The three genera in this family that occur in the eastern United States are quite diverse in size of the included species, as well as in their appearance and habits. The most distinctive common feature is the short, broadly truncate, bifid or bilobed glossa in which they resemble the sphaecoid wasps more closely than they do the other bees. In the males, the volsella of the genital armature is composed of a distinct cuspis and digitus, the latter being articulated in some of the included forms, and the inner opposed surfaces being denticulated. In most species the females have distinct, though sometimes small, facial foveae. These are sometimes evident to a lesser degree in the males. The labial palpi are short and the four segments are more or less equal in length.

KEY TO GENERA
1. Front wing with but two submarginal cells
   Hylocaenis (p. 90)
   Front wing with three submarginal cells
   .................................................. 2
2. Pygidial plate absent; 2nd recurrent vein recurved posteriorly toward outer margin of wing Coletes (p. 24)
   Pygidial plate present; 2nd recurrent vein nearly straight, not or all recurved ........................ Caupolicana

**Caupolicana Spinola**

(Fig. 5)

Type: *Caupolicana gayi* Spinola.
Type: *Megacilissa falcicollis* Spinola.
Emendation.

This is primarily a neotropical group of bees, with but two species known from the United States, one of them occurring in the southwest and the other in the southeast. The included species are large and densely pubescent, our species being about as large as a medium-sized bumble-bee. The glossa is conspicuously bilobed, each lobe being elongate, slender, acute apically and well covered with short setae. The scopae is well developed on the trochanters, femora and tibiae of the hind legs, the hairs very long, slender, copious and densely plumose. The pygidial plate is large and well developed in the female, while in the male it is evident but not distinct.

**Caupolicana electa** (Cresson)

(Frontispiece & fig. 6)


Length, 20 mm.; integument black, basal segments of legs piceous, tibiae and tarsi ferruginous; wings pale fuliginous, veins more ferruginous, the small and narrow stigma piceous; tegulae pale yellowish-hyaline thorax and basal abdominal segment with a dense and rather short covering of fine pubescence which entirely obscures the surface, pale ochraceous above, becoming somewhat more whitish below; 2nd and following segments of abdomen black in appearance, pubescence extremely short and hardly evident on the more basal segments, becoming rather long and copious on 5th and 6th, fusaceous in color.

**FEMALE**—Face about as long as broad; clypeus protuberant, relatively bare, smooth and shining, with minute, scattered, irregular punctures; labrum largely exposed, with a shallow median groove; mandibles rather short and slender, bidentate; basal segment of flagellum about equal to segments 2-5 combined, the median segments somewhat longer than broad, the 2nd about as broad as long, piceous above, somewhat more brownish beneath; facial

![Figure 6](image)

Genital armature and sterna 7 and 8 in males of *Caupolicana electa*. Dorsal view of armature on left of median line, ventral view on right.
foveae poorly developed; vertex narrow back of eyes, lateral ocelli large, about equidistant from eyes and each other, and separated from margin of vertex by a space about equal to their diameter; pubescence rather long and copious on posterior and lower surfaces of head, between ocelli and around bases of antennae, entirely pale ochraceous; cheeks about equal to eyes in width; front and middle legs quite densely pubescent, front tibiae with a prominent, posterior, whitish fringe; scopal dense, well developed on trochanters, femora and tibiae, pale ochraceous, very finely plumose; hind basitarsi shorter than tibiae but fully as broad; basitibial plate poorly developed.

MALE—Face rather narrow and elongate, inner margin of eyes parallel, eyes quite large in frontal view; clypeus protuberant, quite densely pubescent, with very fine and close punctures beneath; labrum largely exposed, with a shallow median groove; mandibles short and slender, with a subapical inner tooth; basal segment of flagellum about equal to segments 2-5 in length, 2nd segment broader than long, following segments slightly longer than broad, piceous above, more brownish beneath; vertex narrow back of eyes, lateral ocelli large, space separating them from eyes about equal to their diameter, but somewhat more widely removed from margin of vertex; cheeks slightly narrower than eyes; pubescence pale ochraceous and quite dense on posterior portion of vertex, cheeks, front below antennae, between ocelli and over most of clypeus; legs slender, hind tibiae elongate, slightly arcuate, about twice the length of the mid tibiae, hind basitarsi slender, parallel-sided and about half the length of their tibiae.

DISTRIBUTION—Coastal plain, North Carolina to Georgia and Alabama; September.

FLOWER RECORDS—Aureolaria sp. and Trichostema dichotemum.

There is much to learn regarding the distribution and habits of this bee. It seems to be primarily matinal, so far as the time of flight is concerned, and both sexes have been collected on Trichostema around sunrise. Males, however, have been collected in late afternoon or at dusk, visiting both Trichostema and Aureolaria. It was thought that it might be nocturnal, but the flowers which it visits, at least so far as positive records show, are closed during the night, which would seem to preclude any nocturnal visits. It occurs, apparently, only in the sand ridge areas of the Coastal Plain in the Southeast.

Colletes Latreille


Colletes is quite primitive in several respects. The broadly truncate and emarginate glossa is one such feature, and the rather general distribution of the pollen collecting hairs on the posterior surface of the thorax, the more basal segments of the hind legs and to some degree the venter of the abdomen also suggest a primitive or generalized condition. The most distinctive and reliable character is the recurved form of the 2nd recurrent vein of the front wing. The 1st submarginal cell is nearly equal to the 2nd and 3rd combined. In size, species of Colletes approximate that of the honeybee, some of them being somewhat larger and others smaller. Usually they are rather conspicuously pubescent, and many species have prominent apical bands of hair on the abdominal segments.

Biological notes on a few of the species have been published. They are soil-nesting, making tunnels of varying depths which are humming with activity during the brief period of flight. Species are either vernal or autumnal, and only in the more northern latitudes where the summer is very short, are they found in flight during the mid summer period.

KEY TO SPECIES

Females

1. Malar space half as long as eye

   2. Malar space much shorter than half length of eye

2. Malar space nearly equalling the width of the base of the mandible

3. Clypeus elongate, flattened, with a sharp median, longitudinal sulcus

   4. Clypeus relatively short, the median sulcus shallow or poorly developed

—See C. compactus, C. inaequalis and C. thoracicus.
4. Pubescence of dorsum of thorax largely pale, with only a few dark hairs; dorsal face of triangle of propodeum with coarse, widely spaced striae delimiting shining rectangular pits .................. productus Robertson (p. 45)

Thorax dorsally with conspicuous dark pubescence; dorsal face of triangle of propodeum finely and closely striate .................. impunctatus laevis Swenk (p. 40)

5(2). Metapleural protuberance with a dorsal, overhanging, carinate projection, the margin of which usually is testaceous .................. 6

Metapleura not carinate dorsally .................. 16

6. Scutum thinly and entirely pale pubescent, shining, punctures fine and relatively sparse, even anteriorly, interspaces much wider than the punctures ........................................ 7

Scutum more densely or copiously pubescent, or with intermixed blackish hairs, deeply and closely punctate, interspaces usually not exceeding punctures in width, at least anteriorly .................. 8

7. Metapleural protuberance conspicuously carinate, the margin narrowly but distinctly yellow .................. bradleyi Mitchell (p. 83)

Metapleural protuberance very low and inconspicuous, entirely black .................. albescens Cresson (p. 30)

8(6). Scutum with strong admixture of black pubescence medially .................. thysanellae Mitchell (p. 51)

Pubescence of scutum entirely pale .................. 9

9. Lateral angles of pronotum produced and sharply acute, almost spinose .................. howardi Swenk (p. 38)

Lateral angles of pronotum either not produced or only very inconspicuously so .................. 10

10. Pubescence of scutum short, subapressed, thickened and densely plumose, largely obscuring the surface .................. 11

Pubescence of scutum more elongate, fine and erect .................. 12

11. Metapleural protuberance conspicuously carinate, the margin yellow .................. aberrans Cockerell (p. 28)

Metapleural protuberance very low and inconspicuous, entirely black .................. armatus Cockerell (p. 54)

12(10). Metapleural protuberance relatively small and inconspicuous, the carinate margin black or very narrowly testaceous .................. 13

Metapleural protuberance more robust, the margin conspicuously testaceous .................. 14

13. Discs of abdominal terga densely covered with appressed, yellow tomentum, obscuring the surface .................. solidaginis Swenk (p. 49)

Discs of abdominal terga not densely tomentose, surface exposed only beneath the conspicuous, pale ochraceous, apical fasciae .................. mitchelli Stephen (p. 32)

14(12). Pubescence of dorsum of thorax snow-white; discs of abdominal terga densely covered with closely appressed, fine, white tomentum, obscuring the surface .................. susannae Swenk (p. 49)

Pubescence of dorsum of thorax bright ochraceous; discs of abdominal terga largely exposed .................. 15

15. Basal tergum of abdomen shining, very minutely and obscurely punctate; basal tomentose band of second tergum relatively less dense and conspicuous .................. americanus Cresson (p. 31)

Basal tergum more closely and distinctly punctate laterally; basal tomentose band of second tergum broad, dense and conspicuous .................. mandibularis Smith (p. 44)

16(5). Hind basitarsi very broad and flat, length only about twice the breadth .................. latitarsis Robertson (p. 43)

Hind basitarsi three or four times longer than broad .................. 17

17. Abdominal terga 1 & 2 with deep subapical grooves, the rims reflexed .................. brevicornis Robertson (p. 54)

Apical margins of terga 2 & 3 not grooved or reflexed .................. 18

18. Lateral angles of pronotum spinose .................. 19

Angles of pronotum not spinose .................. howardi Swenk (p. 38)

19. Scutum irregularly roughened, without distinct punctures, hind margins of abdominal terga black, and only slightly depressed .................. simulans armatus Patton (p. 47)

Scutum with coarse and deep punctures; hind margins of abdominal terga abruptly depressed, hyaline in part .................. 20

20. Abdominal terga coarsely, deeply and closely punctate .................. robertsonii Dalla Torre (p. 46)

Abdominal terga minutely and obscurely punctate .................. 21

21. Pubescence of dorsum of thorax entirely pale .................. hyalinus Provancher (p. 39)

Pubescence of dorsum of thorax in large part fuscous or black .................. simulans miamensis Mitchell (p. 48)

22(18.) Apical sternum with a pair of distinct lateral ridges .................. 23

Apical sternum without lateral ridges .................. 24
27. Clypeus weakly sulcate medially; abdom-
25. Pubescence of scutum entirely pale
24 (22). Punctures of basal abdominal
23. Abdominal punctures close, deep and dis-
tinct, relatively coarse; dorsum of thor-
ax with much conspicuous blackish pu-
bescence...compactus Cresson (p. 35)
Abdomen more shining, punctures finer
and less deep; dorsum of thorax with
pubescence entirely pale.............
bankesi Swenk (p. 32)
24 (22). Punctures of basal abdominal
tergum deep and distinct, although pos-
sibly fine..............................25
Basal tergum impunctate or with exceed-
ingly minute and obscure punctures that
are barely visible....................33
25. Pubescence of scutum entirely pale...26
Pubescence of scutum with at least some
admixture of blackish or darker hairs
........................................30
26. Facial foveae narrow, restricted, not
nearly reaching lateral ocelli; second
tergum with very short pubescence, not
noticeably dark......................27
Facial foveae triangular, broad and ex-
tensive nearly reaching lateral ocelli 28
27. Clypeus weakly sulcate medially; abdomi-
inal sterna shining, quite coarsely punc-
tate; punctures of mesopleura nearly
contiguous...eulophi Robertson (p. 42)
Clypeus not sulcate; abdominal sterna
dull, the punctures very fine; punctures
of mesopleura separated by about a
puncture width..........................29
kinecaeditis Cockerell (p. 41)
28 (26). Abdominal terga 2-4 with rather
short but erect and quite evident pu-
bescence; central area of scutum shin-
ing and sparsely punctate.........29
Pubescence of abdominal terga 2-4 mostly
appressed, entirely pale and very thin
and inconspicuous; scutum closely punc-
tate throughout.....................ciliatus Patton (p. 35)
29. Smaller (10-11 mm.); hind basitarsi more
slender, with length four times the
breath..............aestivialis Patton (p. 29)
Larger (12-14 mm.); hind basitarsi more
robust, length three and a third times
the breadth.........................andrewsi Cockerell (p. 30)
30. Dorsum of thorax densely covered with
bright fulvous pubescence, with but a
very few blackish hairs intermixed near
center of scutum.....................thoracicus Smith (p. 50)
Pubescence of dorsum of thorax whitish
or blackish, more or less as an inter-
mixture...............................31
31. Clypeus dull, finely and densely striate,
and with a distinct median sulcus......willistoni Robertson (p. 53)
Clypeus either coarsely rugoso-punctate,
or with finer but distinct punctures, to
some degree shining..................32
32. Punctures of scutum posteriorly and scu-
tellum very coarse and deep; cheeks
much narrower than eyes..............nudus Robertson (p. 45)
Punctures of scutum and scutellum rela-
tively fine, cheeks broader than eyes....inaequalis Say (p. 41)
33 (24). Scutum and scutellum densely cov-
ered with rather long, bright fulvous
pubescence; abdominal fasciae reduced
or absent...thoracicus Smith (p. 50)
Either the scutum with some dark pubes-
cence, or the abdomen conspicuously
fasciate...............................34
34. Scutum with at least some admixture of
blackish hairs.......................35
Scutum entirely pale pubescent ..........37
35. Basal abdominal tergum with fine, but
depth, distinct and rather close punc-
tures...inaequalis Say (p. 41)
Basal tergum shining, nearly impunctate
........................................36
36. Malar space lacking; hypoepimeral area
shining between the distinctly separat-
ed, coarse and deep punctures.....
titesenisi Mitchell (p. 51)
Malar space nearly half as long as width
of mandible at base; hypoepimeral area
dull, coarsely rugose..................distinctus Cresson (p. 37)
37 (34). Facial foveae distinct, width about
equal to the space between antennae,
broad and well developed; abdominal
terga with conspicuous, erect, fuscous
pubescence on discs..................
consors mesoscopus Swenk (p. 37)
Facial foveae small or very narrow and
poorly developed; abdomen without con-
spicuous dark pubescence...........38
38. Pubescence of dorsum of thorax bright
ochraceous; hypoepimeral area dull,
closely and completely punctate; seg-
ment 1 of flagellum short, no more than
equal to segment 2....................brinleyi Mitchell (p. 34)
Pubescence of dorsum of thorax pale
ochraceous or whitish; hypoepimeral
area smooth and shining in part, only
upper half punctate; segment 1 of fla-
gellum usually longer than segment 2..hyalinus Provancher (p. 39)
Males
1. Malar space half as long as eye............validus Cresson (p. 52)
Malar space shorter, subequal to or short-
er than width of mandibles at base...2
2. Malar space long, nearly or quite equal-
ing width of the mandibles at base...3
Malar space not longer than half the
width of the mandibles at base......10
3. Basal segment of abdomen closely and deeply punctate, especially toward apical margin ........................................... 4
   Basal segment of abdomen shining, punctures fine or minute, separated by much more than their own diameters .... 7
4. Apical margin of 2nd and 3rd abdominal terga not or only very obscurely depressed ............ inaequalis Say (p. 41)
   Apical margin of 2nd and 3rd terga deeply and abruptly depressed .......... 5
5. Pubescence of dorsum of thorax entirely pale ........................................... 6
   At least scutellum with some intermixture of dark hairs compactus Cresson (p. 36)
6. Wings of 7th sternum relatively broad, angulate medially on outer margin .................. kinosialis Cockerell (p. 41)
   Wings of 7th sternum relatively narrow, evenly rounded on outer margin, and with a distinct neck basally, just beyond articular condyle .......... eulophi Robertson (p. 42)
7(3). Punctures of scutum minute, widely separated even anteriorly, the surface polished . productus Robertson (p. 45)
   Punctures of scutum coarse and deep, quite close, at least anteriorly .......... 8
8. Smaller (about 7 mm.); clypeus shining beneath beard, punctures minute; pleura shining, with distinctly separated punctures .................. . impunctatus lacustris Swenk (p. 40)
   Somewhat larger (9 mm. or more); clypeus deeply, coarsely and quite closely punctate ........... 9
9. Punctures of scutellum much more coarse than those of scutum; lower portion of pleura with some shining spaces evident between punctures .................. distinctus Cresson (p. 37)
   Punctures of scutellum and scutum about equally coarse and deep; pleura densely tessellate and dull between the rather coarse and close punctures .................. thoraeicous Smith (p. 50)
10(2). Metapleura with an overhanging carinate protuberance just beneath base of hind wing; the margin of this protuberance usually testaceous ............... 11
   Metapleura, if protuberant at all, not carinate .......... 20
11. Pubescence of scutum entirely pale .... 12
   Scutum with abundant, fuscous or blackish hairs intermixed with the pale pubescence .. thyamellae Mitchell (p. 51)
12. Basal tergum closely and distinctly punctate throughout, interspaces only slightly exceeding puncture width .......... 13
   Median portion of disc of basal tergum either indistinctly or quite sparsely punctate .......... 17
13. Lateral areas of prothorax, above front coxae expanded, nearly nude, carinate anteriorly . aberrans Cockerell (p. 28)
   Lateral areas not expanded, obscured by relatively dense pubescence ........ 14
14. Pubescence of head and thorax snowy-white .......... susannae Swenk (p. 49)
   Pubescence of head and thorax yellowish or ochraceous ............... 15
15. Metapleural protuberance low and inconspicuous, obscured by dense pubescence, margin entirely black .......... howardi Swenk (p. 38)
   Metapleural protuberance well developed, although possibly obscured by pubescence, the margin quite broadly yellow .......... 16
16. Legs bright testaceous .......... wilmattae Cockerell (p. 54)
   Legs basally piceous or black, the tarsi more or less testaceous .......... mandibularis Smith (p. 44)
17(12). Tarsi ferruginous; punctures of basal segment of abdomen very obscure, barely evident even laterally .......... solidaginis Swenk (p. 49)
   Punctures of basal segment of abdomen distinct, though very fine, laterally quite close .......... 18
18. Malar space fully half as long as width of mandible at base .......... albescens Cresson (p. 30)
   Malar space very narrow or linear .......... 19
19. Metapleural protuberance wide and conspicuous, with a distinct testaceous rim .......... americanaus Cresson (p. 31)
   Metapleural protuberance quite low and inconspicuous, its margin entirely black .... mitchelli Stephen (p. 32)
20(10). Hind basitarsi very broad and flat, width equalling half the length .......... latittaris Robertson (p. 43)
   Hind basitarsi narrow, three or four times longer than broad .......... 21
21. Basal segment of flagellum nearly or quite equal to second segment in length .... 22
   Basal segment of flagellum short, usually not much longer than broad, deviating much shorter than second segment .......... 28
22. Basal segment of abdomen very finely punctate, shining, interspaces much exceeding diameter of punctures .......... 23
   Basal segments of abdomen closely and deeply punctate, punctures usually rather coarse .......... 24
23. Basal segment of flagellum longer than the second segment which is very short,
31(29). Anterior portion of scutum roughened or rugoso-punctate, without distinctly separated punctures; pubescence of scutum largely fuscous, with pale hairs intermixed

