina usually poorly developed, not reaching dorsal surface, and/or metapostnotum weakly sculptured, if lateral carina reaches dorsal margin and metapostnotum strongly sculptured, then metapostnotum subequal in length to scutellum and either head short (length/width ratio = 0.77–0.89) or T1 with distinctive basal tomentose band ... *L. (Lasioglossum)*

4 (2). Scopa reduced to simple, hamate setae arranged linearly; ocelli slightly to greatly enlarged (Onagraceae specialists) ... *L. (Sphecodogastra)* [in part]

- Scopa normal, composed of plumose setae; ocelli not enlarged ... 5

5 (4). Head wide (length / width ratio < 0.84); female inner metatibial spur with fine oblique teeth, not as tall as width of rachis; lateral carina of propodeum divergent and not reaching dorsal margin (in *L. cinctipes* (Provancher, 1888) the carina blends with rugae making it appear to reach dorsal margin) ... *L. (Evyllaesus)*

- Head longer (length / width ratio > 0.88); female inner metatibial spur with longer, narrow or fat teeth, often taller than width of rachis at least basally; lateral carina of propodeum variable ... 6

5 (4). Propodeum with lateral carina not reaching dorsal margin, if lateral carina merges with dorsal rugae then mesopleuron with coarse rugae ... *L. (Hemihalictus)*

- Propodeum with lateral carina reaching dorsal margin and mesopleuron finely rugulose ... *L. (Sphecodogastra)* [in part]

Males

1. Head and mesosoma dull metallic (green, blue, or golden); the coastal species *L. (Lasioglossum) pavonotus* (Cockerell, 1925) is metallic blue-green, but only occurs north to Washington State ... *L. (Dialictus)*

- Head and mesosoma black-brown ... 2

2. Flagellomere 2 longer than flagellomere 1 and pedicel combined ... 3

- Flagellomere 2 subequal to or shorter than flagellomere 1 and pedicel combined ... 4

3 (2). Sterna with erect setae, length approximately equal to ocellar diameter; gonostylus without retrorse lobe ... *L. (Evyllaesus)*

- Sterna without erect setae, length much less than ocellar diameter; gonostylus with retrorse lobe ... *L. (Sphecodogastra)* [in part]

4 (2). Gonostylus without retrorse lobe ... *L. (Leuchalictus)*

- Gonostylus with retrorse lobe ... 5

5 (4). Sternum 6 with medial depression; ocelli slightly to greatly enlarged; sterna with long posteriorly directed setae ... *L. (Sphecodogastra)* [in part]

- Sternum 6 without medial depression, ocelli not enlarged; sterna with erect, ventrally directed setae ... 6

6 (5). Size smaller (4–8 mm); terga with marginal areas distinct from disc either by sparser punctures, paler integument, and/or being relatively strongly impressed; sterna 4–6 with straight margins and lacking distinctive setal patterns; clypeus broadly rounded, except *L. swenki* (Crawford, 1907) ... *L. (Hemihalictus)*

- Size larger (7–12 mm); terga with marginal areas usually less distinct with consistent punctures, concolourous integument, and/or are weakly impressed; clypeus flat, or if broadly rounded then sterna 4–6 with at least one sternum emarginate or marked by distinctive setal patterns ... *L. (Lasioglossum)*

Revised key to female *Lasioglossum* (*Dialictus*) of Canada

Note that females of *L. dubitatum* have not been definitively associated with the male. The species may occur in southern Ontario or Québec, but the type is possibly just an aberrant specimen of *L. versatum*. Punctuation density is given in terms of the interspaces (IS) between punctures relative to puncture diameter (PD).

1. Nest-building species; hind femur with scopa; labrum with narrow apical process and distinct dorsal keel when view laterally (Fig. 1A) ... 2

- Socially parasitic species; hind femur without scopa; labrum with broad apical process and no dorsal keel (Fig. 1B) ... 103

2 (1). Metasomal terga brown, black, or with metallic reflections ... 3

- Metasomal terga reddish orange to pale yellow ... 99

3 (2). Tegula not reaching posterior margin of mesoscutum in dorsal view, ovoid, or IF inner posterior margin concave, then impunctate in centre (Fig. 2B) ... 4

- Tegula enlarged, reaching posterior margin of mesoscutum in dorsal view, inner posterior margin concave, and distinctly punctate in centre (Fig. 2A) ... 95

4 (3). Mesoscutal punctuation dense laterad of parapsidal lines ($IS \leq 1 PD$) and on anterolateral portions (Fig. 3B) ... 5

- Mesoscutal punctuation sparse laterad of parapsidal lines ($IS > 1.5 PD$) and on anterolateral portions (Fig. 3A) ... 89

5 (4). Metasomal T1 anterior slope with appressed setae at least laterally, no erect setae basomedially (Fig. 4A) ... 6

- Metasomal T1 anterior slope without appressed setae, erect setae sparsely distributed throughout (Fig. 4B) ... 85

6 (5). Mesosoma coarsely sculptured (mesoscutal punctures coarse, mesepisternum coarsely rugose or reticulate) and propodeal lateral and posterior surfaces separated by strong lateral carina (Fig. 5B) ... 7

- Mesosoma without combination above (mesoscutal punctures fine, mesepisternum rugulose or punctate, AND/OR propodeal lateral and posterior surfaces incompletely separated by lateral carina; Fig. 5A) ... 11

7 (6). Hypostomal carinae strongly divergent anteriorly (Fig. 6B); mesoscutum reticulate-rugose anteriorly ... *L. bruneri* (Crawford, 1902)

- Hypostomal carinae subparallel (Fig. 6A); mesoscutum punctate anteriorly ... 8

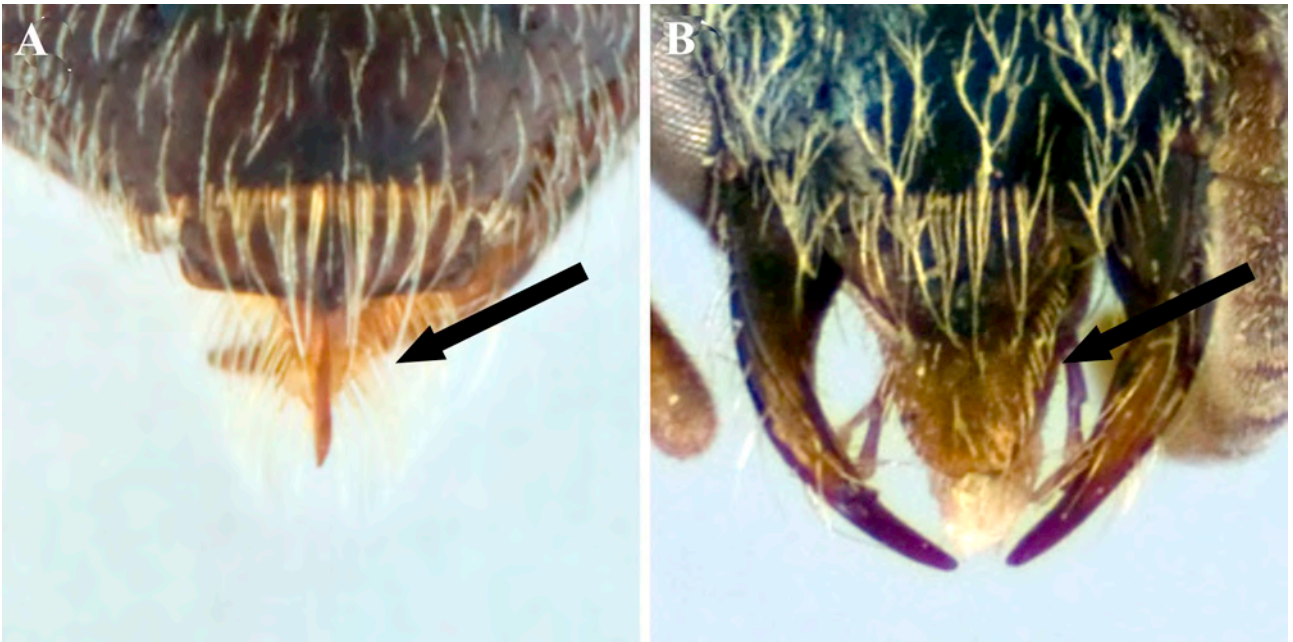


Figure 1. Labrum of female *Dialictus*; (A) nest-building species, (B) parasitic species. Arrows indicate apical process. Reprinted from Gibbs (2010).

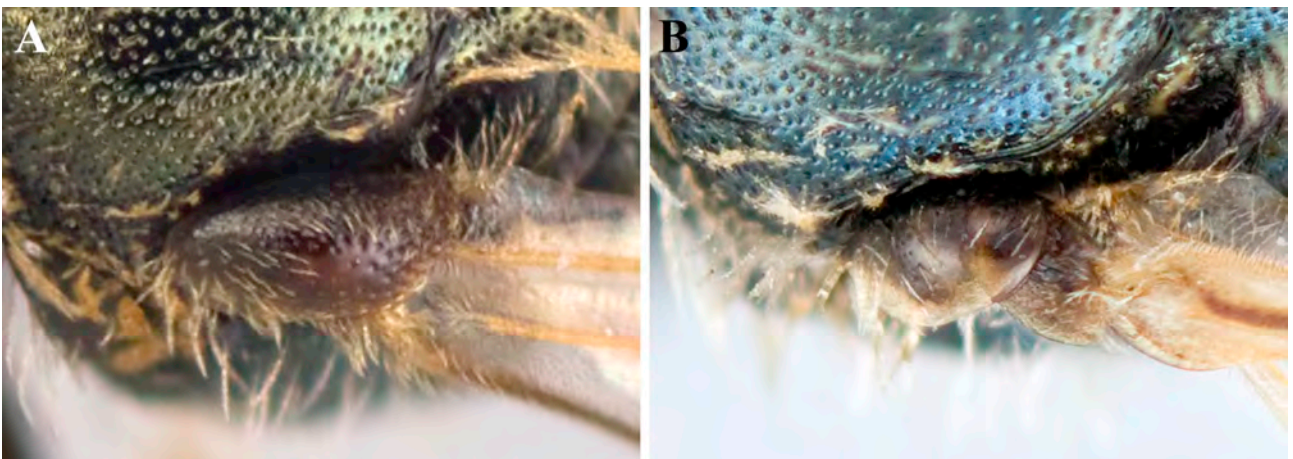


Figure 2. Tegula of (A) *L. helianthi*, (B) *L. oceanicum*. Reprinted from Gibbs (2010).

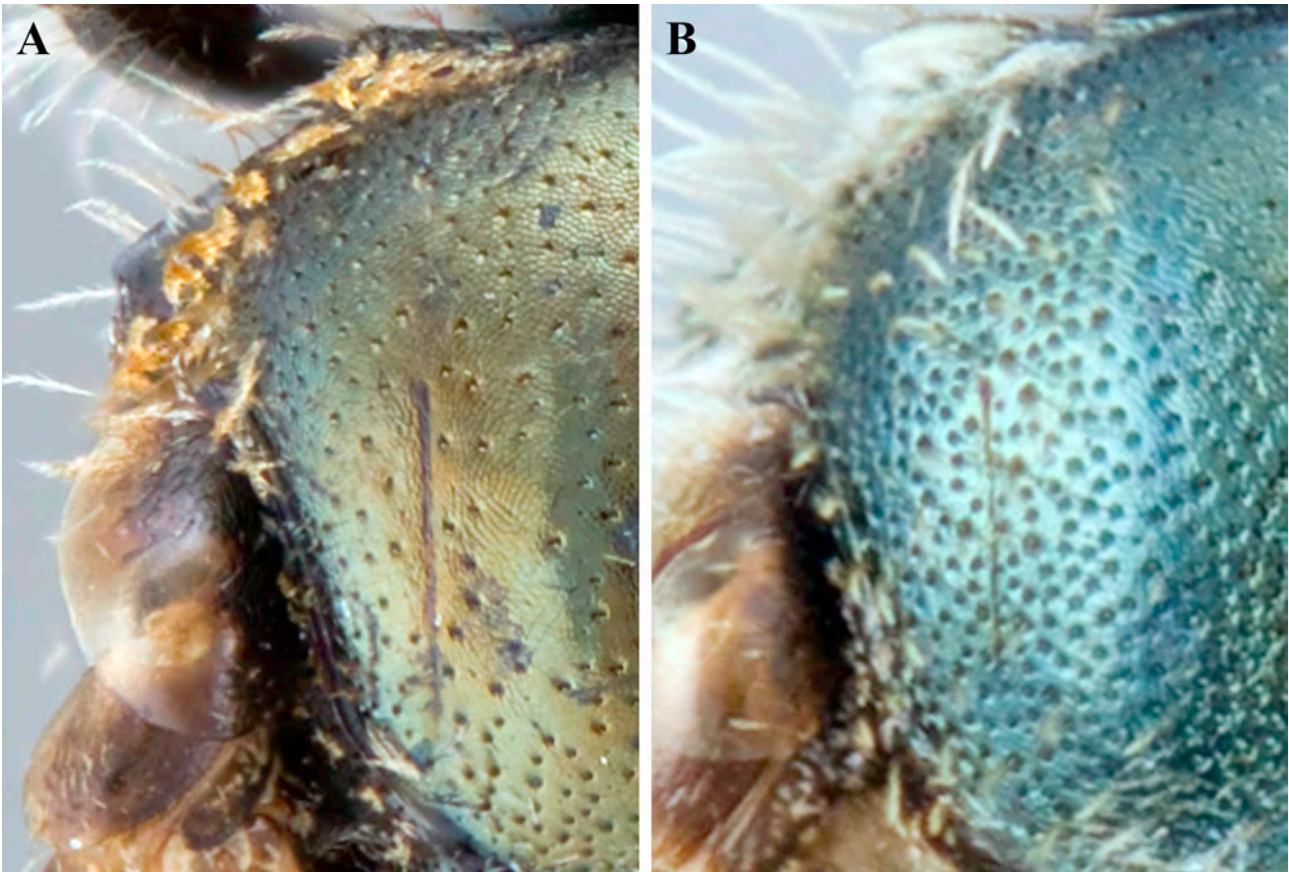


Figure 3. Mesoscutal punctation on lateral portion of disc (A) *L. obscurum*, (B) *L. incompletum*. Reprinted from Gibbs (2010).

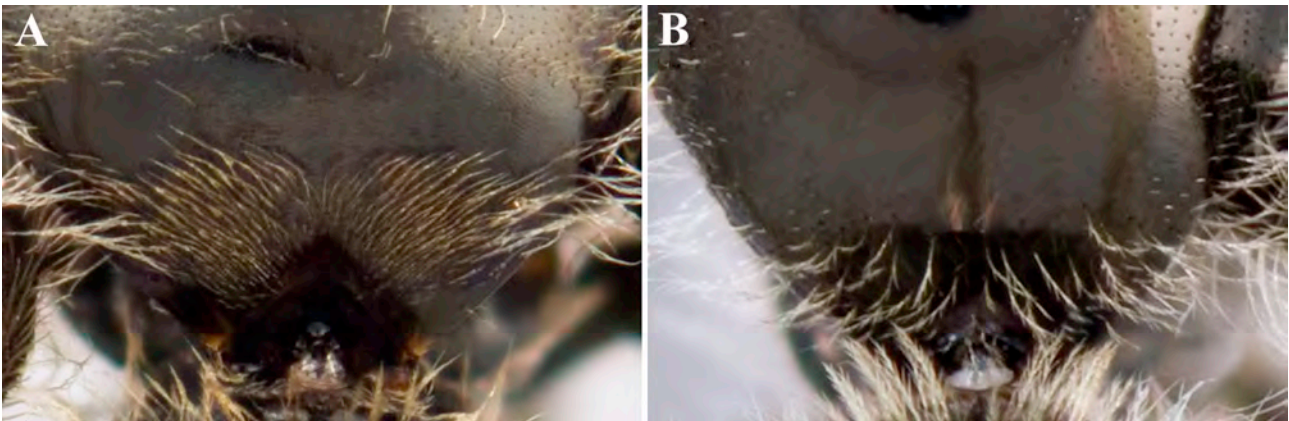


Figure 4. Anterior slope of T1 with acarinarial fan (A) present, (B) absent. Reprinted from Gibbs (2010).

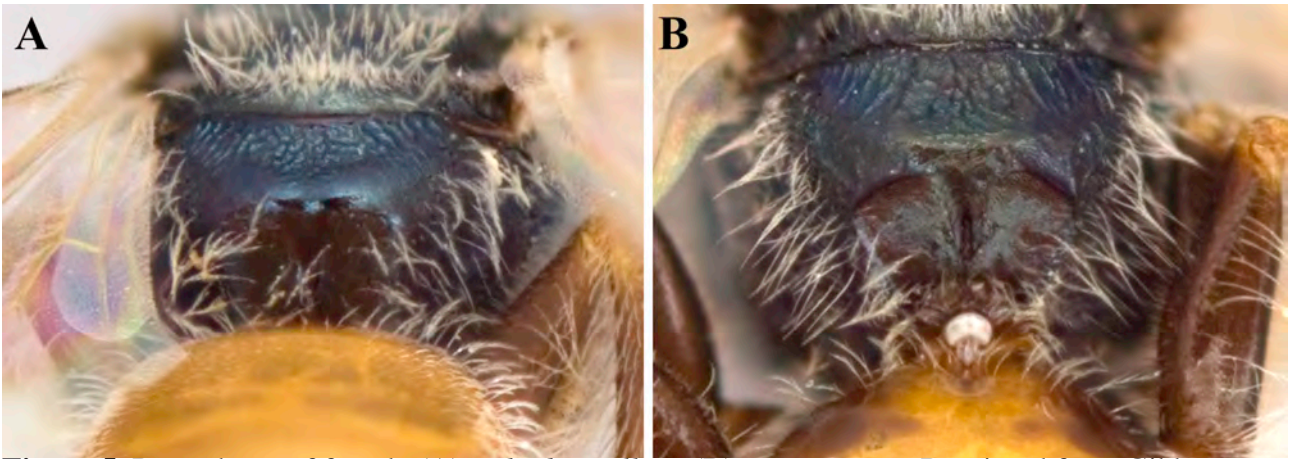


Figure 5. Propodeum of female (A) *L. hudsoniellum*, (B) *L. testaceum*. Reprinted from Gibbs (2010).



Figure 6. Hypostomal carinae of female (A) parallel, (B) divergent (*L. bruneri*), (C) divergent (*L. heterognathus*). Reprinted from Gibbs (2010).

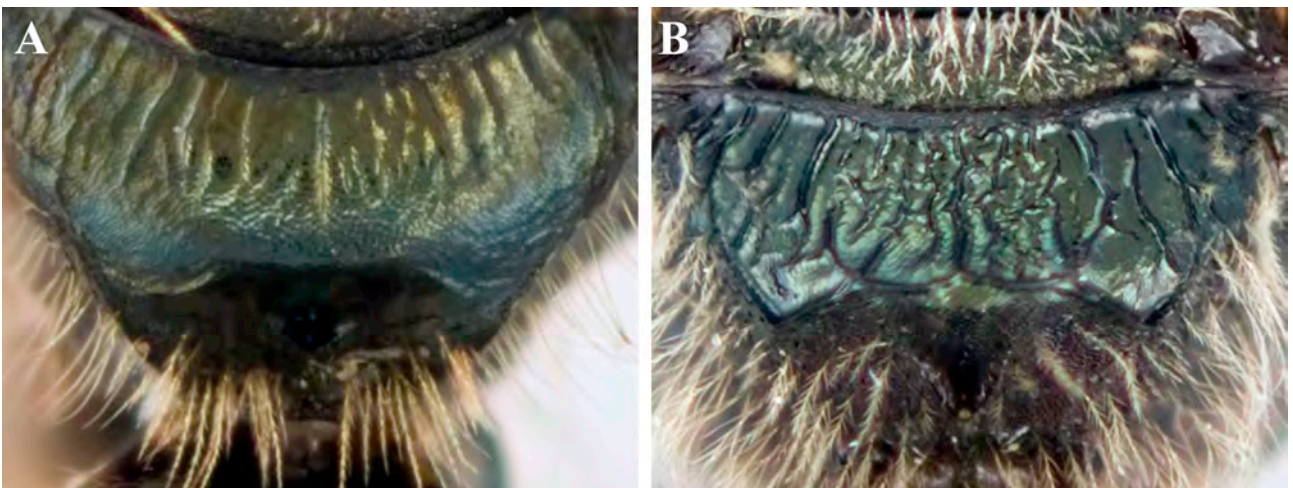


Figure 7. Metapostnotum and dorsal propodeal surface of female (A) *L. lineatulum*, (B) *L. achilleae*. Reprinted from Gibbs (2010).

8 (7). Transverse propodeal carina not interrupted medially (Fig. 7B); tegula finely but distinctly punctate in centre; hypostomal carina produced distally, slightly protruding in lateral view ... *L. oceanicum* (Cockerell, 1916)

- Transverse propodeal carina, if present, interrupted medially (Fig. 7A); tegula impunctate in centre; hypostomal carina not produced distally, not noticeably protruding in lateral view ... 9

9 (8). Mesoscutal punctures between parapsidal lines sparse (IS=1–3 PD); head and mesosoma usually blue; wings hyaline with white setae and venation (except subcosta) pale amber ... *L. albipenne* (Robertson, 1890)

- Mesoscutal punctures between parapsidal lines relatively dense (IS=1–1.5 PD); head and mesosoma greenish; wings faintly infuscated with dark setae and venation amber to brown ... 10

10 (9). T2 apical impressed area impunctate or nearly so (Fig. 8B); mesepisternum rugose with no distinct punctures (as in Fig. 14A) ... *L. cressonii* (Robertson)

- T2 apical impressed area distinctly punctate, similar to disc (Fig. 8A); mesepisternum punctate (IS<1 PD) to areolate (as in Fig. 46A) ... *L. immigrans* new species [in part]

11 (6). Submarginal cells three (Fig. 9A) ... 12

- Submarginal cells two (Fig. 9B) ... 84

12 (11). Propodeum without oblique carina OR carina not curved anteriorly and not partially separating dorsolateral slope from lateral propodeal surface (Figs. 10B, 21, 26, 32, 39, 41, 48) ... 13

- Propodeum with oblique carina distinctly curved anteriorly, partially separating dorsolateral slope from lateral propodeal surface (Figs. 10A) ... 83

13 (12). Mesoscutum with punctation sparse in part (IS \geq 1 PD) (Fig. 11B) ... 14

- Mesoscutum with punctation dense throughout (IS<1 PD) (Fig. 11A) ... 73

14 (13). Mesepisternum without punctures (Fig. 12B), if any obscure punctures are present then the metasomal terga without metallic reflections ... 15

- Mesepisternum with distinct punctures at 40X magnification (Fig. 12A), if punctures somewhat obscure then the metasomal terga with strong metallic reflections ... 47

15 (14). Protrochanters narrow, much longer than wide (Fig. 13A); dorsal margin of mandible not strongly curved or narrowed at midlength (Fig. 14A) ... 16

- Protrochanters very wide, nearly as wide as long (Fig. 13B); dorsal margin of mandible strongly curved and narrowed at midlength (Fig. 14B) (Eastern) ... *L. callidum* (Sandhouse, 1924)

16 (15). Mesepisternum without sharp delineation of sculpture between dorsal and ventral halves (Fig. 15A) ... 17

- Mesepisternum with sharp delineation between coarsely rugose dorsal half and punctate-imbricate ventral half (Fig. 15B) ... *L. dreisbachi* (Mitchell, 1960) [in part]

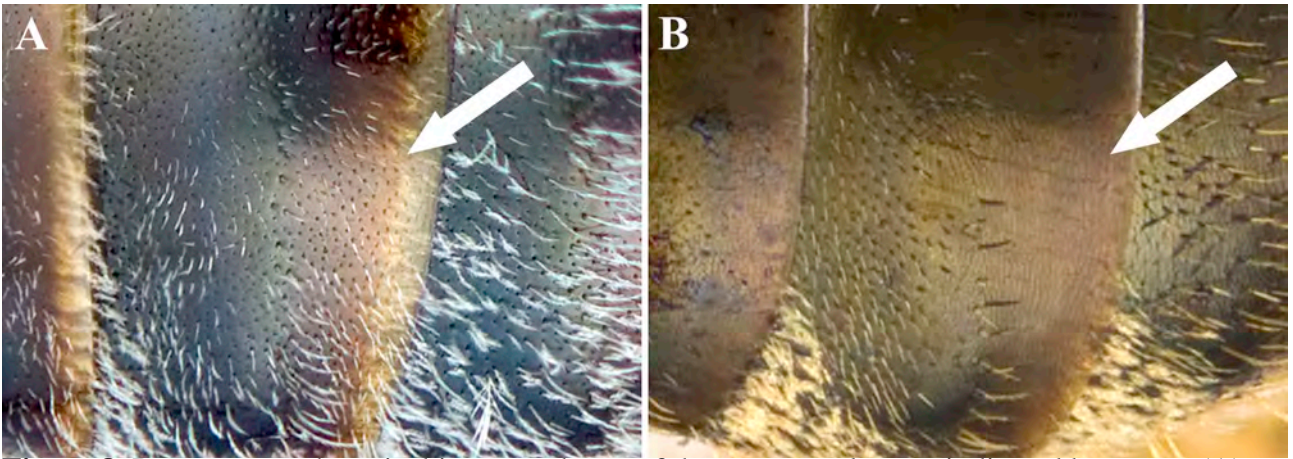


Figure 8. Punctures on the apical impressed area of the metasomal terga, indicated by arrow, (A) present, (B) absent. Reprinted from Gibbs (2010).

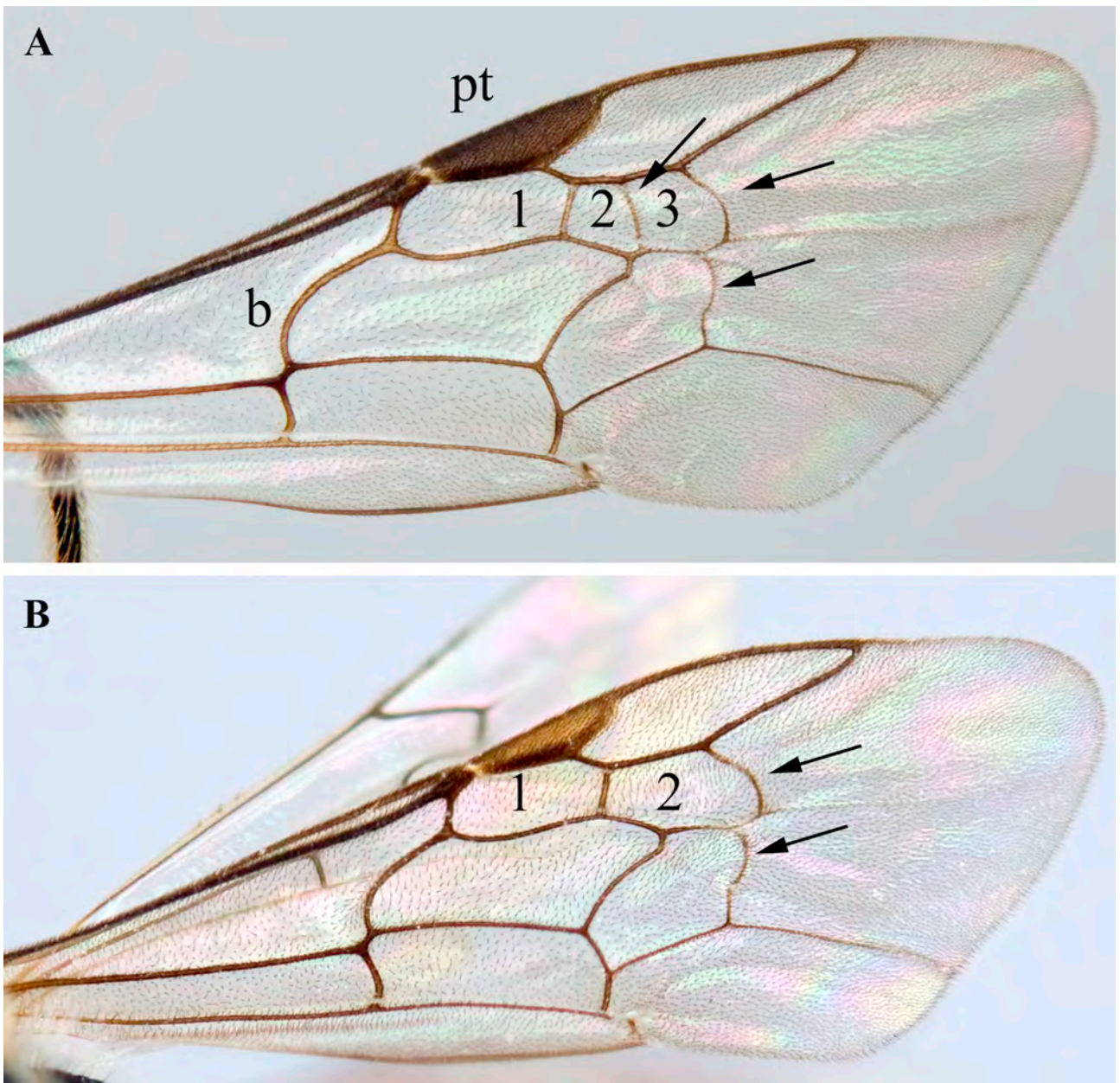


Figure 9. Forewings of female *Lasioglossum* subgenus *Dialictus*. (A) Typical forewing with three submarginal cells. Pterostigma (pt), basal vein (b), arrows indicate weakened veins. (B) Forewing with two submarginal cells. Arrows indicate weakened veins. Reprinted from Gibbs (2010).

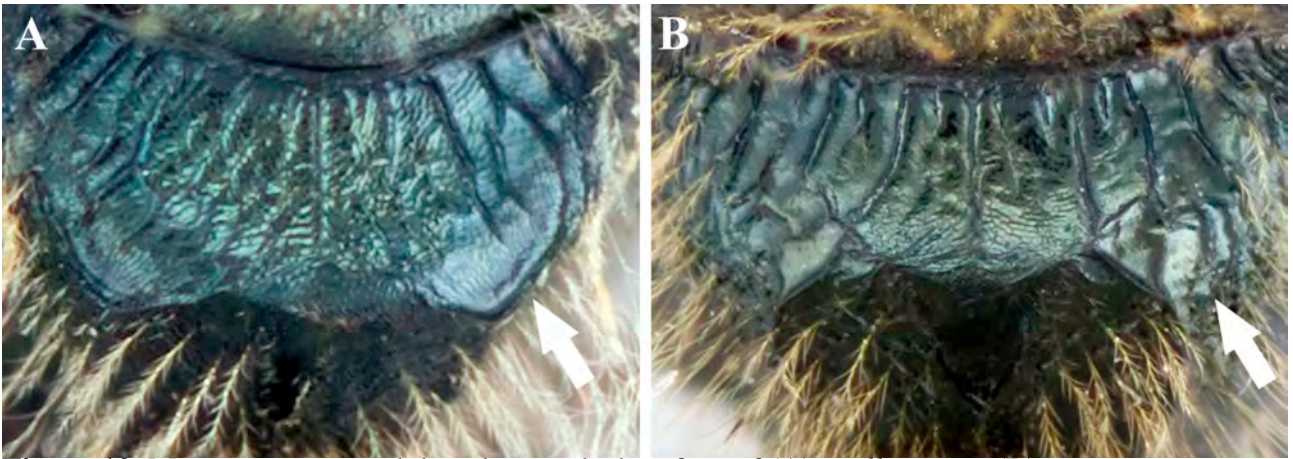


Figure 10. Metapostnotum and dorsal propodeal surface of (A) *L. illinoense*, (B) *L. cressonii*. Arrows indicate oblique carinae. Reprinted from Gibbs (2010).