.... simulans armatus Patton (p. 47)

Scutum entirely pale pubescent, punctures over anterior portion distinct and to some degree separate

32. Scutum anteriorly closely punctate, interspaces less than diameter of punctures; punctures of scutellum only slightly more coarse than those of scutum

.... brinleyi Mitchell (p. 34)

Scutum anteriorly more finely punctate, interspaces about equal to or slightly greater than diameter of punctures; punctures of scutellum very much more coarse and close than those of scutum

.... banksii Swenk (p. 32)

33(28). Punctures of abdominal terga very coarse, close and deep; tarsi ferruginous

.... robertsonii Dalla Torre (p. 46)

Punctures of abdominal terga relatively fine

34. Hypoeplimal area with coarse, deep and distinct punctures

.... nudus Robertson (p. 45)

Hypoeplimal area without distinct punctures

35. Pubescence of dorsum of thorax entirely pale; wings lightly infuscated, 2nd submarginal cell shorter than 3rd

.... simulans miamiensis Mitchell (p. 48)

Dorsum of thorax with intermixed fuscous or blackish hairs; wings clear hyaline, 2nd submarginal cell longer than 3rd

.... simulans armatus Patton (p. 47)

**Colletes aberrans Cockerell**

(Figs. 8 & 9)


FEMALE—Length 10-11 mm.; face somewhat longer than its greatest breadth; eyes convergent below; length of malar space about one-fourth its breadth; facial fovea narrow but rather deep, obscured by a covering of whitish tomentum; antennal segments fully as broad as long; clypeus very slightly produced below suborbital line, shining, rather closely and irregularly punctate, punctures finer and closer laterally and above; supraclavicular area bare, more finely punctured, punctures well separated medially; face otherwise densely covered with whitish, feathery pubescence, obscuring the surface; vertex bare and shining, with a few scattered very fine punc-
Colletidae—Colletes

DISTRIBUTION—This species is western in its distribution, but ranges into Wisconsin, Illinois and Michigan in the east. It is in flight from mid June to mid August.

FLOWER RECORDS—Stephen records this species on Meliloti. Petalostemon flavescens and P. villosum.

Colletes aestivalis Patton
(Figs. 7 & 9)


Colletes heuscheae Robertson, 1891. Amer. Ent. Soc. Trans. 18, p. 61. 7.

Colletes aestivalis Robertson, 1929. Flowers and Insects, Lancaster, Pa., Science Press. (Flower records)


FEMALE—Length 10-11 mm.; length of face slightly exceeding greatest width; eyes subparallel, only very slightly convergent below; length of malar space about one-fourth its breadth; facial foveae extensive, subtriangular, slightly curved toward the lateral ocelli above; antenna dark, median segments slightly longer than broad; clypeus somewhat shining, but finely, contiguously and striately punctate, especially above, with punctures of supraclypeal area sparse in marked contrast; pubescence grayish-white, slightly yellowish on dorsal of head and thorax, without dark admixture; lateral angles of prothorax acute, but not spine-like; metapleural protuberance with a very low obscure carina; tegulae dark; wings subhyaline, very slightly violaceous, partially exposing the surface, punctures of scutum rather coarse and close, but not crowded, closer laterally, quite sparse posteriorly; those on scutellum coarser, sparse anteriorly, crowded along hind margin; pleura quite coarsely and deeply punctate, punctures crowded anteriorly and above, well separated but not sparse below, pubescence long and rather thin; lateral faces of propodeum with long, thin pubescence, surface partially exposed, somewhat shining, dorsal face short, shining between the parallel striae; abdominal terga closely, deeply, distinctly and finely punctate, punctures becoming closer and minute on the more apical segments; apical margins of terga depressed, testaceous-hyaline beneath the dense, entire, white fascia; discs of 2nd and 3rd abdominal terga with a slight amount of suberect white pubescence across base, otherwise pubescence of abdomen very thin, short, pale and obscure, not obscuring the surface.
veins and stigma ferruginous; 2nd submarginal cell considerably shorter than 3rd; scutum shining, rather finely but distinctly punctate, those in front separated by about a puncture width, becoming very sparse posteriorly; punctures of scutellum more coarse, crowded posteriorly, but very sparse along anterior margin; pleura dull, tessellate, punctures about equal to those of scutum but more crowded; dorsal portion of propodeum smooth between the rather close, parallel striae; legs, including tarsi dark, coxal spines well developed; hind basitarsi slender, parallel-sided, length about four times the breadth; spurs yellowish-ferruginous; abdominal terga rather dull, punctures fine but distinct, separated by two or three times the puncture width, apical margins somewhat hyaline, slightly depressed beneath the dense, entire, white, apical fasciae, but segment 5 not fasciace; discal pubescence fuscos, short and erect on abdominal terga beyond the first.

MALE—Length 10 mm.; length of face slightly exceeding its greatest width; eyes subparallel, only very slightly convergent below; length of malar space about one-third its breadth; antennae dark, median segments twice as long as broad; clypeus very finely and densely punctate beneath the pubescence; pubescence greyish-white, slightly yellowish on dorsum of head and thorax, without dark admixture; lateral angles of prothorax acute, but not spinelike; metapleural protubercation with a very low obscure carina; tegulae dark; wings subhyaline, very slightly violaceous. Veins and stigma ferruginous; 2nd submarginal cell considerably shorter than 3rd; scutum somewhat shining; punctures fine but distinct, separated by two or three times the puncture width over anterior portion of disc; becoming somewhat more sparse posteriorly; anterior margin of scutellum impunctate, otherwise the punctures more coarse, close and deep than on scutum; posterior portion of pleura with shallow, distinctly separated punctures. Interspaces shining, but surface dull, tessellate and very obscurely punctate anteriorly and above; striae of dorsal face of propodeum parallel and quite close; legs dark, basitarsi slender and parallel-sided, length of hind basitarsi about four times the breadth; spurs yellowish-ferruginous; abdominal terga somewhat shining between the minute, well separated punctures, apical margins slightly depressed, pulvini in color beneath the entire narrow, white, apical fasciae; discal pubescence fuscos, short and erect on abdominal terga beyond the 1st.

DISTRIBUTION—Illinois to New York and Massachusetts, south to Tennessee, North Carolina and Georgia; mid May to mid July.


Colletes andrewsi Cockerell


Colletes andrewsi Cockerell, 1907. Univ. Colorado Studies 4, p. 239. (key)


This species is more western in distribution, occurring in Colorado, Nebraska, South Dakota and Manitoba, but has also been recorded in Wisconsin. It is nearly identical with aestivalis, differing only in size, the relative proportions of the hind basitarsi, and the male genital armature and 7th abdominal sternum.

FEMALE—Length 12-14 mm.; length of hind basitarsi about three and a three times the breadth.

MALE—Length 14 mm.; length of hind basitarsi no more than three times the breadth; wings of sternum 7 with an inner apical angle.

This visits Heuchera, and is in flight from mid May to mid July.

Colletes albecens Cresson


Colletes albecens Robertson, 1929. Flowers and Insects, Lancaster, Pa. Science Press. (flower records)


FEMALE—Length 8-9 mm.; face somewhat longer than distance between eyes above; eyes convergent below; malar space short, about one-third as long as basal width of mandible; facial foveae rather small and shallow, terminating above about midway between eye and lateral ocellus; clypeus protruding nearly one-half below suborbital line, with rather fine, close punctures above, becoming more sparse and irregular apically, median area of clypeus slightly flattened; upper portion of face with fine, close and deep punctures, becoming minute and obscure on vertex, very
fine and close on cheeks above, becoming slightly more distinct below; segments of flagellum brownish beneath, more piceous above, about as long as broad, basal segment blackish, somewhat longer; pubescence entirely white, copious, rather short, but not hiding the surface on entire head and thorax; lateral angles of pronotum not produced; metapleural protuberance low, entirely black; front coxae without spines; legs piceous in general, apical tarsal segments more or less ferruginous, spurs distinct; tegulae brownish-hyaline with practically no punctures; wings hyaline, veins and stigma brownish-testaceous, 2nd submarginal cell nearly as long as 3rd; dorsum of thorax somewhat shining, punctures of scutum deep and distinct, rather close and fine over anterior portion, but becoming sparse along anterior margin and sparse mediately toward posterior margin, those on scutellum somewhat sparse anteriorly, but becoming very close, almost crowded posteriorly; pleural punctures deep, distinct and quite close and coarse in general, the hypocoxal area more finely punctate, almost rugose; dorsal area of propodeum, nearly as broad as metanotum, with coarse irregular striae, lateral faces rather smooth, with a few obscure punctures, posterior face somewhat shining, with a few minute, obscure punctures; abdominal terga smooth but dull, basal segment with hardly visible punctures, 2nd, 3rd and 4th with minute and close punctures over most of disc, apical margins of the segments somewhat depressed, yellowish-hyaline, with broad, dense and entire, white, apical fasciae, the discs with very fine and obscure, subappressed pile, basal segment with more copious erect pubescence across base.

M.M.L.—Length 8 mm.; length of face about equal to distance between eyes above; eyes slightly convergent below; malar space nearly half as long as width of mandibles at base; antennae black above, deep brownish beneath, median segments somewhat longer than broad; clypeus shining beneath beard, punctures fine and close but distinct above, becoming sparse toward apical margin and laterally; face below cceli rather dull, punctures quite deep, distinct and close, area below antennae densely white pubescent; vertex somewhat shining, punctures minute and rather close and indis- tinct; cheeks slightly narrower than eyes, very finely and quite closely punctate beneath the long white pubescence, punctures becoming somewhat more distinct below; pubescence of entire head and thorax white, quite long and dense over most of thorax; lateral angles of pronotum not spinose; metapleural protuberance well developed, outer margin narrowly testaceous; legs piceous basally, becoming more brownish on apical tarsal segments; spurs yellowish; tegulae black, shining, nearly im- puctate; wings whitish, veins piceous, stigma testaceous; punctures of scutellum quite deep and distinct, well separated anteriorly, becoming quite sparse in center of disc posteriorly, those on scutellum slightly more coarse and close; punctures of pleura coarse, deep and distinct, separated by about a puncture width; lateral faces of propodeum somewhat shining beneath the long white pubescence, dorsal face short, with irregular, coarse striae; abdominal terga rather dull, punctures of basal tergum very fine, rather close at extreme sides and toward apical margin, otherwise very sparse, those on 2nd and 3rd segments uniformly fine and close but deep and distinct; apical mar- gins of terga somewhat depressed, yellowish-hyaline beneath the dense, entire, white fasciae; discal pubescence of abdominal terga thin, suberect and entirely whisht.

**DISTRIBUTION**—In the east, *albescens* has been collected in Illinois and Wisconsin. To the west it ranges as far as Utah and New Mexico and thus is more western than eastern in its distribution. It is in flight from late June to early August.

**FLOWER RECORDS**—Stephen records this only on *Amorpha canescens*. According to Robertson (1929) it also visits *Petasites tenax purpureus*.

**Colletes americanus** Cresson

(Figs. 8 & 9)


*Colletes americanus* Robertson, 1929. Flowers and Insects, Lancaster, Pa., Science Press. (Flower records)


**FEMALE**—Length 11 mm.; length of face about equal to greatest distance between eyes; eyes convergent below; malar space very short; facial foveae bare, somewhat shining, broad above, acute below; segments of flagel- lum as broad as long; basal segment slightly longer; clypeus shining, closely, deeply and rather finely punctate; pubescence of dorsum of head and thorax ochraceous, quite dense, without black intermixture, becoming paler below; lateral angles of pronotum not spined; dorsal protuberance of metapleura conspicu- ously carinate, margin of the carina testacea; tegulae brownish-hyaline; wings hyaline, veins and stigma brownish-ferruginous; punctures on scutum close and deep, rather fine, sparse near center posteriorly; anterior half of scutellum impunctate, closely punctate
Colletes mitchelli Stephen

(Fig. 9)


This species is closely related to and nearly identical with americanus Cresson and is difficult to separate from that species. The chief differences are:

FEMALE—Length 10 mm.; metapleural protuberance less prominent, entirely dark, lacking the testaceous outer rim of americanus.

MALE—Length 7-9 mm.; testaceous rim of metapleural protuberance very narrow or absent; discs of sternum 7 much reduced, quadrangular in outline, the pubescence covering central area of each.

DISTRIBUTION—Florida to New Jersey, Illinois and Minnesota; July to November, with flight occurring as early as April and May in Florida.

FLOWER RECORDS—Aster, Erigeron quercifolius, Haplopappus, Melilotus alba. Pentstemon and Solidago. It has also been collected at honeydew of Phyloxera, on Quercus alba by Krombein.

Colletes banksii Swenk

(Figs. 8 & 9)

Colletes banksii Swenk, 1958, Nebr. Univ. Dept.
Ent. Contrib. 1, p. 19, 5. 

Colletes hilei Mitchell, 1951. Elisha Mitchell


FEMALE—Length 11 mm.; eyes convergent below; length of malar space about one-fifth its breadth; facial foveae subtriangular, rather broad, curved slightly toward lateral ocellus above and terminating about midway between ocellus and eye; antennae dark, length and breadth of segments subequal; lateral angles of pronotum slightly produced to form very short, sharp spines; metapleural protuberance not carinate; legs dark, coxal spines lacking, hind basitarsi about three times longer than broad; spurs pale ferruginous; scutum and scutellum shining, punctures deep and distinct, rather close and fine on anterior
portion of scutum, becoming sparse posteriorly, much more coarse on scutellum, well separated but not sparse except for the impunctate anterior border; pleura dull, coarsely rugoso-punctate anteriorly and laterally, more shining, with deep, well separated punctures below; lateral faces of propodeum shining, but finely striate, dorsal face divided into a series of shining pits by short parallel striae; tegulae reddish-piceous; wings lightly infuscated, veins and stigma piceous to ferruginous; pubescence of head and thorax entirely pale ochraceous to whitish, abdomen white, portion of scutum, becoming sparse posteriorly, pale ochraceous to whitish, abdomen white, basal abdominal tergum shining, finely and quite closely punctate toward apical margin, punctures becoming very sparse and minute basally, following segments more closely and minutely punctate, apical margins only very slightly depressed, very narrowly hyaline, with dense, entire, white fasciae, that on 1st tergum subinterrupted medially; apical sternum with a pair of lateral ridges.

MALE—Length 10 mm.; eyes convergent below; length of malar space about one-third its breadth; antennae reddish-piceous, segments fully twice as long as broad, basal segment of flagellum darker, very short, subequal to pedicel; clypeus closely and rather finely punctate beneath beard; lateral angles of pronotum slightly produced to form very short, sharp spines; metapleural protuberance not carinate; scutum and scutellum shining, punctures deep and distinct, rather close on scutum laterally, well separated over most of disc, becoming sparse posteriorly, those on scutellum very much more coarse except for some smaller pits along the shining anterior border; pleura coarsely rugoso-punctate anteriorly and above, more shining and distinctly punctate below; lateral faces of pleura shining, with some irregular rugosities posteriorly, dorsal area divided into a series of shining pits by the short parallel striae; tegulae piceous; legs dark, tarsi somewhat reddened, basitarsi slender, spurs yellowish; abdominal terga shining, minutely punctate, punctures sparse on 1st tergum basally, becoming close apically and on the following segments; apical margins slightly depressed toward sides, narrowly redish-hyaline, with dense, white fasciae, that on 1st segment thin or interrupted medially, discs of 2nd and following segments with very short subappressed dark pubescence.

DISTRIBUTION—Florida to New Jersey, New York and Michigan; mid-April to mid-July.

FLOWER RECORDS—Batodendron and Ilex glabra.

*Colletes bradleyi* Mitchell


FEMALE—Length 9 mm.; eyes convergent below; malar space very short, linear; facial foveae well developed, subtriangular, rounded above, broad medially, more pointed below; antennae ferruginous beneath, length and breadth of median segments subequal; clypeus produced but very slightly below suborbital line, shining, deeply and rather coarsely and closely punctate; supraclypeal area shining and impunctate medially, becoming finely and closely punctate laterally; face above antennae rather dull, punctures irregular, rather shallow, interspaces tessellate; vertex shining, punctures scattered, very minute; cheeks closely and very finely punctate; pubescence of head and thorax entirely pale, whitish below, more creamy above; lateral angles of prothorax not spinous; metapleural protubercane carinate, margin of the carina narrowly testaceous; tegulae ferruginous; wings subhyaline, violaceous, veins and stigma ferruginous; thorax shining, punctures of scutum fine and quite sparse, even anteriorly, becoming more sparse and slightly more coarse and deep posteriorly; punctures of scutellum much more coarse, close posteriorly, becoming fine and sparse anteriorly; punctures of pleura deep, rather coarse, well separated but not sparse; lateral faces of propodeum somewhat shining, obscurely sculptured posteriorly, dorsal face divided into eight or nine shining pits by the parallel striae; tarsi slightly reddened, but not contrasting with tibiae or femora; spurs pale ferruginous; anterior coxal spines lacking; length of hind basitarsi about three times their breadth; basal abdominal coxal spines lacking; length of hind basitarsi about three times their breadth; basal abdominal tergum shining, finely but distinctly punctate, the punctures well separated but not sparse, following segments becoming successively more finely and closely punctate, apical margins not appreciably depressed, but reddish-hyaline beneath the entire, rather narrow but dense white fasciae, discal pubescence erect, very short and thin, faintly brownish.