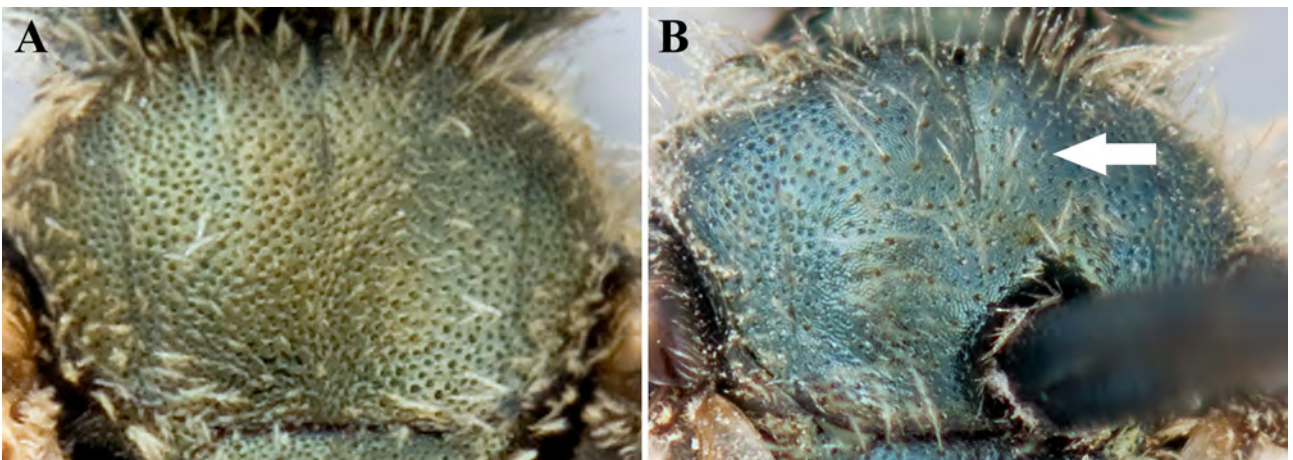


Figure 11. Mesoscutal punctation (A) completely dense, (B) sparse medially (indicated by arrow). Reprinted from Gibbs (2010).

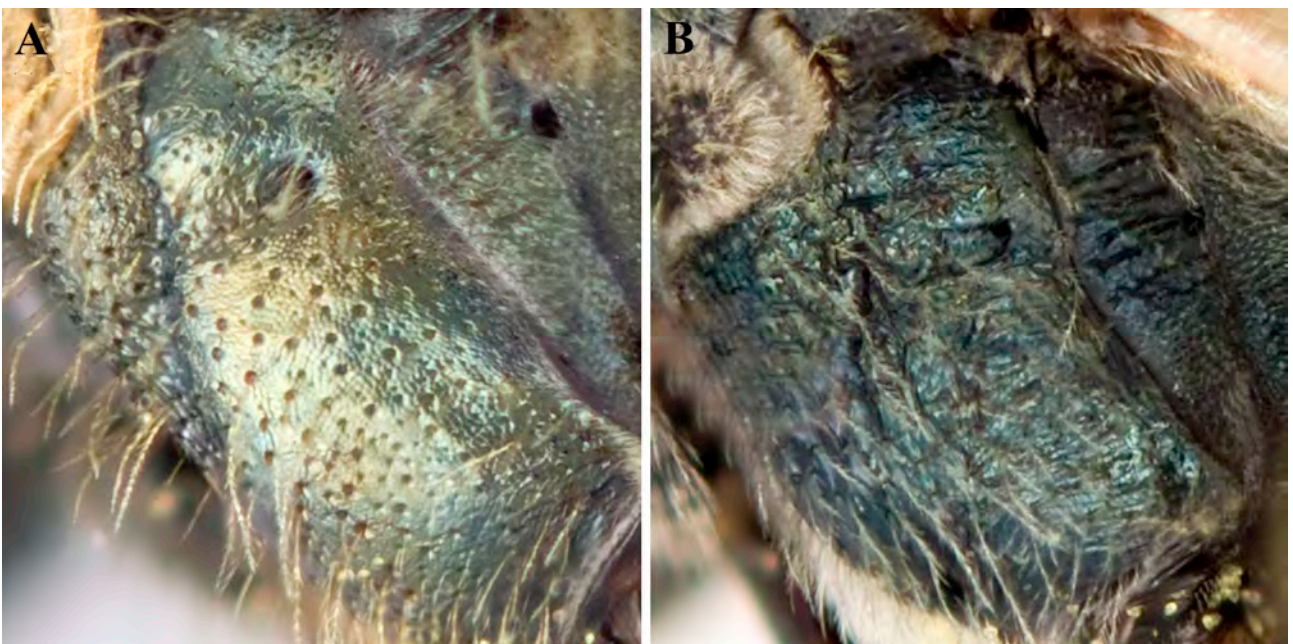


Figure 12. Mesepisternum of female (A) *L. nigroviride*, distinctly punctate, (B) *L. oblongum*, impunctate. Reprinted from Gibbs (2010).

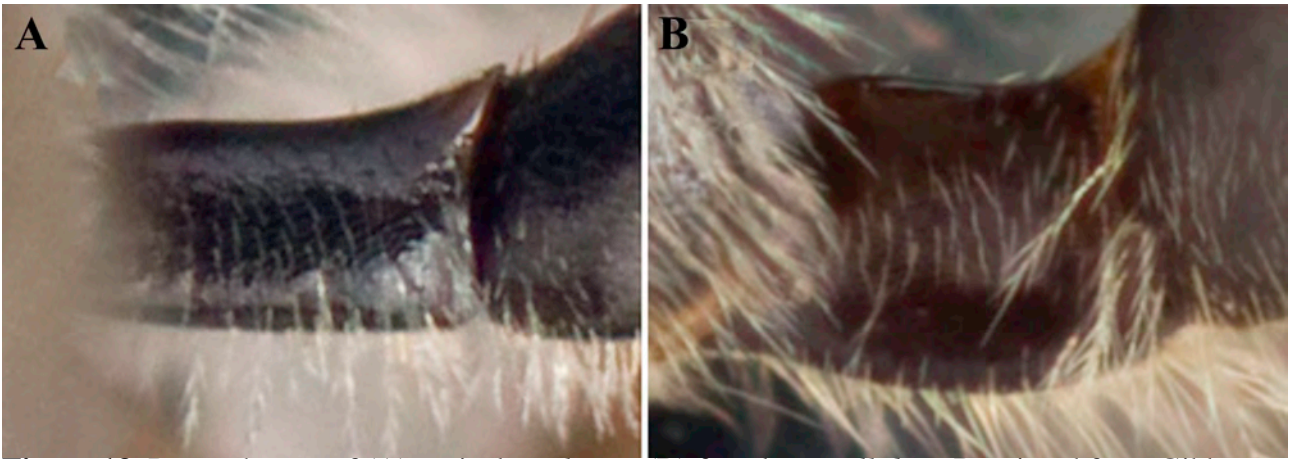


Figure 13. Prothrochanter of (A) typical *Dialictus*, (B) female *L. callidum*. Reprinted from Gibbs (2010).

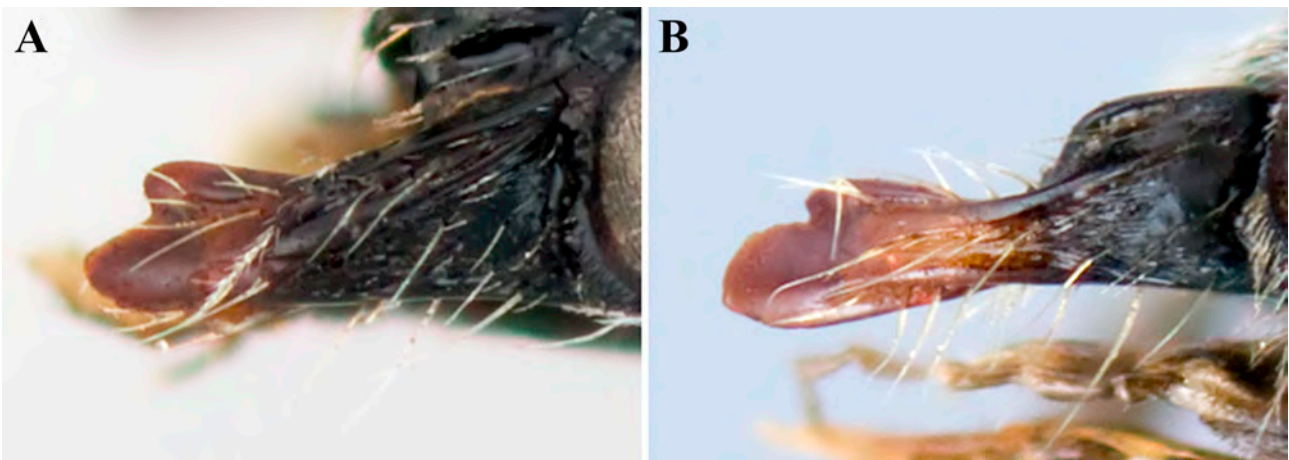


Figure 14. Mandible of female (A) *L. coeruleum*, (B) *L. callidum*. Reprinted from Gibbs (2010).

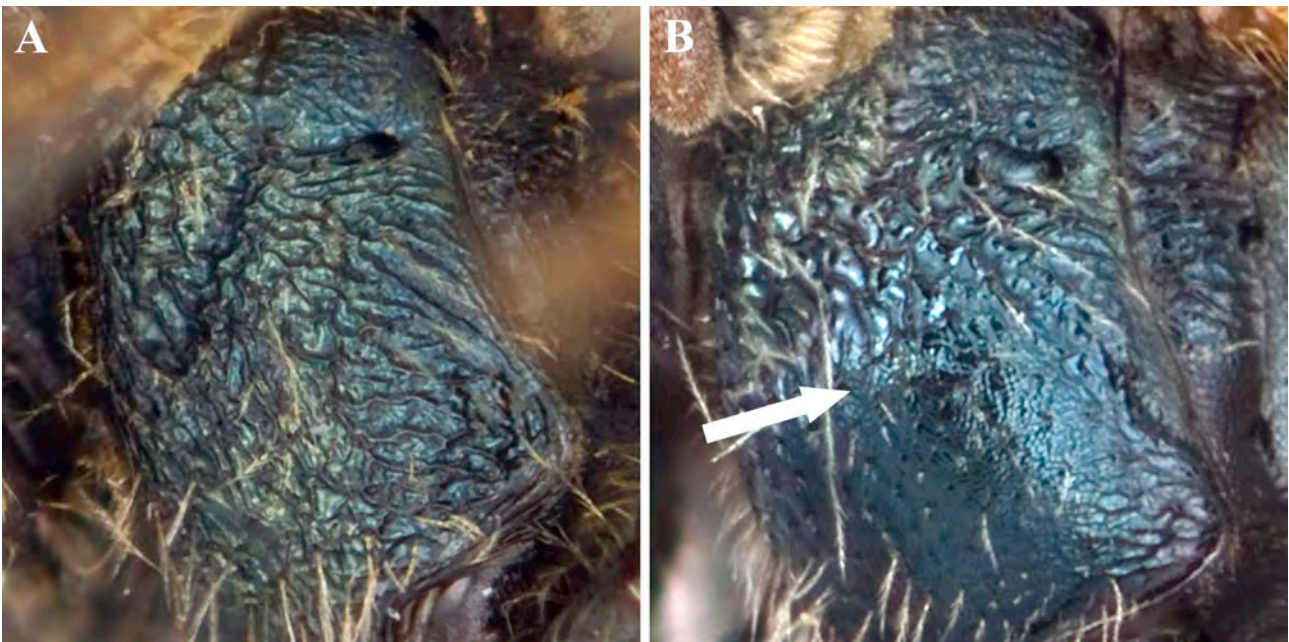


Figure 15. Mesepisternum of female (A) *L. atwoodi*, (B) *L. dreisbachi*, arrow indicates sharply delineated change in sculpture. Reprinted from Gibbs (2010).

- 17 (16). T1 acarinarial fan incomplete, with dorsal opening (Fig. 16B) ... 18
- T1 acarinarial fan complete, without dorsal opening (Fig. 16A) ... 39
- 18 (17). Mesepisternum rugulose to tessellate (Figs. 17A, 17B) ... 19
- Mesepisternum strongly rugose (Fig. 15A) ... 35
- 19 (18). Supraclypeal area weakly convex; parapsidal lines narrow (Fig. 18A) ... 20
- Supraclypeal area very strongly convex; parapsidal lines very wide, greater than two puncture diameters (Fig. 18B) (Eastern) ... *L. foveolatum* (Robertson, 1902)
- 20 (19). Metasomal terga with very sparse, virtually absent tomentum, at most limited to scattered basolateral hairs, never extensive on T4; AND T3–T4 apical fimbriae absent or very weak, usually limited to lateral portions when present (Fig. 19A) ... 21
- Metasomal terga with moderately abundant tomentum, at least forming distinct basolateral patches on T2–T3 and usually extensive on T4; OR T3–T4 apical fimbriae present, usually strong across entire posterior width (Fig. 19B) ... 26
- 21 (20). Mesoscutal punctures relatively dense between parapsidal lines ($IS < 2 PD$); acarinarial fan composed of very short non-overlapping hairs, complete but often worn and appearing incomplete (Fig. 20A) ... 72
- Mesoscutal punctures relatively sparse between parapsidal lines ($IS \geq 2 PD$ in part); acarinarial fan composed of long overlapping hairs (Fig. 20B) ... 22
- 22 (21). Head moderately long (L/W ratio = 0.97–1.05); mesepisternum smooth and imbricate to weakly rugulose; metapostnotum with rugae usually restricted to basal half, except sometimes a single medial carinula extending nearly to posterior margin (Fig. 21B) ... 23
- Head round (L/W ratio = 0.94–0.99); mesepisternum rugulose to rugose; metapostnotum with rugae extending nearly to posterior margin (Fig. 21A) ... 24
- 23 (22). Mesepisternum with fine punctures; metapostnotum with basal rugae of even length; T2 apical impressed area with sparse punctures laterally ... *L. taylorae* Gibbs, 2010
- Mesepisternum without punctures; metapostnotum with median carinula extending beyond submedial rugae; T2 apical impressed area impunctate ... *L. planatum* (Lovell, 1905)
- 24 (22). Mesoscutum largely imbricate; metasoma with tomentum absent or extremely sparse and inconspicuous; head and mesosoma usually bluish ... 25
- Mesoscutum mostly polished; metasoma with some obvious tomentum; head and mesosoma usually greenish ... *L. subviridatum* (Cockerell, 1938)
- 25 (24). Metapostnotum with anastomosing rugae (Western) ... *L. marinense* (Michener, 1936)
- Metapostnotum with longitudinal rugae (Eastern) ... *L. oblongum* (Lovell, 1905)

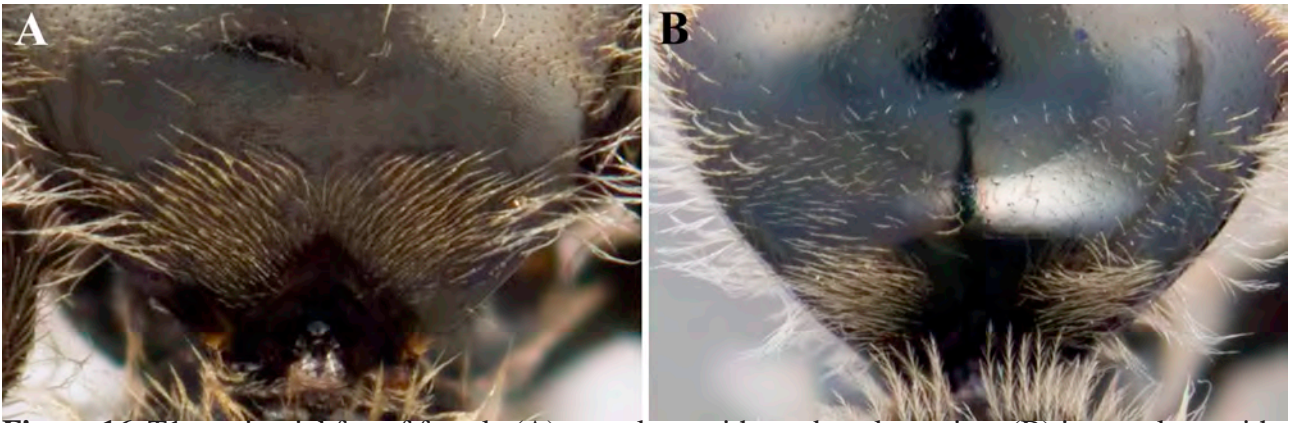


Figure 16. T1 acarinarial fan of female (A) complete, without dorsal opening, (B) incomplete, with dorsal opening. Reprinted from Gibbs (2010).

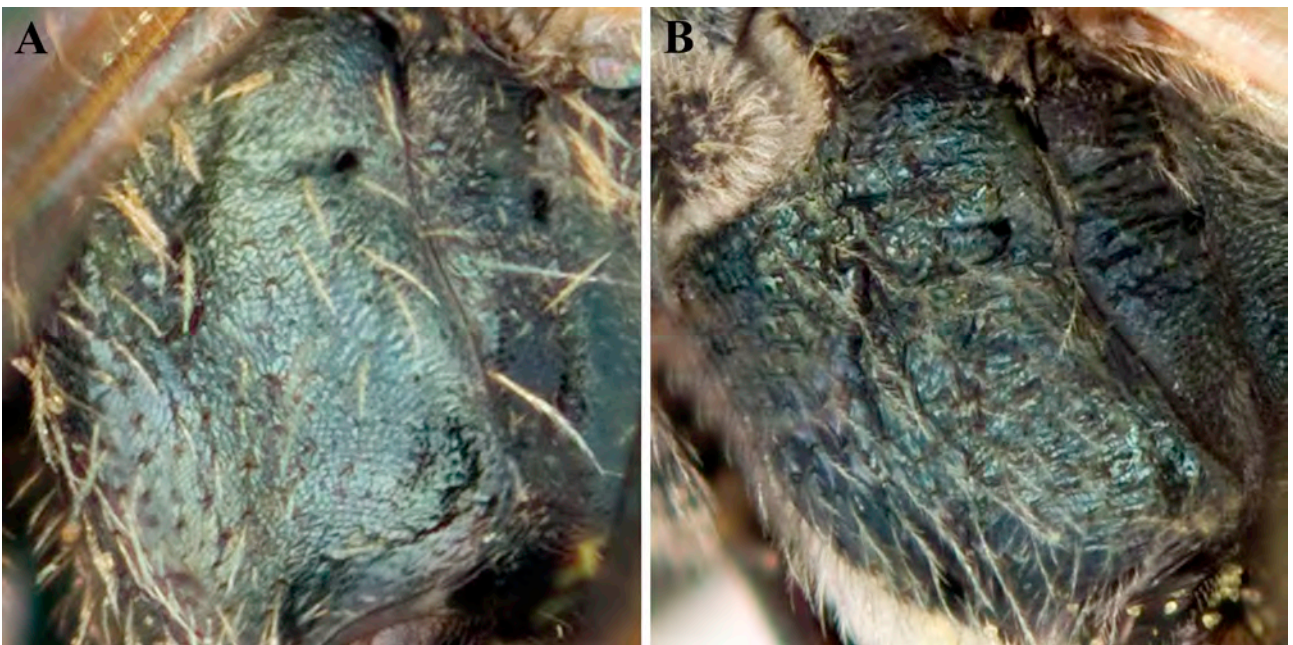


Figure 17. Mesepisternum (A) tessellate-imbricate (B) rugose-rugulose. Reprinted from Gibbs (2010).

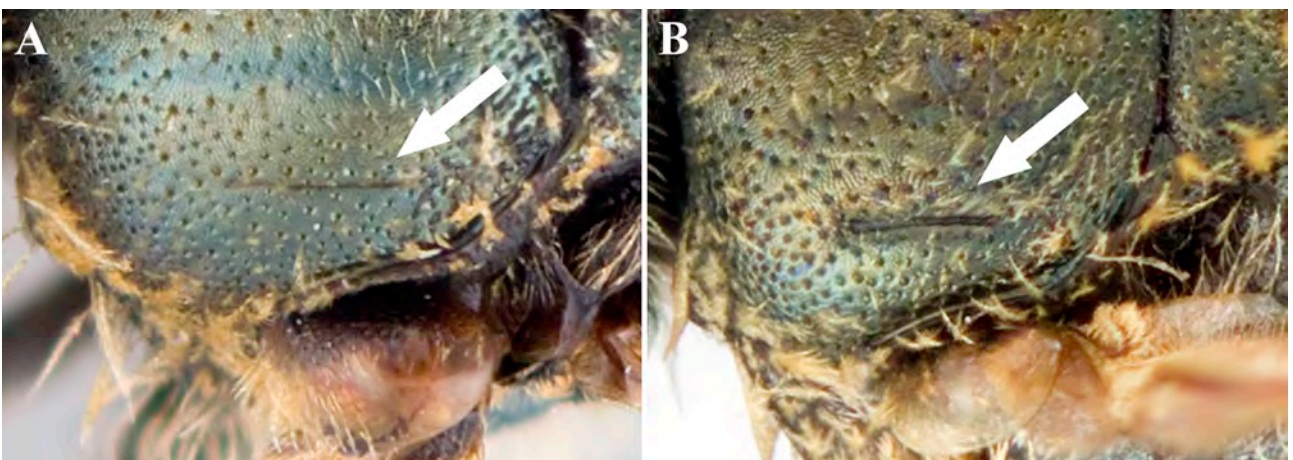


Figure 18. Parapsidal line of mesoscutum, indicated by arrow, (A) narrow, (B) wide (*L. foveolatum*). Reprinted from Gibbs (2010).

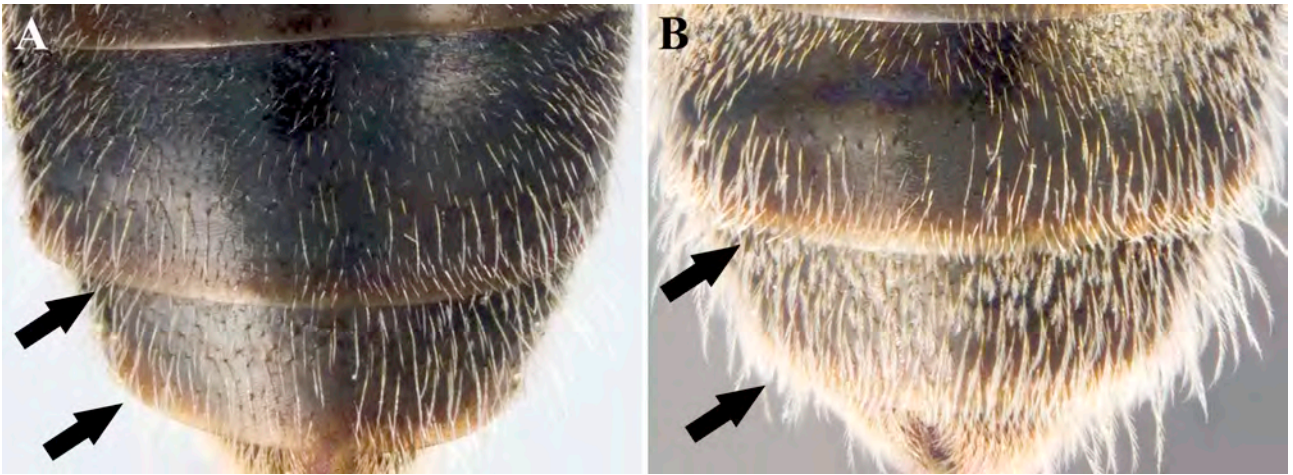


Figure 19. T3 and T4 with tomentum (A) absent, (B) present, arrows indicate apical fringes. Reprinted from Gibbs (2010).

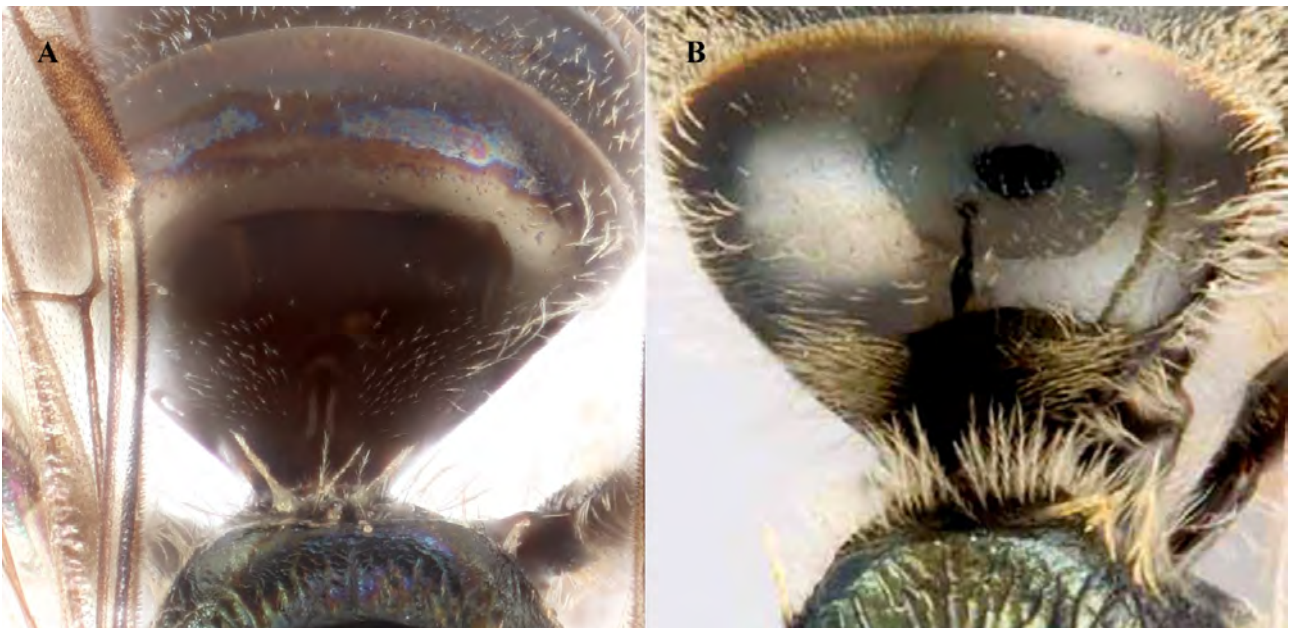


Figure 20. T1 acarinarial fan of female (A) composed of short non-overlapping hairs, (B) composed of long overlapping hairs. (B) reprinted from Gibbs (2010).



Figure 21. Metapostnotum of female (A) *L. oblongum*, (B) *L. planatum*. Reprinted from Gibbs (2010).

26 (20). T1 anterior slope coriarius (Fig. 22B) ... 27

- T1 anterior slope smooth and polished (Fig. 22A) ... 31

27 (26). Distal margin of clypeus 1.4–1.5 times wider than clypeal length, lateral margins appearing weakly convergent below; apicolateral corner of clypeus orthogonal (Fig. 23A) (Eastern) ... 28

- Distal margin of clypeus 1.1–1.2 times wider than clypeal length, lateral margins appearing distinctly convergent below; apicolateral corner of clypeus rounded (Fig. 23B) ... 29

28 (27). T1 acarinarial fan with narrow dorsal opening, clearly narrower than lateral acarinarial patches ... *L. hitchensi* Gibbs, 2012 [in part]

- T1 acarinarial fan with wide dorsal opening, nearly as wide as lateral acarinarial patches ... *L. weemsi* (Mitchell, 1960)

29 (27). T3–T4 apical impressed areas reddish brown, without apicomедial fimbriae ... *L. laevissimum* (Smith, 1853)

- T3–T4 apical impressed areas yellowish brown, with apicomедial fimbriae ... 30

30 (29). Mesoscutum tessellate; T3–T4 with abundant tomentum and strong apical fringes; lower paraocular area with dense punctures ($IS \leq 1$ PD) ... *L. paradmirandum* (Knerer & Atwood, 1966)

- Mesoscutum weakly imbricate; T3–T4 with moderately sparse tomentum and weak apical fringes; lower paraocular area with relatively sparse punctures ($IS = 1-1.5$ PD) ... *L. fattigi* (Mitchell, 1960)

31 (26). T2 apical impressed area with obscure or irregularly distributed punctures, punctures absent medially (Fig. 24B) ... 32

- T2 apical impressed area with relatively distinct and regularly distributed punctures, but often minute, punctures present medially (Fig. 24A) ... 38

32 (31). Mesepisternum smooth, imbricate to tessellate, at most weakly rugulose dorsally ... 33

- Mesepisternum mostly roughened by rugulose microsculpture ... 34

33 (32). Mesoscutum shiny; metasomal terga with translucent yellow apical margins; T3–T4 apical fringes strong (Fig. 19B) ... *L. absimile* (Sandhouse, 1924) (not confirmed for Canada but may occur from Manitoba westward)

- Mesoscutum imbricate; metasomal terga with reddish brown apical margins; T3–T4 apical fringes weak (Fig. 19A) ... *L. pacatum* (Sandhouse, 1924)

34 (32). Supraclypeal area with moderately sparse punctures ($IS = 1-3$ PD): T3–T4 with dense tomentum mostly limited to basolateral areas (Fig. 25A) ... *L. ephialtum* Gibbs, 2010 [in part]

- Supraclypeal area with dense punctures ($IS \leq 1$ PD); T3–T4 with dense tomentum throughout (Fig. 25B) ... *L. sagax* (Sandhouse, 1924)

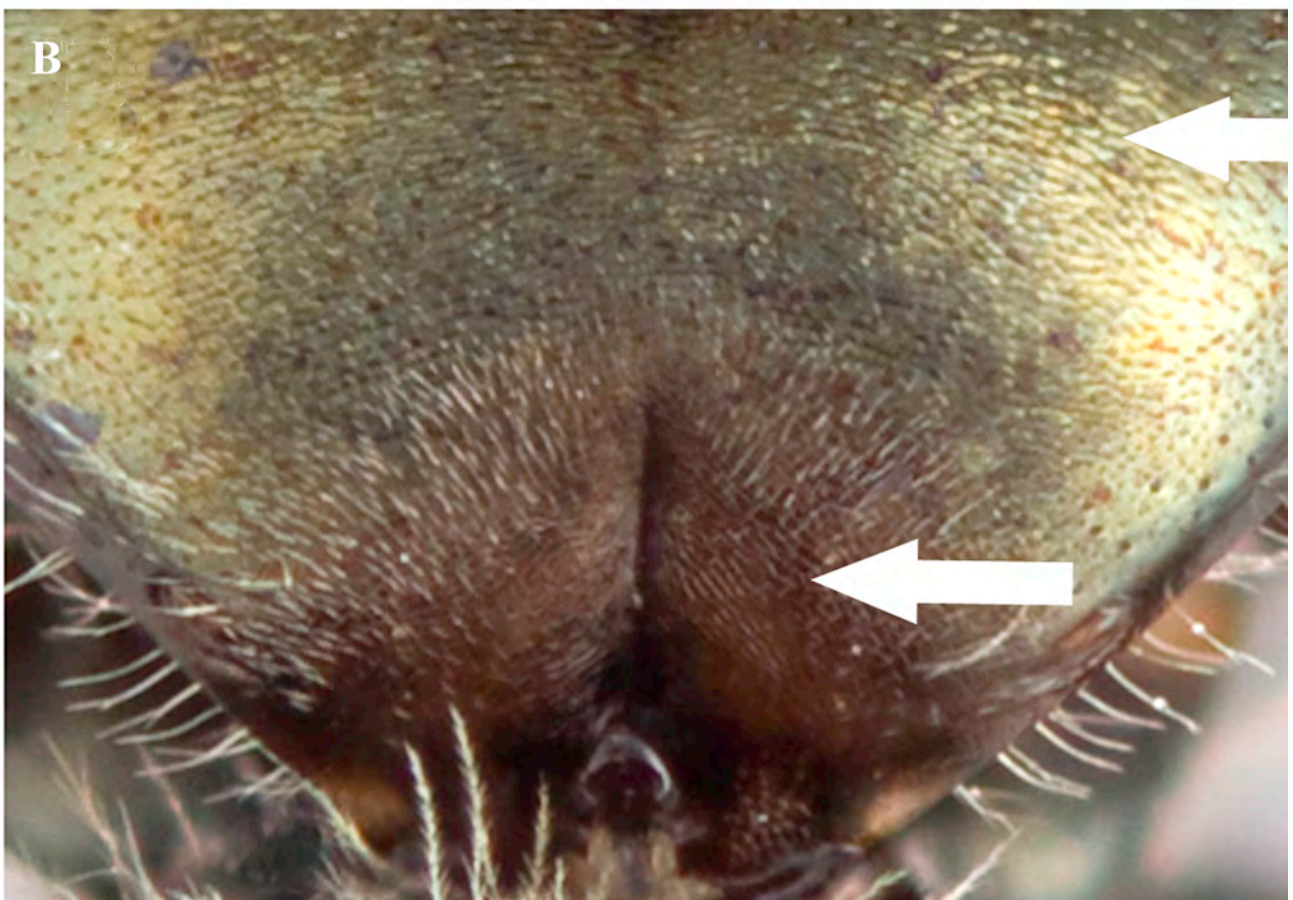
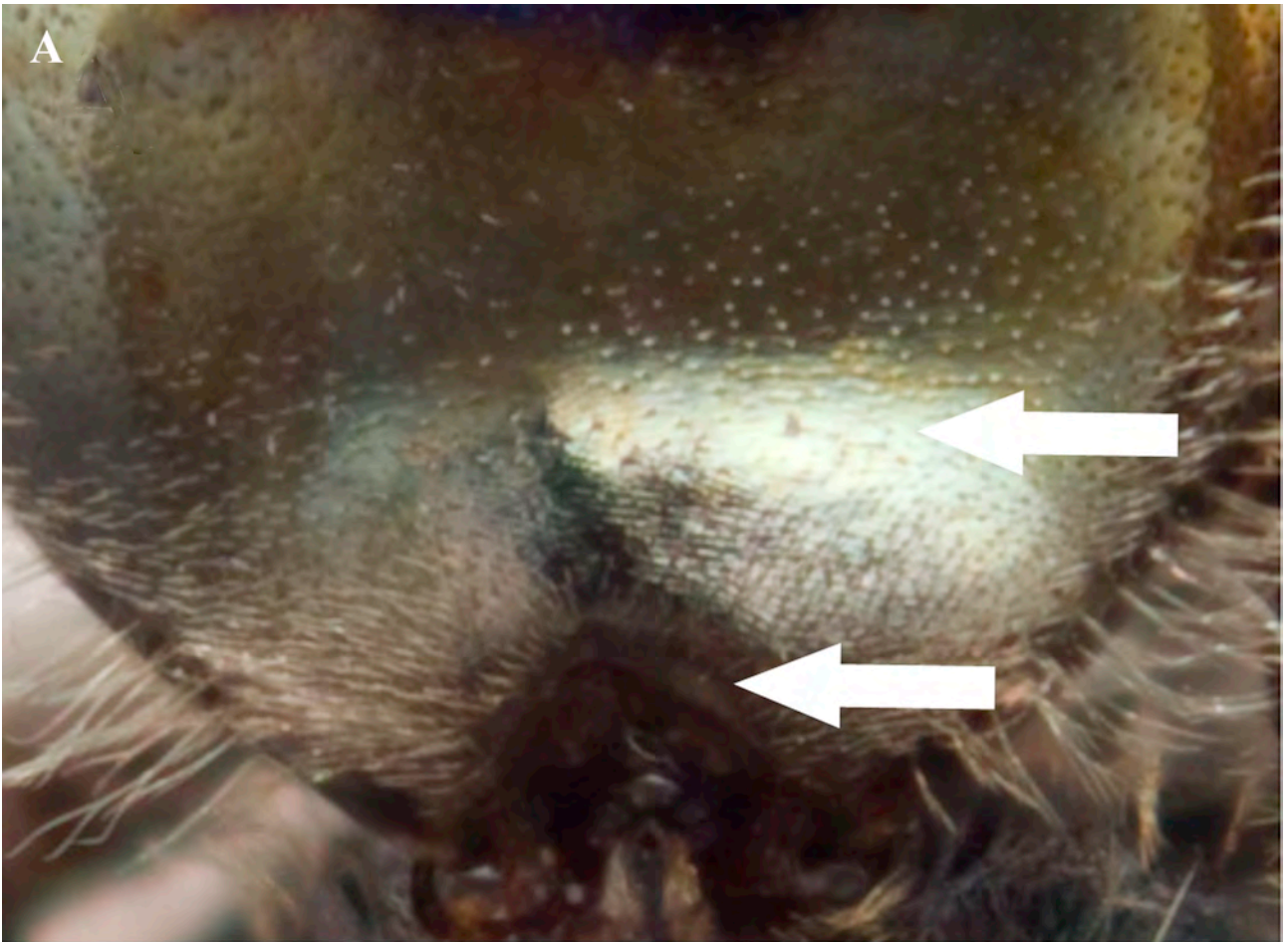


Figure 22. T1 declivitous surface of female (A) *L. sandhousiellum*, arrows indicated polished surface, (B) *L. sedi*, arrows indicated coriarious surface. Reprinted from Gibbs (2010).