MALE—This sex unknown.

DISTRIBUTION—So far, this has been recorded only from New Jersey, the holotype and a paratype specimen both collected in June.

FLOWER RECORDS—No data on host plants has yet been found.
Colletes brevicornis Robertson
(Figs. 7 & 8)

Colletes brevicornis Robertson, 1897. Acad. Sci. St. Louis, Trans. 7, p. 315. 3.


Colletes brevicornis Robertson, 1929. Flowers and Insects, Lancaster, Pa., Science Press. (Flower records)


FEMALE—Length 9 mm.; eyes convergent below; malar space lacking; facial foveae rather broad, subtriangular, rounded above; antennae reddened, length and breadth of segments subequal; clypeus uniformly, closely and deeply punctate; punctures relatively sparse on supraocellar area; pubescence rather short, white, fuscous in part on dorsum of thorax; lateral angles of prothorax not spine-like; metapleural protuberance obtuse; mesopleural fasciae, narrow on 1st and 2nd segments, broader and more dense on 3rd, 4th, and 5th, end slightly more than three times longer than broad (17:5); spurs yellowish; tegulae yellowish-ferruginous; wings hyaline, violaceous, veins and stigma ferruginous; punctures of basal abdominal tergum about equal to those on scutum, but closer, those on following segments becoming closer and finer; apical margins of the terga reflexed, having a deep subapical groove; abdominal fasciae entire, white, thin on the two basal segments, more dense on the following segments.

DISTRIBUTION—North Carolina, Georgia, Florida and Louisiana, north to New Jersey, Michigan, Wisconsin and Minnesota; late March through June. This species extends westward to the Rockies.

FLOWER RECORDS—Batodendron, Crataegus, Rubus and Specularia. Stephen records it on Asclepias, Callirhoe, Campanula, Melilotus and Opuntia. In addition, it is recorded by Robertson (1929) on Pastinaca sativa and Psoralea onobrychis.

Colletes brimleyi Mitchell
(Figs. 8 & 9)


FEMALE—Length 8-10 mm.; eyes slightly convergent below; malar space about one-third as long as broad; facial foveae moderately shining, rounded above; clypeus shining between rather close and fine punctures, these somewhat more close and fine on sides of face and on front below ocelli, minute on vertex and cheeks; hind margin of vertex indefinite, rounded, separated from lateral ocelli by somewhat more than their width; basal segment of flagellum hardly longer than pedicel, 2nd very slightly shorter, middle segments about as long as broad; pubescence pale ochraceous on head and thorax, becoming deeper ochraceous or nearly fuscous on dorsum of thorax; lateral angles of pronotum short, acute but not spine-like; metapleural protuberance not carinate; front coxae simple; hind basta-tarsi slightly more than three times longer than broad (17:5); spurs yellowish; tegulae yellowish-ferruginous; wings hyaline, ochraceous, veins and stigma ferruginous; punctures moderately coarse and deep on thorax, rather close on anterior half of scutum and most of scutellum, more sparse in center of scutum and along anterior margin of scutellum, more coarse and close on subrugose pleura; posterior face of propodeum shallowly rugose, the triangle smooth below, with a few irregular striae above, upper face composed of a transverse series of shining pits, posterior margin

Colletes brevicornis Robertson
(Figs. 7 & 8)

Colletes brevicornis Robertson, 1897. Acad. Sci. St. Louis, Trans. 7, p. 315. 3.


Colletes brevicornis Robertson, 1929. Flowers and Insects, Lancaster, Pa., Science Press. (Flower records)


FEMALE—Length 9 mm.; eyes convergent below; malar space lacking; facial foveae rather broad, subtriangular, rounded above; antennae reddened, length and breadth of segments subequal; clypeus uniformly, closely and deeply punctate; punctures relatively sparse on supraocellar area; pubescence rather short, white, fuscous in part on dorsum of thorax; lateral angles of prothorax not spine-like; metapleural protuberance obtuse; mesopleural fasciae, narrow on 1st and 2nd segments, broader and more dense on 3rd, 4th, and 5th, end slightly more than three times longer than broad (17:5); spurs yellowish; tegulae yellowish-ferruginous; wings hyaline, violaceous, veins and stigma ferruginous; punctures of basal abdominal tergum about equal to those on scutum, but closer, those on following segments becoming closer and finer; apical margins of the terga reflexed, having a deep subapical groove; abdominal fasciae entire, white, thin on the two basal segments, more dense on the following segments.

DISTRIBUTION—North Carolina, Georgia, Florida and Louisiana, north to New Jersey, Michigan, Wisconsin and Minnesota; late March through June. This species extends westward to the Rockies.

FLOWER RECORDS—Batodendron, Crataegus, Rubus and Specularia. Stephen records it on Asclepias, Callirhoe, Campanula, Melilotus and Opuntia. In addition, it is recorded by Robertson (1929) on Pastinaca sativa and Psoralea onobrychis.
basal segment, quite close on the others; discs of terga with very obscure short pile which seems to be largely pale, the more apical segments with scattered erect and rather long pale hairs; apical fasciae entire, whitish or ochraceous; 6th tergum dark in its general aspect, but with some long pale hairs.

MALE—Length 8-10 mm.; eyes slightly convergent below; length of malar space about half its breadth; facial foveae small but quite distinct; distance of lateral ocelli from edge of vertex less rounded than in female; basal segment of flagellum subequal to pedicel, 2nd and following segments twice as long, flagellum ferruginous to piceous beneath; punctures fine and quite close on the more apical segments. 6th tergum dark in its general as-

MALE—Length 8-10 mm.; eyes slightly convergent below; length of malar space about half its breadth; facial foveae small but quite distinct; distance of lateral ocelli from edge of vertex less rounded than in female; basal segment of flagellum subequal to pedicel, 2nd and following segments twice as long, flagellum ferruginous to piceous beneath; punctures fine and quite close on the more apical segments.

MALE—Length 8-10 mm.; eyes slightly convergent below; length of malar space about half its breadth; facial foveae small but quite distinct; distance of lateral ocelli from edge of vertex less rounded than in female; basal segment of flagellum subequal to pedicel, 2nd and following segments twice as long, flagellum ferruginous to piceous beneath; punctures fine and quite close on the more apical segments.

MALE—Length 8-10 mm.; eyes slightly convergent below; length of malar space about half its breadth; facial foveae small but quite distinct; distance of lateral ocelli from edge of vertex less rounded than in female; basal segment of flagellum subequal to pedicel, 2nd and following segments twice as long, flagellum ferruginous to piceous beneath; punctures fine and quite close on the more apical segments.
longer than pedicel; pubescence of face, vertex and dorsum of thorax pale ochraceous, becoming whitish on cheeks and on thorax laterally and beneath; lateral angles of pronotum not produced; metapleural protuberance very low, not carinate; legs picaceous basally, tarsi becoming testaceous apically and spurs testaceous; tegulae yellowish-hyaline; wings subhyaline, veins and stigma fuscous or ferruginous, 2nd submarginal cell slightly exceeding 3rd; antennae, tegulae and tarsi reddish-fuscous; spurs testaceous; scutum closely punctate and dull over anterior half, punctures becoming sparse and surface shining in center of posterior half; anterior half of scutellum shining, largely impunctate, posterior half closely punctate; pleura shining, the more basal segments deeply, distinctly punctate, becoming more minute on apical segments, apical margins of the terga only very obscurely and narrowly reddened, distinctly depressed, with dense, white, apical fasciae, interrupted medially on the basal segment, lacking on the 5th, discal pubescence very short and inconspicuous on abdominal terga beyond the 2nd.

**MALE**—Length 9-10 mm.; eyes convergent below; malar space slightly longer than broad; antennae dark, segments twice as long as broad; clypeus flattened in central portion, shining, with but a few sparse, scattered punctures; pubescence greyish-white, intermixed with fuscous on face, fuscous on vertex and dorsum of thorax; lateral angles of prothorax acute but not spine-like; metapleural protuberance low, not carinate; wings subhyaline, veins and stigma fuscous or ferruginous, 2nd submarginal cell slightly exceeding 3rd; antennae, tegulae and tarsi reddish-fuscous; spurs testaceous; scutum closely punctate and dull over anterior half, punctures becoming sparse and surface shining in center of posterior half; anterior half of scutellum shining, largely impunctate, posterior half closely punctate; pleura shining, the more basal segments deeply, distinctly punctate, punctures becoming more minute on apical segments, apical margins of the terga only very obscurely and narrowly reddened, distinctly depressed, with dense, white, apical fasciae, interrupted medially on the basal segment, lacking on the 5th, discal pubescence very short and inconspicuous on abdominal terga beyond the 2nd.

**FLOWER RECORDS**—This species has been collected on **Cuscuta**, and **Robertson (1929)** records it (as speciosus) on **Eryngium yuccifolium**.

**Colletes compactus** Cresson

(Figs. 8 & 9)


*Colletes compactus* Robertson, 1929. Flowers and Insects, Lancaster, Pa., Science Press. (flower records)


**FEMALE**—Length 11-13 mm.; eyes convergent below; length of malar space nearly one-half its breadth; facial foveae distinct, but very small, subtriangular; antennal segments nearly as broad as long; clypeus rather flat, dull and tessellate, sparsely punctate except at extreme sides where the punctures are close; punctures sparse in center of supraclypeal area; pubescence greyish-white, intermixed with fuscous on face, fuscous on vertex and dorsum of thorax; lateral angles of prothorax acute but not spine-like; metapleural protuberance low, not carinate; wings subhyaline, veins and stigma fuscous or ferruginous, 2nd submarginal cell slightly exceeding 3rd; antennae, tegulae and tarsi reddish-fuscous; spurs testaceous; scutum closely punctate and dull over anterior half, punctures becoming sparse and surface shining in center of posterior half; anterior half of scutellum shining, largely impunctate, posterior half closely punctate; pleura shining, the more basal segments deeply, distinctly punctate, punctures becoming more minute on apical segments, apical margins of the terga only very obscurely and narrowly reddened, distinctly depressed, with dense, white, apical fasciae, interrupted medially on the basal segment, lacking on the 5th, discal pubescence very short and inconspicuous on abdominal terga beyond the 2nd.

**FLOWER RECORDS**—**Aster**, **Baccharis**, **Chrysopsis**, **Eupatorium**, **Rudbeckia** and **Solidago**. **Robertson (1929)** records **compactus** on **Ridens arvistana**. **R. fronulosa** **R. novus**
Colletes consors mesoscopus Swenk
(Figs. 7 & 9)


**FEMALE**—Length 10 mm.; eyes convergent below; length of malar space about one-fourth its breadth; facial foveae distinct, broad, sub-triangular; antennae reddish beneath, median segments very nearly as broad as long; clypeus shining, striately and rather closely punctate; punctures of supraclypeal area distinct, relatively sparse, surface dull; pubescence greyish-white on head and thorax, becoming coarser and more sparse toward apex; scales along lateral margin, but all obscured by a dense beard; facial foveae quite shallow, broad, distinctly separated but not sparse, more coarse than those on scutum; dorsal area of propodeum very short, with quadrangular pits formed by the short parallel striae, somewhat shining; tarsi dark, length of hind basitarsi about three times the breadth, spurs ferruginous; abdominal terga shining, minutely and obscurely punctate, sparsely on the more basal terga, becoming closer apically, apical margins depressed, reddish-hyaline beneath the entire white apical fasciae, discal pubescence fuscous, erect and rather long.

**DISTRIBUTION**—This subspecies of *C. consors* Cresson is widely distributed throughout Canada, and in the eastern United States is recorded only from Maine, Vermont, Massachusetts, Michigan and Wisconsin. It is in flight from June to August.

**FLOWER RECORDS**—*Geranium* and *Vaccinium*. Stephen records it on *Kalmia* and *Rubus*.

*Colletes distinctus* Cresson
(Figs. 8 & 9)


**FEMALE**—Length 10 mm.; face slightly longer than broad; eyes slightly divergent below; length of malar space about one-third its breadth; facial foveae quite shallow, broad, obscurely pointed on eye margin below, more rounded and slightly divergent from orbit above; antennae brownish-ferruginous beneath, 2nd segment of flagellum subequal to pedicel in length, slightly broader than long, 1st segment considerably longer; lateral ocelli separated from posterior margin of vertex by about their own diameter; cheeks above very narrow; clypeus shining, punctures quite coarse and close centrally, more scattered laterally, but fine and close along the margins, a series of quite large and deep impressions just above apical margin; punctures fine and close but distinct between antennae and ocelli, minute and close on cheeks, vertex shining, the punctures exceedingly minute and obscure; labrum rather dull. with about five large shal-
Bees of the Eastern United States, I

low and obscure impressions; pubescence white and quite densely plumose over most of head and thorax, a few dark hairs intermixed with the pale on vertex and dorsum of thorax, quite sparse on these areas except anterior half of scutum where there are no black hairs, entirely pale on legs; prothoracic spine not produced; metapleural protuberance not carinate; front coxae not spined; hind basitarsi flat, parallel-sided, four times longer than broad; spurs yellowish-brown; tegulae shining, dark ferruginous; wings subhyaline, veins yellowish-brown; scutum and scutellum polished, punctures very fine and sparse over posterior half of scutum, moderately coarse and close over anterior half, closer along lateral margins, more coarse on scutellum, sparse anteriorly, becoming very close along posterior margin; pleura rather coarsely subrugose; metanotum more finely and densely rugose; posterior face of propodeum shining, with a few vague irregular striations, median triangle clearly demarked by deep lateral furrows, sharply carinate above, dorsal portion short, with a transverse series of large shining pits, lateral faces of propodeum more testaceous; abdomen shining, the punctures exceedingly minute and obscure, quite sparse on basal segment, close on the others, terga 2-4 with entire white apical fasciae, discs of terga with a barely discernable covering of extremely short, brown pile, a few long, erect, pale hairs toward the sides of the more apical segments, tergum 6 with a few long, dark hairs.

MALE—Length 9-10 mm.; length of face slightly greater than distance between eyes above; eyes somewhat convergent below; length and breadth of malar space about equal; facial foveae small but evident; vertex narrow back of ocelli, lateral ocelli slightly nearer to eyes than to each other; clypeus protruding considerably below suborbital line, closely and finely punctate above, the punctures becoming somewhat more coarse and more distinctly separated below; punctures of face obscured by the dense pubescence, those on vertex and cheeks very fine and irregular, surface somewhat shining; pubescence copious, pale ochraceous on head and thorax above, becoming more whitish below, without dark admixture; lateral angles of pronotum acute but not spine-like; basal segment of flagellum piceous, about as broad as long, slightly longer than pedicel, following segments piceous above, brownish beneath, length about twice the breadth; metapleural protuberance not carinate; legs piceous, tarsi more or less brownish-testaceous; spurs testaceous; tegulae brownish-testaceous, very finely and rather closely punctate; wings subhyaline, veins and stigma brownish-testaceous, 2nd submarginal cell slightly longer than 3rd; scutum shining, punctures deep and distinct but rather fine, well separated anteriorly, somewhat more sparse posteriorly, those on scutellum much more coarse and close; pleura rather coarsely rugoso-punctate above, becoming more distinctly punctate below; dorsal area of propodeum short, with rather widely separated, coarse striate, lateral faces obscurely roughened, posterior face shining, with a few irregular reticulations; abdominal terga shining, minutely but quite distinctly punctate, punctures well separated, but not sparse on the more basal segments, becoming closer on the more apical segments, apical margins somewhat depressed and narrowly testaceous; discs of terga with very short, rather thin, brownish pile, apical margins with quite distinct white fasciae.

DISTRIBUTION—North Carolina, Georgia, and Florida; March through June.

FLOWER RECORDS—Hypericum, Ilex cassine and Melilotus alba.

Colletes howardi Swenk
(Fig. 10)


FEMALE—Length 9-12 mm.; face somewhat longer than broad; eyes convergent below; malar space very short; facial foveae subtriangular, quite broad; clypeus bare, finely and closely punctate; pleura rather coarsely rugoso-punctate on supraocular area; antennal segments about as long as broad; lateral angles of prothorax produced into short, acute, triangular spines; metapleural protuberance low, entirely black, obscured by dense tomentum; front coxae with rather short but well developed spines; spurs yellowish; hind basitarsi about three and a half times longer than broad; tegulae yellowish-hyaline; wings faintly yellowish, veins and stigma pale testaceous, 2nd submarginal cell slightly longer than 3rd; dorsum of thorax covered by short, dense, entirely ochraceous pubescence, obscuring the rather fine and close punctures, these well separated in center of scutum posteriorly, and on scutellum anteriorly; pubescence of pleura not so dense, punctures rather fine but deep and distinct; dorsal area of propodeum coarsely striate, lateral faces densely tomentose, posterior face more thinly pubescent and shining; abdominal terga minutely and closely punctate, apical margins only slightly depressed toward sides, reddened, with broad, dense, entire fasciae of closely appressed, yellowish tomentum, pubescence of discs very thin and entirely pale.