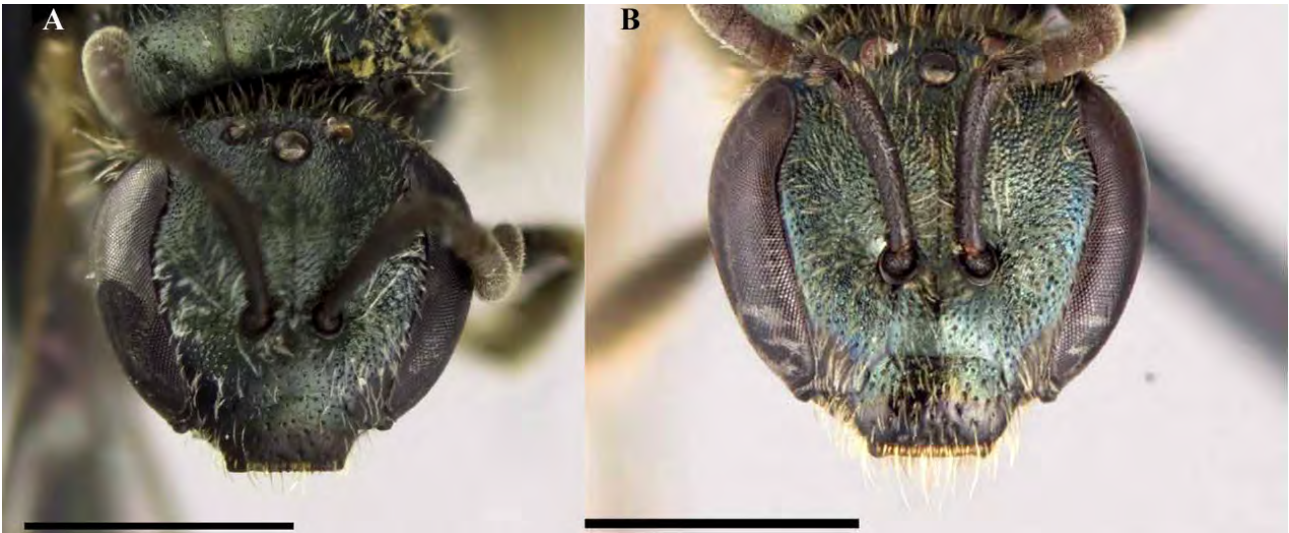


Figure 23. Clypeus of female (A) lateral margins weakly convergent below, apicolateral corners orthogonal, (B) lateral margins convergent below, apicolateral corners rounded. Reprinted from Gibbs (2010). Scale bars: 1mm.

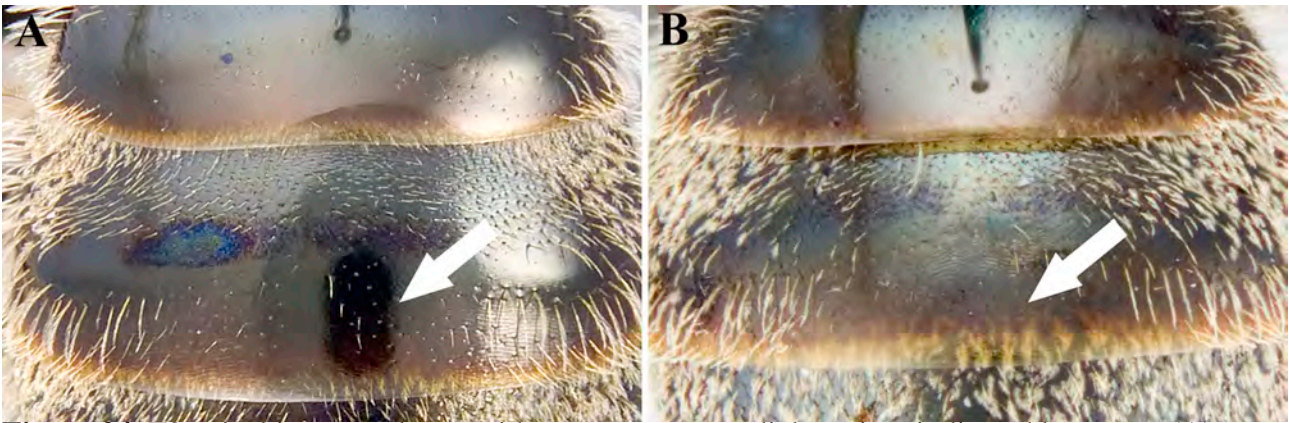


Figure 24. T2 apical impressed area with punctures on medial portion, indicated by arrow, (A) present, (B) absent. Reprinted from Gibbs (2010).

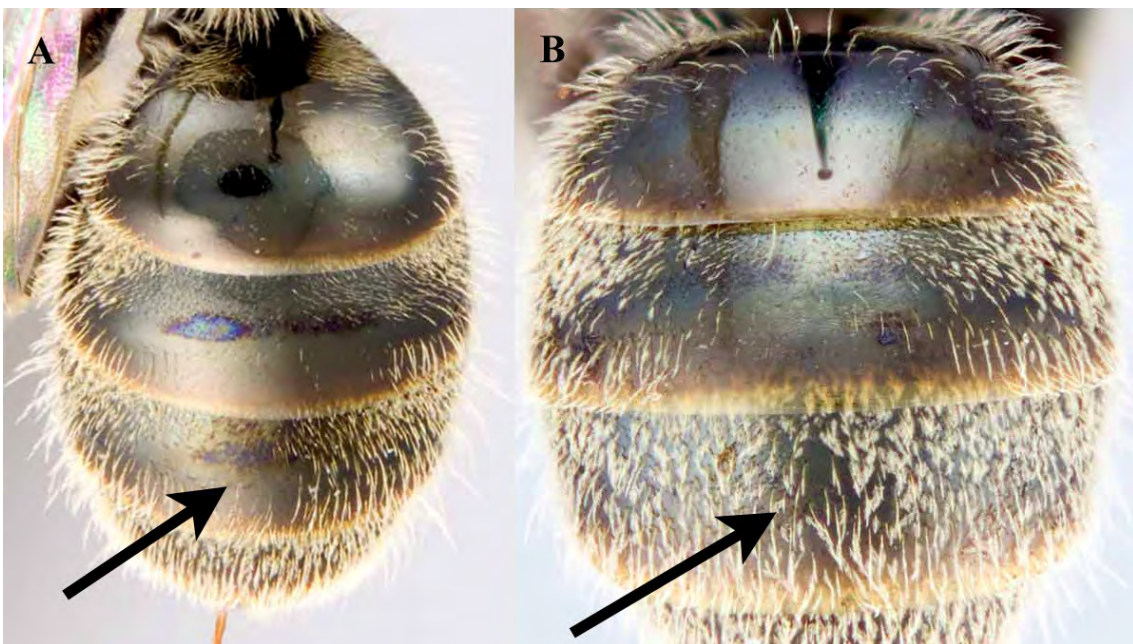


Figure 25. T3 of female, (A) with dense tomentum limited to basolateral patches (*L. ephialtum*), (B) with dense tomentum throughout (*L. sagax*). Reprinted from Gibbs (2010).

35 (31). Head moderately elongate (length/width ratio = 0.95–1.01); mesoscutum with anteromedial portion of disc weakly convex in lateral view; glabrate dorsal opening of T1 acarinarial fan narrow, distinctly narrower than lateral acarinarial patches ... 36

- Head short (length/width ratio = 0.89–0.94); mesoscutum with anteromedial portion of disc distinctly flattened in lateral view; glabrate dorsal opening of T1 acarinarial fan nearly as wide as lateral acarinarial patches ... *L. versatum* (Robertson, 1902)

36 (35). Mesoscutum weakly imbricate or polished due to lack of microsculpture; tegula reddish to brown ... 37

- Mesoscutum dull due to tessellate microsculpture; tegula pale ... *L. admirandum* (Sandhouse, 1924)

37 (36). Mesoscutum dull due to weakly imbricate microsculpture ... *L. ephialtum* Gibbs, 2010 [in part]

- Mesoscutum polished due to lack of microsculpture (Sable Island endemic) ... *L. sablense* Gibbs, 2010

38 (35). Head and mesosoma bluish; supraclypeal area sparsely punctate (IS=1–4 PD); metapostnotum with rugae not reaching posterior margin (Fig. 26A); T4 with very sparse tomentum not obscuring surface ... *L. atwoodi* Gibbs, 2010

- Head and mesosoma greenish; supraclypeal area more densely punctate (IS=1–2 PD); metapostnotum with rugae reaching or nearly reaching posterior margin (Fig. 26B); T4 with sparse tomentum partially obscuring surface ... *L. viridatum* (Lovell, 1905)

39 (17). Head elongate (length/width ratio = 1.05–1.09); wings appearing nearly white ... 40

- Head round (length/width ratio = 0.89–0.95); wings subhyaline or faintly dusky ... 41

40 (39). Mesepisternum rugulose below scrobe; metasoma distinctly metallic ... *L. pruinatum* (Robertson, 1892)

- Mesepisternum punctate below scrobe; metasoma not metallic ... *L. onuferkoi* new species [in part]

41 (39). T3–T4 with coarse, white setae evenly spaced across disc (Fig. 27A) (Size small (head width 1.13–1.42 mm)) ... *L. imitatum* (Smith, 1853)

- T3–T4 without coarse, white setae evenly spaced across disc (Fig. 27B) ... 42

42 (41). Hypostomal carinae parallel (Fig. 6A) ... 43

- Hypostomal carinae divergent anteriorly (Fig. 6C) ... *L. heterognathus* (Mitchell, 1960)

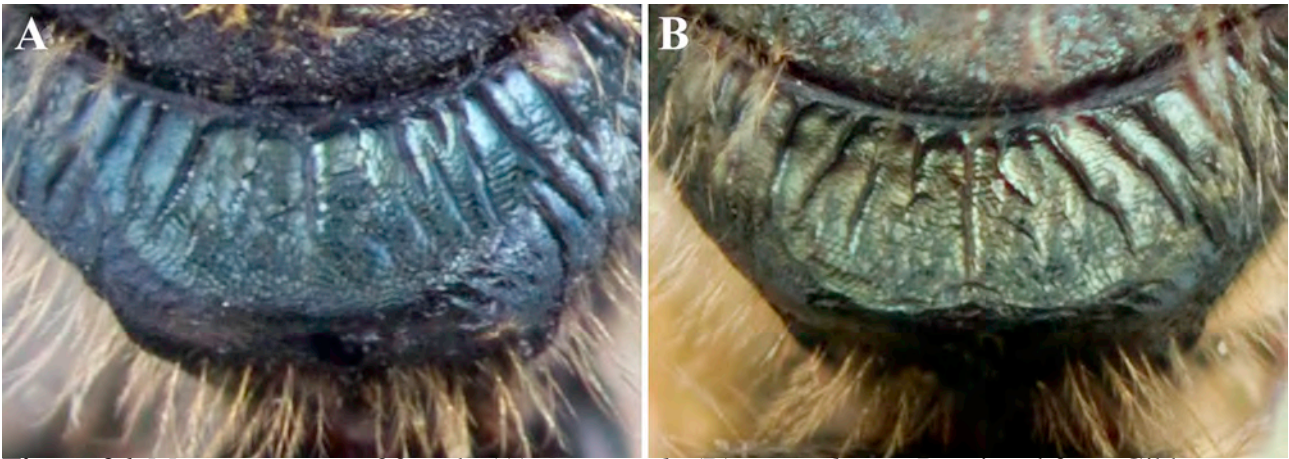


Figure 26. Metapostnotum of female (A) *L. atwoodi*, (B) *L. viridatum*. Reprinted from Gibbs (2010).

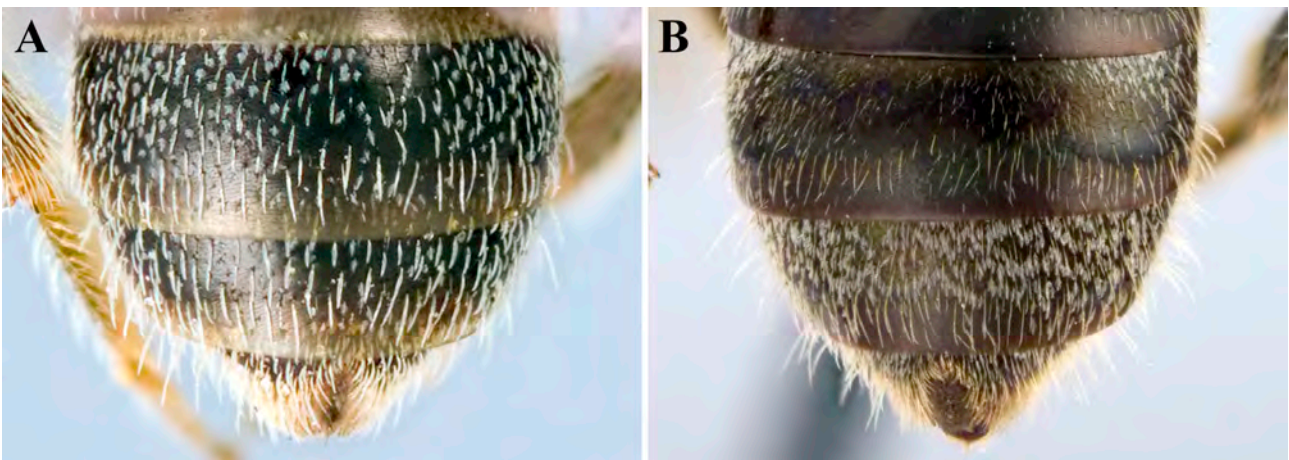


Figure 27. T3–T5 of female (A) with coarse white setae (*L. imitatum*), (B) without coarse white setae (*L. laevissimum*). Reprinted from Gibbs (2010).

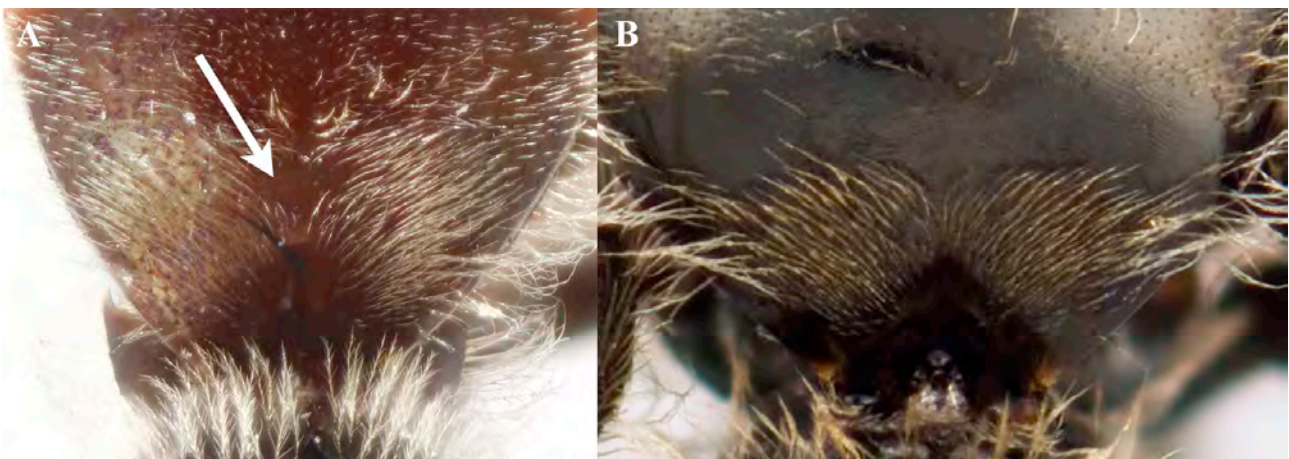


Figure 28. T1 acarinarial fan of female (A) interrupted by glabrate patch (*L. georgeickworti*), (B) complete, uninterrupted. (A) reprinted from Gibbs (2011), (B) from Gibbs (2010).

- 43 (42). Metasomal T2–T3 apical impressed area impunctate (as in Fig. 8B); T3–T4 without apicomedial fimbriae (Fig. 19A); apical impressed areas opaque dark reddish brown ... *L. laevissimum* (Smith, 1853)
- Metasomal T2–T3 apical impressed area punctate (as in Fig. 24A); T3–T4 with apicomedial fimbriae (Fig. 19B); apical impressed areas sometimes translucent testaceous ... 44
- 44 (43). T1 with acarinarial fan interrupted dorsomedially by distinctive glabrate patch, appressed hairs present medially above and below glabrate patch (Fig. 28A) ... *L. georgeickworti* Gibbs, 2011
- T1 acarinarial fan without dorsomedial glabrate patch (Fig. 28B) ... 45
- 45 (44). Propodeum with oblique carina strong, distinct; distal margin of clypeus 1.1–1.2 times wider than clypeal length; apicolateral corner of clypeus rounded (Fig. 23B); size larger (head width 1.51–2.02 mm) ... 46
- Propodeum with oblique carina fine, indistinct; distal margin of clypeus 1.4–1.5 times wider than clypeal length, apicolateral corner of clypeus acute (Fig. 23A); size usually smaller (head width 1.30–1.63 mm) ... *L. hitchensi* Gibbs, 2012
- 46 (45). Propodeum with dorsolateral slope rugose (Fig. 29A); mesepisternum rugose ... *L. timothyi* Gibbs, 2010
- Propodeum with dorsolateral slope ruguloso-imbricate (Fig. 29B); mesepisternum rugulose ... *L. smilacinae* (Robertson, 1897)
- 47 (14). Gena narrower than eye in lateral view (Fig. 30A), sometimes slightly wider (Fig. 30B); pronotal angle obtuse ... 48
- Gena much wider than eye in lateral view (Fig. 30C); pronotal angle orthogonal ... *L. packeri* Gibbs, 2010
- 48 (47). Metasomal terga strongly metallic green or blue ... 49
- Metasomal terga brown or black with, at most, weak metallic reflections visible at certain angles ... 60
- 49 (48). Head, mesosoma, and metasoma green or golden with at most bluish reflections (Fig. 31A); size variable ... 50
- Head, mesosoma, and metasoma deep metallic blue (Fig. 31B); size large (head width 1.70–1.99 mm) ... *L. coeruleum* (Robertson, 1893)
- 50 (49). T2–T3 with apical impressed area punctate (Fig. 8A); mesoscutum with whitish hairs ... 51
- T2–T3 with apical impressed area impunctate, except along premarginal line (Fig. 8B); mesoscutum with yellowish hairs ... *L. cattellae* (Ellis, 1913) (not confirmed for Canada, but it is relatively common in Michigan so occurrence in southern Ontario is probable)

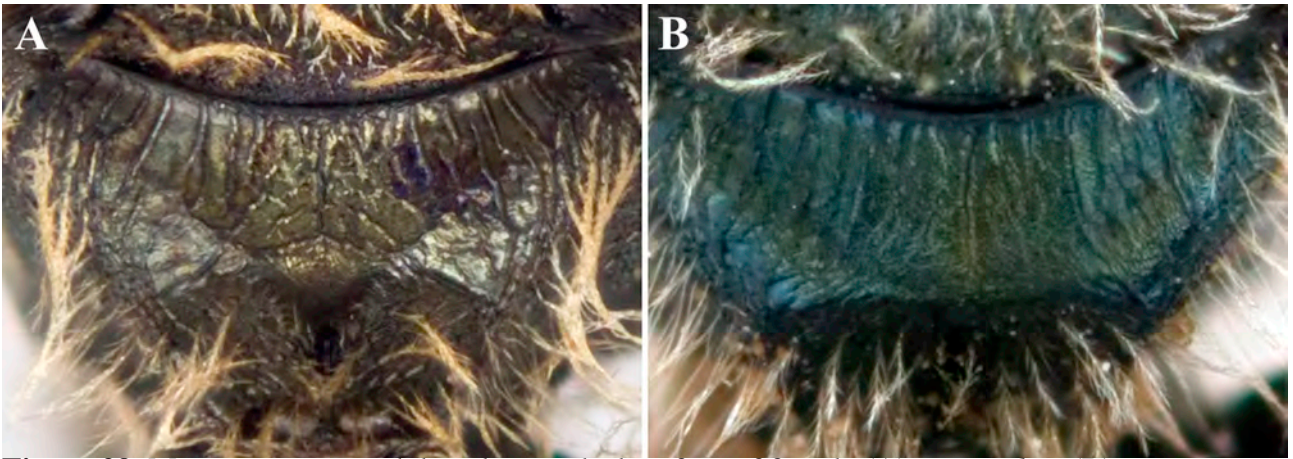


Figure 29. Metapostnotum and dorsal propodeal surface of female (A) *L. timothyi*, (B) *L. smilacinae*. Reprinted from Gibbs (2010).

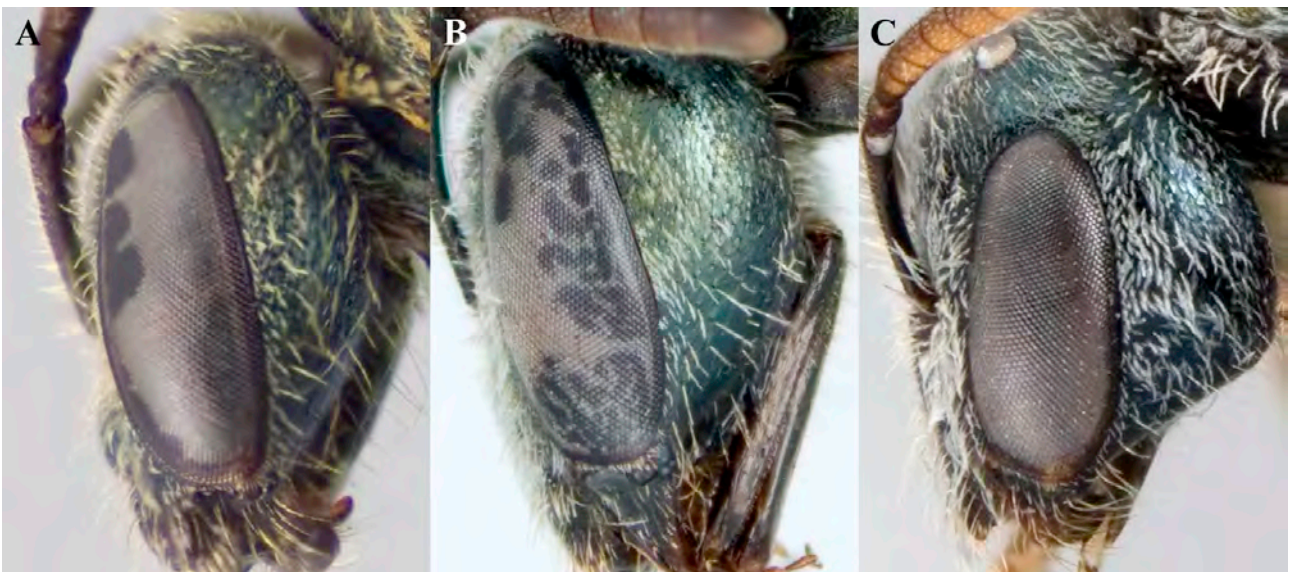


Figure 30. Gena of female (A) narrower than eye, (B) slightly wider than eye (*L. zephyrus*), (C) much wider than eye (*L. packeri*). Reprinted from Gibbs (2010).

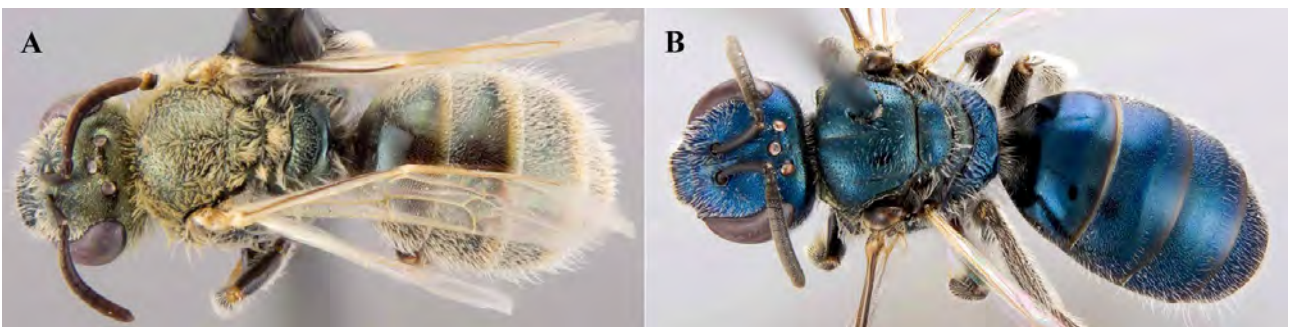


Figure 31. Colour and pubescence of female (A) golden green with very dense tomentum and wooly setae (*L. albohirtum*), (B) blue with sparse tomentum and wooly setae (*L. coeruleum*). Reprinted from Gibbs (2010).

51 (50). Head and mesosoma green or greenish blue, with moderately sparse tomentum and woolly setae (pubescence as in Fig. 31B) ... 52

- Head and mesosoma golden, covered in very dense tomentum and woolly setae (Fig. 31A) ... *L. albohirtum* (Crawford, 1907)

52 (51). Metapostnotum with rugae usually reaching greater than 2/3 of the distance to posterior margin (Fig. 32A); gena narrower than eye (Fig. 30A); lower paraocular area with moderately sparse tomentum (Fig. 33B) ... 53

- Metapostnotum with rugae not reaching 1/2–2/3 of the distance to posterior margin (Fig. 32B); gena wider than eye (Fig. 30B); lower paraocular area with very dense tomentum (Fig. 33A) ... *L. zephyrus* (Smith, 1853)

53 (52). Mesoscutum and mesepisternum with coarse punctures (Fig. 34A) ... 54

- Mesoscutum and mesepisternum with fine punctures (Fig. 34B) ... 57

54 (53). Mesoscutal punctures moderately sparse (IS=1–3 PD); mesepisternal punctures moderately sparse (IS=1–2 PD); metapostnotum truncate with weakly anastomosing rugae (as in Fig. 41A); acarinarial fan smaller, not covering entire T1 anterior slope ... 55

- Mesoscutal punctures moderately dense (IS=1–1.5 PD); mesepisternal punctures dense (IS≤1 PD); metapostnotum crescentic with strongly anastomosing rugae (Fig. 32A); acarinarial fan very large, covering entire T1 anterior slope ... *L. semicaeruleum* (Cockerell, 1895)

55 (54). Posterior margins of propodeum dorsolateral slope and metapostnotum rugose; apical impressed areas of metasomal terga with punctation less distinct than disc (Fig. 35B) ... 56

- Posterior margins of propodeum dorsolateral slope and metapostnotum smooth; apical impressed areas of metasomal terga with punctation as distinct as disc (Fig. 35A) ... *L. abundipunctum* Gibbs, 2010

56 (55). T2 apical impressed area strongly coriarius; T3–T4 with sparse tomentum not obscuring surface ... *L. punctatovenre* (Crawford, 1907)

- T2 apical impressed area weakly coriarius; T3–T4 with dense tomentum partially obscuring surface ... *L. dashwoodi* Gibbs, 2010

57 (53). Mesoscutum moderately polished due to weak microsculpture; mesoscutal punctures most sparse submedially ... 58

- Mesoscutum dull due to microsculpture; mesoscutal punctures most sparse medially ... *L. sheffieldi* Gibbs, 2010 [in part]

58 (57). Mesepisternum punctation finer, less distinct (Fig. 36B); T2–4 with less extensive, usually sparse tomentum (most hairs not touching one another); T1 tomentum, if present, not meeting acarinarial fan ... 59

- Mesepisternum punctation coarser, more distinct (Fig. 36A); T1–4 with extensive, usually dense tomentum (the hairs mostly touching one another); T1 with tomentum meeting acarinarial fan laterally ... *L. prasinogaster* Gibbs, 2010 [in part]

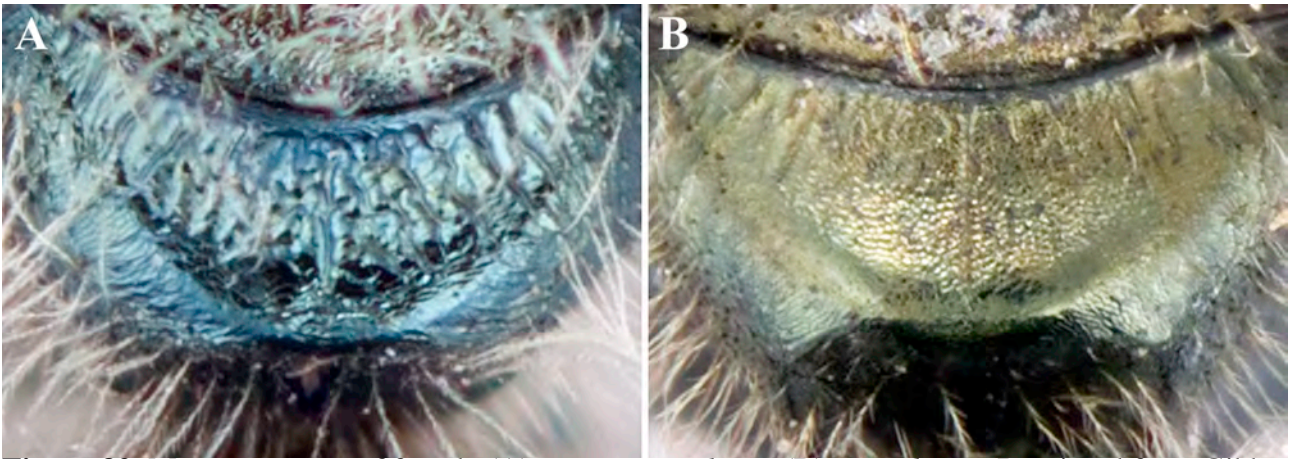


Figure 32. Metapostnotum of female (A) *L. semicaeruleum*, (B) *L. zephyrus*. Reprinted from Gibbs (2010).

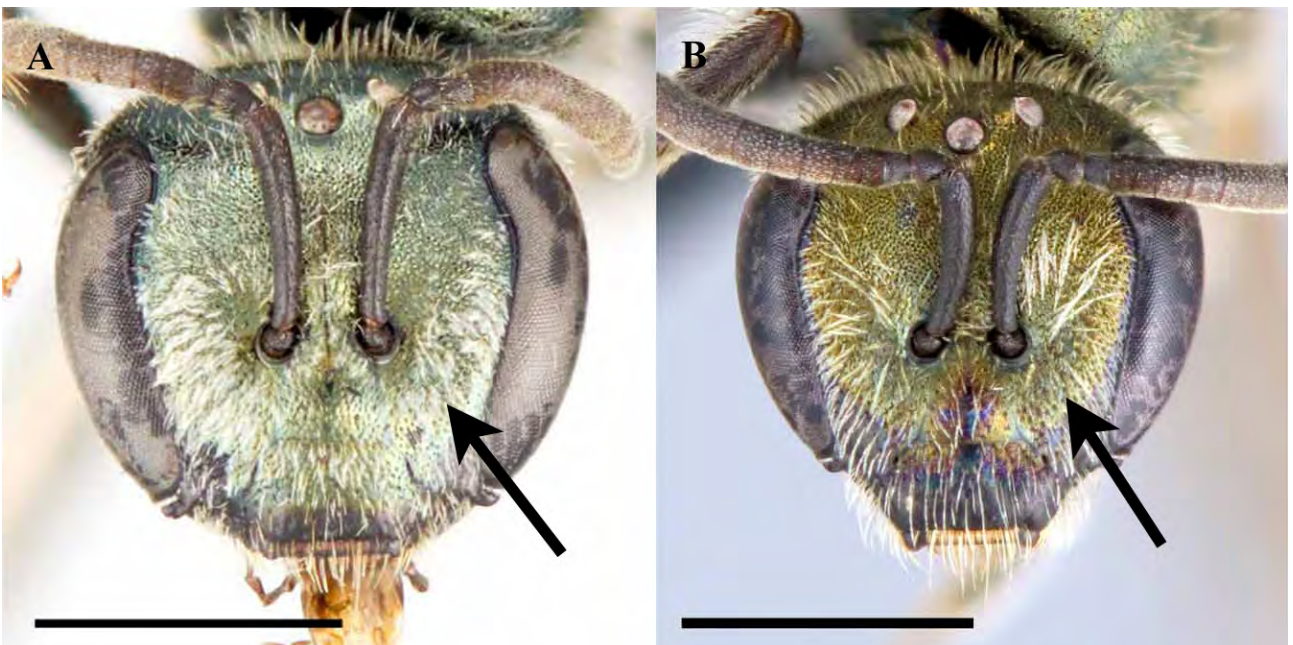


Figure 33. Tomentum on lower paraocular area of female, (A) dense, (B) sparse/absent. Reprinted from Gibbs (2010).

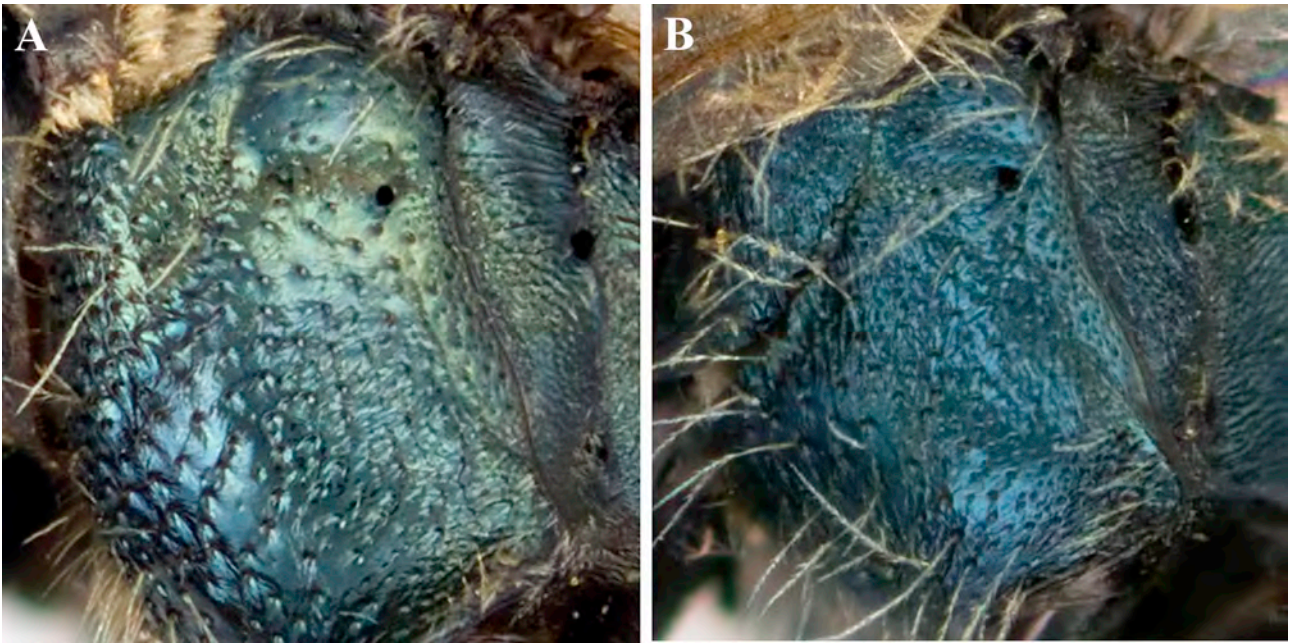


Figure 34. Mesopleuron of female *Dialictus* with punctures (A) coarse, (B) fine. Reprinted from Gibbs (2010).

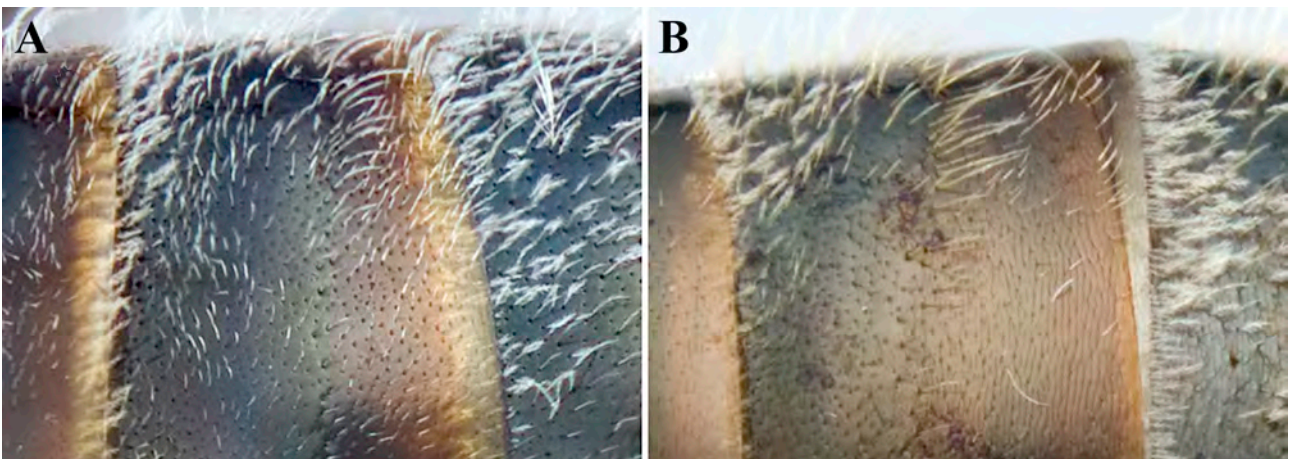


Figure 35. T2 punctation on apical impressed area of female (A) *L. abundipunctum*, (B) *L. reasbeckae*. Reprinted from Gibbs (2010).

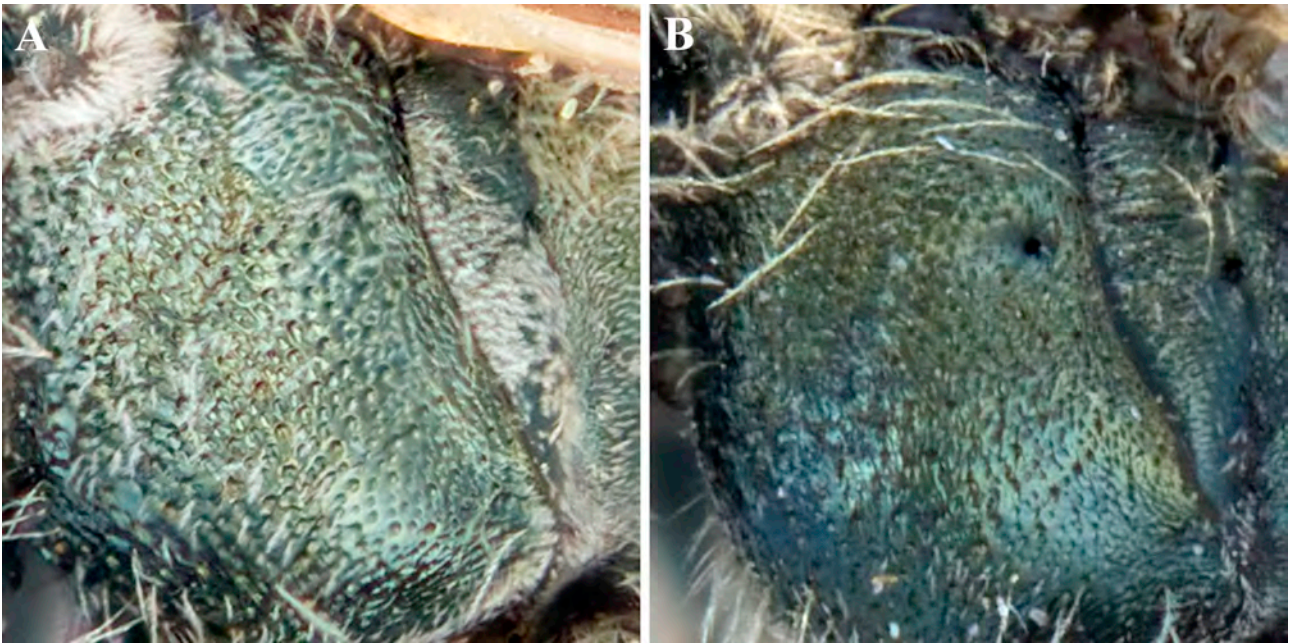


Figure 36. Mesopleuron of female *Dialictus* (A) moderately coarse, *L. prasinogaster*, (B) fine, *L. sedi*. Reprinted from Gibbs (2010).

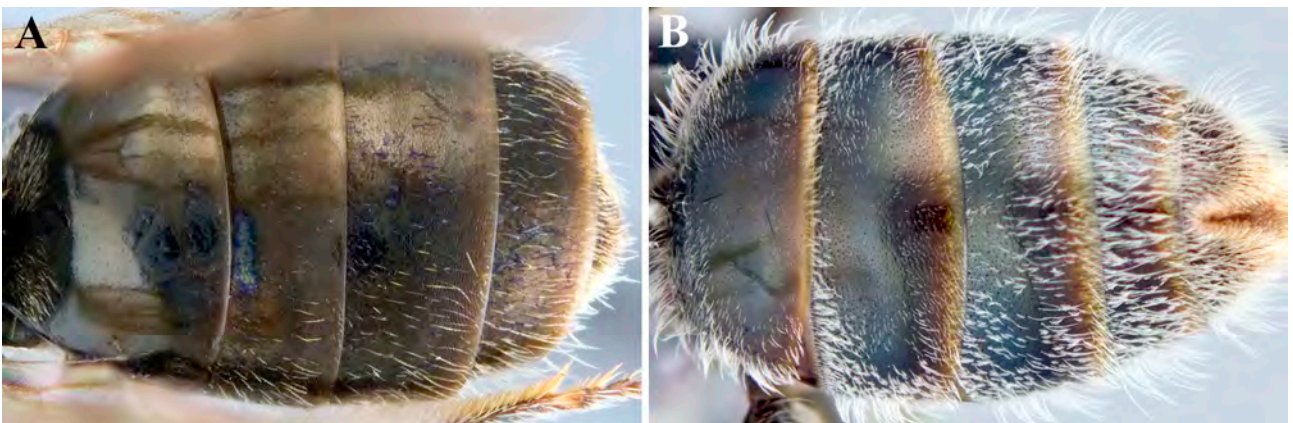


Figure 37. Metasomal terga of female (A) *L. obscurum*, (B) *L. abundipunctum*. Reprinted from Gibbs (2010).

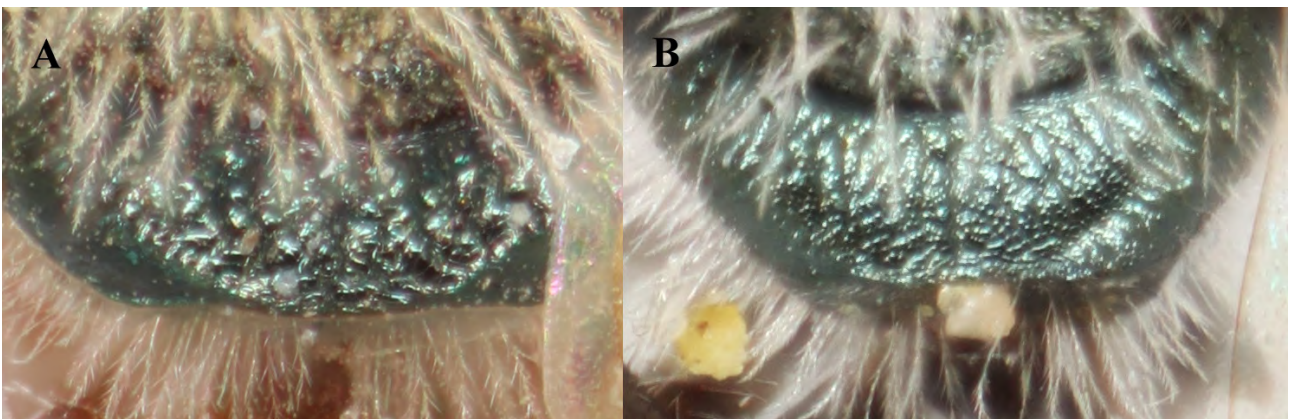


Figure 38. Metapostnotum of female (A) shiny with strong anastomosing rugae (*L. ellisiae*), (B) dull with weak subparallel rugae (*L. stictaspis*).

59 (58). T1 with lower anterior slope polished due to lack of microsculpture (Fig. 22A); parapsidal line *usually* distinct, deeply impressed, about half a puncture width wide or more; punctures laterad of parapsidal line slightly coarser and sparser (3-5 punctures present between posterior end of parapsidal line and lateral edge of mesoscutum) ... *L. sandhousiellum* Gibbs, 2010

- T1 with lower anterior slope dull due to strong microsculpture (Fig. 22B); parapsidal line very thin, inconspicuous, and not at all impressed; punctures laterad of parapsidal line fine and dense (4-6 punctures present between posterior end of parapsidal line and lateral edge of mesoscutum) ... *L. sedi* (Sandhouse, 1924) [in part]

60 (48). T1–T2 with apical impressed area impunctate, except along premarginal line (Fig. 8B); mesepisternum with weak microsculpture and sparse punctures (IS=1–2 PD) ... 61

- T1–T2 with apical impressed area punctate (Fig. 8A), sometimes weakly and sparsely; mesepisternum sculpture and punctures variable ... 62

61 (60). Size large (head width 1.94–2.11 mm); metasomal terga without tomentum (as in Fig. 37A) ... *L. nigroviride* (Graenicher, 1911)

- Size smaller (head width 1.42–1.49 mm); metasomal terga with tomentum (as in Fig. 37B) ... *L. tenax* (Sandhouse, 1924)

62 (60). Head elongate (length/width ratio = 1.00–1.06) ... 63

- Head short (length/width ratio = 0.87–0.97) ... 66

63 (62). T3–T4 with apical fringes (Fig. 19B); metapostnotum shiny with strong rugae basally (as in Fig. 38A); size larger (head width 1.66–1.85 mm) ... 64

- T3–T4 without apical fringes (Fig. 19A); metapostnotum tessellate to finely reticulate with weak rugae basally (as in Fig. 38B); size small (head width 1.19–1.30 mm) ... *L. obnubilum* (Sandhouse, 1924)

64 (63). Head relatively short (length/width ratio = 1.00–1.01); mesoscutum usually tessellate in anterior half or more ... *L. sheffieldi* Gibbs, 2010 [in part]

- Head long (length/width ratio = 1.04–1.11); mesoscutum usually mostly shiny, becoming tessellate anteromedially ... 65

65 (64). Metapostnotum two-thirds covered by rugae with long transverse imbricate or shiny band at posterior margin (Fig. 39B); wings subhyaline with dark hairs ... *L. ebmerellum* Gibbs, 2010

- Metapostnotum nearly entirely covered by rugae with, at most, a short transverse imbricate band at posterior margin (Fig. 39A); wings hyaline with light hairs ... *L. onuferkoi* new species [in part]

66 (63). Head and mesosoma with very dense tomentum and woolly hairs; wings hyaline with pale pterostigma ... 67

- Head and mesosoma with moderately sparse tomentum and woolly hairs; wings usually subhyaline or faintly dusky typically with moderately dark pterostigma ... 68

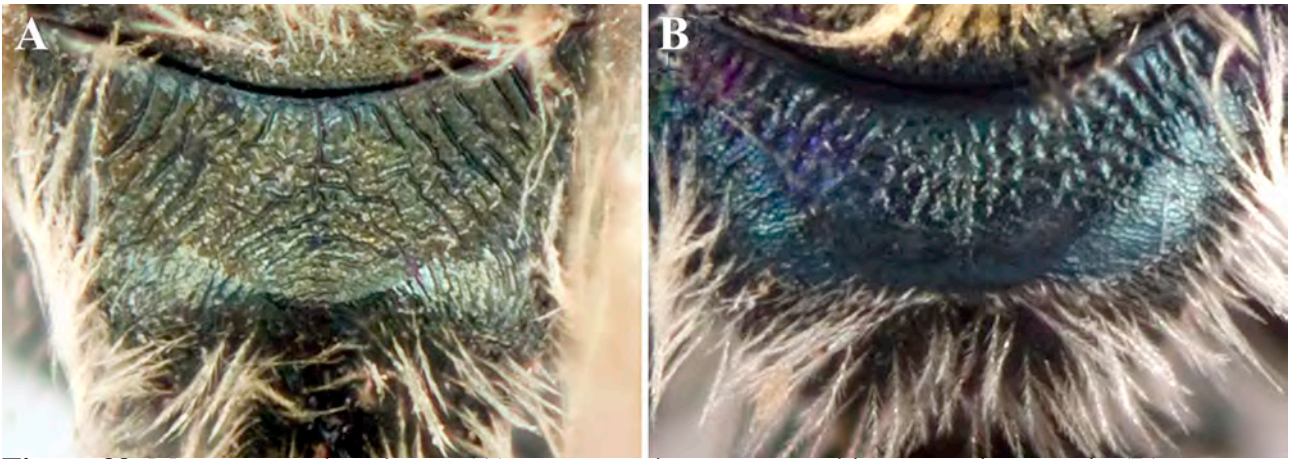


Figure 39. Metapostnotal sculpture (A) anastomosing rugae reaching posterior margin (B) anastomosing rugae not reaching posterior margin. Reprinted from Gibbs (2010).



Figure 40. Metasoma of female (A) with acarinarial fan dense and T3–T4 with very sparse tomentum (*L. knereri*), (B) with acarinarial fan sparse and T3–T4 with dense tomentum.

67 (66). Head short (length/width ratio = 0.87–0.93); mesoscutal punctures sparse between parapsidal lines (IS=1–4 PD) ... *L. pallidellum* (Ellis, 1914)

- Head longer (length/width ratio = 0.94–0.95); mesoscutal punctures moderately dense between parapsidal lines (IS=1–2 PD) ... *L. hyalinum* (Crawford, 1907)

68 (66). Mesoscutum and mesepisternum with coarse punctures (Fig. 34A); size relatively large, head width 1.66–1.87 mm ... 69

- Mesoscutum and mesepisternum with fine punctures (Fig. 34B); size relatively small, head width 1.22–1.49 mm (except *L. knereri*, head width 1.45–1.75 mm) ... 71

69 (68). Apical impressed areas of the metasomal terga polished with distinct punctures (Fig. 35A); head and mesosoma bluish green ... *L. abundipunctum* Gibbs, 2010 [in part]

- Apical impressed areas of the metasomal terga coriarius with obscure punctures (Fig. 35B); head and mesosoma colour variable ... 70

70 (69). T1 with erect hairs limited to lateral margins and apical rim with impunctate median area narrower than lateral punctate area; head and mesosoma bluish green ... *L. punctatovenstre* (Crawford, 1907)

- T1 with numerous erect hairs intermixed with the acarinarial fan and apical rim with impunctate median area wider than punctate lateral area; head and mesosoma golden green ... *L. reasbeckae* Gibbs, 2010

71 (68). Metapostnotum with rugae ending before posterior margin; acarinarial fan dense, with distinct straight edge dorsally (unless worn) (Fig. 40A); T3–T4 with very sparse tomentum and weak apical fringes (Fig. 40A) ... 72

- Metapostnotum with rugae reaching posterior margin; acarinarial fan sparse (Fig. 40B); T3–T4 with relatively dense tomentum and moderately strong apical fringes (Fig. 40B) ... *L. nevadense* (Crawford, 1907)

72 (71). Size usually larger, head width 1.45–1.75 mm; metapostnotum with posterior margin distinctly rounded and elevated above basal rugoso-striate portion (Fig. 41A); propodeum with lateral surface imbricate-tessellate, relatively smooth ... *L. knereri* Gibbs, 2010

- Size smaller, head width 1.40–1.49 mm; metapostnotum with posterior margin obscurely rounded and elevated above basal rugoso-striate portion (Fig. 41B); propodeum with lateral surface ruguloso-tessellate, relatively rough ... *L. subversans* (Mitchell, 1960)

73 (13). Head moderately elongate (length/width ratio = 1.00–1.09) or IF shorter (length/width ratio = 0.96–1.00) then either the mesepisternum impunctate and dull due to microsculpture OR the metapostnotum rugae not reaching posterior margin and the metasomal terga with strong metallic reflections ... 74

- Head short (length/width ratio = 0.95–0.96); mesepisternum punctate and faintly polished due to weak microsculpture; metapostnotum rugae reaching posterior margin; metasomal terga brown with at most faint metallic reflections ... *L. perpunctatum* (Ellis, 1913)

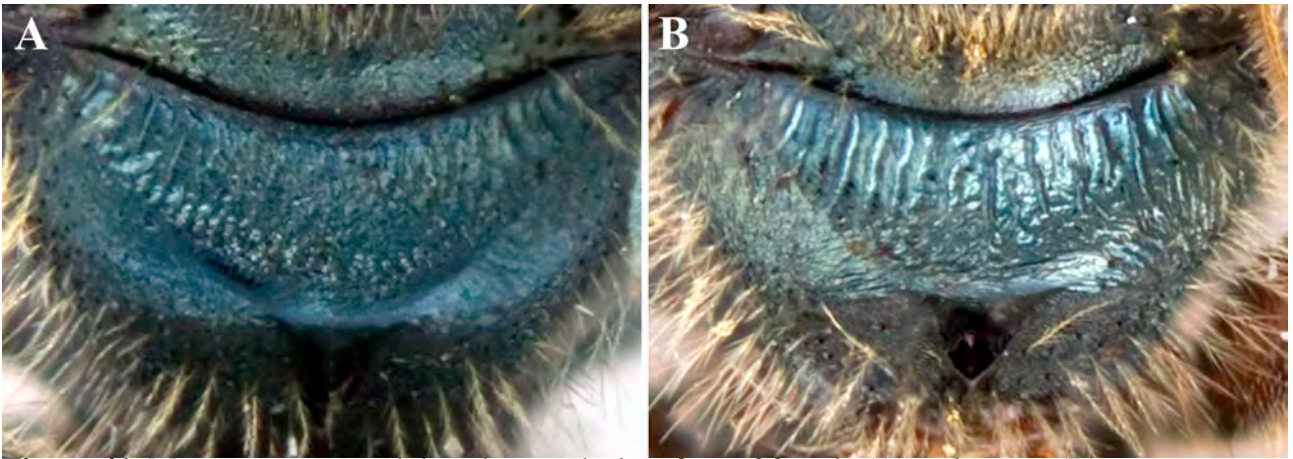


Figure 41. Metapostnotum and dorsal propodeal surface of female (A) *L. knereri*, (B) *L. subversans*. Reprinted from Gibbs (2010).

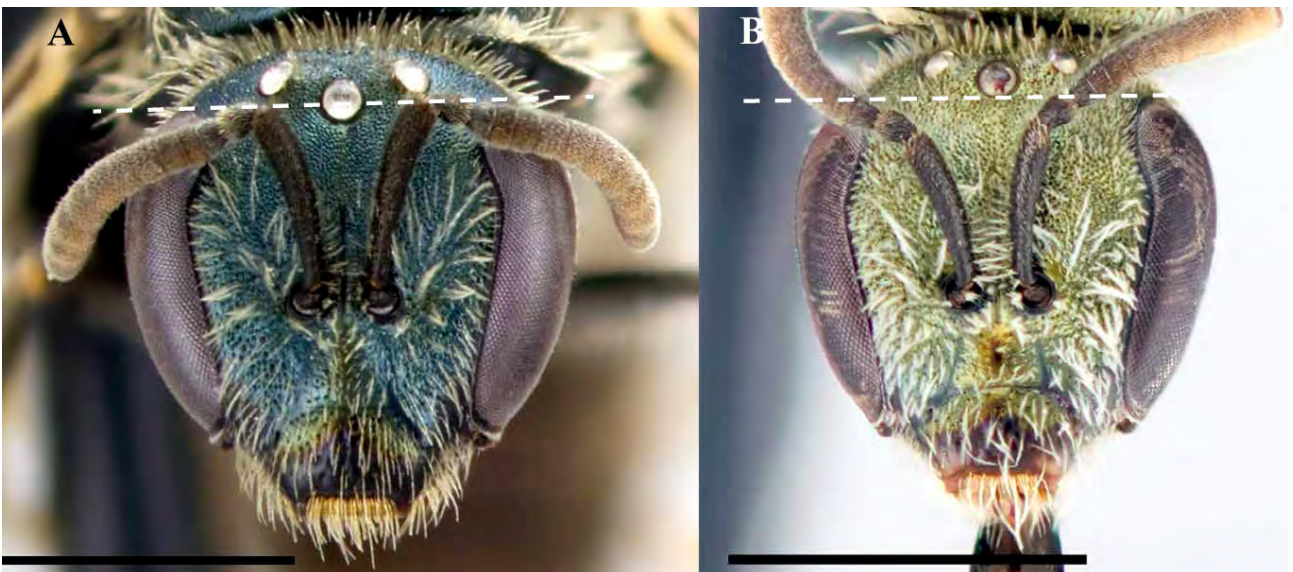


Figure 42. Heads of female (A) *L. macroprosopum*, slightly shorter with median ocellus on upper ocular tangent, (B) *L. brunneiventris*, slightly longer with median ocellus above upper ocular tangent. Reprinted from Gibbs (2010). Scale bars: 1 mm.

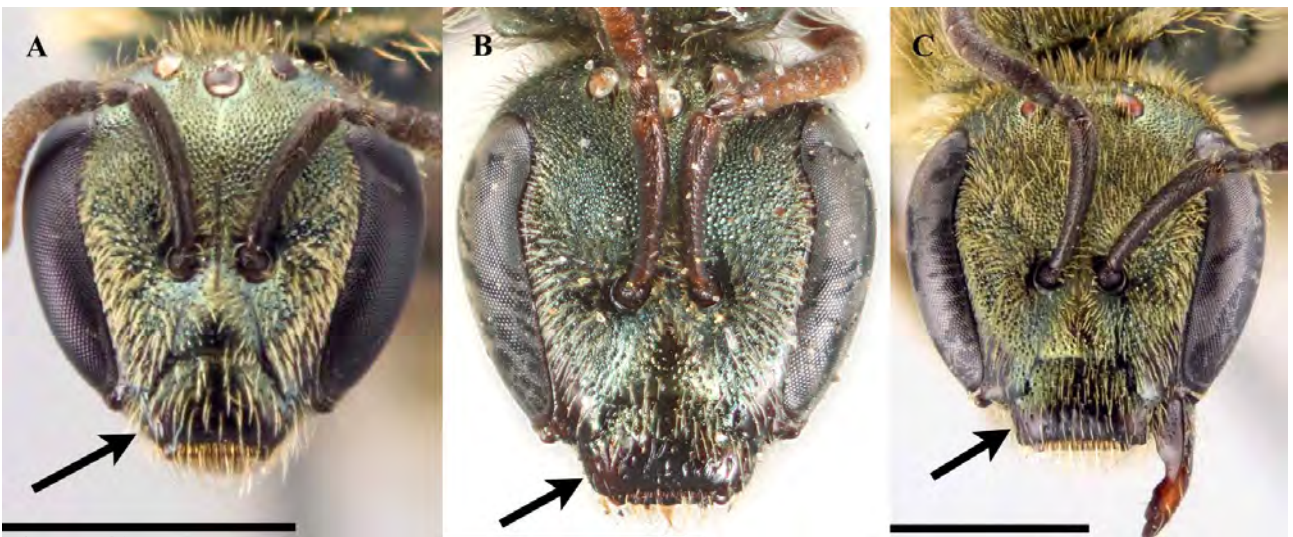


Figure 43. Heads of female (A) *L. leucomus*, short with clypeus apicolateral margins convergent, (B) *L. succinipenne* (holotype), long with apicolateral margins convergent, (C) *L. pilosum*, clypeus apicolateral margins subparallel. (A), (C) reprinted from Gibbs (2010).