MALE—Length 10 mm.; head considerably broader than long; eyes convergent below;
Colletidae—Colletes

male space short, about one-third or one-fourth as long as basal width of mandible; facial foveae small but evident; vertex narrow back of lateral ocelli which are slightly nearer eyes than each other; basal segment of flagellum blackish, slightly broader than long, and slightly longer than, following segments more brownish-piceous, length only slightly longer than breadth; clypeus protruding only slightly below suborbital line, closely and finely punctate above, the punctures becoming somewhat more widely separated below; punctures of face obscured by the dense pubescence, the vertex minute and indistinct, becoming more distinct but still very fine on the shining cheeks below; pubescence of head and thorax pale ochraceous, dense on face and dorsum of thorax, becoming somewhat thinner and more whitish below; lateral angles of pronotum sharply acute but not spine-like; metapleural protuberance very low, entirely black, obscured by dense pubescence; legs piceous basally, tibiae faintly reddish-piceous, tegulae testaceus-hyaline, practically impunctate; wings hyaline, veins and stigma testaceous, 2nd submarginal cell somewhat longer than 3rd; punctures of scutum beneath pubescence well separated in center of disc, becoming rather close and fine anteriorly and laterally, scutellum shining anteriorly, becoming closely punctate posteriorly; pleura deeply, distinctly and rather closely punctate above, becoming somewhat more coarsely and sparsely so below; dorsal area of propodeum about as broad as metanotum, shining, obliquely and rather irregularly reticulate, lateral faces quite smooth beneath the rather dense pubescence, posterior face shining, with a few minute and obscure punctures; abdominal terga rather dull, very finely and closely punctate, but punctures of basal segment more distinctly separated, apical margins of terga with broad, dense, entire, pale ochraceous fasciae, basal segment quite copiously pubescent over most of disc, remaining segments with very fine subappressed tomentum, depressed apical margins of the terga hyaline beneath the fasciae, tergum 6 not fasciate.

DISTRIBUTION—Southern Pines, North Carolina; September.

FLOWER RECORDS—Kuhnistera pininato (given as Petalostemon corymbosum in the original record).

Colletes hyalinus Provancher (Figs. 8 & 9)


FEMALE—Length 9-10 mm.; eyes slightly convergent below; male space short, length about one-fifth its breadth; facial foveae much reduced, both narrow and short; antennae dull reddish-piceous, median segments about as broad as long; clypeus produced about one-third below suborbital line, punctures deep and distinct, rather fine, close above, more sparse and irregular below; supraclypeal area with rather coarse and deep, well separated punctures; face above antennae dull, with close, fine, deep and distinct punctures; vertex between eyes and ocelli shining, punctures fine, close and irregular; punctures of cheeks very fine and close; pubescence of head and thorax ochraceous above, becoming whitish below, without dark admixture; lateral angles of pronotum slightly produced to form short acute spines; metapleural protuberance not carinate; legs dark, spurs yellowish; tegulae piceous, shining, wings hyaline, violaceous apically, veins and stigma feruginous to piceous; scutum anteriorly closely, deeply coarsely punctate, punctures becoming somewhat coarser and well separated posteriorly, sparse in center; punctures of scutellum coarser, rather close, but anterior margin narrowly impunctate; pleura rather dull, rugoso-punctate anteriorly and above, punctures close, deeper and more distinct below; lateral faces of propodeum somewhat shining, obscurely reticulate above, dorsal face narrow, with short close parallel striae, posterior face reticulate; anterior coxal spines very short and blunt; hind basitarsi about four times longer than broad; basal abdominal tergum shining, distinctly but minutely and quite sparsely punctate, punctures becoming much closer and more minute on the more apical segments; apical margins of terga slightly depressed, narrowly testaceous beneath the entire, narrow, dense, white fasciae, discal pubescence short, thin, erect, largely pale.

MALE—Length 8 mm.; eyes slightly convergent below; male space nearly as long as it is broad; antennae brownish-fuscous beneath, length of median segments about one and a half times the breadth; clypeus above very finely and closely punctate beneath the dense white pubescence, punctures becoming more sparse and coarse over the shining apical portion; lateral angles of pronotum acute but not spine-like; metapleural protuberance low, not carinate; tarsi dark, spurs yellowish; tegulae feruginous; wings hyaline, slightly violaceous, veins and stigma feruginous; scutum shining, punctures coarse and deep,
close over most of disc, those on scutellum more coarse, close except along anterior border; pleura rather shining, more closely but otherwise punctured similarly to scutum; dorsal area of propodeum with close parallel striae; basitarsi slender, parallel-sided; abdominal terga shining, punctures deep and distinct, rather fine, well separated but not sparse, apical margins of segments reddish-hyaline, distinctly depressed beneath the entire, white, apical fasciae; pubescence entirely white, without dark admixture.

DISTRIBUTION—This is a boreal species and is recorded in the East only from Maine and Michigan. In Canada it ranges from Nova Scotia to Yukon, and in the United States west to South Dakota, Colorado and New Mexico. It is in flight from late June to September.

FLOWER RECORDS—Sonchus arvensis. Stephen records hyalinus on Achillea, Cirsium, Epilobium, Frasera, Kalmia, Melilotus, Rhus and Solidago.

**Colletes impunctatus lacustris** Swenk

(Figs. 7 & 9)


FEMALE—Length 7-10 mm.; eyes only very slightly convergent below; length of malar space nearly equal to its breadth; facial foveae reduced, narrow, barely evident; antennae dull ferruginous beneath, median segments nearly as broad as long; clypeus produced much below suborbital line, very slightly depressed medially, finely, striately and rather closely punctate, surface shining; supraclavical area shining between scattered, deep and rather coarse punctures; face above antennae dull, closely and rather obscurely punctate; vertex more shining, minutely and closely punctate; cheeks above rather dull, minutely and closely punctate, punctures becoming more sparse and distinctly separated below; pubescence whitish below on head and thorax, becoming dull ochraceous above, with intermixed fuscous hairs on vertex, scutum and scutellum; lateral angles of pronotum acute but not spine-like; metapleural protubrance not carinate; tegulae fuscous; wings subhyaline, veins and stigma piceous to ferruginous; surface of thorax rather dull, punctures of scutum anteriorly close and deep, not very coarse, becoming more coarse, deep and sparse posteriorly, those on scutellum quite coarse, close posteriorly, but anterior margin impunctate; punctures of pleura fine and rather close, interspaces somewhat shining below; lateral faces of propodeum dull, tessellate, impunctate, dorsal face very short, very finely and closely striate, thus lacking the usual quadrate shining spaces; legs dark, spur yellowish, anterior coxae not spined, length of hind basitarsi about four times the breadth; abdominal terga somewhat shining, punctures of basal segment very fine, well separated, those on the following segments successively more close and minute, becoming indistinct apically; apical margins of terga depressed toward sides, reddish-hyaline on the more apical segments, with rather narrow, dense, white fasciae, widely interrupted on basal segments; discal pubescence of abdominal terga erect, thin and rather long, pale on basal segments, becoming obscurely darker on apical segments.

MALE—Length 7 mm.; eyes only very slightly convergent below; length and breadth of malar space subequal; antennae dull ferruginous beneath, length of median segments about one and a third times the breadth; apical portion of clypeus shining, minutely and quite sparsely punctate, punctures becoming close above under the long dense pubescence; face above antennae dull, obscurely rugosopunctate; vertex only slightly more shining, minutely and closely punctate; pubescence whitish below on head and thorax, becoming dull ochraceous above, with intermixed fuscous hairs on vertex, scutum and scutellum; lateral angles of pronotum acute but not spine-like; metapleural protubrance not carinate; tegulae fuscous; wings subhyaline, veins and stigma piceous to ferruginous; punctures of scutum rather close and fine, but distinctly separated anteriorly, becoming deeper, more distinct and sparse posteriorly, surface shining; punctures of scutellum more coarse, close and deep, but anterior margin impunctate, shining; punctures of pleura rather fine, close and deep, surface shining; lateral faces of propodeum dull, tessellate, subrugose, without distinct punctures, dorsal face short, finely and closely striate, thus lacking the usual quadrate shining spaces; legs dark, spur yellowish, length of hind basitarsi about four times the breadth; abdominal terga somewhat shining, punctures of basal segment deep, distinct and rather sparse, but fine, those on 2nd segment somewhat finer and closer, becoming minute and obscure on the more apical segments; apical margins of terga slightly depressed, reddish-hyaline beneath the thin, narrow, white fasciae, interrupted medially on basal segment; discal pubescence of abdominal terga erect, thin and rather long, pale on basal segments, becoming obscurely darker on apical segments.

DISTRIBUTION—This boreal species barely reaches the United States, being re-
corded only from Maine, New Hampshire, Michigan, Wisconsin and Minnesota. It extends across Canada from east to west and is recorded from the northern tier of western states. It is in flight during June and July.

FLOWER RECORDS—Brassica. It probably visits huckleberry blooms, according to Swenk, but definite records are lacking.

**Colletes inaequalis Say**

(Figs. 7 & 9)


*Colletes inaequalis* Robertson, 1929. *Flowers and Insects, Lancaster, Pa., Science Press.* (flower records)


FEMALE—Length 12-13 mm.; eyes convergent below; malar space nearly as long as broad; antennae brownish, median segments twice as long as broad; clypeus very closely and finely punctate beneath the dense pubescence; head and thorax pale ochraceous pubescent; lateral angles of pronotum not spined; metapleural protubercance not carinate; tegulae dark red; wings subhyaline, violaceous, veins and stigma ferruginous; punctures of scutellum slightly more coarse, slightly separated over most of disc; pleura dull, tessellate between the rather close, shallow, obscure punctures; legs somewhat reddened, spurs yellowish, abdominal terga shining, deeply and distinctly punctate, spurs more coarse and well separated, but not sparse on basal tergum, becoming closer and finer on more apical terga; apical margins of terga only very slightly depressed toward sides, narrowly rimmed with ferruginous, with dense, entire, pale ochraceous fasciae on terga 1-5; discs of abdominal terga beyond the 2nd with some very short, inconspicuous, erect, dark pubescence.

MALE—Length 9-10 mm.; eyes convergent below; malar space nearly as long as broad; antennae brownish, median segments twice as long as broad; clypeus very closely and finely punctate beneath the dense pubescence; head and thorax pale ochraceous pubescent; lateral angles of pronotum not spined; metapleural protuberance not carinate; tegulae dark red; wings subhyaline, violaceous, veins and stigma ferruginous; punctures of scutellum slightly more coarse, slightly separated over most of disc; pleura dull, tessellate between the rather close, shallow, obscure punctures; legs somewhat reddened, spurs yellowish, abdominal terga shining, deeply and distinctly punctate, spurs more coarse and well separated but not sparse on basal tergum, becoming closer and finer on the more apical terga; apical margins of terga reddish, hardly at all depressed, with entire whitish fascia; discs of abdominal terga beyond the 2nd with some very short, inconspicuous, erect, dark pubescence.

DISTRIBUTION—Nova Scotia to Minnesota, south to Georgia; March to July, with occasional records in the fall.

FLOWER RECORDS—This is a pronouncedly polylectic visitor to a wide range of flowering plants. Personal collecting and records from Robertson (1929) and Stephen (1954) show the following list of genera as host plants: *Aesculus, Amelanchier, Anemone, Anemonella, Arectostaphalus, Aronia, Cercis, Claytonia, Crataegus, Dendrini, Dentaria, Dirca, Erigenia, Erythronium, Hepatica, Heracleum, Isopyrum, Lomatium, Polyaeonia, Prunus, Ptelea, Pyrus, Rhamnus, Rhus, Ribes, Rubus, Salix, Spiraea, Staphylea, Stellaria, Taraxacum, Vaccinium, Viburnum, Zanthoxylum and Zizia.*

**Colletes kincaidii** Cockerell

(Fig. 10)


**MALE**—Length 7-9 mm.; eyes convergent below; length of malar space about two-thirds its breadth; antennae obscurely reddened apically, length and breadth of median segments subequal; clypeus rather shiny, punctures irregular, rather deep and distinct, rather close basally and laterally, sparsely apically; pubescence of head and thorax pale ochraceous, without dark admixture; lateral angles of pronotum sharply acute but not spine-like; tegulae dark reddish-piceous; scutum shining, punctures deep and distinct, fine and close over anterior half, more coarse posteriorly, with a quite distinct, median, sparsely punctate area; anterior margin of scutellum smooth and impunctate, becoming closely and coarsely punctate posteriorly; pleura shining, punctures coarse, deep and distinct, evenly spaced, interspaces about a puncture width; anterior coxae not spined; tarsi dark, length of hind basitarsi about four times the breadth, spurs yellowish; abdominal terga closely and finely punctate, deep and more coarse and distinctly separated on basal segment, becoming minute, obscure and very close on the more apical segments; apical margins of terga depressed, somewhat reddened beneath the dense white fasciae, widely interrupted on basal segment, entire on the remainder; discs of terga with short, erect and inconspicuous fuscous pubescence.

**FEMALE**—Length 9-11 mm.; eyes convergent below; length of malar space about one-fourth its breadth; facial foveae small, rather narrow, elongate-triangular; antennae obscurely reddened apically, length and breadth of median segments subequal; clypeus rather shiny, punctures irregular, rather deep and distinct, rather close basally and laterally, sparsely apically; pubescence of head and thorax pale ochraceous, without dark admixture; lateral angles of pronotum sharply acute but not spine-like; metapleural protuberance not carinate; tegulae dark reddish-piceous; wings hyaline, slightly reddened apically, length and breadth of this area about four times the breadth, spurs yellowish; abdominal terga closely and finely punctate, deep and more coarse and distinctly separated on basal segment, becoming minute, obscure and very close on the more apical segments; apical margins of terga depressed, faintly reddish beneath the dense white fasciae, widely interrupted on basal segment, entire on the remainder; discs of terga with short, erect and inconspicuous fuscous pubescence.

**DISTRIBUTION**—In the East this occurs in Nova Scotia, New York, Indiana and Illinois, and southward through the Appalachians as far as North Carolina, but it is primarily Western, reaching Arizona, California and British Columbia. It is in flight from early June to early September.

**FLOWER RECORDS**—Stephen records this on Heracleum, Medicago sativa, Melilotus, Pentstemon, Potentilla and Symphoricarpos.

**Colletes eulophi Robertson**

(Fig. 10)

*Colletes eulophi* Robertson, 1891. Amer. Ent. Soc. Trans. 18, p. 61. ♀♀.


This species is so closely related to *kincaidii* that the two are distinguished only with difficulty. No reliable or constant difference between the females of the two species can be given, and it is best to rely on the males for positive identification. In that sex the one apparently constant difference is in the form of the retracted 7th abdominal sternum. The figures (Plate 9) will show the difference. In *kincaidii* the discs of this plate are relatively broad at the base, abruptly expanded above the base, and this area is densely setose to the inner margin. In contrast, the discs in *eulophi* are somewhat narrower at base, are much more gradually expanded above toward the apex, and the inner half of the base is devoid of setae.

In all other characters the description of both sexes in *kincaidii* will serve equally well for *eulophi*.

**DISTRIBUTION**—According to Stephen (1954) this occurs in Illinois, Ohio, Kentucky, the District of Columbia, Virginia. lbly, closer but not crowded posteriorly; punctures of pleura about as those of scutum anteriorly; legs somewhat reddened, basitarsi slender; spurs yellowish; punctures of abdominal terga close and fine, deep and distinct on basal segment, becoming minute and obscure on the more apical segments; apical margins of terga depressed, somewhat reddened beneath the entire white fasciae; discs of terga with short, erect and inconspicuous fuscous pubescence.
Arizona and Utah. In North Carolina it is in flight from June to early November.

FLOWER RECORDS—Aster, Rubus, Solidago. Stephen records it also on Ceanothus fenderi, Clematis, Eupatorium perfoliatum, Melilotus, Solidago nemoralis and Sophia obtusa. In Robertson’s “Nadow and Insects” (1929) this species or the closely related kinecadii Cockerell is recorded on about 30 host plants, some of which are listed above. Since there is a probability of confusion between these two species with respect to these records, they will not be listed here.

Colletes latitarsis Robertson (Fig. 10)

Colletes latitarsis Robertson, 1891. Amer. Ent. Soc. Trans. 18, p. 60. \( \text{\textcopyright} \).

Colletes latitarsis Robertson, 1929. Flowers and Insects, Lancaster, Pa., Science Press. (Flower records)


FEMALE—Length 11 mm.; eyes only slightly convergent below; length of malar space about one-fourth its breadth; facial foveae quite deep and extensive, subtriangular; antennae dull reddish, length and breadth of median segments subequal; central area of clypeus flattened, more striate than punctate; central portion of supraclypeal area impunctate, but with scattered, irregular punctures laterally; pubescence rather short, more or less intermixed with fuscous on vertex and dorsum of thorax; lateral angles of pronotum sharply acute, but not spine-like; metapleural protuberance not carinate; tegulae dull reddish; wings subhyaline, veins and stigma ferruginous, 2nd submarginal cell longer than 3rd; scutum, scutellum and pleura shining, punctures deep, distinct, quite coarse, regularly distributed, interspaces about a puncture width except on pleura below where they are more sparse, and with a median impunctate line on scutellum; tarsi dark, hind basitarsi apically fully half as wide as the total length, slightly narrower at base; mid and hind spurs fuscous, anterior spurs yellowish; abdominal terga finely and closely punctate, punctures deep and distinct on basal segment, becoming minute and obscure on the more apical segments; hind margins of terga depressed, reddish-hyaline beneath the dense, entire, white fasciae; discs of abdominal terga with short, thin, erect, fuscous pubescence.

DISTRIBUTION—Florida to Louisiana, north to New York, Michigan and Wisconsin; March to September. Stephen states that the range of this species extends west as far as Arizona. The early flight records are from Florida.

FLOWER RECORDS—Ceanothus americanus, Physalis and Trifolium. It is recorded by Stephen on Asclepias incarnata, Medicago sativa, Melilotus alba, Physalis lacinolata, P. virginiana, Polygonum hydropiperoides, Solidago and Symphoricarpos occidentalis. Robertson (1929) records this species also on Asclepias syriaca, Campanula americana, Cicuta maculata, Lycopus americanus, Passiflora lutea, Physalis lancedolata, P. subglabrata, P. virginiana and Pycnanthemum flexuosum.