74 (73). Metasomal terga black to brown (Western provinces) ... 75

- Metasomal terga metallic green to blue... 79

75 (74). T1 without tomentum ... 76

- T1 with lateral tomentum meeting acarinarial fan ... 77

76 (75). Head slightly shorter (length/width ratio = 1.05–1.07) with median ocellus on upper ocular tangent (Fig. 42A); size moderate to large (head width = 1.56–1.62 mm) ... *L. macroprosopum* Gibbs, 2010

- Head slightly longer (length/width ratio = 1.07–1.1) with median ocellus usually above upper ocular tangent (Fig. 42B); size small (head width = 1.13–1.22 mm) ... *L. brunneiventre* (Crawford, 1907)

77 (75). Metapostnotum nearly entirely covered by rugae with, at most, a short transverse imbricate band at posterior margin (Fig. 39A) ... 78

- Metapostnotum two-thirds covered by rugae with long transverse imbricate or shiny band at posterior margin (Fig. 39B) ... *L. ebmerellum* Gibbs, 2010 [in part]

78 (77). Wings hyaline with white hairs; mesepisternum shiny and distinctly punctate in ventral half; head long (length/width ratio = 1.06–1.11) ... *L. onuferkoi* new species [in part]

- Wings subhyaline with dark hairs; mesepisternum imbricate or tessellate without distinct punctures in ventral half; head round (length/width ratio = 0.96–1.00) ... *L. yukonae* Gibbs, 2010

79 (74). Mesepisternum punctate, punctures distinct at least from slight posterior angle in lateral view (Western) ... 80

- Mesepisternum rugulose, punctures not distinct from any angle ... 81

80 (79). Mesepisternum and mesoscutum punctures moderately coarse (dorsal margin of mesepisternum with 8–10 punctures present and 3–5 punctures present between posterior end of parapsidal line and lateral edge of mesoscutum) (Fig. 36A); T1–T4 with extensive, usually dense tomentum (the hairs mostly touching one another); T1 with tomentum meeting acarinarial fan laterally ... *L. prasinogaster* Gibbs, 2010 [in part]

- Mesepisternum punctures minute (dorsal margin of mesepisternum with 13–15 punctures present and 4–6 punctures present between posterior end of parapsidal line and lateral edge of mesoscutum) (Fig. 36B); T2–T4 with less extensive, usually sparse tomentum (most hairs not touching one another); T1 tomentum, if present, not meeting acarinarial fan ... *L. sedi* (Sandhouse, 1924) [in part]

81 (79). Clypeus with apicolateral margins below suborbital tangent convergent (Figs. 43A, 43B) ... 82

- Clypeus with apicolateral margins below suborbital tangent subparallel (Fig. 43C) ... *L. pilosum* (Smith, 1853)

82 (81). Head slightly shorter (length/width ratio 1.03–1.06); supraclypeal area relatively short (0.65–0.86 times length of clypeus) (Fig. 43A) (east of Rocky Mountains) ... *L. leucocomus* (Lovell, 1908)

- Head slightly longer (length/width ratio 1.05–1.09); supraclypeal area relatively long (0.80–0.90 times length of clypeus) (Fig. 43B) (Rocky Mountains and Midwest) ... *L. succinipenne* (Ellis, 1913)

83 (12). Front coxa normal, without conical projection (Fig. 44B) (Western) ... *L. incompletum* (Crawford, 1907)

- Front coxa with conical projection (Fig. 44A) (Eastern) ... *L. illinoense* (Robertson, 1892) (not confirmed for Canada, but likely to occur in southern Ontario, Québec, and Nova Scotia)

84 (11). Face short (length/width ratio = 0.95–1.00); metasomal terga with apical impressed areas impunctate; head and mesosoma greenish ... *L. anomalum* (Robertson, 1892)

- Face moderately elongate (length/width ratio = 1.00–1.05); metasomal terga with apical impressed areas punctate; head and mesosoma bluish ... *L. occidentale* (Crawford, 1902)

85 (5). Propodeum with strong oblique and lateral carinae, separating posterior surface from lateral surface or nearly so (Fig. 5B) ... 86

- Propodeum with oblique carina absent or very weak and lateral carina not reaching dorsal margin or separating posterior surface from lateral surface (Fig. 5A) ... 87

86 (85). Mesepisternum and mesoscutum relatively smooth with fine punctures (Figs. 45A, 46B); tarsi yellow-orange ... *L. rufulipes* (Cockerell, 1938)

- Mesepisternum and mesoscutum roughened by large, deep, crowded punctures (Figs. 45B, 46A); tarsi brown ... *L. immigrans* new species [in part]

87 (85). Metasomal terga metallic green ... *L. pavoninum* (Ellis, 1913)

- Metasomal terga dark brown ... 88

88 (87). Metapostnotum with posterior margin distinctly convex, projecting beyond dorsolateral slope of propodeum (Fig. 47A); T2 apical half impunctate (except along premarginal line) (east of Rocky Mountains) ... *L. versans* (Lovell, 1905)

- Metapostnotum with posterior margin straight, medial portion not projecting beyond dorsolateral slope of propodeum (Fig. 47B); T2 apical half distinctly punctate, only apical impressed area impunctate (Rocky Mountains and westward) ... *L. ruidosense* (Cockerell, 1897) species complex

89 (4). Mesepisternum without sharp delineation of sculpture between dorsal and ventral halves (Fig. 15A) ... 90

- Mesepisternum with sharp delineation between coarsely rugose dorsal half and punctate-imbricate ventral half (Fig. 15B) ... *L. dreisbachi* (Mitchell, 1960) [in part]

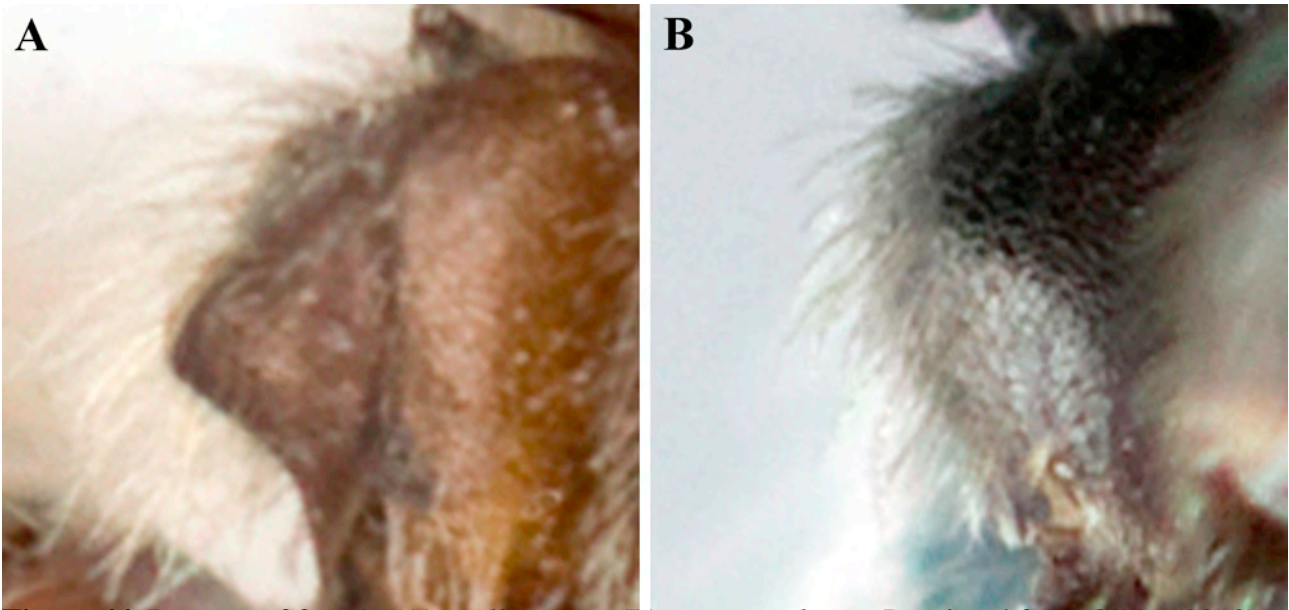


Figure 44. Procoxa of female (A) *L. illinoense*, (B) *L. incompletum*. Reprinted from Gibbs (2010).

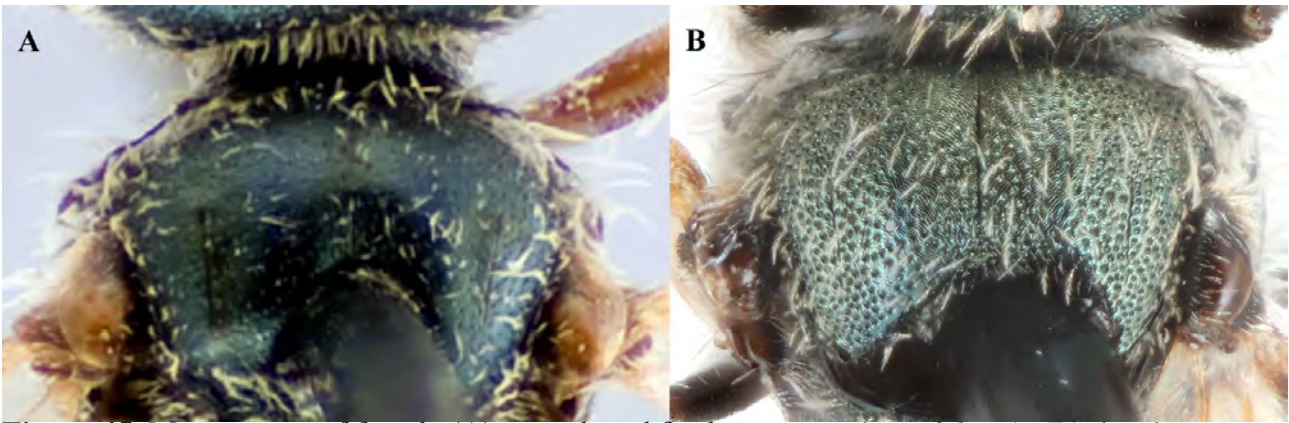


Figure 45. Mesoscutum of female (A) smooth and finely punctate (*L. rufulipes*), (B) deeply, coarsely punctate (*L. immigrans*). (A) reprinted from Gibbs (2011).

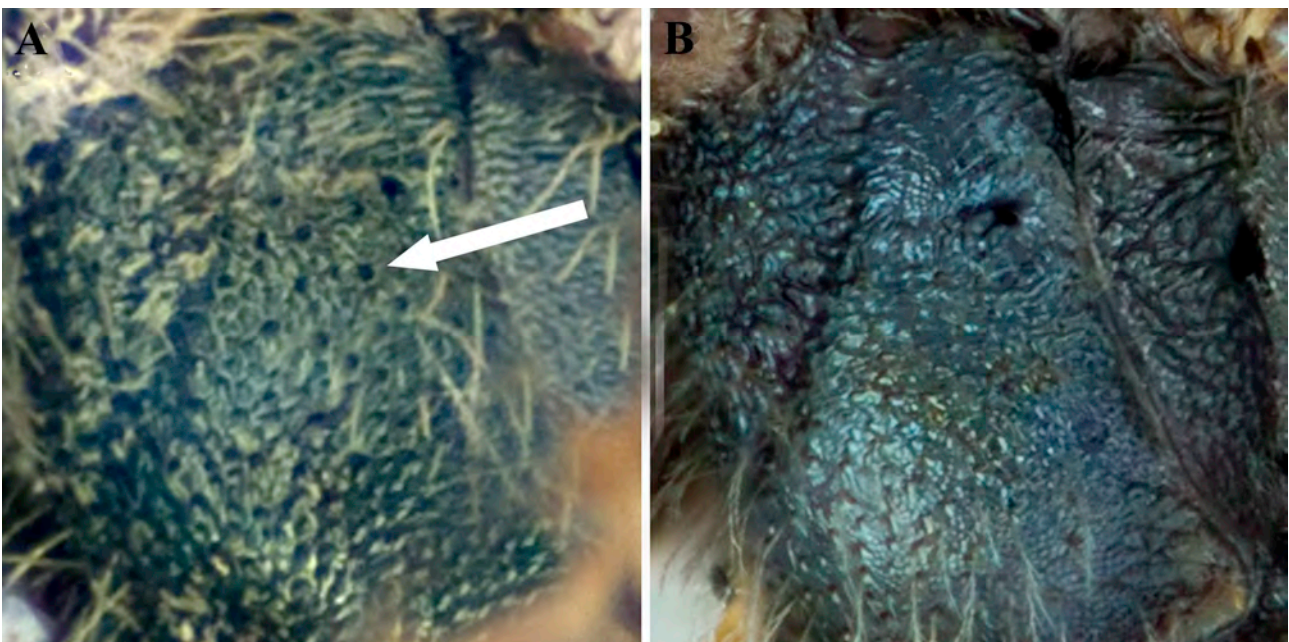


Figure 46. Mesopleuron of female *Dialictus* (A) reticulate-punctate, (B) rugulose. Arrow indicates puncture. Reprinted from Gibbs (2010).

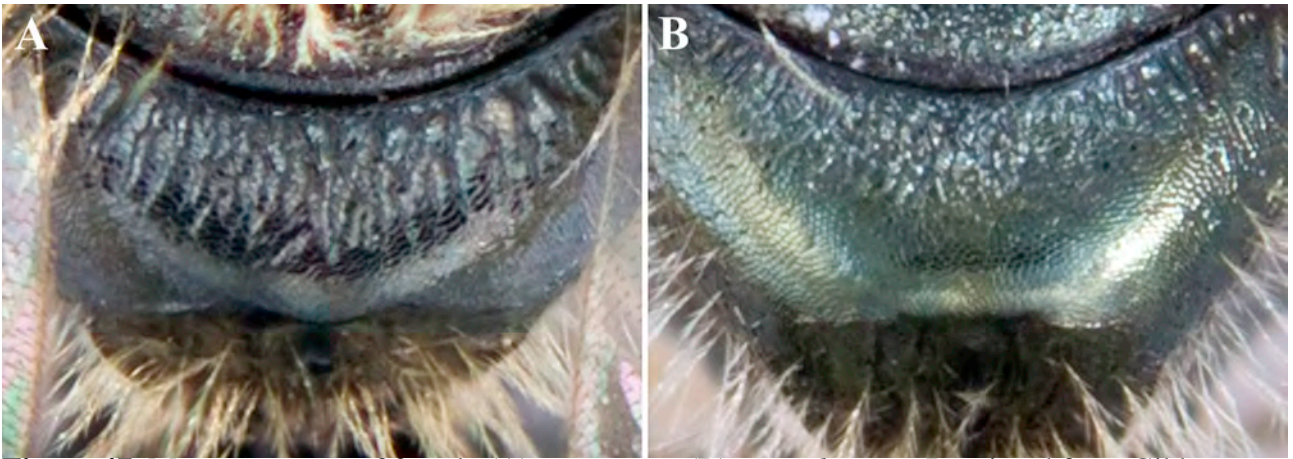


Figure 47. Metapostnotum of female (A) *L. versans*, (B) *L. ruidosense*. Reprinted from Gibbs (2010).

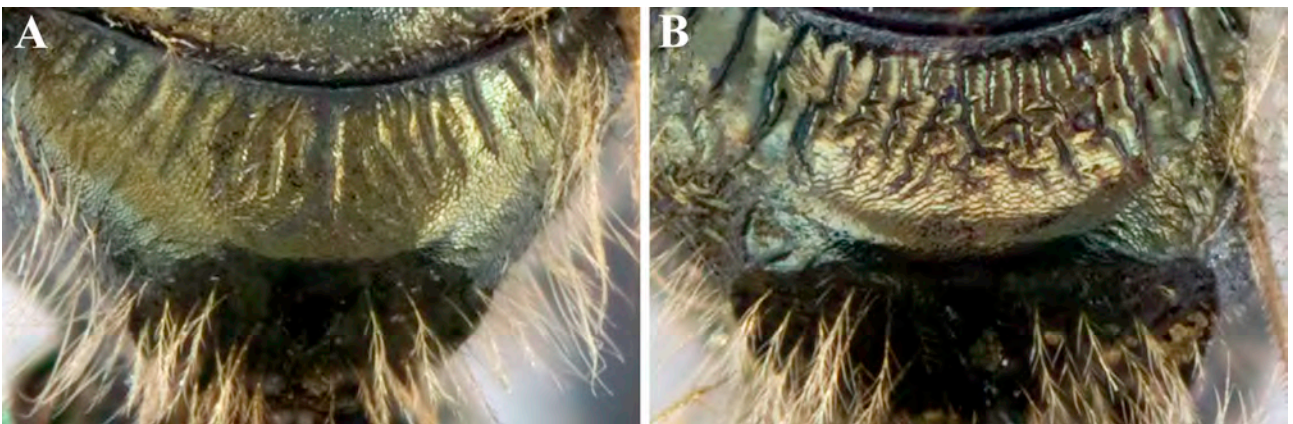


Figure 48. Metapostnotum and dorsal propodeal surface of female (A) *L. obscurum*, (B) *L. nigroviride*. Reprinted from Gibbs (2010).

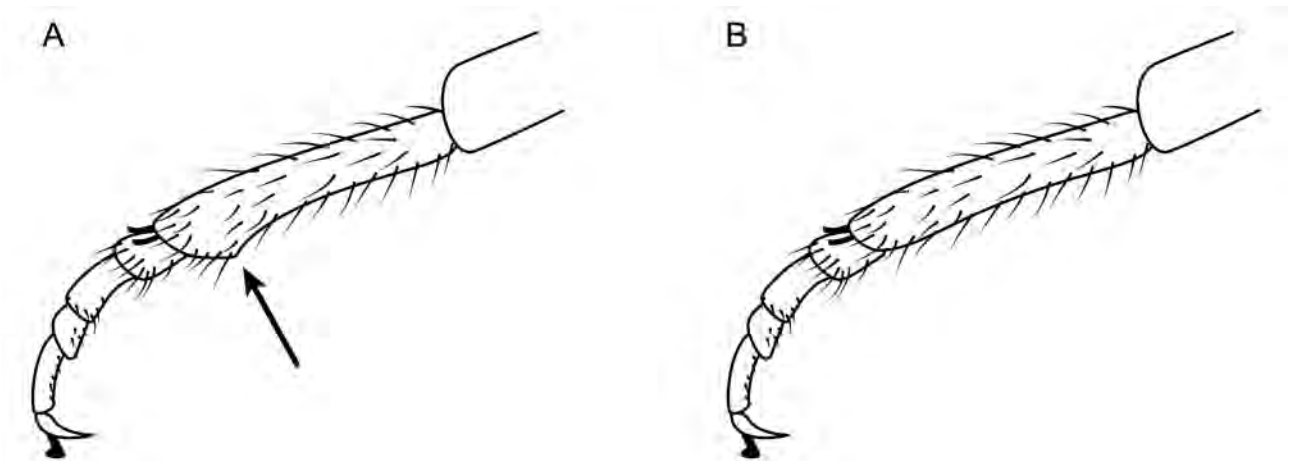


Figure 49. Hind basitarsus of female (A) *L. lineatulum* and (B) all other species. The arrow indicates the expanded apical region.

90 (89). Mesepisternum with distinct punctures (Fig. 12A) ... 91

- Mesepisternum without distinct punctures (Fig. 12B) ... 93

91 (90). Mesoscutal punctures relatively fine and shallow; metasomal terga with sparse or virtually absent tomentum (Fig. 37A) ... 92

- Mesoscutal punctures relatively coarse and deep; metasomal terga with abundant tomentum (Fig. 37B) ... *L. abundipunctum* Gibbs, 2010 [in part]

92 (91). Propodeum with weak oblique carina (Fig. 48A); metasomal terga with scattered basolateral tomentum and sparse apical fringes; size moderate, head width 1.49–1.66 mm ... *L. obscurum* (Robertson, 1892)

- Propodeum with strong oblique carina (Fig. 48B); metasomal terga with no tomentum and no apical fringes; size large, head width 1.94–2.11 mm ... *L. nigroviride* (Graenicher, 1911) [in part]

93 (89). Relatively large (head width 1.70–1.82 mm); oblique carina of propodeum relatively weak (Fig. 7A) ... 94

- Relatively small (head width 1.44–1.49 mm); oblique carina of propodeum very strong (Fig. 7B) ... *L. achilleae* (Mitchell, 1960)

94 (93). Hind basitarsus expanded apically (maximum width of apical fourth about 1.5 times width of basal three fourths) (Fig. 49A); head and mesosoma usually greenish; metasoma often with metallic reflections; head shorter (length/width ratio = 0.92–0.93); clypeus protruding less than 50% of length below suborbital tangent (Fig. 50A); propodeum with dorsolateral slope imbricate (Fig. 51A) ... *L. lineatulum* (Crawford, 1906)

- Hind basitarsus parallel-sided throughout its length (Fig. 49B); head and mesosoma bluish; metasoma brown; head longer (length/width ratio = 0.95–0.96); clypeus protruding 50% of length below suborbital tangent or more (Fig. 50B); propodeum with dorsolateral slope rugulose (Fig. 51B) ... *L. novascotiae* (Mitchell, 1960)

95(3). T1 dorsal surface with impunctate median line 1 OD wide or slightly less (Fig. 52A); paraocular area punctures similar in size and density to frons punctures; tegula very densely punctate ($IS \leq 1$ PD) with few interspaces up to 1 PD and very large (clearly exceeding posterior margin of mesoscutum in dorsal view) ... *L. regulariforme* (Crawford, 1907)

- T1 dorsal surface evenly punctate throughout (Fig. 52B); paraocular area punctures larger and sparser than frons punctures; tegula usually more sparsely punctate with numerous interspaces ≥ 1 PD; tegula smaller (reaching or slightly exceeding posterior margin of mesoscutum in dorsal view) ... 96

96 (95). T3 with dense basal band of tomentum and either a dense subapical band of tomentum, or sparse tomentum covering disc (Fig. 53A) (Saskatchewan and westward) ... 97

- T3 with dense basal band of tomentum and virtually no tomentum elsewhere on disc (Fig. 53B) (sometimes with a sparse subapical band of tomentum) (Saskatchewan and eastward) ... 98

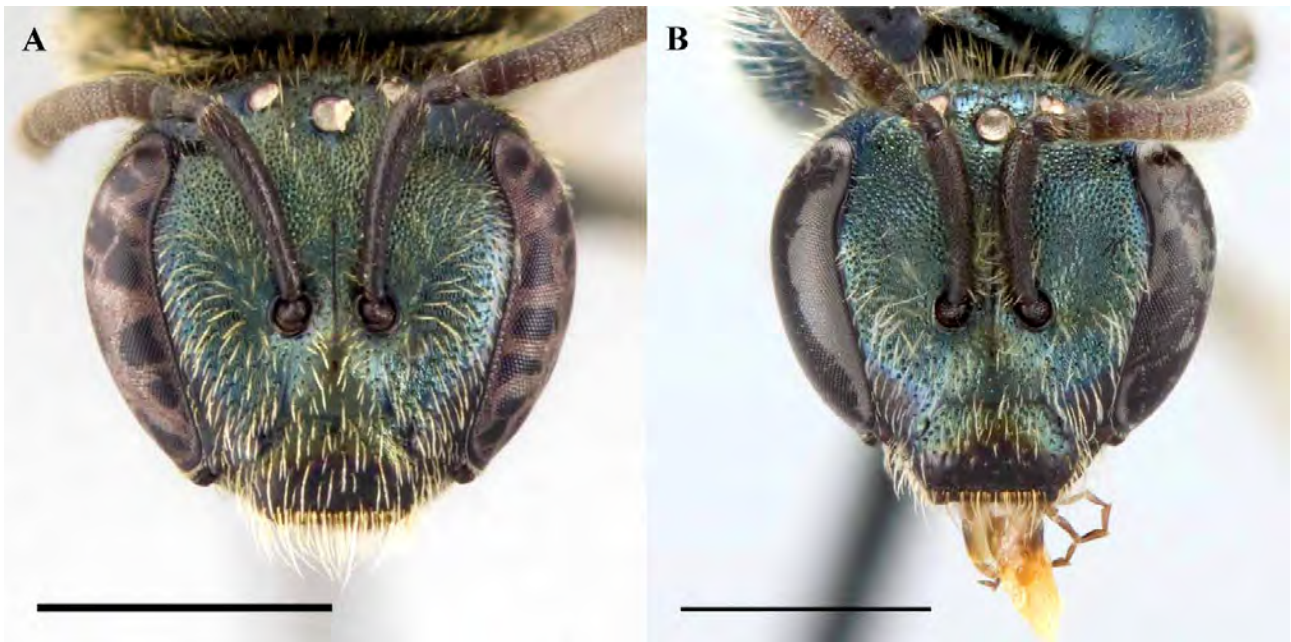


Figure 50. Heads of female (A) *L. lineatulum*, short with clypeus protruding <50% of length below suborbital tangent, (B) *L. novascotiae*, longer with clypeus protruding \geq 50% of length below suborbital tangent. Reprinted from Gibbs (2010). Scale bars: 1 mm.

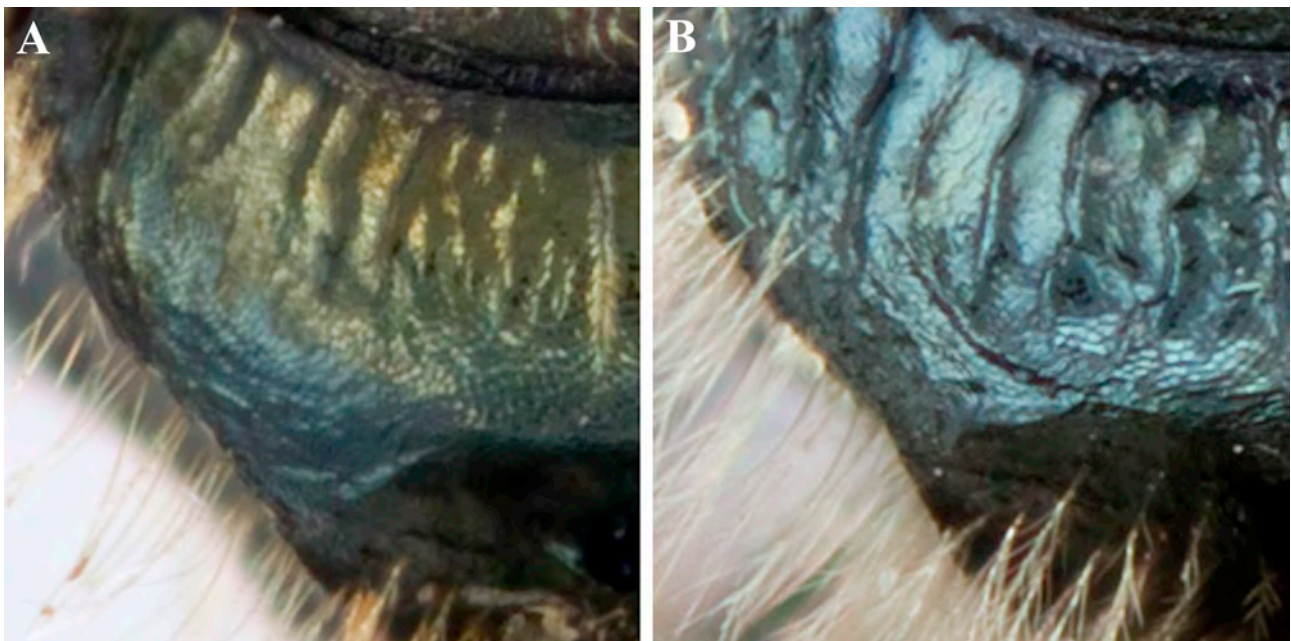


Figure 51. Dorsolateral slope of propodeum of female (A) *L. lineatulum*, (B) *L. novascotiae*. Reprinted from Gibbs (2010).

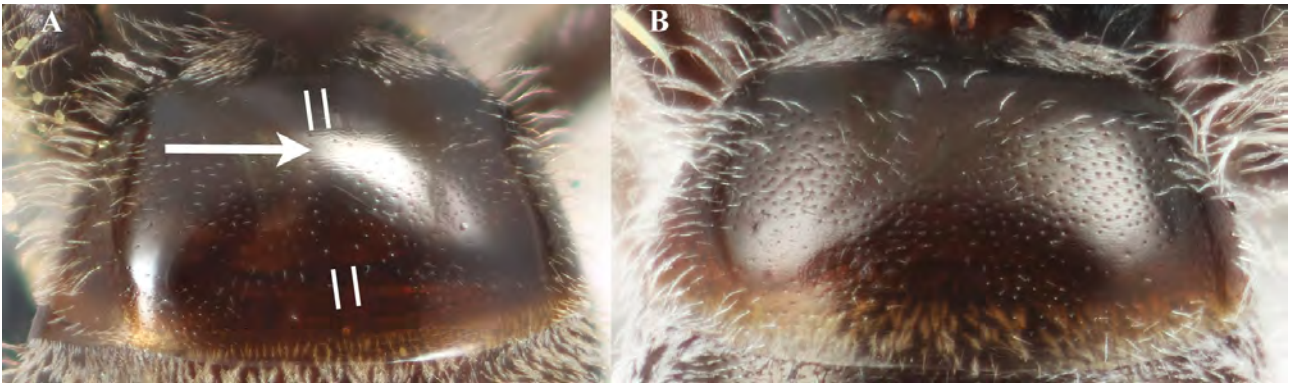


Figure 52. T1 of female (A) with impunctate median line (*L. tegulariforme*), (B) evenly punctate throughout. Arrow points to impunctate line and paired white lines indicate width and end points.

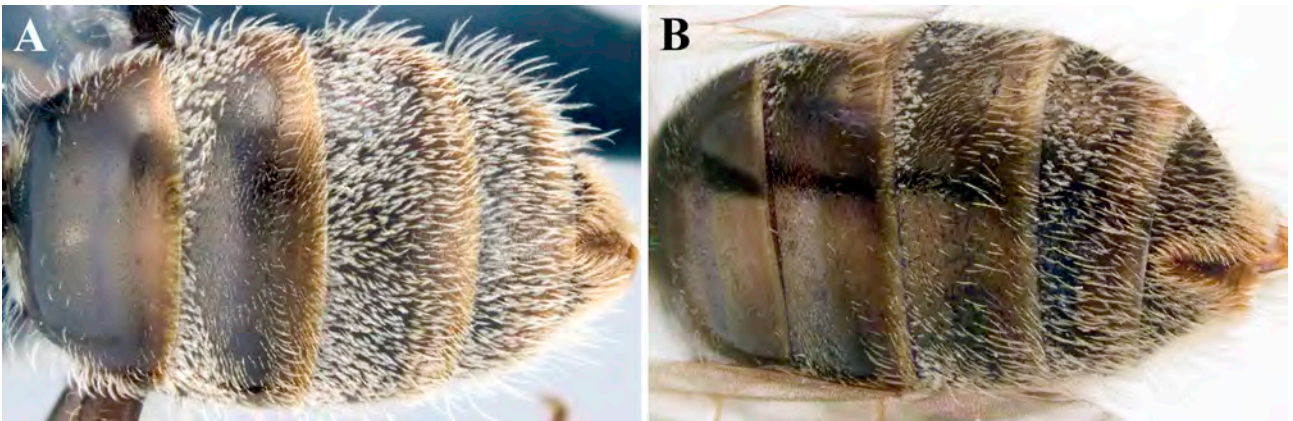


Figure 53. Metasomal terga of female (A) T3 with dense tomentum throughout (*L. helianthi*), (B) T3 with dense tomentum limited to basolateral areas (*L. ellisiae*). Reprinted from Gibbs (2010).

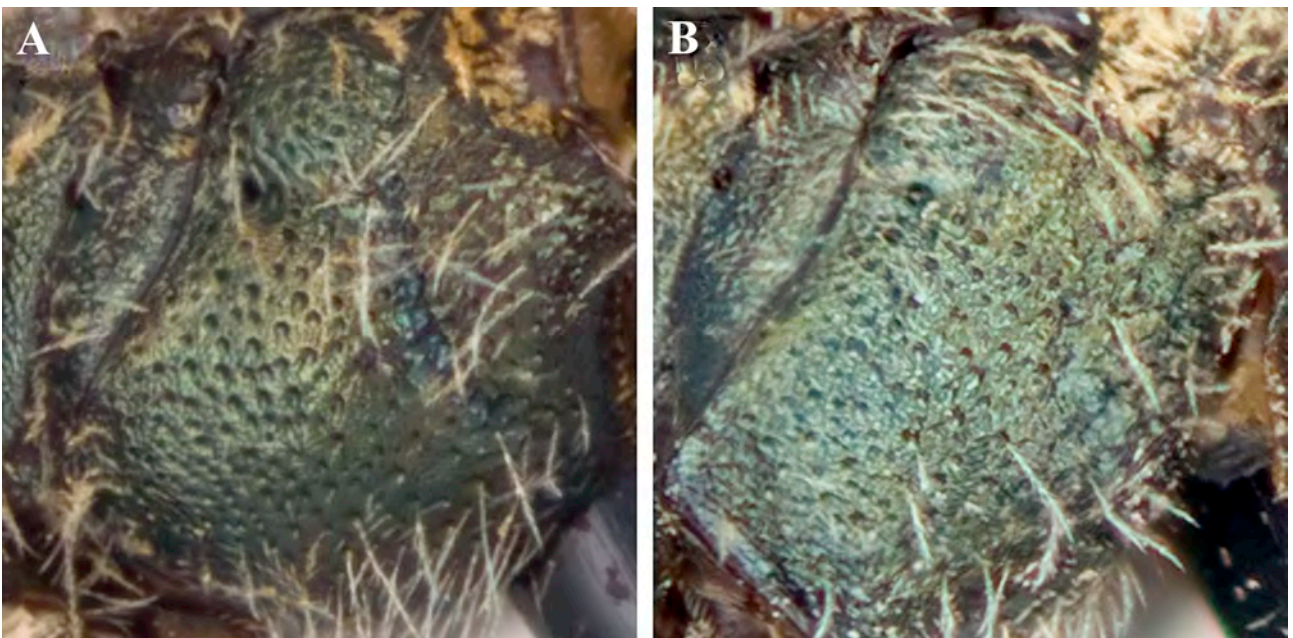


Figure 54. Mesepisternum of female (A) with distinct round punctures (*L. ellisiae*), (B) with some crowded, polygonal punctures (*L. tegulare*). Reprinted from Gibbs (2010).