Colletes longifacies Stephen


FEMALE—Length 11 mm.; face much longer than distance between eyes; eyes slightly convergent below; malar space nearly as long as width of mandibles at base; clypeus protruding fully one-half below suborbital line, strongly sulcate medially, with scattered and rather sparse punctures; facial foveae distinct, subtriangular, pointed above; antennae black, segments of flagellum somewhat reddened beneath, basal segment subequal to segment 2; vertex somewhat shining, with a

median segments only slightly longer than broad; clypeus flattened, somewhat grooved medially, bare and rather smooth, punctures fine, obscure and quite sparse, obscurely striate; pubescence rather short, more or less intermixed with fuscous on vertex and dorsum of thorax; lateral angles of pronotum sharply acute, but not spine-like; metapleural protuberance not carinate; tegulae dull reddish; wings subhyaline, veins and stigma ferruginous, 2nd submarginal cell longer than 3rd; scutum, scutellum and pleura shining, punctures deep, distinct, quite coarse, regularly distributed, interspaces about a puncture width except on pleura below where they are more sparse, and with a median impunctate line on scutellum; tarsi dark, hind basitarsi apically fully half as wide as the total length, slightly narrower at base; mid and hind spurs fuscous, anterior spurs yellowish; abdominal terga finely and closely punctate, punctures deep and distinct on basal segment, becoming minute and obscure on the more apical segments; hind margins of terga depressed, reddish-hyaline beneath the dense, entire, white fasciae; discs of abdominal terga with short, thin, erect, fuscous pubescence.

DISTRIBUTION—Florida to Louisiana, north to New York, Michigan and Wisconsin; March to September. Stephen states that the range of this species extends west as far as Arizona. The early flight records are from Florida.

FLOWER RECORDS—Ceanothus americanus, Physalis and Trifolium. It is recorded by Stephen on Asclepias incarnata, Medicago sativa, Melilotus alba, Physalis lacinolata, P. virginiana, Polygonum hydropiperoides, Solidago and Symphoricarpos occidentalis. Robertson (1929) records this species also on Asclepias syriaca, Campanula americana, Cicuta maculata, Lycopus americanus, Passiflora lutea, Physalis lancedolata, P. subglabrata, P. virginiana and Pycnanthemum flexuosum.
few scattered sparse punctures between eyes and ocelli; clypeus bare, but cheeks and other portions of face, quite densely covered with whitish pubescence, a few fuscous hairs on vertex; thorax quite densely pubescent, hairs rather short and densely plumose, whitish in large part, but with intermixed fuscous hairs on scutum and scutellum; scutum shining, with coarse and deep punctures, these separated by about a puncture width anteriorly, becoming rather sparse posteriorly; scutellum shining and largely impunctate anteriorly, becoming rather closely but shallowing punctate posteriorly and laterally; pleura with coarse and deep punctures, somewhat shining below, but densely granular and impunctate above; lateral angles of pronotum acute but short, metapleura not carinate above; tegulae shining, fuscous; wings hyaline, veins and stigma piceous, 2nd sub-marginal cell longer than 3rd; dorsal face of propodeum rather short, shining, with a few irregular striae, lateral faces rather dull; legs dark, hind basitarsi quite narrow and elongate; spurs testaceous; front coxae not spined; abdominal terga rather smooth, somewhat shining, punctures exceedingly minute, hardly evident, width of median antenna 1 segment one-fourth its width; facial foveae shallow, barely evident, width of median antennal segments two-thirds their length; clypeus shining between fine and close punctures, largely hidden by pubescence; pubescence pale ochraceous throughout, entirely so on head and thorax; prothoracic angles not spinose; metapleural protuberance strongly carinate, margin of the carina testaceous; tegulae dark fuscous; wings subhyaline, veins and stigma fuscous; punctures of scutum deep and distinct, close anteriorly, becoming sparse in center of posterior half; scutellum shining and impunctate along anterior border, otherwise closely and coarsely punctate; pleura very closely and deeply punctate; dorsal area of propodeum narrow, with shining quadrangular pits formed by the well separated striae; triangular area of posterior face polished and bare, lateral areas more dull and reticulate, with long thin pubescence; front coxae spined; hind basitarsi slender, elongate; spurs pale fuscous or yellowish; punctures of abdominal terga minute, close on 2nd and following segments, more distinctly separated on 1st medially; hind margins of abdominal terga narrowly fuscous, with broad, dense, apical fasciae, discs very thinly tomentose and appearing dark; apical segment dark.

**MALE**—Length 7-8 mm.; eyes strongly convergent below; length of malar space about one-fourth its width; facial foveae shallow, barely evident, width of median antennal segments two-thirds their length; clypeus shining between fine and close punctures, largely hidden by pubescence; pubescence pale ochraceous throughout, entirely so on head and thorax; prothoracic angles not spinose; metapleural protuberance strongly carinate, margin of the carina testaceous; tegulae pale fuscous; wings subhyaline, veins and stigma fuscous; punctures of scutum close and deep on scutum, sparse in center of disc and on anterior half of scutellum, close and coarse on scutellum posteriorly; pleura shining below, deeply punctate, the punctures well separated but becoming crowded above; dorsal area of propodeum shining between distinct but irregular striae; spurs and tarsal segments pale, fuscous or testaceous; basitarsi slender, elongate; basal abdominal terga finely but distinctly punctate, closely so on the 2nd and only slightly separated in center of disc of the 1st; abdominal fasciae entire, quite broad, pale ochraceous; integument beneath fuscous or testaceous.

**FEMALE**—Length 9 mm.; eyes strongly convergent below; malar space linear, hardly evident; facial foveae shining, broad medially, narrowed above and below; length and breadth of flabellar segments equal; clypeus bare, shining, closely and finely punctate; pubescence pale ochraceous throughout, entirely so on head and thorax; prothoracic angles not spinose; metapleural protuberance strongly carinate, margin of the carina testaceous; tegulae dark fuscous; wings subhyaline, veins and stigma fuscous; punctures of scutum deep and distinct, close anteriorly, becoming sparse in center of posterior half; scutellum shining and impunctate along anterior border, otherwise closely and coarsely punctate; pleura very closely and deeply punctate; dorsal area of propodeum narrow, with shining quadrangular pits formed by the well separated striae; triangular area of posterior face polished and bare, lateral areas more dull and reticulate, with long thin pubescence; front coxae spined; hind basitarsi slender, elongate; spurs pale fuscous or yellowish; punctures of abdominal terga minute, close on 2nd and following segments, more distinctly separated on 1st medially; hind margins of abdominal terga narrowly fuscous, with broad, dense, apical fasciae, discs very thinly tomentose and appearing dark; apical segment dark.

**DISTRIBUTION**—In the East this species is generally distributed from Florida and Texas to Nova Scotia and Minnesota, but it ranges west to Utah, Idaho and British Columbia. It is in flight from June to September, but Florida records include the months of November, December, March, April and May.

**Colletes mandibularis** Smith

*(Figs. 8 & 10)*


Colletes similis Robertson, 1904. Canad. Ent. 36, p. 276. ♀. (nec Schenck)

Colletes mandibularis Robertson, 1929. Flowers and Insects, Lancaster, Pa., Science press. (flower records)


**FEMALE**—Length 9 mm.; eyes strongly convergent below; malar space linear, hardly evident; facial foveae shining, broad medially, narrowed above and below; length and breadth of flabellar segments equal; clypeus bare, shining, closely and finely punctate; pubescence pale ochraceous throughout, entirely so on head and thorax; prothoracic angles not spinose; metapleural protuberance strongly carinate, margin of the carina testaceous; tegulae dark fuscous; wings subhyaline, veins and stigma fuscous; punctures of scutum deep and distinct, close anteriorly, becoming sparse in center of posterior half; scutellum shining and impunctate along anterior border, otherwise closely and coarsely punctate; pleura very closely and deeply punctate; dorsal area of propodeum narrow, with shining quadrangular pits formed by the well separated striae; triangular area of posterior face polished and bare, lateral areas more dull and reticulate, with long thin pubescence; front coxae spined; hind basitarsi slender, elongate; spurs pale fuscous or yellowish; punctures of abdominal terga minute, close on 2nd and following segments, more distinctly separated on 1st medially; hind margins of abdominal terga narrowly fuscous, with broad, dense, apical fasciae, discs very thinly tomentose and appearing dark; apical segment dark.

**DISTRIBUTION**—Florida. The type and one paratype were collected at De Funiak Springs, October 17-19, 1914. One additional specimen has since been collected in Alachua County, October 12, 1956 (H. V. Weem, Jr., on Liatris laevigata).

**Colletes mandibularis** Smith

*(Figs. 8 & 10)*


Colletes similis Robertson, 1904. Canad. Ent. 36, p. 276. ♀. (nec Schenck)

Colletes mandibularis Robertson, 1929. Flowers and Insects, Lancaster, Pa., Science press. (flower records)


**FEMALE**—Length 9 mm.; eyes strongly convergent below; malar space linear, hardly evident; facial foveae shining, broad medially, narrowed above and below; length and breadth of flabellar segments equal; clypeus bare, shining, closely and finely punctate; pubescence pale ochraceous throughout, entirely so on head and thorax; prothoracic angles not spinose; metapleural protuberance strongly carinate, margin of the carina testaceous; tegulae dark fuscous; wings subhyaline, veins and stigma fuscous; punctures of scutum deep and distinct, close anteriorly, becoming sparse in center of posterior half; scutellum shining and impunctate along anterior border, otherwise closely and coarsely punctate; pleura very closely and deeply punctate; dorsal area of propodeum narrow, with shining quadrangular pits formed by the well separated striae; triangular area of posterior face polished and bare, lateral areas more dull and reticulate, with long thin pubescence; front coxae spined; hind basitarsi slender, elongate; spurs pale fuscous or yellowish; punctures of abdominal terga minute, close on 2nd and following segments, more distinctly separated on 1st medially; hind margins of abdominal terga narrowly fuscous, with broad, dense, apical fasciae, discs very thinly tomentose and appearing dark; apical segment dark.

**MALE**—Length 7-8 mm.; eyes strongly convergent below; length of malar space about one-fourth its width; facial foveae shallow, barely evident, width of median antennal segments two-thirds their length; clypeus shining between fine and close punctures, largely hidden by pubescence; pubescence pale ochraceous throughout, entirely so on head and thorax; prothoracic angles not spinose; metapleural protuberance strongly carinate, margin of the carina testaceous; tegulae pale fuscous; wings subhyaline, veins and stigma fuscous; punctures of scutum close and deep on scutum, sparse in center of disc and on anterior half of scutellum, close and coarse on scutellum posteriorly; pleura shining below, deeply punctate, the punctures well separated but becoming crowded above; dorsal area of propodeum shining between distinct but irregular striae; spurs and tarsal segments pale, fuscous or testaceous; basitarsi slender, elongate; basal abdominal terga finely but distinctly punctate, closely so on the 2nd and only slightly separated in center of disc of the 1st; abdominal fasciae entire, quite broad, pale ochraceous; integument beneath fuscous or testaceous.

**DISTRIBUTION**—In the East this species is generally distributed from Florida and Texas to Nova Scotia and Minnesota, but it ranges west to Utah, Idaho and British Columbia. It is in flight from June to September, but Florida records include the months of November, December, March, April and May.
FLOWER RECORDS—Berlandiera subcaulis, Ceanothus, Cirsium, Erigeron quercifolius, E. ramosus, Flaveria linearis, Melilotus alba and M. indica. Stephen records it also on Amorpha canescens, Amphiachris, Cassia fasciculata, Heterotheca subaxillaris, Isopappus divaricatus, Medicago sativa and Prionopsis ciliata. It is recorded by Robertson (1929) (as C. similis) on Pycnanthemum flexuosum.

Colletes nudus Robertson

(Figs. 7 & 9)

Colletes nudus Robertson, 1898. Acad. Sci. St. Louis, Trans. 8, p. 43. 8.


Colletes nudus Robertson, 1929. Flowers and Insects, Lancaster, Pa., Science Press. (flower records)


FEMALE—Length 12 mm.; eyes convergent below; malar space extremely short; facial foveae very slightly longer than broad; clypeus shining between the close, coarse and deep punctures; median part of supracylpeal area impunctate but dull, punctures fine and closely crowded laterally; pubescence whitish, rather short, to some degree fuscous or blackish on vertex and dorsum of thorax; lateral angles of pronotum acute, somewhat elongate, to a slight degree spine-like; metapleural protuberance low, not carinate; tegulae piceous; wings lightly infuscated, violaceous, veins and stigma piceous to ferruginous; scutum shining, punctures very coarse and deep, close laterally, quite sparse in center posteriorly; punctures of scutellum exceedingly coarse and deep, close except in center; punctures of pleura coarse, deep and close; tarsi becoming redden ed apically, basitarsi narrow, slender; spurs yellowish; abdominal terga shining, punctures deep and distinct, but rather fine and widely separated; apical margins of terga very narrowly and obscurely hyaline, depressed toward sides, with narrow, entire, white fasciae.

DISTRIBUTION—Florida to Louisiana, north to Wisconsin, Ontario and Massachusetts; April and May in Florida, through June, July and August in the North. According to Stephen the range of nudus reaches Colorado to the west.

FLOWER RECORDS—Ceanothus, Daucus carota, Hydrangea arborescens, Melilotus alba, Parthenocissus, Rhus copallinum, and R. glabra. Stephen records nudus on Monarda mollis, Symphoricarpus vulgaris and Verbena urticifolia. Robertson records it on Asclepias syriaca, Pycnanthemum flexuosum and Symphoricarpus orbiculatus.

Colletes productus Robertson

(Figs. 8 & 9)


Colletes productus Robertson, 1929. Flowers and Insects, Lancaster, Pa., Science Press. (flower records)


FEMALE—Length 9-10 mm.; length of face considerably exceeding its greatest width; eyes convergent below; length of malar space nearly equalling its breadth; facial foveae well developed, elongate, rounded above, acute below; antennae dark, length and breadth of median segments subequal; clypeus convex, shining, slightly depressed in middle, rather finely, striately punctate, closely so above, more sparsely so toward apical margin; pubescence whitish, slightly yellowish on dorsum of...
thorax; lateral angles of pronotum acute but not spine-like; metapleural protuberance inconspicuously carinate, margin of carina slightly yellowish; tegulae dark; wings hyaline, veins and stigma ferruginous; scutum shining, finely but deeply punctate, punctures close laterally, more sparse medially, especially in center of disc posteriorly; punctures of scutellum much more coarse and close except along anterior margin; pleura shining between rather coarse, close and deep punctures; posterior coxae not spined; tarsi dark, mid and hind basitarsi about three times longer than broad, spurs yellowish-ferruginous; basal abdominal tergum shining and impunctate over basal half, becoming very finely and rather closely punctate apically, punctures of 2nd and following terga very fine and close, margins of the terga narrowly reddish, segments 1-4 with white apical fasciae, widely interrupted on the 1st, lacking on the 5th; discs of terga with a very thin covering of very short, erect, fuscous hairs, sometimes in evident.

MALE—Length 7-8 mm.; length of face considerably exceeding its greatest width; eyes convergent below; length of malar space slightly exceeding its breadth; segments of flagella reddish-brown except the fuscous or blackish basal segment and pedicel; median segments twice as long as broad; clypeus minutely and closely punctate above, becoming sparsely so toward apical margin; pubescence whitish, slightly yellowish on dorsum of thorax; lateral angles of pronotum acute but not spine-like; metapleural protuberance inconspicuously carinate, margin of carina slightly yellowish; tegulae dark; wings hyaline, veins and stigma ferruginous; scutum shining, punctures fine, rather widely separated over most of disc; scutellum in contrast very coarsely and quite closely punctate except along anterior margin; pleura rather coarsely rugoso-punctate except in a restricted shining central area where the punctures are finer and well separated; tarsi more or less reddened, basitarsi narrow and elongate, spurs ferruginous; basal abdominal tergum shining, minutely and quite sparsely punctate, punctures becoming closer along apical margin; 2nd and following terga more closely and uniformly, although very finely punctate, apical margins depressed, to some degree reddish-hyaline beneath the white apical fasciae, discs of terga with a very thin covering of very short, erect, fuscous hairs, sometimes in evident.

DISTRIBUTION—Alabama and Georgia, north to Illinois and New Hampshire; April to July.

FLOWER RECORDS — Batodendron, Rhus copallinum and R. glabra. Stephen also records it on Xolima ligustrina, and Robertson (1929) on Apocynum cannabinum.

**Colletes robertsonii** Dalla Torre

(Figs. 7 & 9)

**Colletes punctata** Robertson, 1891. Amer. Ent. Soc. Trans. 18, p. 92. §. (nee Moesary)

**Colletes robertsonii** Dalla Torre, 1896. Cat. Hym. 10, p. 44.

**Colletes robustus** Swenk, 1904. Ent. News 15, p. 251.

**Colletes robertsonii** Robertson, 1929. Flowers and Insects, Lancaster, Pa., Science Press. (flower records)


FEMALE—Length 12 mm.; length of face nearly equal to distance between eyes above; eyes slightly convergent below; malar space linear; facial foveae deep and distinct, rather broad medially, terminating above about half way between eyes and ocelli; clypeus projecting about one-third below suborbital line, with rather fine but deep and close punctures, these somewhat more widely separated toward apical margin; punctures above antennae somewhat more coarse and widely separated but still rather close, those on vertex rather irregular, becoming very fine and close on cheeks above, but more coarse and widely separated on the shining ventral surface; basal segment of flagellum slightly longer than broad and considerably longer than pedicel, the following segments somewhat shorter, with length and breadth subequal, piceous below, blackish above; pubescence of head and thorax rather thin, but rather copious around bases of antennae, on vertex posteriorly and around prothoracic tubercles, apparently mostly pale, without blackish admixture, more whitish below on thorax; lateral angles of pronotum produced to form rather distinct acute spines; metapleural protuberance very low, not carinate; front coxae without distinct spines; legs piceous basally, mid and hind tarsi becoming somewhat reddened apically, spurs pale ferruginous; tegulae piceous, with scattered, irregular, minute punctures; wings subhyaline, veins ferruginous to piceous, stigma brownish-ferruginous; 2nd submarginal cell somewhat longer than 3rd, slightly narrowed above; scutum sparsely punctate in center, punctures rather coarse but shallow, becoming more closely punctate laterally, and very finely and closely punctate over anterior 3rd; scutellum with coarse, shallow irregular punctures; pleura coarsely and quite closely punctate anteriorly and above, becoming more finely punctate posteriorly, the hypoepepimal area rather smooth below, finely and deeply punctate above; dorsal area of pronodeum very nar-
row, rather finely striate, lateral surfaces finely roughened, posterior face dull; abdominal terga very coarsely and deeply punctate, punctures close but distinctly separated in large part, somewhat more widely so on the basal segment, apical margins deeply depressed and hyaline, with dense entire white pubescence on segments I-3, that on the 4th reduced, and lacking on the 5th, discs of the terga with very fine, pale pile which is hardly visible.

MALE—Length 11-12 mm.; length of face nearly equal to distance between eyes above; eyes slightly convergent below; malar space linear; facial foveae deep and distinct; clypeus protruding but very slightly below suborbital line, closely and finely punctate, but surface largely obscured by dense white pubescence; face below ocelli coarsely, deeply and closely punctate, laterally faces nearly equal to distance between eyes above; malar space closely and finely punctate, lateral faces protruding but very slightly below suborbital line, closely and finely punctate, punctures becoming somewhat finer on vertex, but still quite deep and distinct, finer on cheeks above and below; lateral ocelli subequally distant from eyes and each other; basal segment of flagellum blackish, slightly longer than pedicel, but length about equal to breadth, following segments piceous, slightly longer than broad; pubescence of head and thorax; prothoracic spines well developed; metapleural protuberance not carinate; tegulae reddish-piceous; wings subhyaline, veins and stigma piceous; scutum dull, anterior half of disc rugose, posterior half with some scattered, sparse, irregular punctures; scutellum rather finely rugoso-striate, without distinct punctures; pleura dark, depressed toward sides, with white fasciae, invident on 1st segment, interrupted medially on 2nd, entire on 3rd and 4th, 2nd with a basal white fascia, discal pubescence fuscos, but very short and inconspicuous.

FEMALE—Length 10-11 mm.; eyes convergent below; malar space evident, but very short; facial foveae very small and narrow, adjacent to upper end of eye; antennae blackish, length and breadth of median segments subequal; clypeus closely, striately and rather coarsely punctate; punctures rather sparse on suprapectal area; pubescence greyish-white or faintly yellowish, intermixed with fuscos on upper portions of head and thorax; prothoracic spines well developed; metapleural protuberance not carinate; tegulae blackish; wings subhyaline, veins and stigma piceous; scutum dull, anterior half of disc rugose, posterior half with some scattered, sparse, irregular punctures; scutellum rather finely rugoso-striate, without distinct punctures; pleura dull, coarsely rugose; anterior coxal spines well developed; tarsi dark, mid and hind basitarsi about three times as long as broad, spurs yellowish-ferruginous; abdominal terga shining, closely and distinctly, but rather finely punctate, punctures well separated on basal tergum, becoming closer and finer on more apical segments; apical margins of terga dark, depressed toward sides, with white fasciae, invident on 1st segment, interrupted medially on 2nd, entire on 3rd and 4th, 2nd with a basal white fascia, discal pubescence fuscos, but very short and inconspicuous.

MALE—Length 8-9 mm.; eyes convergent below; length of malar space about one-fourth its breadth; antennae brownish, length of median segments about one and a half times the breadth; clypeus closely punctate; pubescence greyish-white or faintly yellowish, intermixed with fuscos on upper portions of head and thorax; prothoracic spines well developed; metapleural protuberance not carinate; tegulae reddish-piceous; wings subhyaline, veins and stigma piceous; scutum somewhat shining, punctures rather coarse and

**Colletes similans armatus Patton**

(Fig. 10)


*Colletes armatus* Robertson, 1929. Flowers and Insects, Lancaster, Pa., Science Press. (flower records)


FLOWER RECORDS—Stephen records this on *Amorpha coerulea*, *Monarda punctata*, *Oxalis palpata*, *Petalostrongylos candidus* and *P. violaceus*. Robertson (1929) records it also on *Petalostrongylos purpureum*. 

**DISTRIBUTION**—This is a midwestern species extending from Colorado and New Mexico east to Minnesota, Illinois, Missouri and Mississippi. It is in flight during June, July and August.

**FLOWER RECORDS**—Stephen records this on *Amorpha coerulea*, *Monarda punctata*, *Oxalis palpata*, *Petalostrongylos candidus* and *P. violaceus*. Robertson (1929) records it also on *Petalostrongylos purpureum*. 

**COLLETIDAE—COLLETES**

47
longer than segment 2, median segments about scattered punctures, those on vertex scattered ocelli coming largely whitish on thorax below but piceous, basal segment of flagellum somewhat what finer, close and deep; tarsi somewhat reddened, basitarsi slender, spurs yellowish; abdominal terga shining, closely, deeply and distinctly but rather finely punctate, punctures well separated on basal tergum, becoming more close and fine on the more apical segments; apical margins of terga depressed, somewhat reddened, with entire white fasciae, discal pubescence fuscous, but very short and inopuncicuous.

**DISTRIBUTION**—North Carolina and Georgia, north to Wisconsin, Michigan, New York and the New England states, into southern Canada; May to November.

**FLOWER RECORDS**—Aster, Baccharis, Eupatorium, Polygonum cuspidatum and Solidago. Robertson (1929) lists the following as host plants: Aster ericoides, Bidens aristosa, Cicuta maculata, Polygonum hydropiperoides, Solidago canadensis, S. graminifolia, S. nemoralis, and S. ulmifolia.

**Colletes simulans miamiensis** Mitchell


**FEMALE**—Length 11.5 mm.; length of face about equal to distance between eyes above; eyes converging below; malar space very short, barely evident; foveae deep and distinct, terminating near top of eye; antennae black or piceous, basal segment of flagellum somewhat longer than segment 2, median segments about as long as broad; clypeus quite short, not protruding appreciably below suborbital line; clypeus rather finely, strictly punctate; supraclypeal area shining and with only a few scattered punctures, those on vertex scattered and irregular, surface shining, face between ocelli and antennae dull, obscurely rugoso-punctate, cheeks rather finely, strictly punctate; pubescence of head rather short, greyish, with a few intermixed fuscous hairs below antennae, and vertex with copious, more elongate, fuscous pubescence, that on dorsum of thorax intermixed greyish and fuscous, becoming largely whitish on thorax below but with a few intermixed fuscous hairs on pleura dorsally; scutum with coarse and close but distinct punctures anteriorly, becoming shining and sparsely punctate posteriorly; scutellum shining, with rather coarse and well separated, shallow punctures; pleura coarsely rugoso-punctate; dorsal face of propodeum very short, with coarse, longitudinal striae dividing it into quadrate shining pits, anterior face coarsely reticulate, lateral faces smooth and somewhat reticulate above; lateral angles of pronotum produced into rather short flattened triangular spines that do not quite attain outer margins of head; metapleura not appreciably protuberant above; tegulae smooth, more or less testaceo-centrally; wings lightly infuscated, veins and stigma piceous; 2nd and 3rd submarginal cells about equal in length; legs blackish, spurs brownish-testaceous, hind basitarsi rather slender and elongated; front coxal spines well developed abdominal terga somewhat shining, very minutely and obscurely punctate, punctures on basal tergum well separated but becoming more close and fine on the more apical segments becoming increasingly close and somewhat more distinct; apical margins of segments 2-4 rather broadly depressed towards sides, apical fasciae poorly developed, but specimen possibly rubbed.

**MALE**—Length 9 mm.; length and breadth of face subequal; eyes converging below; length of malar space about one-third its breadth; antennae brownish, but basal segment of flagellum much darker, length of median segments about one and a half times the breadth, basal segment of flagellum much shorter than the 2nd; clypeus closely and deeply punctate, upper portion hidden by the dense pubescence; face above antennae dull, rugoso-punctate; vertex shining, finely and irregularly punctured; cheeks closely and finely punctate beneath the copious pubescence; pubescence whitish on head and thorax, slightly yellowish above, scutum and scutellum with a very few inconspicuous fuscous hairs; lateral angles of prothorax not spined; metapleural protuberance not carinate; tegulae yellowish-ferruginous; wings lightly infuscated, veins and stigma piceous; punctures of scutum deep and coarse, close over most of disc, but sparse in center of posterior half; scutellum shining, coarsely and deeply punctate, anterior margin impunctate, but punctures quite close along hind margin; pleura dull, rugoso-punctate anteriorly and above, with more distinct but close and coarse punctures below; lateral and posterior faces of propodeum coarsely reticulate, dorsal face short, with closely parallel striae; legs dark; basitarsi slender, spurs yellowish; base of abdomen deeply and distinctly, but finely punctate, punctures well separated but not sparse; 2nd and following terga becoming successively, more minutely and closely punctate; apical margins of terga slightly depressed, reddish-hyaline beneath the thin, white fasciae, discal
pubescence on 2nd and following terga fuscous, very short, suberect and inconspicuous.

**DISTRIBUTION**—The type locality is Miami, Florida. The female described above for the first time was collected at Gainesville, Florida, November 15, 1956 (R. A. Morse, on Bidens pilosa).

**Colletes solidaginis** Swenk

(Figs. 8 & 9)


**FEMALE**—Length 8-9 mm.; length of face slightly greater than greatest distance between eyes, these strongly convergent below; malar space linear, almost obliterated; facial foveae also very poorly developed, hardly visible beneath pubescence; mid antennal segments about as broad as long, apical ones somewhat longer; clypeus densely and finely punctuate, thinly pubescent; pubescence entirely yellow, prothoracic spines inedit; metapleural protuberance small, inconspicuously carinate, the margin not ferruginous; tegulae pale ferruginous; wings hyaline, somewhat violaceous, veins and stigma brownish to testaceous; punctures of abdominal terga exceedingly minute and obscure, fasciae broad, densely and entirely covered by the dense, appressed, yellowish-hyaline; apical margins of abdominal terga yellowish-hyaline beneath fasciae; pubescence ochraceous throughout.

**MALE**—Length 7 mm.; length of face slightly greater than greatest distance between eyes; eyes strongly convergent below; length of malar space about one-third its width; width of mid antennal segments two-thirds the length; clypeus very finely and closely punctate beneath the long dense pubescence; pubescence entirely yellow on head and thorax above, more whitish below; prothoracic spines inedit; metapleural protuberance small, inconspicuously carinate, the margin not ferruginous; tegulae pale yellow; wings hyaline, somewhat violaceous, veins and stigma brownish to testaceous; scutum finely and rather closely punctate anteriorly, punctures becoming very sparse in center of disc posteriorly, pubescence quite long and dense, but not obscuring the surface; posterior half of scutellum rugoso-punctate, anterior portion smooth; pleura shining, finely and rather sparsely punctate, becoming finely rugose above; dorsal area of propodeum rather closely striate; tarsi testaceous, basitarsi slender and elongate, spurs pale yellow; abdominal terga very minutely and obscurely punctate, basal tergum smooth and shining beneath the long, thin pubescence; abdominal fasciae dense, entire, whitish and rather broad on segments 1-5, discs appearing dark from the thin covering of fine short hairs, but pubescence entirely pale to tip; apical margins of abdominal terga yellowish-hyaline beneath fasciae.

**DISTRIBUTION**—Georgia and North Carolina, north to Minnesota, Illinois, Michigan and Massachusetts; July to September.

**FLOWER RECORDS**—Solidago.

**Colletes susannae** Swenk


**FEMALE**—Length 10 mm.; length of face about equal to distance between eyes above; eyes convergent below; malar space very short; facial foveae subtriangular, quite broad; clypeus bare, finely and closely punctate; punctures relatively sparse on supraclavdual area; antennal segments nearly as long as broad; lateral angles of prothorax triangularly acute but not spined; metapleural protuberance well developed, its carinate margin narrowly yellow; front coxae with elongate, well developed spines; spurs yellowish; hind basitarsi about three and a half times longer than broad; tegulae yellowish-hyaline; wings white, veins and stigma pale yellow, 2nd submarginal cell slightly longer than 3rd; dorsum of thorax covered with dense, white pubescence, obscuring the rather deep and distinct punctures, these well separated in center of scutum posteriorly; scutellum impunctate anteriorly, becoming rather closely punctate along hind margin; pubescence of pleura not so dense, punctures rather shallow but distinct; dorsal area of propodeum coarsely striate, lateral faces largely bare but with a dorsal fringe, posterior face thinly pubescent; abdominal terga minutely and closely punctate, apical
margins broadly yellowish, only slightly depressed toward sides, with broad, dense, entire fasciae of closely appressed, whitishomentum, pubescence of discs very thin and entirely pale.

**MALE**—Length 10 mm.; length of face slightly less than distance between eyes above; eyes convergent below; malar space short, about one-third as long as basal width of mandible; facial foveae small but evident; vertex narrow back of rectangular pits; front coxae with long pubescence. Antennal segment more brownish-testaceous, length only slightly greater than breadth; clypeus protruding only slightly below suborbital line, closely and finely punctate above, the punctures becoming somewhat more distinctly separated below; punctures of face obscured by the dense pubescence, those on vertex minute and indistinct, becoming more distinct but still rather fine on the shining cheeks below; pubescence of head and thorax white, dense on face, cheeks and eyes, pubescence entirely pale on head and thorax, more or less fulvous on dorsum of thorax; prothoracic spines not evident; metapleural protuberance low, very inconspicuously carinate, if at all; tegulae pale ferruginous; wings lightly infuscated, veins and stigma pale ferruginous, punctures of scutum close, coarse and deep, becoming somewhat sparse in center of disc posteriorly, but puncturation obscured by the dense erect pubescence; scutellum nearly impunctate along anterior margin, otherwise similar to scutum; pleura dullest, rather coarsely rugosopunctate; dorsal area of propodeum short, shining, the parallel striae forming a series of rectangular pits; front coxae with long slender spines; tarsi dark, hind basitarsi parallel-sided, about three times longer than broad, spurs pale ferruginous; abdominal terga smooth and shining, punctures rather fine but deep and distinct on basal segments, becoming more minute but still close on the more apical segments, apical margins of terga only very narrowly and inconspicuously reddish and only very slightly depressed, white fasciae present only as faint traces laterally, discal pubescence dark, but short and very inconspicuous.

**FEMALE**—Length 12-14 mm.; eyes slightly convergent below; length of malar space about one-third its breadth; facial foveae broad, rounded anteriorly, narrowed below; antennae dark, median segments slightly longer than broad; clypeus closely, deeply and rather coarsely punctate; pubescence entirely pale on head and thorax, more or less fulvous on dorsum of thorax; prothoracic spines not evident; metapleural protuberance low, very inconspicuously carinate, if at all; tegulae pale ferruginous; wings lightly infuscated, veins and stigma pale ferruginous, punctures of scutum close, coarse and deep, becoming somewhat sparse in center of disc posteriorly, but puncturation obscured by the dense erect pubescence; scutellum nearly impunctate along anterior margin, otherwise similar to scutum; pleura dullest, rather coarsely rugosopunctate; dorsal area of propodeum short, shining, the parallel striae forming a series of rectangular pits; front coxae with long slender spines; tarsi dark, hind basitarsi parallel-sided, about three times longer than broad, spurs pale ferruginous; abdominal terga smooth and shining, punctures rather fine but deep and distinct on basal segments, becoming more minute but still close on the more apical segments, apical margins of terga only very narrowly and inconspicuously reddish and only very slightly depressed, white fasciae present only as faint traces laterally, discal pubescence dark, but short and very inconspicuous.

**DISTRIBUTION**—This is primarily western in distribution, ranging from Alberta to Manitoba, and from Colorado, Nebraska and South Dakota to Minnesota, Iowa and Wisconsin; from July 1st to mid August.

**FLOWER RECORDS**—Helianthus and Kuhnistera.

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**Colletes thoracicus** Smith  
(Figs. 8 & 9)


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**MALE**—Length 10-13 mm.; length of face exceeding its greatest width; eyes slightly convergent below; length and breadth of malar space subequal; antennae dark, median segments fully twice as long as broad; clypeus closely, deeply and rather coarsely punctate beneath the dense pubescence; pubescence entirely pale on head and thorax, more or less fulvous on dorsum of thorax; prothoracic spines not evident; metapleural protuberance low, very inconspicuously carinate, if at all; tegulae yellowish-ferruginous; wings lightly infuscated, veins and stigma pale ferruginous; scutum shining, punctures coarse and deep.
close laterally, slightly less so medially; those on scutellum slightly more coarse, rather close except along anterior border; pleura dull, punctures close, coarse and deep; dorsal area of propodeum short, shining, the parallel striae forming a series of narrow pits; tarsi dark, basitarsi slender, spurs yellowish-ferruginous; abdominal terga smooth and shining, punctures deep and distinct, well separated and rather fine on the more basal segments, becoming close and minute on the more apical segments, apical margins of segments only very slightly depressed, more or less reddish-hyaline, with rather incomplete or thin, white, apical fasciae, discal pubescence dark, but short and very inconspicuous.

**DISTRIBUTION** — Texas to Florida, north through the Atlantic Coast states to New York and Massachusetts; January and February in Florida; March through June in the norther parts of the range.

**FLOWER RECORDS** — Amelanchier, Aronia, Brassica, Ilex, Malus, Melilotus, Padus, Prunus angustifolia, Saltz and Vaccinium.

**Colletes thysanellae** Mitchell

(Figs. 8 & 10)


**FEMALE** — Length 9-10 mm.; eyes convergent below; malar space extremely short; facial foveae small, rather narrow, but distinct; antennae dark reddish, length and breadth of median segments subequal; clypeus produced only slightly beyond suborbital line, dull and tessellate between the rather close, coarse punctures, those on supraclypeal area fine and rather close; face above antennae dull, more tessellate than rugose, punctures indistinct; vertex shining, finely pebbled, with scattered coarser punctures, those on cheeks obscured by pubescence; pubescence whitish in general, brownish-fuscous in part on vertex and dorsal area of thorax; lateral angles of pronotum produced into short sharp spines; metasternal protuberance obscurely carinate, entirely black; tegulae dark reddish; wings subhyaline, strongly violaceous, veins and stigma ferruginous; legs dark reddish, anterior coxae with very short, triangular spines; basitarsi about four times longer than broad, spurs yellowish-ferruginous; dorsal of thorax shining, coarsely and deeply punctate, rather closely so on scutum, anteriorly, becoming very sparse in center posteriorly, sparse on scutellum anteriorly, closer posteriorly, about equal in size to those of scutum; pleura dull, rugose anteriorly and above, becoming more striately rugose below; lateral faces of propodeum shining, microscopically reticulate, dorsal face divided into a series of rather large polished pits by the parallel striae; basal abdominal tergum shining, very minutely and sparsely punctate, following segments much more closely punctate, apical margins of terga only very slightly depressed toward sides, reddened, with dense, entire, white fasciae, discal pubescence very short, thin and entirely pale.