97 (96). Mesoscutum finely punctate (4–5 punctures between posterior end of parapsidal line and lateral edge of mesoscutum); metapostnotum shiny with strong anastomosing rugae basally (as in Fig. 38A) (northwestern United States and British Columbia) ... *L. helianthi* (Cockerell, 1916)

- Mesoscutum coarsely punctate (2–4 punctures between posterior end of parapsidal line and lateral edge of mesoscutum); metapostnotum tessellate to finely reticulate with fine subparallel rugae basally (Fig. 38B) (western Great Plains including Alberta and Saskatchewan) ... *L. stictaspis* (Sandhouse, 1923)

98 (96). Mesepisternum dull with many punctures tightly packed such that some are polygonal, not round (Fig. 54B) ... *L. tegulare* (Robertson, 1890)

- Mesepisternum with all or most punctures distinctly round, often shiny (Fig. 54A) ... *L. ellisiae* (Sandhouse, 1924)

99 (2). Acarinarial fan absent; T1 anterior slope with erect hairs throughout ... 100

- Acarinarial fan present (but often weak); T1 anterior slope with erect hairs limited to lateral margins ... 101

100 (99). Propodeum with strong V-shaped oblique carina; head broader than long ... *L. testaceum* (Robertson, 1897)

- Propodeum with oblique carina absent; head much longer than broad ... *L. tuolumnense* Gibbs, 2009

101 (99). Mesoscutum with distinctly separated punctures on centre of disc, not obscured by tomentum (Fig. 55A) ... 102

- Mesoscutum with contiguous punctures on centre of disc, obscured by dense tomentum (Fig. 55B) ... *L. vierecki* (Crawford, 1904)

102 (101). Supraclypeal area and postgena mostly smooth and shiny; clypeus with apical margin usually red-orange (Fig. 56A); paraocular area with dense tomentum (Fig. 56A) ... *L. hudsoniellum* (Cockerell, 1919)

- Supraclypeal area tessellate; postgena lineate; clypeus with apical margin black to brown (Fig. 56B); paraocular area with sparse tomentum (Fig. 56B) ... *L. pictum* (Crawford, 1902)

103 (1). Mandible without preapical tooth (Fig. 57A), or with small preapical tooth, much smaller than that of nest-building species ... 105

- Mandible with moderately strong preapical tooth, only slightly smaller than nest-building species (Fig. 57B)... 104

104 (103). Mesepisternum vertically lineate dorsally; labral process with small apical projection ... *L. michiganense* (Mitchell, 1960)

- Mesepisternum smooth, punctate; labral process without apical projection ... *L. ascheri* Gibbs, 2011 [in part]

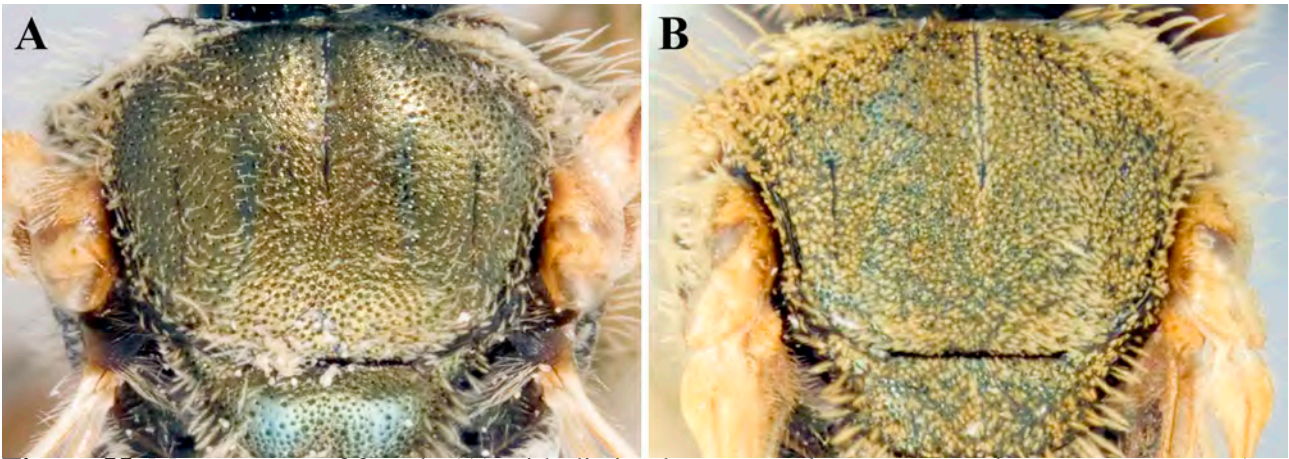


Figure 55. Mesoscutum of female (A) with distinctly separated punctures and sparse tomentum (*L. pictum*), (B) with contiguous punctures and dense tomentum (*L. vierecki*). Reprinted from Gibbs (2010).

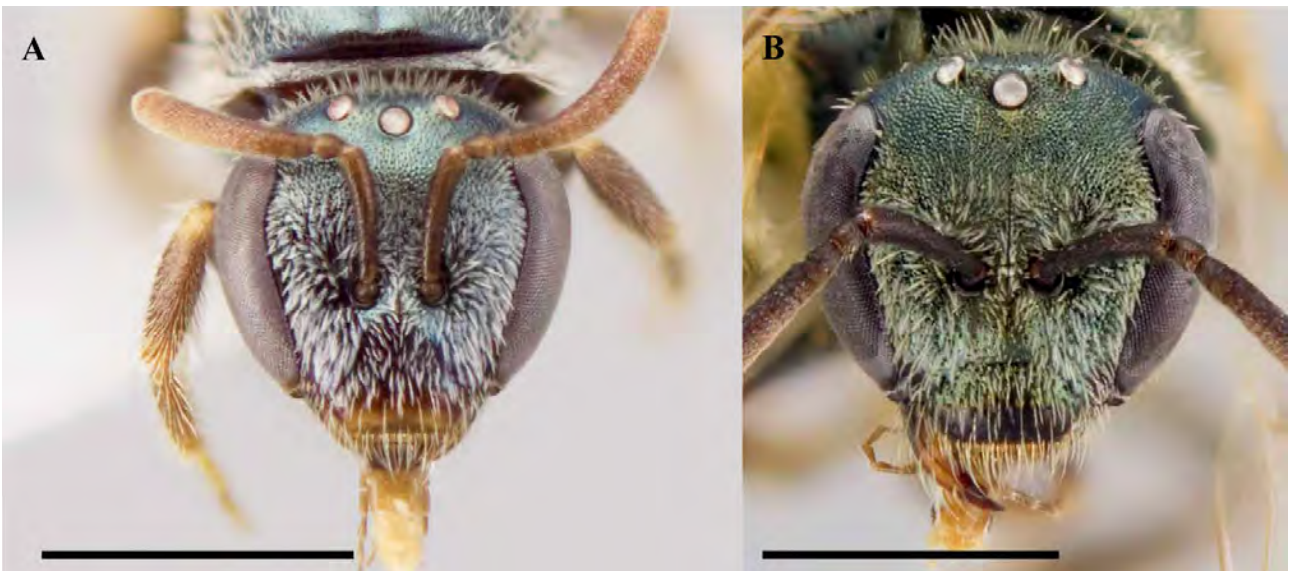


Figure 56. Heads of female (A) with clypeus apical margin orange and paraocular area with dense tomentum (*L. hudsoniellum*), (B) with clypeus apical margin black and paraocular area with sparse tomentum (*L. pictum*). Reprinted from Gibbs (2010). Scale bars: 1 mm.

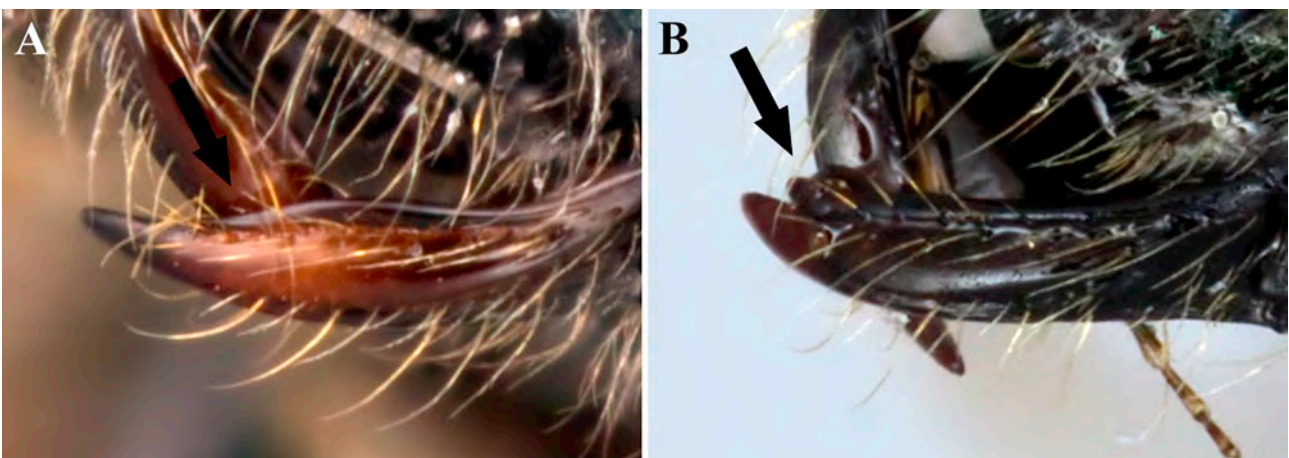


Figure 57. Enlarged mandible of female parasitic *Dialictus*, arrows indicate subapical tooth (A) absent, (B) present (*L. michiganense*). Reprinted from Gibbs (2010).

- 105 (103). Gena in lateral view distinctly wider than eye (Fig. 30C) ... 106
- Gena in lateral view subequal to eye (Fig. 30B) ... 110
- 106 (105). Mesepisternum distinctly punctate ... *L. ascheri* Gibbs, 2010 [in part]
- Mesepisternum rugulose ... 107
- 107 (106). Metapostnotum strigate or rugose over most of length (Fig. 58A) ... 108
- Metapostnotum smooth over most of length (Fig. 58B) ... 109
- 108 (107). Labrum with weak basal tubercle; mandible narrowing evenly along entire length, width at midlength 1 OD ... *L. rozeni* Gibbs, 2011 (not yet confirmed for Canada)
- Labrum with strong basal tubercle; mandible narrowing more sharply towards apex, width at midlength 1.5 OD (occasionally with small preapical tooth visible) ... *L. platyparius* (Robertson, 1895)
- 109 (107). Size small (head width 1.25–1.30 mm) ... *L. lionotus* (Sandhouse, 1923)
- Size large (head width 1.80–2.02 mm) ... *L. cephalotes* (Dalla Torre, 1896) (not yet confirmed for Canada)
- 110 (105). Niagara region ... *L. furunculum* Gibbs, 2011
- Prairie Provinces ... *L. sitocleptum* Gibbs, 2010

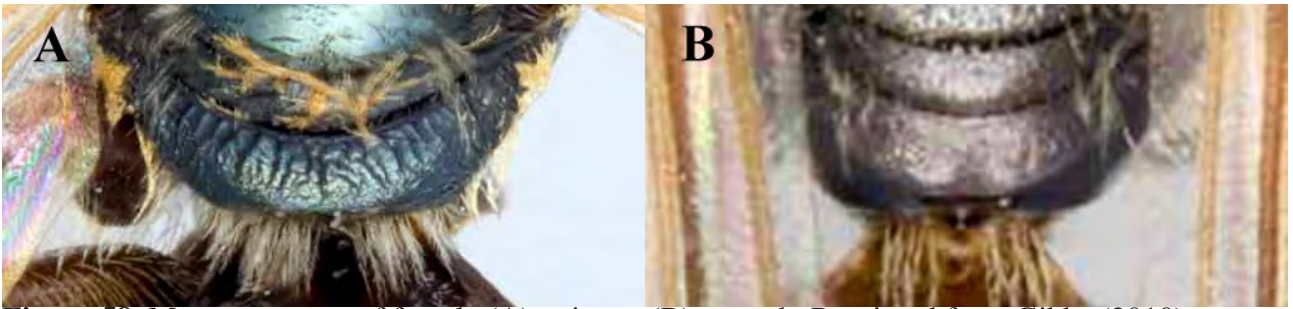


Figure 58. Metapostnotum of female (A) strigate, (B) smooth. Reprinted from Gibbs (2010).

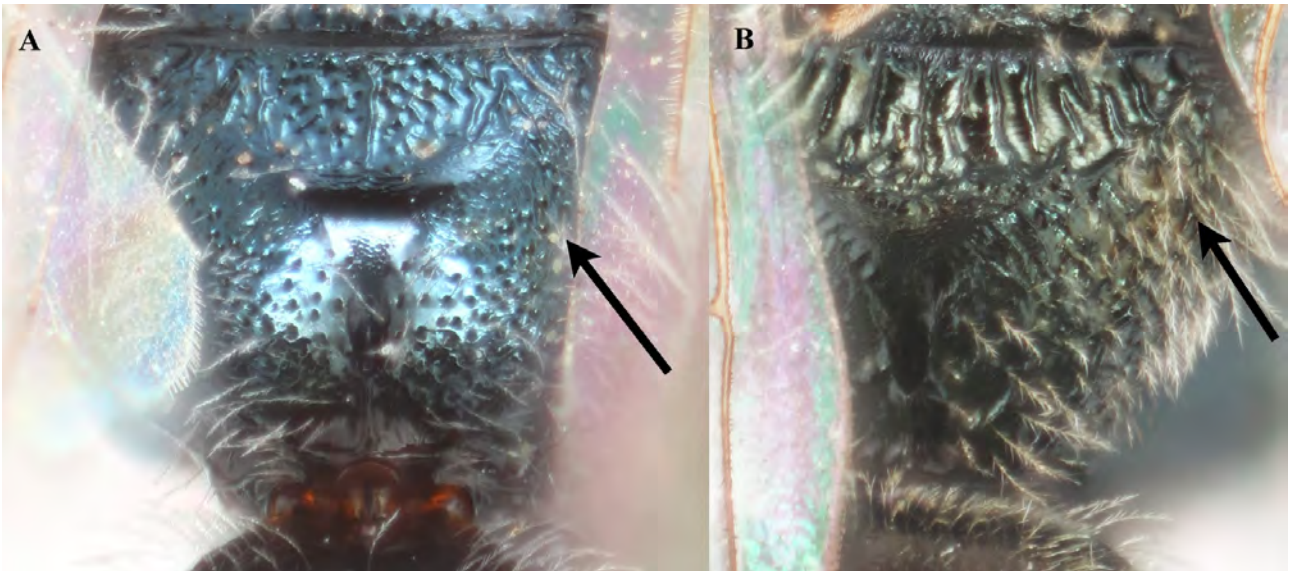


Figure 59. Propodeum dorsolateral slope (arrows) of male (A) punctate, (B) rugose.



Figure 60. Mesoscutum of male (A) coarsely punctate, (B) moderately coarsely punctate, (C) finely punctate.

Revised key to male *Lasioglossum* (*Dialictus*) of Canada

Note that not all males have been definitively associated with females. As such, not all males are included in the key. Particular care should be taken when interpreting males of any *viridatum* group species. Species for which the male is not yet known are *L. abundipunctum*, *L. ascheri*, *L. atwoodi*, *L. curculum*, *L. furunculum*, *L. marinense*, *L. pacatum*, *L. sitocleptum*, and *L. taylorae*.

1. Tegula not reaching posterior margin of mesoscutum in dorsal view, ovoid, or IF inner posterior margin concave, then impunctate in centre (Fig. 2B) ... 2
 - Tegula enlarged, reaching posterior margin of mesoscutum in dorsal view, inner posterior margin concave, and distinctly punctate in centre (Fig. 2A) ... 98
- 2 (1). Forewing with three submarginal cells (Fig. 9A) ... 3
 - Forewing with two submarginal cells (Fig. 9B) ... 95
- 3 (2). Mesoscutum with some sparse punctures ($IS \geq 1$ PD at least on central disc) (Fig. 11B) ... 4
 - Mesoscutum with dense punctures throughout ($IS < 1$ PD including central disc) (Fig. 11A) ... 91
- 4 (3). Clypeus with apical margin black, brown, or reddish brown ... 5
 - Clypeus with apical margin yellow ... 79
- 5 (4). Mesepisternum with distinct punctures ... 6
 - Mesepisternum without evident punctures ... 49
- 6 (5). Metasomal terga partially metallic blue to green (most obvious in T1 basal half and T2–T4 basal and apical margins of discs) ... 7
 - Metasomal terga entirely black to brown or red ... 15
- 7 (6). Face with dense pubescence below level of eye emargination; pterostigma pale brownish yellow; metasomal terga with dense tomentum on basolateral portions ... 8
 - Face with dense pubescence limited to lower paraocular area; pterostigma brown; metasomal terga with, at most, sparse tomentum on basolateral portions ... 12
- 8 (7). T1–T2 apical impressed areas impunctate OR much more sparsely and finely punctate than discs ... 9
 - T1–T2 apical impressed areas distinctly and completely punctate, similar to discs ... *L. semicaeruleum* (Cockerell, 1895)
- 9 (8). Metepisternum no more than partially obscured by tomentum, majority of surface visible; postgena dull due to microsculpture; wing membrane subhyaline and hairs dark (except sometimes in *L. prasinogaster*) ... 10
 - Metepisternum completely obscured by dense tomentum; postgena polished due to lack of microsculpture; wing membrane and hairs white ... *L. albohirtum* (Crawford, 1907)

- 10 (9). Propodeum with dorsolateral slope and lateral surface distinctly punctate (Fig. 59A) ... 11
- Propodeum with dorsolateral slope and lateral surface rugulose to rugose (Fig. 59B) ... *L. zephyrus* (Smith, 1853) [in part]
- 11 (10). Mesosomal punctures very coarse, about twice or more width of parapsidal line (Fig. 60A); tarsi brown ... *L. dashwoodi* Gibbs, 2010
- Mesosomal punctures relatively fine, less than twice width of parapsidal line (Fig. 60B); tarsi yellow ... *L. prasinogaster* Gibbs, 2010
- 12(7). Propodeum with dorsolateral slope punctate (Fig. 59A) (Western) ... 13
- Propodeum with dorsolateral slope rugose (Fig. 59B) (Eastern) ... 14
- 13 (12). Head elongate (length/width ratio = 1.11); mesoscutal punctures sparse on submedial areas (IS=1–4 PD); tarsi yellowish ... *L. sandhousiellum* Gibbs, 2010 [in part]
- Head round (length/width ratio = 0.99–1.00); mesoscutal punctures moderately dense on submedial areas (IS=1–2 PD); tarsi brown ... *L. sedi* (Sandhouse, 1924) [in part]
- 14(12). Body golden green; hypoepimeral area punctate; size small (head width = 1.30–1.37 mm) ... *L. cattellae* (Ellis, 1913) [in part] (not confirmed for Canada, but it is relatively common in Michigan so occurrence in southern Ontario is probable)
- Body blue; hypoepimeral area rugulose; size large (head width = 1.81 mm) ... *L. coeruleum* (Robertson, 1893)
- 15(6). Antennal sockets relatively close (IAD/AOD ratio ≤ 1.6); pronotum with obtuse dorsolateral angle (Fig. 61A) and dorsoventral ridge rounded and interrupted by oblique sulcus (Fig. 62A) ... 16
- Antennal sockets very distant (IAD/AOD ratio approximately 2.0); pronotum with orthogonal to acute dorsolateral angle (Fig. 61B) and carinate, complete dorsoventral ridge not interrupted by oblique sulcus (Fig. 62B) ... 96
- 16 (15). Metasomal terga at least partially red to orange ... 17
- Metasomal terga entirely black to brown ... 18
- 17 (16). Hypoepimeral area polished with distinct punctures; mesosoma punctures fine and sparse (IS=1–3 PD); S2–5 with dense plumose hair concentrated on apicolateral portions of S3 and lateral margins of S4–5; hair of S2 thinner and sparser and S4–5 bare apicomediaally ... *L. zephyrus* (Smith, 1853) [in part]
- Hypoepimeral area reticulate-rugose without distinct punctures; mesosoma punctures moderately coarse and dense (IS ≤ 1 PD except on mesoscutum medially); S2–5 with hairs uniformly sparse and plumose throughout ... *L. pictum* (Crawford, 1902)
- 18(16). Parapsidal line a narrow groove (Fig. 18A) ... 19
- Parapsidal line a wide furrow (Fig. 18B) ... *L. foveolatum* (Robertson, 1902)

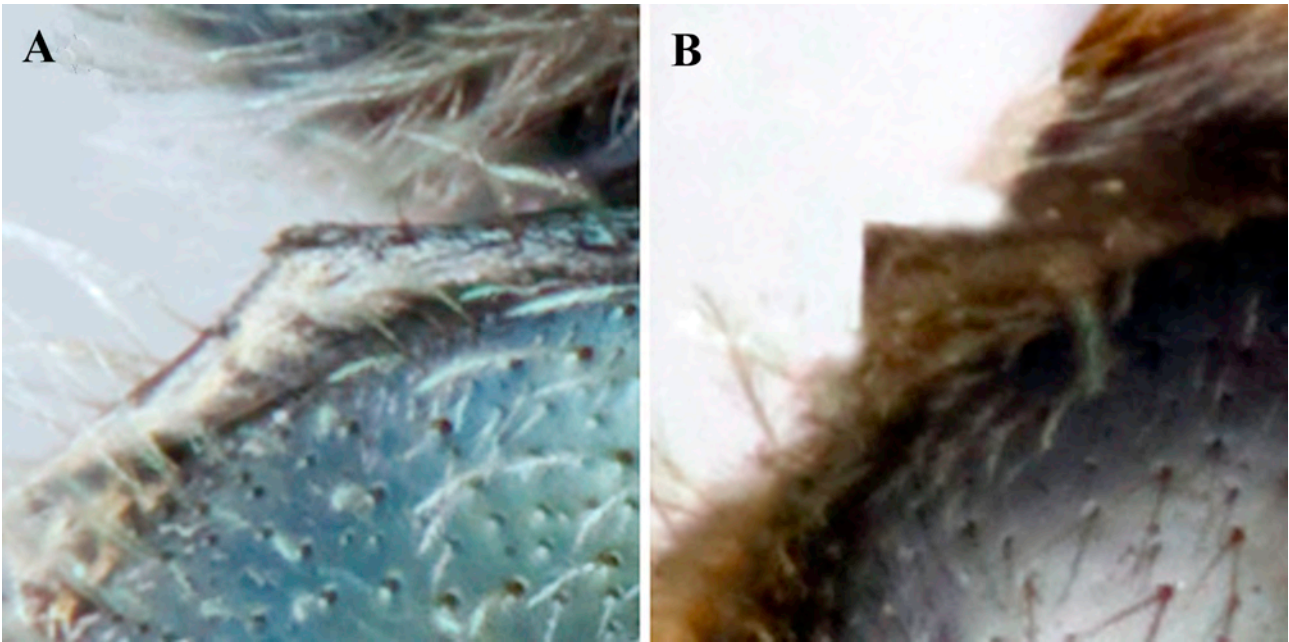


Figure 61. Dorsolateral angle of pronotum (A) obtuse, (B) orthogonal. Reprinted from Gibbs (2010).

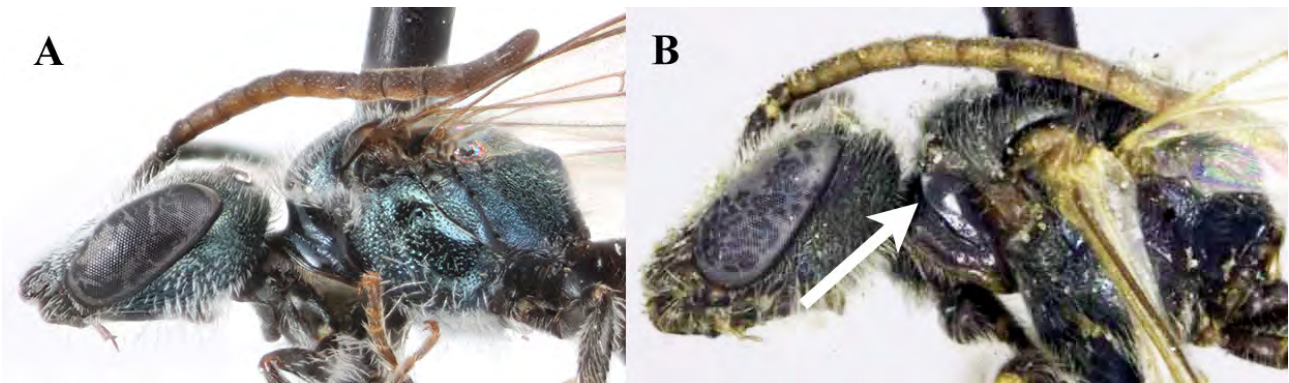


Figure 62. Pronotum of male (A) with dorsoventral ridge rounded and interrupted by oblique sulcus, (B) with dorsoventral ridge carinate and complete. (B) reprinted from Gibbs (2011).

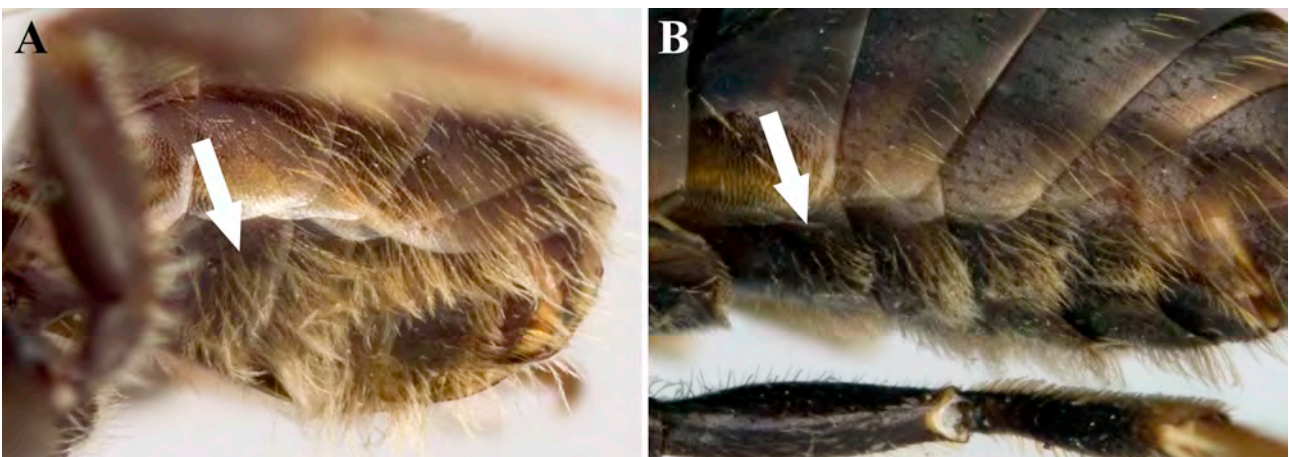


Figure 63. Sternal hairs of male (A) elongate, scopa-like, (B) short, plumose. Arrows indicate S2. Reprinted from Gibbs (2010).

- 19 (18). S2–S4 with elongate (1.5–2.5 OD) and dense scopa-like hairs (Fig. 63A) ... 20
- S2–S4 without elongate scopa-like hairs, S2 (except in *L. packeri*), at least, with short (≤ 1 OD) and sparse hairs (Fig. 63B) ... 23
- 20 (19). Face and scape with relatively short hair (≤ 1 OD); tarsi usually light brown to yellow, contrasting with dark brown tibia ... 21
- Face and scape with longer, somewhat shaggy hair (1–2 OD); tarsi dark brown, concolourous with tibia ... 22
- 21 (20). Head elongate (length/width ratio = 1.10); propodeum with smooth dorsolateral slope and weak oblique carina ... *L. brunneiventre* (Crawford, 1907) [in part]
- Head round (length/width ratio = 0.98–1.00); propodeum with rugose dorsolateral slope and strong oblique carina ... *L. incompletum* (Crawford, 1907) [in part]
- 22 (21). Metasomal terga with apical impressed areas punctate ... *L. knereri* Gibbs, 2010
- Metasomal terga with apical impressed areas impunctate ... *L. subversans* (Mitchell, 1960)
- 23(19). Propodeum with dorsolateral slope shiny and distinctly punctate (Fig. 59A) ... 24
- Propodeum with dorsolateral slope rugose or dull with indistinct punctures (Fig. 59B) ... 30
- 24 (23). Head and mesosoma bluish; metasomal terga with apical impressed areas punctate (Fig. 64A); face with tomentum below level of eye emargination, not limited to lower paraocular area ... 25
- Head and mesosoma greenish; metasomal terga with apical impressed areas impunctate (Fig. 64B); face with tomentum limited to lower paraocular area ... 29
- 25 (24). Mandible and tarsi brown, concolourous with tibiae ... 26
- Mandible and tarsi yellow, contrasting with brown tibiae ... 27
- 26 (25). Face with very dense tomentum in lower paraocular area ... *L. ebmerellum* Gibbs, 2010
- Face with tomentum uniformly sparse ... *L. immigrans* new species [in part]
- 27 (25). Clypeus not obscured by tomentum; mesoscutal punctures dense on anterior half (IS<1 PD); metasomal terga with, at most, sparse basal tomentum ... *L. macroprosopum* Gibbs, 2010
- Clypeus obscured by white tomentum; mesoscutal punctures sparse on anterior half (IS=1–4 PD); metasomal terga with abundant basal tomentum ... 28

28 (27). T1 anterior surface covered in dense appressed tomentum; head short (length/width ratio = 0.94); gonocoxite very broad and cashew-shaped; gonostylus boot-shaped, much longer than broad ... *L. pallidellum* (Ellis, 1914)

- T1 anterior surface without tomentum; head longer (length/width ratio = 1.00–1.07); gonocoxite narrower and more parallel-sided; gonostylus subtriangular, no longer than broad ... *L. hyalinum* (Crawford, 1907)

29(24). Head elongate (length/width ratio = 1.11); mesoscutal punctures sparse on submedial areas (IS=1–4 PD); tarsi yellowish ... *L. sandhousiellum* Gibbs, 2010 [in part]

- Head round (length/width ratio = 0.99–1.00); mesoscutal punctures moderately dense on submedial areas (IS=1–2 PD); tarsi brown ... *L. sedi* (Sandhouse, 1924) [in part]

30(23). Mesoscutum and mesepisternum very coarsely punctate, about twice or more width of parapsidal line (Fig. 60A) and shiny ... 31

- Mesoscutum and/or mesepisternum finely punctate, less than twice width of parapsidal line (Fig. 60B), sometimes dull ... 33

31 (30). Metasomal terga very finely and sparsely punctate (IS=1–4 PD); apical impressed areas impunctate ... *L. reasbeckae* Gibbs, 2010

- Metasomal terga densely and distinctly punctate (IS=0.5–2 PD), including on basal area of apical impressed areas ... 32

32 (31). Propodeum lateral surface rugulose ... *L. punctatoventre* (Crawford, 1907)

- Propodeum lateral surface punctate ... *L. immigrans* new species [in part]

33 (30). Metasomal terga with apical impressed areas punctate (Fig. 64A) ... 34

- Metasomal terga with apical impressed areas impunctate (Fig. 64B) ... 43

34 (33). Head round (length/width ratio = 0.95); face covered in dense, white tomentum obscuring the surface underneath (Fig. 65A); metapostnotum with striae not reaching more than halfway to posterior margin ... *L. packeri* Gibbs, 2010

- Head variable (length/width ratio = 0.95–1.08), IF round then face not obscured by dense, white tomentum (Fig. 65B); metapostnotum usually with striae reaching posterior margin ... 35

35 (34). Head moderately elongate (length/width ratio = 0.99–1.08); flagellomeres short (length/width ratio = 1.20–1.62) ... 36

- Head round (length/width ratio = 0.95–0.98); flagellomeres elongate (length/width ratio = 1.57–1.87) ... *L. smilacinae* (Robertson, 1897) [in part]

36 (35). Mesepisternum with dorsal portion distinctly punctate (Fig. 66A) ... 37

Mesepisternum with dorsal portion reticulate-rugose (Fig. 66B) ... 42

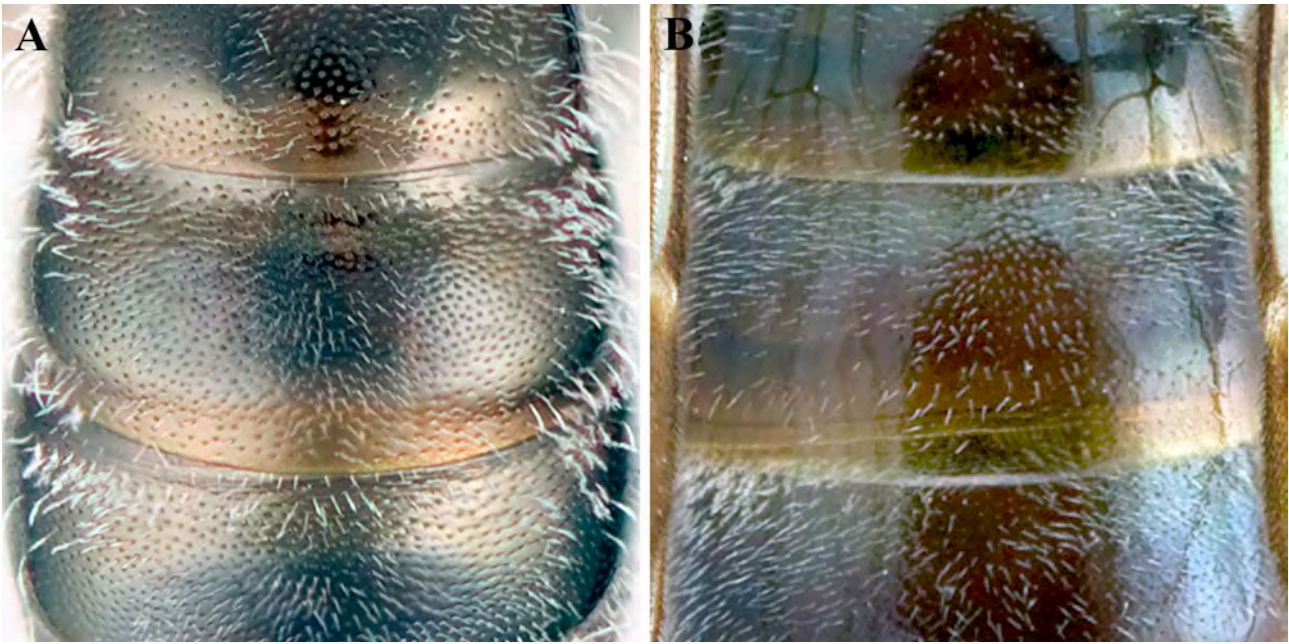


Figure 64. Metasomal terga of male with punctures (A) strong, apical impressed area punctate, (B) fine, apical impressed area impunctate. Reprinted from Gibbs (2010).