**MALE** — Length 7-8 mm.; eyes convergent below; length of malar space about one-fourth its breadth; antennae dark reddish, length of median segments about one and a half times the breadth; clypeus closely and rather coarsely punctate beneath beard; pubescence whitish in general, brownish-fuscous in part on vertex and dorsum of thorax; metapleural protuberance obscurely carinate, entirely black; tegulae dark, reddish; wings subhyaline, strongly violaceous, veins and stigma ferruginous; dorsal of thorax shining, punctures deep and distinct, close laterally on scutum, rather sparse medially, becoming very sparse posteriorly, more close and coarse on scutellum except for anterior border; pleura rugoso-punctate anteriorly and above, more shining below, obscurely striately punctate; lateral faces of propodeum somewhat shining, obscurely and irregularly sculptured, dorsal face divided into several shining quadrates pits by the parallel striae; legs dark reddish, basitarsi slender; spurs yellowish; basal abdominal tergum shining, sparsely and very finely punctate, punctures on following segments closer, becoming minute and obscure apically; apical margins of terga depressed, reddish-hyaline, with dense, entire, white fasciae, discal pubescence of 2nd and following segments dark, very fine, obscure and subapressed.

**DISTRIBUTION** — Florida, Georgia, North Carolina and Virginia; September to November.

**FLOWER RECORDS** — Aster, Baccharis, Eupatorium and Solidago. The fact that Robertson used the manuscript name *thysanellae* for a series of specimens of this species suggests the probability that they were collected on *Thysanella*. Krombein has also collected males at Kill Devil Hills, N. C. visiting honeydew of a *Phylloxera* infesting *Quercus falcata*.

**Colletes titusensis** Mitchell

(Figs. 8 & 10)


FEMALE—Length 8 mm.; face slightly longer than greatest distance between eyes; eyes convergent below; malar space linear; facial foveae quite short, rather shallow except along margin of eye, somewhat rounded above, terminating close to upper end of eye; clypeus rounded, protruding very slightly below suborbital line, closely, deeply and rather finely and uniformly punctate, the punctures becoming somewhat obscure along apical margin; supraclypeal area largely impunctate; punctures of face above antennae somewhat posterior and more distinctly separated, those on vertex minute and irregular, the surface shining, those on cheeks minute and rather close above, becoming somewhat deeper and more distinct but still quite close below; antennae blackish, segments of flagellum somewhat broader than long, but the basal segment at least twice as long as the 2nd; vertex and dorsum of thorax with some pale brownish-fuscous pubescence, pubescence of face, cheeks and thorax laterally and posteriorly largely white, and that on legs largely white, including the scopa; lateral angles of pronotum acute but not spine-like; metapleural protuberance very low, barely evident, entirely black; front coxae not spined; legs including the scopa; lateral angles of prothorax sharply acute, but not spined; metapleural protuberance not carinate; tegulae shining ferruginous; wings subhyaline, veins and stigma fuscous; punctures of scutellum deep and distinct, close over most of disc, rather coarse, becoming coarser and rather sparse in center posteriorly, those on scutellum coarse, deep and well separated, anterior margin shining and impunctate; pleura coarsely, deeply and closely punctate throughout; lateral faces of propodeum finely rugose, dorsal face short, with shining quadrangular spaces formed by the parallel striae; legs dark, the apical tarsal segments becoming ferruginous, length of hind basitarsi about three times the breadth, spurs yellowish-ferruginous; abdominal terga smooth, somewhat shining, punctures minute, well separated on disc of basal segment, becoming closer and more minute and obscure on the more apical segments; apical margins of terga depressed, reddish on the more apical segments beneath the entire white fascia; pubescence entirely whitish, without dark admixture, discal pubescence obscure, very short and erect.

DISTRIBUTION—Recorded only from Florida, where it is in flight during April and May.

FLOWER RECORDS—No flower-visiting records are available.

Colletes validus Cresson

(Pigs. 7 & 9)


FEMALE—Length 13-14 mm.; length of face considerably exceeding its greatest breadth; eyes subparallel; malar space half as long as eye; facial foveae poorly developed, narrow, obscure; antennae dark, median segments slightly longer than broad; clypeus elongate, shining, punctures rather fine, well separated, somewhat striate; supradiscal area dull, rather closely punctate; pubescence greyish-white, intermixed with fuscous on dorsum of head and thorax and along inner orbits; pronotum not spinose laterally; metapleural protuberance low, not carinate; tegulae dark; wings subhyaline to faintly brownish, veins and stigma dark ferruginous; scutellum closely and deeply punctate throughout, punctures only slightly separated in center posteriorly, rather coarse; scutellum punctured about as scutum, somewhat more sparsely and finely punctate anteriorly; pleura dull,
punctures rather coarse but shallow and contiguous; dorsal area of propodeum with close, parallel striae; coxal spines lacking; tarsi dark, hind basitarsi slender, parallel-sided, spurs yellowish-ferruginous; abdominal terga shining, closely punctate, rather finely so on the more basal segments but these becoming minute on the more apical segments; apical margins of the terga but very slightly depressed, reddish-hyaline beneath the dense, entire, white, apical fasciae; discs of terga with short erect, fuscous hairs, these longer on the more apical segments.

MALE—Length 10-12 mm.; length of face considerably exceeding its greatest breadth; eyes subparallel; malar space half as long as eye; antennae dark, median segments nearly twice as long as broad; clypeus closely and finely punctate over upper half, punctures becoming sparse toward apical margin, surface shining, quite densely pubescent above; pubescence greyish-white, intermixed with fuscous on dorsum of head and thorax and along inner orbits; pronotum not spinose laterally; metapleural protuberance low, not carinate; tegulae dark; wings subhyaline to faintly brownish, veins and stigma dark ferruginous; scutellum closely, deeply and quite coarsely punctate, interspaces shining; scutellum also closely and coarsely punctate except along anterior margin; pleura dull, with close shallow punctures, covered with long dense pubescence; dorsal area of propodeum with close, parallel striae; tarsi dark, hind basitarsi slender, parallel-sided, spurs yellowish-ferruginous; abdominal terga closely and deeply punctate, moderately fine at base, but becoming minute toward apical segments, apical margin of terga hardly at all depressed, somewhat reddened beneath the entire, white, apical fasciae; discs of terga with short erect, fuscous hairs, these longer on the more apical segments.

DISTRIBUTION—Georgia and North Carolina, north to Minnesota, Wisconsin, Michigan, New York, the New England states and New Brunswick; March to July.


Colletes willistoni Robertson
(Figs. 7 & 9)
Colletes willistoni Robertson, 1891. Amer. Ent. Soc. Trans. 18, p. 60. 2.
Colletes willistoni Robertson, 1929. Flowers and Insects, Lancaster, Pa., Science Press. (flower records)

FEMALE—Length 9 mm.; length of face slightly exceeding greatest width; eyes moderately convergent below; length of malar space about one-third length of face; facial foveae separated by short striae; antennae brownish-ferruginous, length and breadth of median segments subequal; clypeus broad and flat, surface dull, densely tessellate, with scattered, obscure, shallow punctures; lateral angles of pronotum acute but hardly spine-like; metapleural protuberance not carinate; tegulae piceous; wings hyaline, slightly violaceous, veins and stigma brownish-testaceous; scutum and scutellum smooth and shining between the coarse and deep punctures, these close but not crowded on anterior portion of scutum, becoming sparse in center posteriorly, those on scutellum slightly coarser, irregularly scattered, not crowded; punctures of pleura coarse, deep and very close; dorsal area of propodeum shining between the irregular, parallel striae; front coxae smooth and shining, slightly conically produced at tip, but without distinct spines; tarsi piceous, hind basitarsi broad and flat, length about three times the breadth, spurs yellowish; pubescence short, thin, greyish-white on head and thorax, with some fuscous admixture on dorsum of thorax; abdominal terga very finely and closely, but deeply and distinctly punctate, apical margins dark, slightly depressed beneath the entire, dense, white fasciae, discal pubescence short, thin, brownish.

MALE—Length 8 mm.; length of face slightly exceeding greatest width; eyes moderately convergent below; length of malar space nearly half its breadth; antennae blackish, median segments only slightly longer than broad, basal segment about as long as broad, slightly exceeding pedicel; clypeus flattened, densely tessellate, punctures shallow and obscure; pubescence short, thin, greyish-white on head and thorax, with a slight amount of fuscous admixture on dorsum of thorax; lateral angles of pronotum acute but hardly spine-like; metapleural protuberance not carinate; tegulae piceous; wings hyaline, slightly violaceous, veins and stigma brownish-testaceous; punctures of scutum coarse and deep, close anteriorly, becoming sparse in center posteriorly, intervening areas shining; punctures of scutellum more coarse, irregular, not crowded, those on pleura coarse, deep and very close; upper surface of propodeum with a series of shining pits separated by short striae; tarsi dark, hind basitarsi about three times longer than broad, parallel-sided, fore and mid meta-tarsi slender; spurs yellowish; punctures of abdominal terga fine, close, deep and distinct, apical margins slightly depressed beneath the entire, white, apical fasciae; discal pubescence short, thin, brownish.
DISTRIBUTION—Florida to Illinois and New York; April, May and June. According to Stephen the range extends northward to Nova Scotia and west to Utah.

FLOWER RECORDS—This has been collected in North Carolina on *Toxicodendron*, and in Florida on *Melilotus alba* and *Physalis eiiolitii*. Other records given by Stephen are *Monarda punctata occidentalis*, *Physalis lanceolata*, *P. virginiana* and *Psoralea tenuiflora*. Robertson (1929) lists also *Ceanothus americanus*, *Pycnanthemum flexuosum* and *Rhus glabra*.

**Colletes wilmatteae** Cockerell

(Figs. 8 & 9)


**FEMALE**—Length 9-10 mm.; length of face somewhat greater than distance between eyes above; eyes convergent below; malar space very short; facial foveae obscured by a covering of dense, yellowish tomentum; clypeus protruding about one-third below suborbital line, closely and finely punctate in large part, but the apical fourth shining and impunctate; punctures of face, vertex and cheeks above hidden by the dense plumose pubescence, lower portion of cheeks somewhat exposed and shining, with minute, rather close punctures; segments of flagellum brownish-piceous below, blackish above, segments about as long as broad, basal segment somewhat longer; pubescence of head and thorax pale yellowish, very dense, obscuring the surface except on venter of thorax and on clypeus and cheeks below; lateral angles of pronotum not produced, metapleural protuberance obscure, entirely black, obscured by dense tomentum; punctures of scutellum beneath pubescence close and fine anteriorly, becoming slightly separated over median posterior area, scutellum somewhat more sparsely punctate and shining anteriorly; pleura closely and finely punctate above, punctures becoming somewhat more distinctly separated below; dorsal area of propodeum quite short, with regularly spaced, rather coarse striae, lateral faces rather smooth, covered with quite dense white tomentum, posterior face obscured by tomentum; front coxal spines short but well developed; legs testaceous, tarsi more yellowish; tegulae testaceous-hyaline; wings hyaline, veins and stigma yellowish-testaceous, 2nd submarginal slightly shorter than 3rd; abdominal terga almost completely covered with dense, pale yellow tomentum, obscuring the surface of the discs which show a few shallow, obscure, but close punctures where the surface is exposed, apical segment dark.

**MALE**—Length 7 mm.; face slightly longer than distance between eyes above; eyes convergent below; malar space about one-fourth as long as basal width of mandible; facial foveae inoperculate; clypeus protruding only slightly below suborbital line, finely, shallowly and closely punctate beneath the dense, pale pubescence, apical margin becoming almost impunctate; vertex somewhat shining, minutely and obscurely punctate; cheeks very minutely and closely punctate above, becoming more distinctly and sparsely punctate below where the surface is shining; segments of flagellum brownish-ferruginous beneath and toward apex above, more piceous toward base above, slightly longer than broad, basal segment blackish, somewhat shorter, only slightly longer than pedicel, scape ferruginous; pubescence of head and thorax entirely pale, cream-colored above, more whitish below, rather dense in general but not entirely obscuring the surface; lateral angles of pronotum acute but not spinose; metapleural protuberance distinct, narrowly rimmed with testaceous; legs largely testaceous, spurs pale yellowish, tarsal faces quite smooth but densely pubescent, posterior face more shining and thinly pubescent; basal abdominal tergum very minutely punctate, the punctures quite close over anterior half, becoming somewhat more widely separated posteriorly, those on scutellum slightly more coarse and quite close; pleura rather finely but closely and deeply punctate; dorsal area of propodeum rather short, with rather coarse parallel striae, lateral faces quite smooth but densely pubescent, posterior face more shining and thinly pubescent; abdominal tergum very minutely punctate, the punctures close apically but becoming more widely separated and scattered basally, discs of the following segments very closely, minutely and uniformly punctate, apical margins hyaline, with broad, dense, entire, cream-colored fasciae, discs with fairly evident, short, pale pile.

DISTRIBUTION—This species is western, reaching Minnesota, Iowa and Wisconsin, with one somewhat doubtful record from Georgia. It is in flight through June, July, August and into September.

FLOWER RECORDS—According to Stephen this visits *Petalostemon*, having been collected on *P. candidum*, *P. flavescens* and *P. oligophyllum*.
### Table 1—Distribution of species of *Colletes* and *Caupolicana* by states.

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Figure 7—Dorsal (left) and ventral aspects of male genital armature in species of Colletes: sternum 7 of males of *C. brevicornis* and *C. ciliatus*.
Figure 8—Dorsal (left) and ventral aspects of male genital armature in species of *Colletes*. 

*Americanus*  
*Hyalinus*  
*Wilmattae*  
*Aberrans*  
*Brevicornis*  
*Thoracicus*  

*Titusensis*  
*Mandibularis*  
*Distinctus*  

*Productus*  
*Solidaginis*  
*Thysanellae*  
*Srimeyi*  
*Compactus*
Figure 9—Sternum 7 in males of species of Colletes.
Figure 10—Dorsal, ventral and lateral aspects of male genital armature, and sternum 7 of *Colletes salvadori*, *C. simulans*, *C. latitarsis* and *C. howardi*; sternum 7 of *C. kinezidii*.
**KEY TO SPECIES**

**Females**

1. Large (8 mm.); entirely black, including face, tubercles, legs, etc. ..............
   \( (Cephalylaeus) \) basalis Smith (p. 76)
   Smaller; face and tubercles usually maculated ........................................ 2

2. Face broad, its greatest width equalling or exceeding its length; front coxae more or less angulate or spinose laterally .......................... \( (Metziella) \)
   Face narrow, clypeus usually longer than broad; front coxae simple .............. 4

3. Dorsal area of propodeum very short, only finely rugose along base; front coxae more sharply acute laterally ........................................... \( sparsus \) Cresson (p. 78)

4(2). Collar entirely black ................................................................. 5
   Collar maculated ................................................................................. 12

5. Base of abdomen red; pleura rugose, the punctures very closely crowded ....
   \( nematobonis \) Robertson (p. 67)
   Abdomen entirely black ......................................................................... 6

6. Thorax coarsely sculptured; wings fuliginous except at base: ......... \( schwazzi \) Cockerell (p. 68)
   Thoracic sculpture fine, wings faintly brownish, if at all .......................... 7

7. Very small (4 mm.); face marks much reduced or absent; tubercles entirely black; front tibiae with small basal spot .............................. 8
   Either small, with well developed face marks, or considerably larger; tubercles maculated .......................................................... 9

8. Dorsal face of propodeum smooth and rounded posteriorly, irregularly rugose along basal margin .............................. \( verticallis \) Cresson & Cockerell (p. 71)
   Dorsal face of propodeum more completely rugose, and more nearly truncate posteriorly ...........................

9(7). Smaller (4-5 mm.); basal two-thirds of outer surface of front tibiae yellow .......................................................... 10
   Larger (6-7 mm.); front tibiae entirely black or with a small basal ivory spot .... 11

10. Face marks triangular, entirely filling area between clypeus and eyes; tegulae usually maculated .................................... \( cressoni \) Cockerell (p. 70)
   Face marks reduced, narrow and elongate, not entirely filling area between clypeus and eyes; tegulae not maculated .......... \( teleporus \) Lovell (p. 75)

11(9). Clypeus and front tibiae entirely black; foveae divergent from eye above; pleural punctures very fine and quite sparse .............................. \( verteicallis \) Cresson (p. 76)
   Clypeus usually with a yellowish transverse stripe below; front tibiae often with a basal ivory maculation; pleura closely punctate; foveae not divergent from eye above ...........