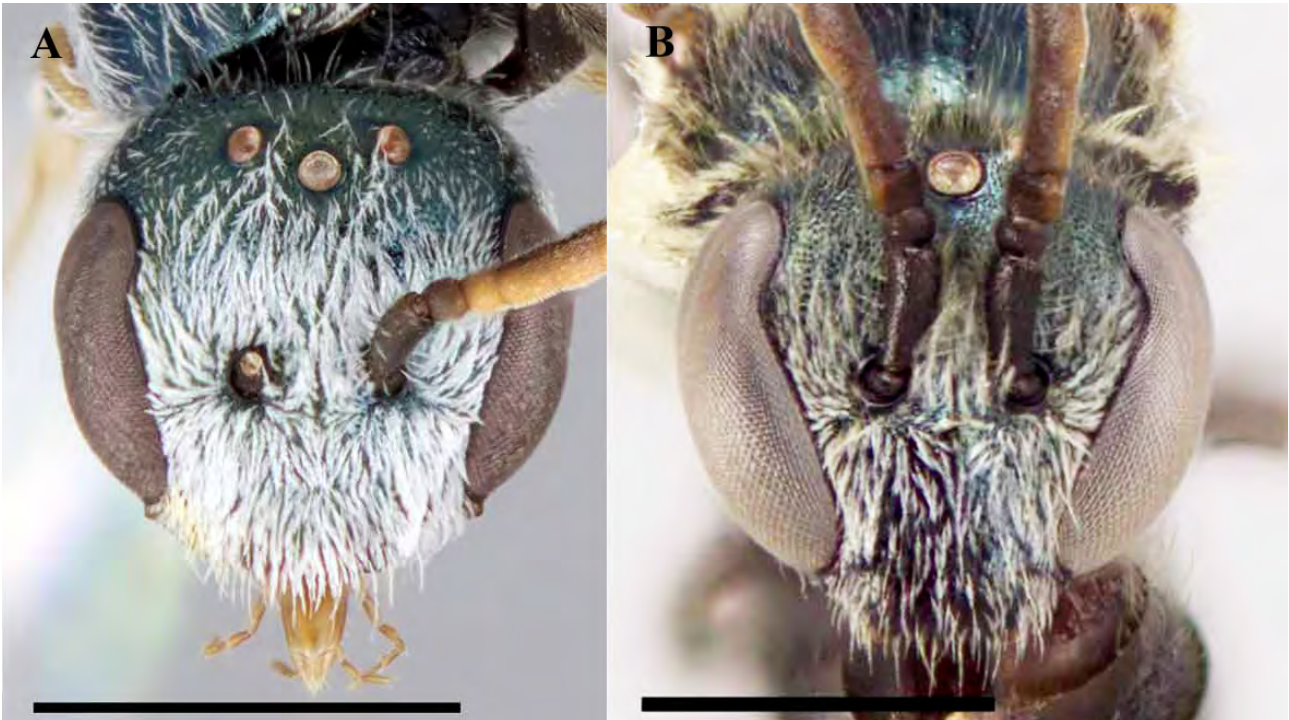


Figure 65. Face of male (A) with very dense tomentum obscuring surface, (B) with tomentum not obscuring surface. Reprinted from Gibbs (2010). Scale bars: 1 mm.

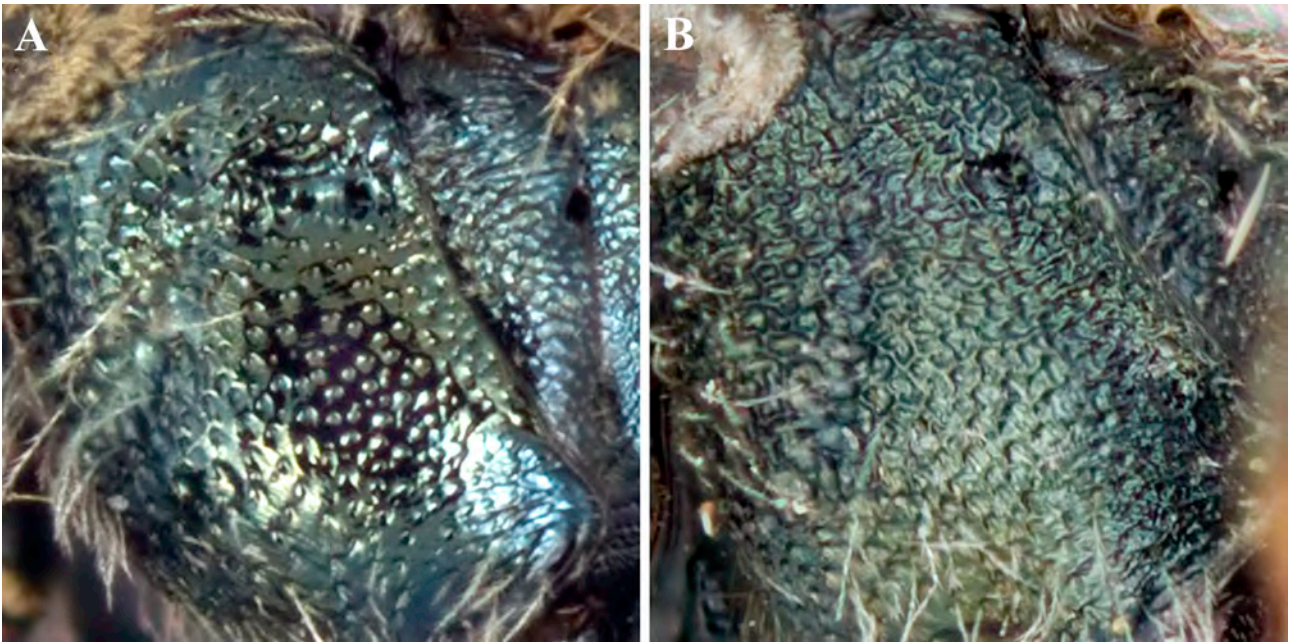


Figure 66. Mesepisternum of male (A) *L. perpunctatum*, strongly punctate, (B) *L. albipenne*, reticulate-rugose. Reprinted from Gibbs (2010).

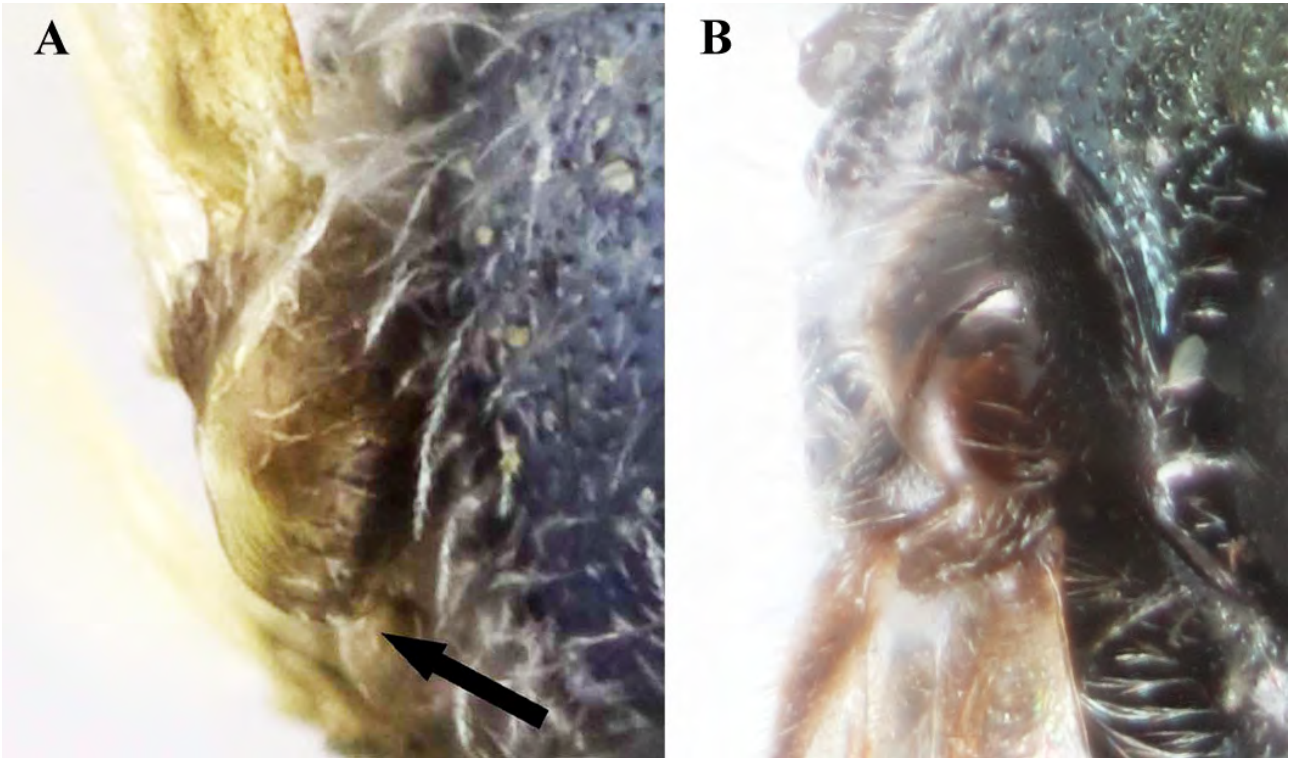


Figure 67. Tegula inner posterior margin (A) straight (arrow), (B) convex. Reprinted from Gibbs (2010).

37 (36). Size larger (head width 1.49–1.56 mm); tegula inner posterior margin straight to weakly concave (Fig. 67A) ... 38

- Size smaller (head width 1.20–1.34 mm); tegula ovoid, inner posterior margin convex (Fig. 67B) (Western) ... 40

38 (37). Head relatively short (length/width ratio = 1.00–1.03); supraclypeal area moderately densely punctate (IS=1–1.5 PD); metasomal terga without appressed tomentum ... *L. perpunctatum* (Ellis, 1913)

- Head longer (length/width ratio = 1.06–1.11); supraclypeal area densely punctate (IS<1 PD); metasomal terga with some appressed tomentum ... 39

39 (38). Metasomal terga with sparse tomentum; face with dense tomentum limited to paraocular area ... *L. sheffieldi* Gibbs, 2010

- Metasomal terga with dense tomentum; face with dense tomentum below eye emargination and above clypeus apical half ... *L. onuferkoi* new species

40(37). Head round (length/width ratio = 0.98–1.00); propodeum with rugose dorsolateral slope and strong oblique carina (Fig. 68A) ... *L. incompletum* (Crawford, 1907)

- Head elongate (length/width ratio = 1.10); propodeum with smooth dorsolateral slope and weak oblique carina (Fig. 68B) ... 41

41 (40). S2–S5 with very long (2–4 OD), dense, plumose hair ... *L. brunneiventre* (Crawford, 1907) [in part]

- S2–S5 with short (1–1.5 OD), sparse, thin hair ... *L. obnubilum* (Sandhouse, 1924) [in part]

42 (36). Metabasitarsus yellow; propodeum with lateral and posterior surfaces coarsely rugose ... *L. albipenne* (Robertson, 1890)

- Metabasitarsus light brown; propodeum with lateral and posterior surfaces at most finely rugulose ... *L. yukonae* Gibbs, 2010

43 (33). Mesoscutal punctures moderately coarse (Fig. 60B); hypoepimeral area polished due to weak microsculpture and with very strong punctures ... 44

- Mesoscutal punctures fine (Fig. 60C); hypoepimeral area ruguloso-imbricate with, at most, fine or obscure punctures ... 45

44 (43). Metasomal terga with punctures reaching the premarginal line ... *L. cattellae* (Ellis, 1913) [in part] (not confirmed for Canada, but it is relatively common in Michigan so occurrence in southern Ontario is probable)

- Metasomal terga with punctures not reaching premarginal line ... *L. tenax* (Sandhouse, 1924)

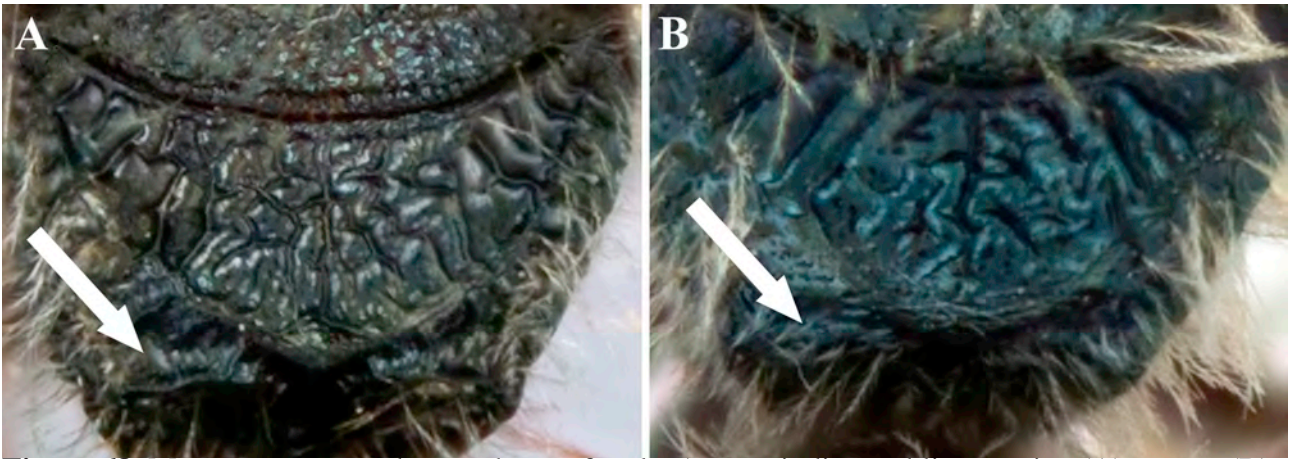


Figure 68. Metapostnotum and propodeum of male. Arrows indicate oblique carina (A) strong, (B) weak. Reprinted from Gibbs (2010).



Figure 69. Sternal hairs of male (A) moderately dense, (B) sparse, (C) very dense. A, B reprinted from Gibbs (2010).

45 (43). Size smaller (head width 1.32–1.56 mm); mesepisternum blue or bluish green; S3 with moderately dense or sparse dull white hairs (Figs. 69A, 69B) ... 46

- Size large (head width 1.75–1.85 mm); mesepisternum golden green; S3 with very dense yellowish hairs (Fig. 69C) ... *L. nigroviride* (Graenicher, 1911)

46 (45). S2 with short hairs (1 OD); propodeum with dorsolateral slope rugose ... 47

- S2 with moderately elongate hairs (1.5 OD); propodeum with dorsolateral slope rugulose (Western) ... *L. nevadense* (Crawford, 1907)

47 (46). Mesepisternum with moderately dense punctures, obscure on dorsal portion (IS=1–2 PD); metasomal terga with apical impressed areas polished ... 48

- Mesepisternum with sparse punctures, distinct throughout (IS=1–4 PD); metasomal terga with apical impressed areas coriarius ... *L. heterognathus* (Mitchell, 1960)

48 (47). Mesoscutal punctures laterad of the parapsidal lines sparse (IS=1–2 PD); S3 with sparse plumose hairs (Fig. 69B) ... *L. obscurum* (Robertson, 1892)

- Mesoscutal punctures laterad of the parapsidal lines dense (IS≤1 PD); S3 with dense plumose hairs (Fig. 69A) ... *L. smilacinae* (Robertson, 1897) [in part]

49 (5). Pronotum with dorsolateral angles obtuse (Fig. 61A) ... 50

- Pronotum with dorsolateral angles orthogonal to acute (Fig. 61B) ... 78

50 (49). Mesepisternum rugulose or weakly rugose (Fig. 17B); mesoscutum with fine or moderately coarse punctures (Figs. 60B, 60C) ... 51

- Mesepisternum strongly rugose or reticulate (Figs. 15A, 66B); mesoscutum with coarse or moderately coarse punctures (Figs. 60A, 60B) ... 75

51 (50). Metasomal terga with apical impressed areas impunctate (Fig. 64A) ... 52

- Metasomal terga with apical impressed areas distinctly punctate (Fig. 64B) ... 71

52 (51). Mesoscutal punctures dense laterad of parapsidal line (IS≤1 PD) (Fig. 3B) ... 53

- Mesoscutal punctures sparse laterad of parapsidal line (IS=1–3 PD) (Fig. 3A) ... 69

53 (52). Mesoscutum polished due to weak microsculpture at least on submedial and posterior portions ... 54

- Mesoscutum dull due to strong microsculpture including on submedial and posterior portions ... 58

54 (53). Size larger (head width 1.34–1.87 mm); mesepisternum with ventral half rough, rugulose to rugose ... 55

- Size small (head width 1.13–1.27 mm); mesepisternum with ventral half smooth, weakly imbricate ... *L. imitatum* (Smith, 1853)

55 (54). Metasomal terga with sparse basolateral tomentum (Fig. 70A) ... 56

- Metasomal terga without tomentum (Fig. 70B) ... 57

56 (55). Mesoscutum highly polished throughout due to lack of microsculpture (Sable Island) ... *L. sablense* Gibbs, 2010

- Mesoscutum weakly polished on anterior portion due to microsculpture ... *L. ephialtum* Gibbs, 2010

57(55). Metapostnotum with very coarse rugae, smooth interstitial areas distinctly wider than ridges (Fig. 71A) ... *L. oblongum* (Lovell, 1905)

- Metapostnotum with moderately coarse rugae, smooth interstitial areas as wide as ridges (Fig. 71B) ... *L. laevissimum* (Smith, 1853)

58 (53). Mesepisternum without distinct delineation between sculpture of dorsal and ventral portions (Fig. 15A) ... 59

- Mesepisternum with distinct delineation between strongly rugose dorsal portion and tessellate ventral portion (Fig. 15B) ... *L. dreisbachi* (Mitchell, 1960)

59 (58). Pronotal ridge weak, surface anterior to oblique sulcus imbricate (Fig. 62A) ... 60

- Pronotal ridge strong, surface anterior to oblique sulcus strigate (Fig. 62B) ... *L. michiganense* (Mitchell, 1960)

60 (59). Metapostnotum with rugae reaching posterior margin (Figs. 68, 71), posterior margin angled or indistinctly rounded; gonostylus without elongate medially directed hairs (Fig. 72A); penis valve without strong dorsal crest (Fig. 72A) ... 61

- Metapostnotum with rugae not reaching posterior margin (Figs. 76A, 76B), posterior margin distinctly smooth and rounded; gonostylus with elongate medially directed hairs (Fig. 72B); penis valve with strong dorsal crest (Fig. 72B) ... 68

61 (60). Mesepisternum strongly rugose on ventral portion (Fig. 15A); mesoscutum with anterolateral portion reticulate-rugulose ... *L. viridatum* (Lovell, 1905)

- Mesepisternum rugulose or tessellate on ventral portion (Figs. 17A, 17B); mesoscutum with anterolateral portion punctate ... 62

62 (61). Head moderately elongate (length/width ratio = 0.97–1.04); mesepisternum rugulose (except tessellate in *L. paradmirandum*) ... 63

- Head elongate (length/width ratio = 1.07); mesepisternum tessellate ... *L. fattigi* (Mitchell, 1960)

63 (62). Mesoscutum densely tessellate; metasomal terga uniformly punctate basal to premarginal line (Fig. 73A) ... 64

- Mesoscutum imbricate; metasomal terga with punctures immediately basad of premarginal line sparser than more anterior ones or absent (Fig. 73B) ... 66

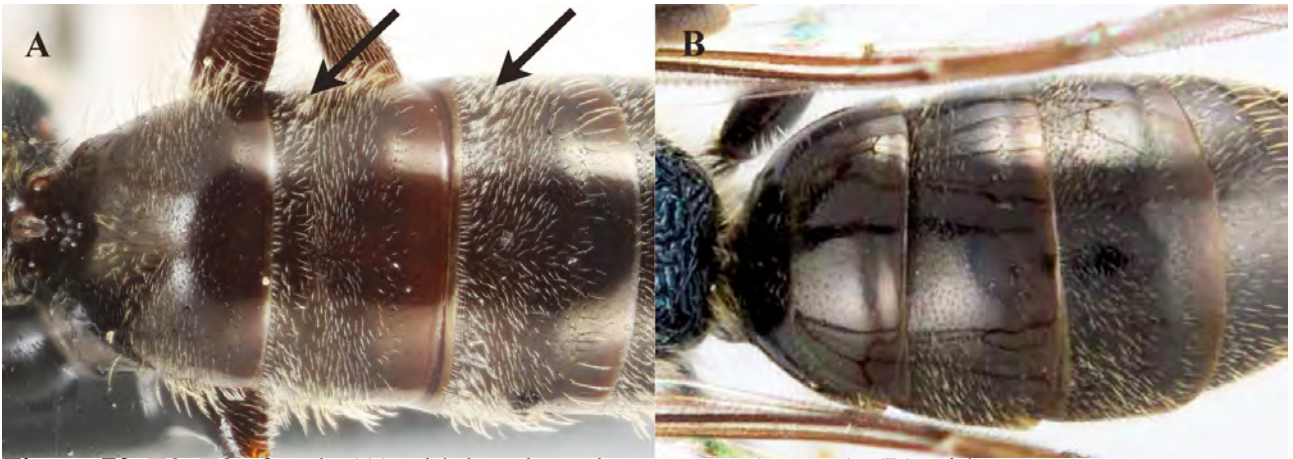


Figure 70. T2–T3 of male (A) with basolateral tomentum (arrows), (B) without tomentum.

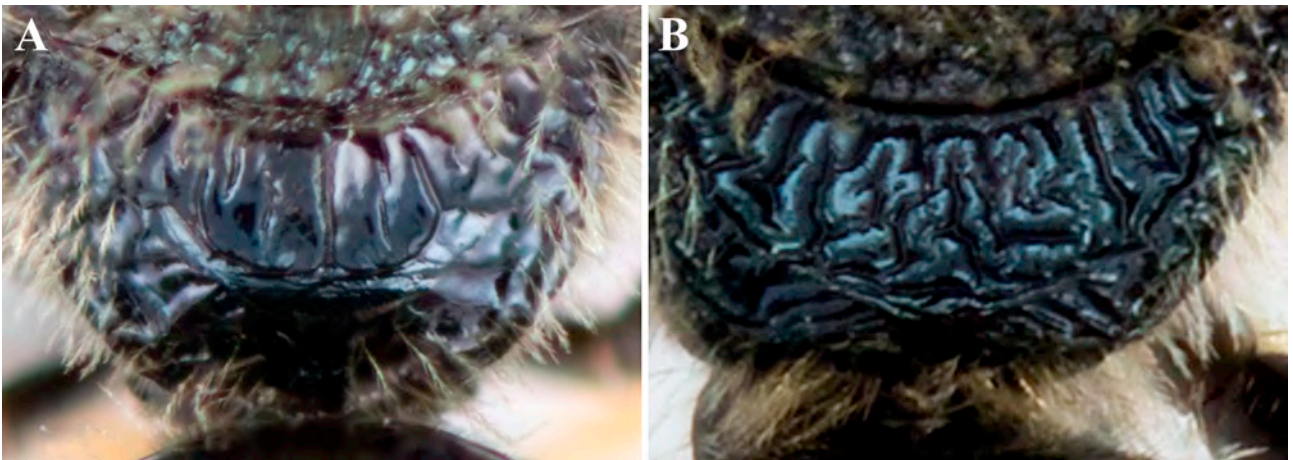


Figure 71. Metapostnotum of male (A) *L. oblongum*, (B) *L. laevissimum*. Reprinted from Gibbs (2010).

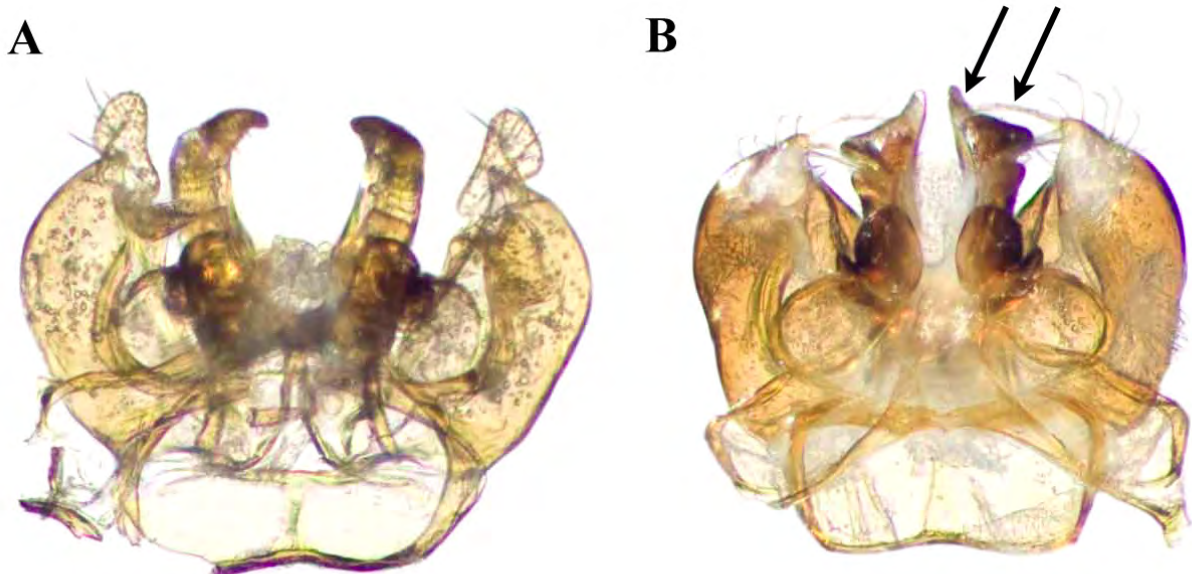


Figure 72. Male genitalia (A) gonostylus without long medially directed hairs and penis valve without dorsal crest, (B) gonostylus with long medially directed hairs (right arrow) and penis valve with strong dorsal crest (left arrow). Reprinted from Gibbs (2010).

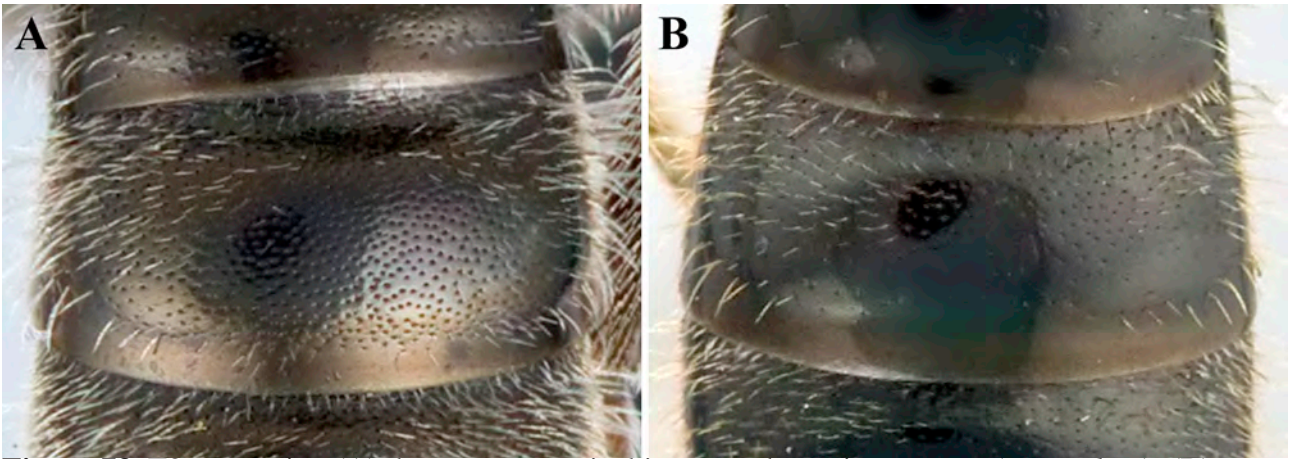


Figure 73. T2 punctation (A) dense except apical impressed area impunctate (*L. tegulare*), (B) sparse on apical half (*L. ellisiae*). Reprinted from Gibbs (2010).

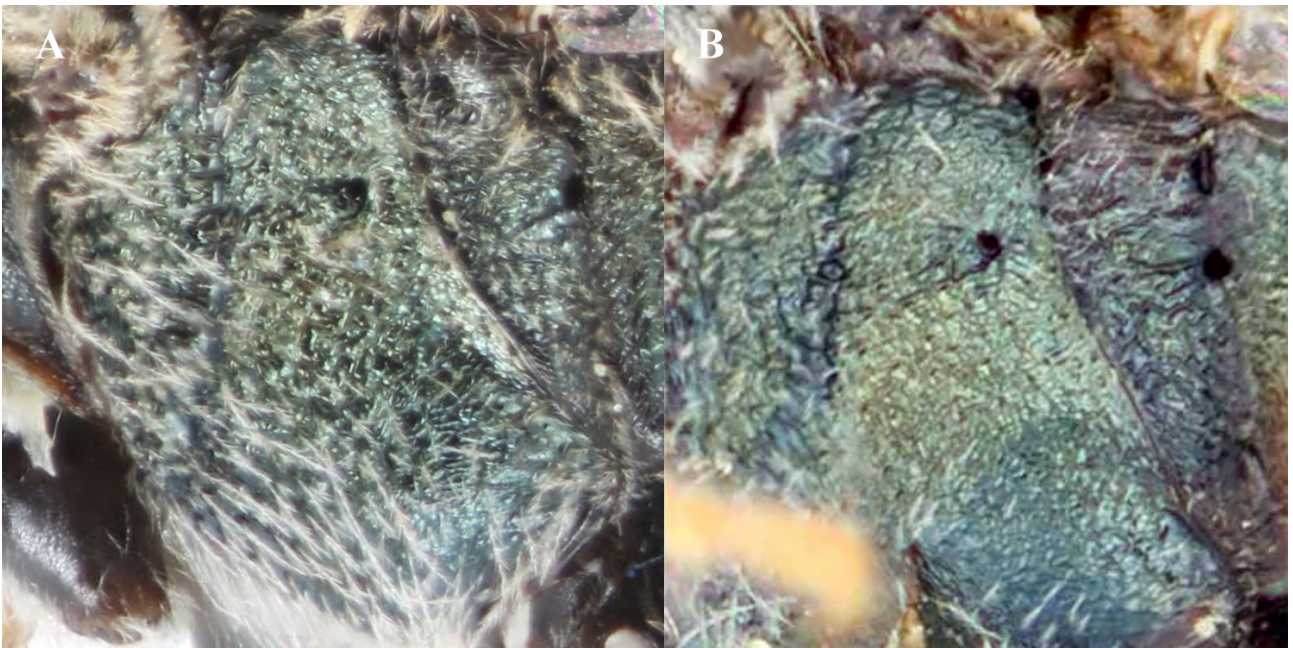


Figure 74. Mesepisternum of male (A) rugulose, (B) tessellate.

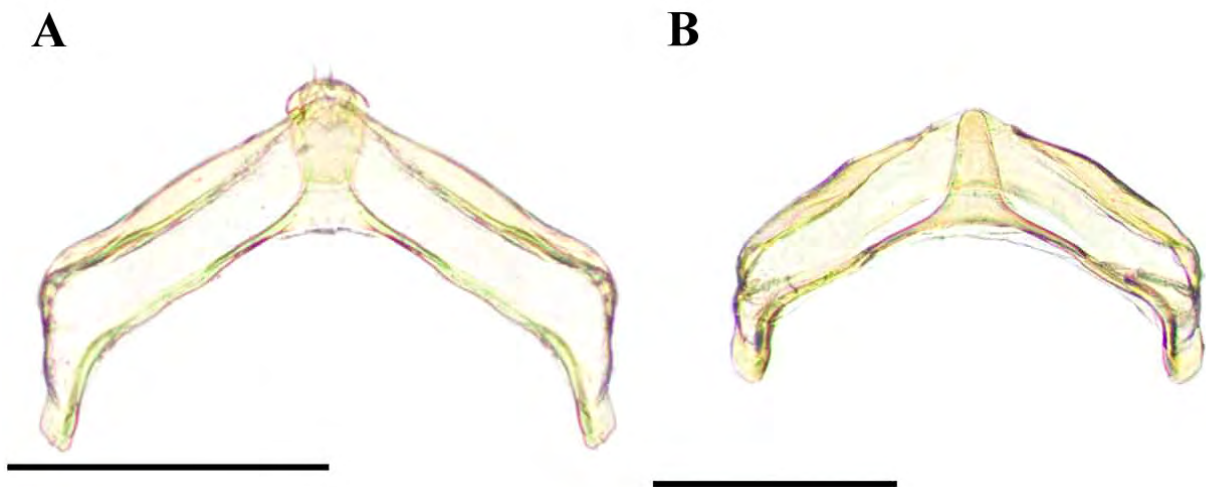


Figure 75. S8 of male (A) clavate, (B) acuminate. Reprinted from Gibbs (2010). Scale bars: 1 mm.

64 (63). Mesepisternum rugulose (Fig. 74A); metapostnotum with angled posterior margin; S8 with medial lobe clavate (Fig. 75A) ... 65

- Mesepisternum tessellate (Fig. 74B); metapostnotum with rounded posterior margin; S8 with medial lobe acuminate (Fig. 75B) ... *L. paradmirandum* (Knerer & Atwood, 1966) [in part]

65 (64). T1–T3 with very fine, sparse punctures in basal half (IS=2–4 PD) ... *L. hitchensi* Gibbs, 2012

- T1–T3 with distinct, moderately dense punctures in basal half (IS=1–2 PD) ... *L. weemsi* (Mitchell, 1960)

66 (63). Size larger (head width 1.54–1.87 mm); S2 with sparse erect hairs ... 67

- Size smaller (head width 1.22–1.42 mm); S2 with moderately dense erect hairs ... *L. tenax* (Sandhouse, 1924)

67 (66). S3–S4 with dense plumose hairs (Fig. 69A) ... *L. laevissimum* (Smith, 1853)

- S3–S4 with sparse plumose hairs (Fig. 69B) ... *L. subviridatum* (Cockerell, 1938)

68 (60). Metapostnotum with weak rugae, reaching halfway to posterior margin (Fig. 76A) (Rocky Mountains and westward) ... *L. ruidosense* (Cockerell, 1897) species complex

- Metapostnotum rugae strong, reaching nearly to posterior margin (Fig. 76B) (east of Rocky Mountains)... *L. versans* (Lovell, 1905)

69 (52). S2–S3 with moderately dense erect hairs on disc ... *L. lineatulum* (Crawford, 1906)

- S2–S3 without erect hairs on disc ... 70

70 (69). Head wide (length/width ratio = 0.94–0.95); T2 punctation sparse basally (IS=2–4 PD) ... *L. achilleae* (Mitchell, 1960)

- Head longer (length/width ratio = 1.00–1.04); T2 punctation dense basally (IS=1–2 PD) ... *L. novascotiae* (Mitchell, 1960)

71 (51). Mesoscutum dull due to strong microsculpture ... 72

- Mesoscutum polished due to weak microsculpture ... *L. timothyi* Gibbs, 2010

72 (71). Hind basitarsus elongate, approximately four times longer than wide (Fig. 77A) ... 73

- Hind basitarsus short, approximately three times longer than wide (Fig. 77B) ... *L. dubitatum* (Mitchell, 1960) (not confirmed for Canada, but may occur in southern Ontario or Québec)

73 (72). Protrochanter rounded, width at midpoint half or less of length (Fig. 78A) ... 74

- Protrochanter flattened, width at midpoint more than half of length (Fig. 78B) ... *L. callidum* (Sandhouse, 1924)

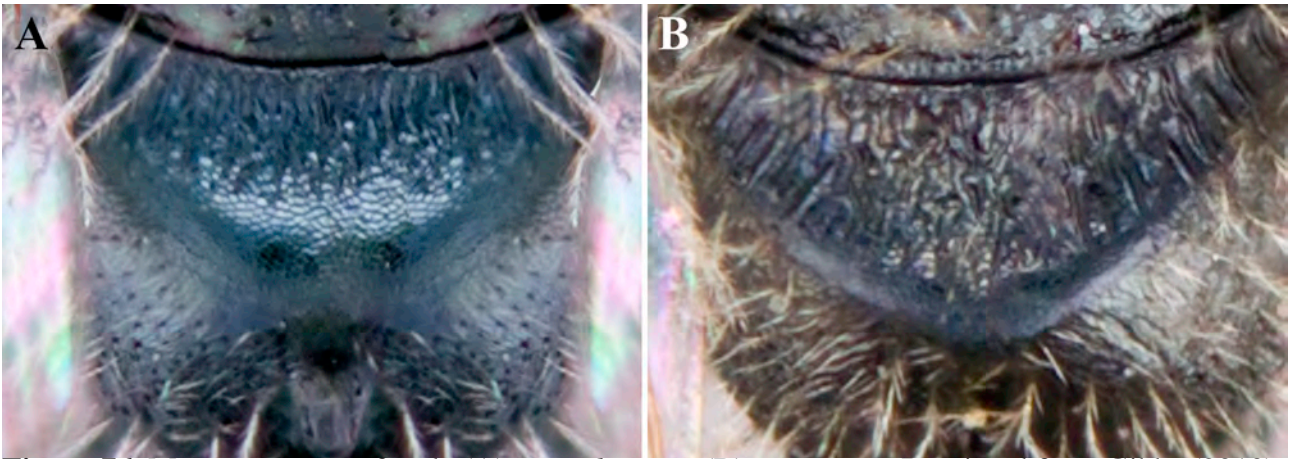


Figure 76. Metapostnotum of male (A) *L. ruidosense*, (B) *L. versans*. Reprinted from Gibbs (2010).



Figure 77. Metabasitarsus of male (A) *L. versatum*, length greater than 4X width, (B) *L. dubitatum*, length approximately 3X width. Reprinted from Gibbs (2010).

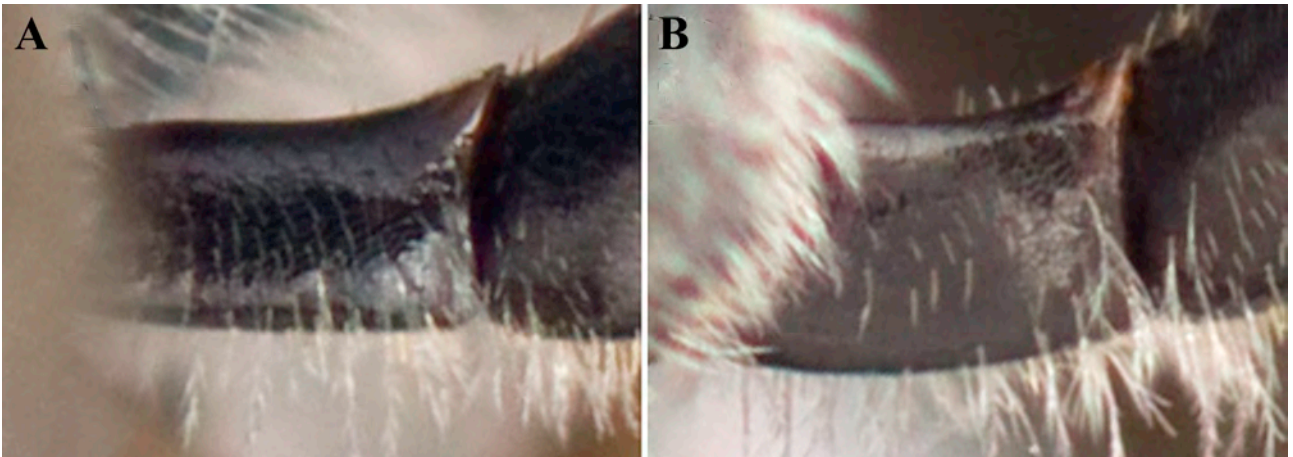


Figure 78. Protrochanter of (A) typical *Dialictus*, (B) male *L. callidum*. Reprinted from Gibbs (2010).

74 (73). T1–T4 apical impressed areas with distinct punctures; tegula usually dark reddish brown ... *L. versatum* (Robertson, 1902)

- T1–T2 apical impressed areas with obscure punctures, T3–T4 apical impressed areas impunctate; tegula pale brownish yellow ... *L. paradmirandum* (Knerer & Atwood, 1966) [in part]

75 (50). F2 elongate (length/width ratio = 1.39–1.83); facial pubescence moderately dense (as in Fig. 65B) ... 76

- F2 short (length/width ratio = 1.13–1.33); facial pubescence very dense (as in Fig. 65A) ... 77

76 (75). Mesoscutum with anteromedial portion rugose ... *L. bruneri* (Crawford, 1902)

- Mesoscutum with anteromedial portion punctate ... *L. cressonii* (Robertson, 1890)

77 (75). Tegula with distinct punctures; mesepisternum rugose (Fig. 15A); metapostnotum with strong transverse carina on posterior margin (Fig. 79A) ... *L. oceanicum* (Cockerell, 1916)

- Tegula without distinct punctures; mesepisternum reticulate (Fig. 66B); metapostnotum without strong transverse carina on posterior margin (Fig. 79B) ... *L. albipenne* (Robertson, 1890)

78 (49). Lower paraocular area obscured by very dense tomentum (as in Fig. 33A); anterior margin of mesoscutum not overlapping medial portion of pronotal collar in dorsal view ... *L. rozeni* Gibbs, 2011

- Lower paraocular area not obscured by tomentum (as in Fig. 33B); anterior margin of mesoscutum overlapping medial portion of pronotal collar in dorsal view ... *L. platyparius* (Robertson, 1895)

79 (4). Metasomal terga with apical impressed areas as distinctly punctate as discs (Fig. 64A) ... 80

- Metasomal terga with apical impressed areas impunctate or punctures much less distinct than on discs (Fig. 64B) ... 84

80 (79). Head elongate (length/width ratio = 1.18–1.21); mesepisternum without distinct punctures ... 81

- Head shorter (length/width ratio = 1.00–1.03); mesepisternum with distinct punctures ... 82

81 (80). Wings hyaline with pale hairs and amber veins (except subcosta brown); head very long (length/width ratio = 1.18–1.21); colour usually blue ... *L. pruinatum* (Robertson, 1892)

- Wings subhyaline with dark hairs and brown veins; head shorter (length/width ratio = 1.13–1.17); colour usually green ... *L. leucocomus* (Lovell, 1908)

82 (80). F2 short (length/width ratio = 1.11–1.45); mesepisternum densely punctate (IS≤1 PD); metasomal terga coarsely punctate (Fig. 64A) ... 83

- F2 elongate (length/width ratio = 1.75–1.86); mesepisternum sparsely punctate (IS=1–2 PD); metasomal terga finely punctate (Fig. 64B) ... *L. zephyrus* (Smith, 1853) [in part]

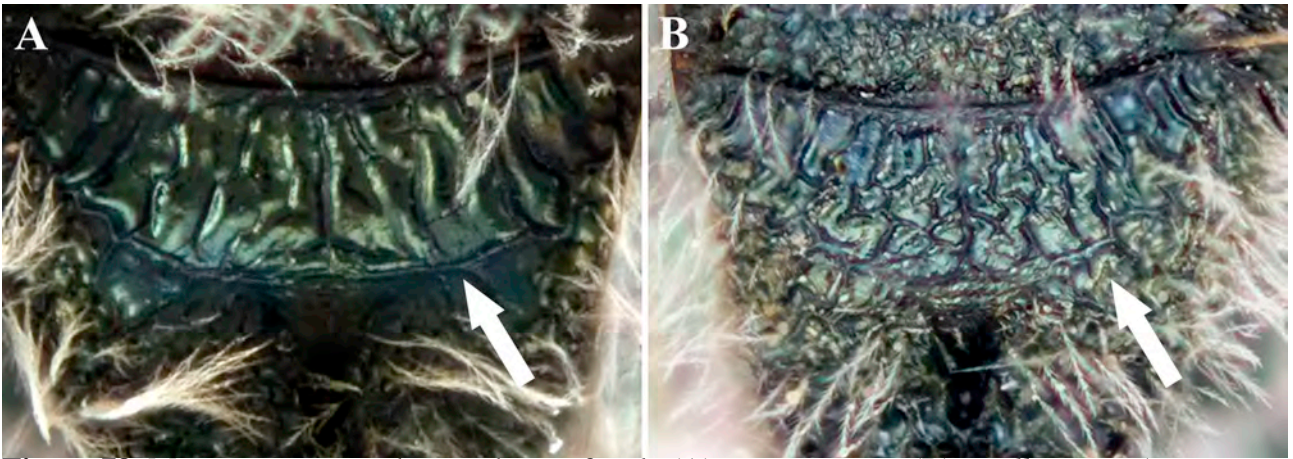


Figure 79. Metapostnotum and propodeum of male (A) *L. oceanicum*, (B) *L. albipenne*. Arrows indicate posterior margin of metapostnotum. Reprinted from Gibbs (2010).

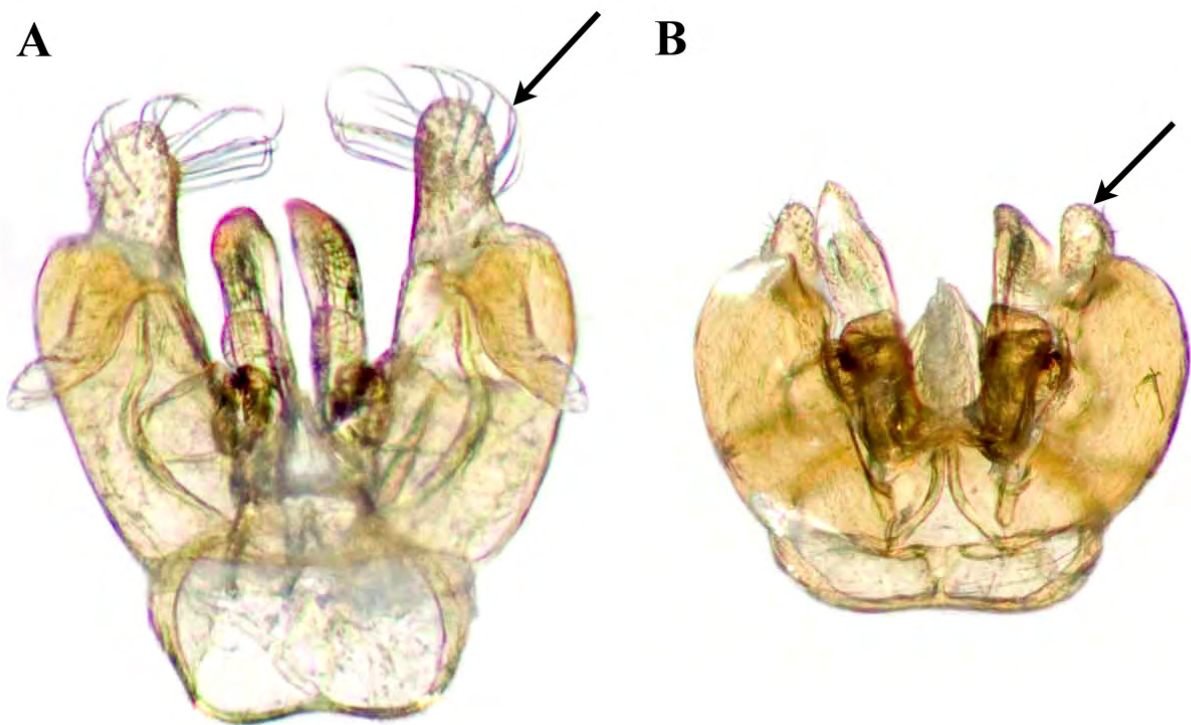


Figure 80. Male gonostylus (arrows) (A) large with long setae (*L. hudsoniellum*), (B) small with short setae (*L. pictum*). Reprinted from Gibbs (2010).

83 (82). S5 apical margin concave; F2 short (length/width ratio = 1.11–1.25); clypeus and supraclypeal area completely obscured by pubescence (as in Fig. 65A); gonostylus large with elongate setae (Fig. 80A) (Western) ... *L. hudsoniellum* (Cockerell, 1919)

- S5 apical margin straight; F2 longer (length/width ratio = 1.25–1.45); clypeus and supraclypeal area partially obscured by pubescence (as in Fig. 65B); gonostylus small with short setae (Fig. 80B) ... *L. pictum* (Crawford, 1902) [in part]

84 (79). Propodeum with very strong oblique carina (Fig. 68A); head wide (length/width ratio = 0.94–0.98) ... 85

- Propodeum with weak oblique carina (Fig. 68B); head variable (length/width ratio = 0.94–1.18) ... 87

85 (84). Clypeus with apical half yellow; F2 approximately 2.0 times as long as wide ... 86

- Clypeus with only narrow apical margin yellow; F2 approximately 1.5 times as long as wide ... *L. illinoense* (Robertson, 1892) (not confirmed for Canada)

86 (85). Discs of metasomal terga dark brown to reddish brown (Fig. 81A); mesepisternum impunctate ... *L. rufulipes* (Cockerell, 1938)

- Discs of metasomal terga lighter brownish yellow to brownish orange (Fig. 81B); mesepisternum finely punctate ... *L. testaceum* (Robertson, 1897)

87 (84). Mesoscutal punctures between parapsidal lines sparse (IS=1–3 PD); clypeus with only narrow apical margin yellow; head round (length/width ratio = 1.00–1.04) ... 88

- Mesoscutal punctures between parapsidal lines dense (IS≤1 PD); clypeus with apical half yellow; head elongate (length/width ratio = 1.16–1.18) ... *L. pavoninum* (Ellis, 1913) [in part]

88 (87). Mesepisternum with distinct punctures ... 89

- Mesepisternum without evident punctures ... 90

89 (88). T2 apical impressed area punctate; metasomal terga often either reddish or metallic green ... *L. zephyrus* (Smith, 1853)

- T2 apical impressed area impunctate; metasomal terga black to brown ... *L. georgeickworti* Gibbs, 2011

90 (88). Mesoscutum strongly tessellate, dull (Fig. 82A) ... *L. admirandum* (Sandhouse, 1924)

- Mesoscutum weakly imbricate to polished, shiny (Fig. 82B) ... *L. sagax* (Sandhouse, 1924)

91 (3). T1 anterior slope with no appressed hairs; remaining metasomal terga with tomentum very sparse or absent ... 92

- T1 anterior slope with dense appressed hairs; remaining metasomal terga with abundant dense tomentum ... 93



Figure 81. Metasomal terga of male (A) dark brown (*L. rufulipes*), (B) brownish orange (*L. testaceum*). Reprinted from Gibbs (2011).

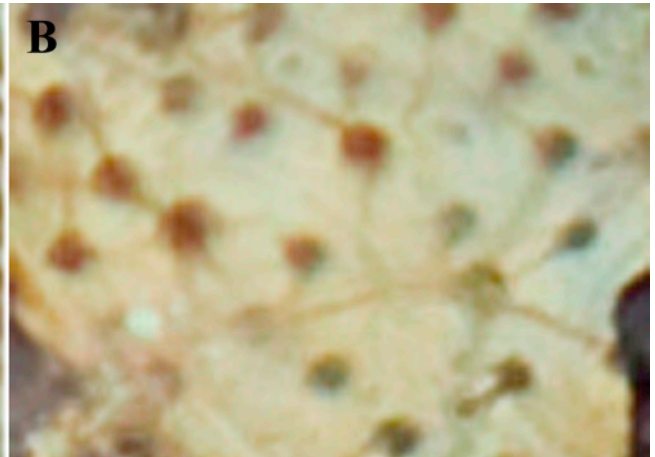
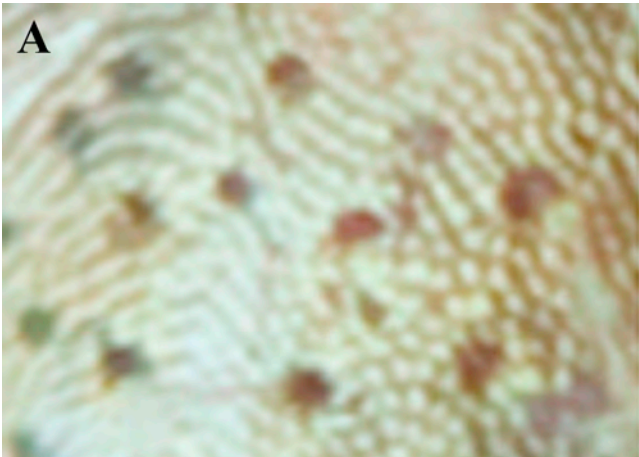


Figure 82. Mesoscutal surface between punctures (A) tessellate, (B) polished/shiny. Reprinted from Gibbs (2010).

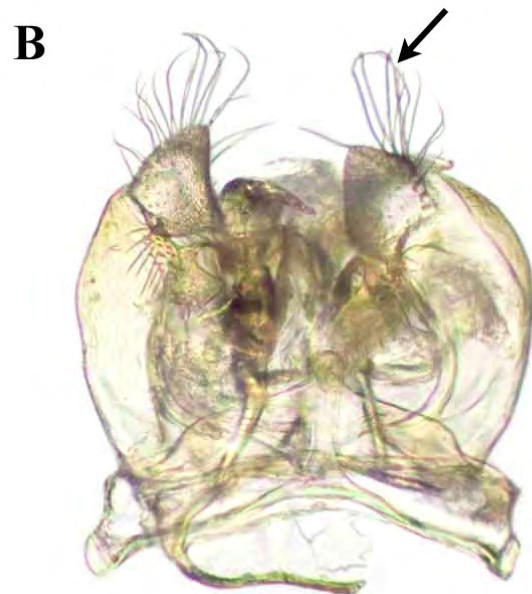
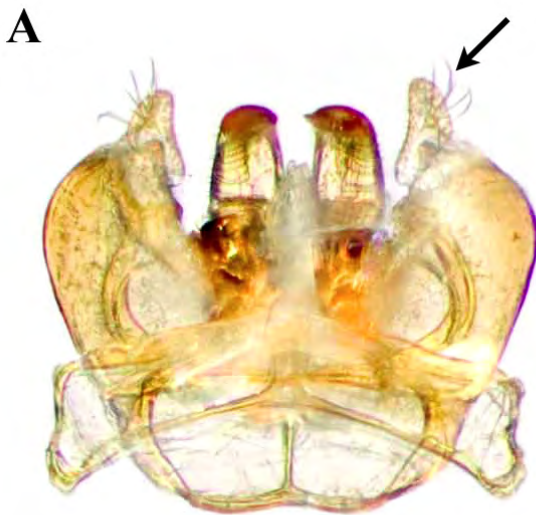


Figure 83. Male gonostylus (arrows) (A) smaller with moderately elongate setae, (B) large with very long setae (*L. vierecki*). Reprinted from Gibbs (2010).

92 (91). Clypeus apical margin yellow; metasomal terga metallic blue-green; retrorse lobe large, comparable in size to gonostylus ... *L. pavoninum* (Ellis, 1913) [in part]

- Clypeus apical margin black or brown; metasomal terga black to reddish brown; retrorse lobe much smaller than gonostylus ... *L. tuolumnense* Gibbs, 2009

93 (91). Clypeus with apical margin usually yellow; metasomal terga metallic green; gonostylus variable in size with at most moderately elongate setae (Fig. 83A) ... 94

- Clypeus with apical margin brown; metasomal terga black to reddish brown, not metallic; gonostylus large, covered in numerous elongate setae (Fig. 83B) ... *L. vierecki* (Crawford, 1904)

94 (93). Mesepisternum rugulose (Fig. 84A) ... *L. pilosum* (Smith, 1853)

- Mesepisternum reticulate-punctate (Fig. 84B) ... *L. succinipenne* (Ellis, 1913)

95 (2). Antennal sockets very distant (IAD/AOD ratio approximately 2.0); pronotum with acute dorsolateral angle (Fig. 61B) ... 96

- Antennal sockets closer (IAD/AOD ratio approximately 1.2); pronotum with obtuse dorsolateral angle (Fig. 61A) ... 97

96 (95). Size small (head width = 1.13–1.20 mm) ... *L. lionotus* (Sandhouse, 1923)

- Size large (head width = 1.54 mm) ... *L. cephalotes* (Dalla Torre, 1896)

97 (95). T2–T3 with dense punctures except on apical impressed margins (Fig. 73A) ... *L. occidentale* (Crawford, 1902)

- T2–T3 with dense punctures limited to basal half and premarginal line (Fig. 73B) ... *L. anomalum* (Robertson, 1892)

98 (1). T1 more sparsely punctate medially than laterally; tegula with crowded punctures (IS=0 PD) and no distinct interspaces, appearing dull ... *L. regulariforme* (Crawford, 1907)

- T1 uniformly punctate medially and laterally; tegula usually with some distinct shiny interspaces between punctures ... 99

99 (98). Metapostnotum shiny with strong parallel rugae (Saskatchewan and eastward) ... 100

- EITHER metapostnotum basal half dull with tessellate to reticulate microsculpture and fine, shallow rugae, OR if shiny with strong rugae, then rugae anastomosing, not parallel (Saskatchewan and westward) ... 101

100 (99). T2–T3 densely punctate to premarginal line (IS≤1 PD) (Fig. 73A) ... *L. tegulare* (Robertson, 1890)

- T2–T3 densely punctate in basal half (IS≤1 PD), becoming somewhat more sparsely punctate apically (IS=1–2 PD) (Fig. 73B) ... *L. ellisiae* (Sandhouse, 1924)

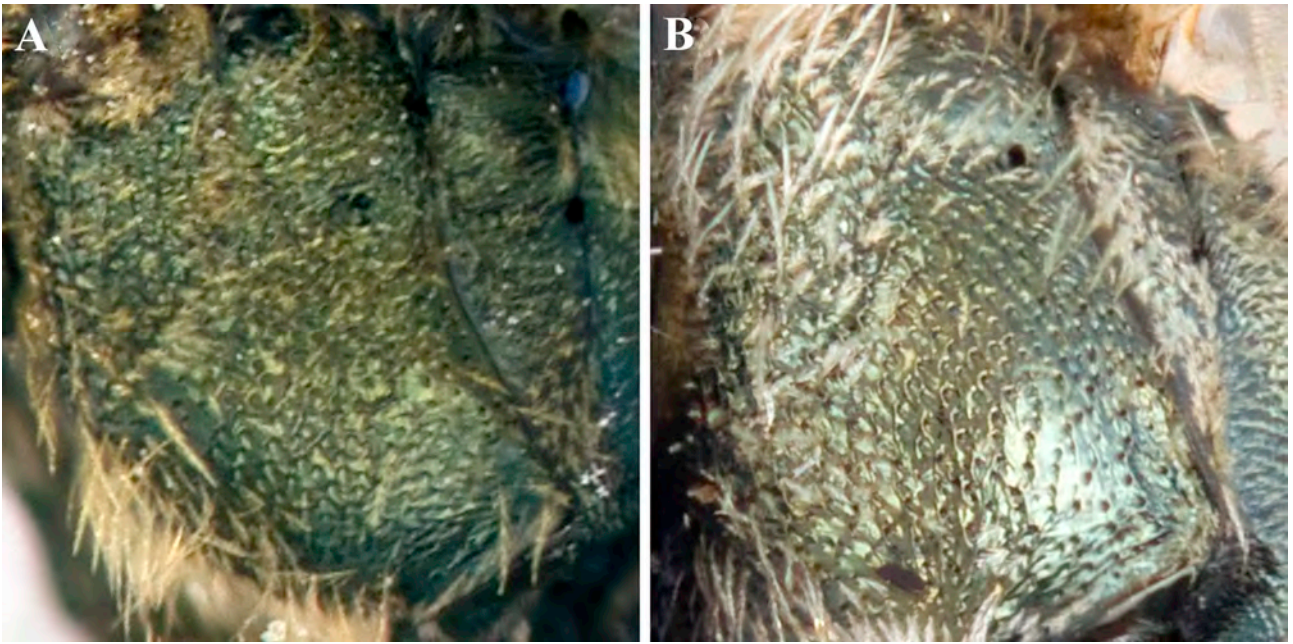


Figure 84. Mesepisternum of male (A) *L. pilosum*, rugulose, (B) *L. succinipenne*, reticulate-punctate. Reprinted from Gibbs (2010).

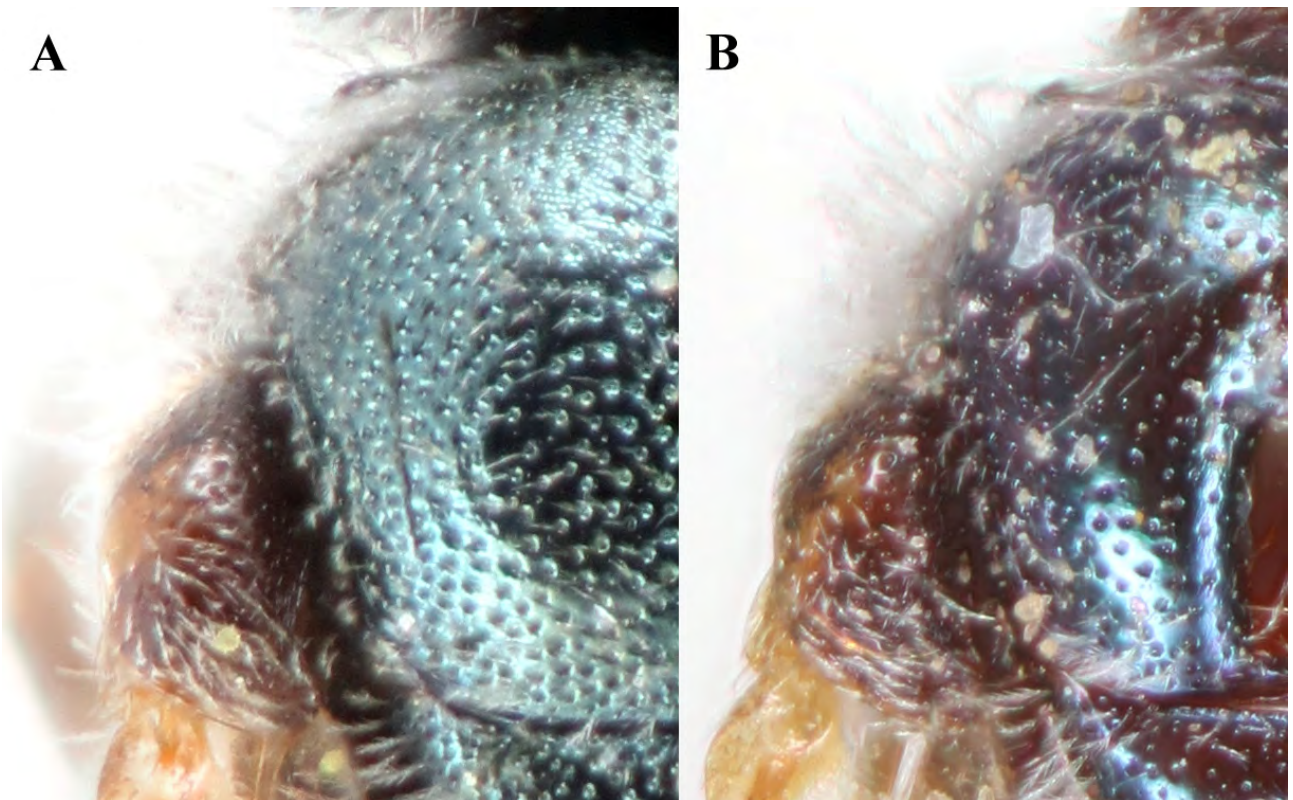


Figure 85. Mesoscutum punctures of male (A) very dense (*L. helianthi*), (B) sparser (*L. stictaspis*).

101 (99). Mesoscutum densely punctate mesad and laterad of parapsidal line ($IS < 0.5 PD$) (Fig. 85A) (west of Rocky Mountains) ... *L. helianthi* (Cockerell, 1916)

- Mesoscutum more sparsely punctate mesad and often laterad of parapsidal line ($IS \leq 1 PD$) (Fig. 85B) (east of Rocky Mountains) ... *L. stictaspis* (Sandhouse, 1923)

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