12(4). Tegulae maculated ................................................................. 13
   Tegulae not maculated ........................................................................ 20

13. Pleural punctures very fine and shallow, quite sparse, with interspaces two or three times diameter of punctures; abdomen and clypeus red at least in part ....................................................... 14

15(12). Pleural punctures more coarse, deep and close; or abdomen and clypeus black.
14. Legs black in large part, the tibiae more or less yellow at base; face with conspicuous yellow maculae between clypeus and eyes that extend narrowly along inner orbits nearly to top of eyes...graenicheri Mitchell (p. 79)

Legs entirely ferruginous; clypeus and lateral face marks ferruginous, the face marks terminating at level of antennae...metopii new species (p. 80)

15(13). Entire clypeus and basal segments of abdomen bright ferruginous, the lateral face marks, maculations of collar and the pronotal tubercles pale yellow or ivory...volusiensis Mitchell (p. 69)

Clypeus and abdomen black...16

16. Facial foveae above strongly divergent from eye, ending almost at midpoint between eye and lateral ocellus...floridanus Robertson (p. 77)

Facial foveae above not at all or very weakly divergent from eye margin...17

17. Face marks ending abruptly at level of antennae; metanotum very coarsely and closely but distinctly punctate...stevensi Crawford (p. 74)✓

Face marks usually extending to some degree above antennae; metanotum roughened or rugose, without distinct punctures...18

18. Pleura rugose, or adull and closely punctured, interspaces densely tessellate...19

Pleura smooth, if not shining, between distinctly separated punctures...modestus Say (p. 65)

20(12). Larger (6 mm.); wings infuscated over apex; pleura coarsely rugose-punctate...confluens Smith (p. 63)

Smaller (5 mm.); wings hyaline; pleura with shallow, subcontiguous punctures; but not rugose...affinis Smith (p. 63)

22. Segments 1 and 2 of abdomen and mid and hind legs entirely bright ferruginous; wings hyaline...flammipes Robertson (p. 64)

Second abdominal segment, and mid and hind femora black; apical half of wings infuscated...ornatus Mitchell (p. 67)

23(20). Thoracic sculpture rather coarse; basal half of outer face of front tibiae yellow; basal segment of abdomen polished and impunctate...illinoensis Robertson (p. 64)

Thoracic sculpture relatively fine; basal maculation of front tibiae usually small...24
8. Upper extensions of face marks broad, obliquely truncate, only slightly removed from eye margin

stenosis Crawford (p. 74)

Upper extensions of face marks much narrowed, widely removed from eye margin

9. Tibiae and tarsi entirely yellow; tubercles yellow; tegulae maculated; scape largely yellow anteriorly

labiatifrons Cockerell (p. 72)

Scape slender, slightly flexed, the outer half dark

Mid and hind tibiae dark over apical half; tegulae entirely dark; maculae on scape reduced or absent

10. Upper extensions of face marks extending consideredly above base of antennae, clavate in form

crossoni Cockerell (p. 70)

Upper extensions of face marks more slender and abbreviated, not clavate, and extending but little if any above base of antennae

11. Abdomen impunctate; upper extensions of face marks very short, not extending above the antennal fossa

grossicornis Swenk & Cockerell (p. 71)

Abdomen minutely but distinctly punctate; upper extensions of face marks more elongate and slender

teleporus Lovell (p. 75)

12. Scape conspicuously maculated

Scape entirely dark

13. Collar and tegulae maculated; pleural punctures close and coarse, much more coarse than those of scutum; facial and thoracic maculae ivory-colored

14. Apex of scape broadly dilated, the width nearly equal to its length, outer half yellow, inner half blackish; hind tibiae entirely yellow

grossicus Cockerell (p. 77)

Scape slender, slightly flexed, the outer concave surface yellow; apical half of hind tibiae dark

georgicus Cockerell (p. 77)

Scape slender, slightly flexed, the outer concave surface yellow; apical half of hind tibiae dark

affinis Smith (p. 63)

15. Small (4 mm.); face marks creamy or whitish; basal segment of flagellum very short, much broader than long and considerably shorter than 2nd segment; 8th sternum deeply cleft apically (Para-

prosopis)

16. Collar and tegulae maculated

floridanus Robertson (p. 77)

Collar and tegulae not maculated

packardii Mitchell (p. 77)

17(16). Pleura coarsely rugose

Pleura with distinctly separated punctures, though these punctures possibly coarse and quite close

18. Collar black

Collar maculated

19. Base of abdomen usually red; pleural punctures closely crowded, more definitely rugose

netumbonis Robertson (p. 67)

Abdomen entirely black; pleura not so distinctly rugose, the coarse punctures slightly separated in part

schwarzii Cockerell (p. 68)

20(18). Tegulae maculated; punctures on scutum and scutellum coarse and crowded; hind tibiae dark apically

confluens Smith (p. 63)

Tegulae entirely dark; punctures on scutellum distinctly more coarse and sparse than those on scutum

21. Bars of abdomen red; pleura definitely rugose, the coarse punctures closely crowded

ornatus Mitchell (p. 67)

Abdomen entirely black; pleura less definitely rugose, the coarse punctures separated in part

illinoensis Robertson (p. 64)

22(17). Base of abdomen ferruginous, in marked contrast to the blackish 2nd and following segments; facial and thoracic maculae ivory-colored

volusiensis Mitchell (p. 69)

Abdomen of uniform color, either black or dark ferrugino-piceous; maculae usually yellow

23. Larger (7 mm.); collar entirely black; pleura dull and densely rugose

schwarzii Cockerell (p. 68)

Smaller; collar maculated; pleural punctures distinct, to some degree separated

24. Pleural punctures close and coarse, much more coarse than those of scutum; hind tibiae entirely yellow

illinoensis Robertson (p. 64)

Pleural punctures relatively fine and sparse, not much more coarse than those of scutum; hind tibiae blackish over apical half
Hylaeus (Prosopis) affinis (Smith)  
(Figs. 11, 13 & 14)

Prosopis ziziae Metz, 1911. Amer. Ent. Soc. Trans. 37, p. 130. (classification)
Prosopis ziziae Robertson, 1929. Flowers and Insects, Lancaster, Pa., Science Press. (flower records)

FEMALE—Length 5-6 mm.; black; antennae piceous above, brownish beneath; face marks yellow, triangular, entirely filling area between clypeus and eyes, terminated more or less distinctly close to eye margin slightly above antenna; collar with a pair of conspicuous transverse maculae; tubercles and an anterior spot on tegulae yellow, tegulae otherwise ferruginous; wings subhyaline, veins and stigma ferruginous; legs black, with basal third or more of all tibiae yellow; spurs pale yellow; face slightly narrowed below; cheeks and eyes subequal in width in lateral view; foveae deep, distinct, linear and rather long, separated from eye by a slightly wider space, rather markedly divergent from eye above; 2nd and 3rd segments of flagellum broader than long, length and breadth subequal on basal and other segments; front coxae simple; dorsal surface of propodeum sloping, shorter than metanotum, coarsely reticulate, posterior surface more finely reticulate, not carinate laterally, lateral surfaces obscurely punctate below, becoming densely and finely rugose above; metanotum densely and finely rugose; clypeus tesselate, with sparse, very fine and obscure punctures; face above antennae closely, deeply and distinctly punctate; punctures of scutellum and pleura slightly more coarse and sparse; abdomen rather dull, basal segment minutely and quite closely punctured, following segments more tesselate than punctate.

DISTRIBUTION—Generally distributed through the Eastern United States and Canada from the New England states west to Minnesota and southward to Mississippi and Georgia; April to October.

FLOWER RECORDS—This species visits a wide range of flowers, with records in the following genera: Apocynum, Ceanothus, Cephalanthus, Cretaegus, Houstonia, Hypericum, Pyracantha, Rhus, Rubus, Salvia, Solidago and Zizia. The following additional genera are listed by Robertson (1929): Amorpha, Aruncus, Asclepias, Biephilia, Boltonia, Campanula, Cicutu, Clematis, Cornus, Cryptotaenia, Erigeron, Eryngium, Euphokus, Eupatorium, Euphorbia, Fragaria, Geranium, Geum, Gnaphalium, Heracleum, Hydrangea, Krigia, Lactuca, Lepidium, Lycopus, Malva, Nelumbo, Osmorhiza, Oxypolis, Pastinaca, Petalostemon, Philadelphus, Polygonum, Polytaenius, Potentilla, Ptelea, Salix, Santicula, Sium, Stellaria, Stenanthium, Symphoricarpus, Taenia, Thaspium, Valeriana, Veronica and Viburnum.

Hylaeus (Prosopis) confluens (Smith)  
(Fig. 12)

Prosopis triangulattara Cockerell, 1896. Psyche 7 (Sup.), p. 31. δ.

FEMALE—Length 6.7 mm.; black; antennae blackish above, more brownish-fuscous beneath; face marks yellow, triangular, completely filling area between clypeus, eyes and antennae, extending above antennae and ending acutely on eye margin; collar with conspicuous transverse maculae; tubercles yellow; tegulae piceous, with large, anterior yellow maculae; wings hyaline basally, becoming deeply infuscated over apical half, veins and stigma piceous; front tibiae ferruginous anteriorly, outer face with a yellow stripe, apical half largely black; mid tibiae with a large basal yellow spot; basal third (or slightly more) of hind tibiae yellow; spurs more testaceous; legs otherwise blackish; face narrowed below; cheeks slightly narrower than eyes in lateral view; foveae deep, linear, separated from eye margin by a slightly wider space, upper end slightly divergent from eye; inner orbits slightly elevated above eye level; 2nd segment of flagellum short, broader than long, 1st and 3rd segments nearly as long as broad, 2nd segment of flagellum short, broader than long, 1st and 3rd segments nearly as long as broad, the others definitely so; front coxae simple; dorsal area of propodeum slightly infuscated over apical half, veins and stigma piceous; front tibiae ferruginous anteriorly, outer face with a yellow stripe, apical third of 2nd; mid and hind legs entirely testaceous; abdomen minute but distinct, rather sparse on shining basal segment, quite close on the others.

DISTRIBUTION — Florida, Georgia, North Carolina, Virginia, and New Jersey; March to October.

FLOWER RECORDS—Chrysanthemum, Chrysopsis, Erigeron, Eryngium, Hypericum, Ilex, Melilotus, Oxycoccus, Oxypolis filiformis, Polygonum, Rhus, Rubus, and Solidago.

Hylaeus (Prosopis) flammipes (Robertson)

Prosopis modestus Metz (in part), 1911. Amer. Ent. Soc. Trans. 37, p. 121.

This species is based upon a single specimen collected in Citrus Co., Florida. The following comparative note was made from the type (No. 12850) in the collection of the Illinois Natural History Survey:

FEMALE—There is a strong resemblance to ornatus, but the pleural punctures are somewhat finer and more widely separated, interstices quite smooth but not shining; punctures of scutellum more distinctly separated; pleura very coarsely rugose; punctures of abdomen minute but distinct, rather sparse on shining basal segment, quite close on the others.

Hylaeus (Prosopis) illinoiensis (Robertson)

(Figs. 11, 13, & 14)

Prosopis illinoiensis Robertson, 1929. Flowers and Insects, Lancaster, Pa., Science Press. (flower records).


FEMALE—Length 6-7 mm.; black; antennae black above, piceous below; face marks yellow, triangular, entirely filling area between clypeus, eyes and antennae, terminating obliquely on eye margin at level of antennae; tubercles and two conspicuous maculae on collar yellow; tegulae piceous, not maculated; wings subhyaline, veins and stigma piceous; front and mid tibiae with basal yellow spots slightly more than a third of their length; slightly more than basal half of hind tibiae yellow; legs otherwise black; spurs yellowish; face somewhat narrowed below; cheeks subequal to eyes in width in lateral view; foveae linear, deep and distinct, separated from eye by a space of about equal width, markedly divergent from eye above; inner orbits slightly elevated above level of eyes; 2nd segment of flagellum slightly broader than long, these dimensions subequal in 1st and 3rd segments, following segments slightly longer; front coxae simple; dorsal area of propodeum about as long as metanotum, coarsely reticulate, as also posterior surface which is bounded by a low, barely evident carina, this interrupted medially above, lateral surfaces finely, irregularly rugose; punctures of scutum deep and quite coarse, crowded anteriorly, close over remainder of disc, well separated but not sparse on scutellum; quite coarse and well separated on pleura; basal segment of abdomen shining, impunctate, 2nd and following segments closely and very minutely punctate; wings of 7th sternum crescentic, the outer concave margin fringed with fine setae; distal pedicel of 8th sternum rather narrow, truncate apically; penis valves of genital armature not attaining tips of gonostyli, the latter rather robust, narrowly rounded apically.

DISTRIBUTION—Illinois and West Virginia to New York, Massachusetts and Maine; June, July and August.

FLOWER RECORDS—Only one flower record has been seen by the writer, a male having been collected by H. V. Weems, Jr. on Apocynum cannabinum in Raleigh Co., W. Va., June 6, 1955. Robertson (1929) records illinoensis on the following: Arnica, Aster, Cicutria, Cornus, Crataegus, Eu- phus, Gonolobus, Heracleum, Lycopus, Osmorrhiza, Pastinaca, Rhus, Salix, Solidago, Taenidia, Thaspium and Viburnum.

At the time that certus was described it was believed that illinoensis was a synonym of modestus, having been recognized as a variety of that species by Metz (1911), and later reduced to synonymy in the Catalog of Hymanoptera (Muesebeck, et al. 1951, p. 1051). Recently the writer had the opportunity to study the type of illinoensis at the Illinois Natural History Survey and found it to be similar in all respects to certus Mitchell.

Hyelaeus (Prospopis) modestus Say

(Figs. 11, 13 & 14)


Prospopis nucleatus Viereck, 1903. Amer. Ent. Soc. Trans. 29, p. 64. ♀.

Prosopis nigra Swenk & Cockerell, 1910. 
Prosopis modestus Metz, 1911. Amer. Ent. Soc. Trans. 37, p. 121.  
Prosopis rosenbomae Robertson, 1929. Flowers and Insects, Lancaster, Pa., Science Press.  
Prosopis modestus Rau, 1930. Psyche 37, pp. 172-175.  

FEMALE—Length 5.0-7.0 mm.; black; antennae piceous above, ferruginous beneath; face marks yellow, triangular, filling area between clypeus and eyes, ending acutely on eye margin above antennae; collar and tubercles yellow; tegulae fuscous or blackish; wings subhyaline, veins and stigma fuscous; legs black, but tibiae yellow at base and spurs yellowish; face narrowed below; cheeks narrower than eyes in lateral view; facial foveae deep and distinct, linear, separated from eye by a very slightly wider space and only slightly divergent from eye above; scape slender, no wider than flagellum; very short, about half as long as broad; front coxae simple; dorsal area of propodeum short, about equal to metanotum, coarsely reticulate, metanotum more finely rugose; facial punctures below antennae minute, sparse and obscure, these deep, distinct and closely crowded above antennae; thoracic punctures deep and distinct, moderately coarse, close but not contiguous on scutum and scutellum, more widely separated but not sparse on pleura; abdomen shining, punctures exceedingly minute, but visible with high magnification, well separated on 1st and 2nd segments.

MALE—Length 4.5-7.0 mm.; black; antennae piceous above, ferruginous beneath, scape slender, no wider than flagellum; very short, about half as long as broad; front coxae simple; dorsal area of propodeum short, about equal to metanotum, coarsely reticulate, metanotum more finely rugose; facial punctures below antennae minute, sparse and obscure, these deep, distinct and closely crowded above antennae; thoracic punctures deep and distinct, moderately coarse, close but not contiguous on scutum and scutellum, more widely separated but not sparse on pleura; abdomen shining, punctures exceedingly minute, but visible with high magnification, well separated on 1st and 2nd segments.

Prosopis modestus Rau, 1930. Psyche 37, pp. 172-175.  

FLOWER RECORDS—Specimens have been recorded from the following: Acer, Achillea, Angelica, Apocynum, Aralia, Aruncus, Azalea, Castanea pumila, Ceanothus, Chrysanthemum, Cymosa, Cuculus, Dauca carota, Evergreen, Eupatorium, Gerardia, Houtoniana purpurea, Hydrangea, Ilex, Koeil, Pyracantha, Rhus, Rosa, Rubus, Solidago, Spiraea and Zizia.  
Robertson (1929) records this species (as P. sayi) on the following additional genera: Amorpha, Arabis, Cacalia, Cornus, Euphynus, Geum, Heracleum, Lepidium, Malva, Monarda, Osmorrhiza, Pastinaca, Ptelea, Pyranthethum, Sicanula, Sium, Symphoricarpus, Tanedina and Thaspium.

The females of modestus vary considerably in size, ranging from 5 mm. to an extreme of 7 mm. but are otherwise fairly constant. The males, however, are subject to much variation, and as a result, several names have been proposed for these differing forms. In size, they range from 4.5 to 7 mm. The scape varies in size, being quite slender in some individuals, very robust in others, and with all intergrading sizes evident in any extensive series. The pleural punctures also vary in their relative density, being quite close in some, rather sparse in others. The extent of the maculated areas varies most conspicuously. The mandibles and labrum may be entirely black, largely yellow, or with smaller yellow infusions. The lateral face marks may be abruptly truncate at the level of the antennae or may extend upward along the
eye margin for some distance, and may be pointed on the eye margin or rounded above and slightly divergent. The collar may be largely yellow, or have only small yellow spots, or even be entirely black, and the tegulae may have large conspicuous yellow maculae, or small obscure spots, or none. There is no constant combination of these variations in any series studied so far that would indicate racial groups, except that there is a tendency for the yellow maculations to be extensive or limited, as the case may be, somewhat uniformly. Thus a specimen with maculated tegulae is likely to have a yellow collar, while one with a black collar usually has dark mandibles and tegulae, but there is no constancy in this, and all intergrades exist.

Hylaeus (Prosopis) nelumbonis (Robertson)

Prosopis nelumbonis Robertson, 1890. Amer. Ent. Soc. Trans. 17, p. 316. 9.
Prosopis nelumbonis Crawford, 1913. Canad. Ent. 45, p. 155. (classification)
Prosopis nelumbonis Robertson, 1929. Flowers and Insects, Lancaster, Pa. Science Press (flower records)


FEMALE—Length 7-8 mm.; black, basal abdominal tergum entirely, and 2nd tergum, in large part, ferruginous, the lateral face marks reddish-testaceous; tubercles and a spot on tegulae yellow; front tibiae yellow anteriorly and mid and hind tibiae yellow at base; wings lightly infuscated apically, becoming hyaline at base, veins brownish-testaceous, stigma more piceous; length and breadth of head about equal, face narrowed below; cheeks subequal to eyes in width; foveae elongate, deep and distinct, closely parallel to upper portion of eye; lateral face marks subtriangular ending about at level of antennae; flagellum somewhat brownish beneath, piceous above, segments about as broad as long; lower portion of face with rather coarse but very shallow and indefinite punctures, upper part of face dull, punctures fine and densely crowded, cheeks dull, very finely and obscurely punctate above, punctures becoming more sparse, shallow and indistinct below; thorax somewhat elongated, considerably longer than broad, scutum dull, punctures rather deep but rather fine and closely crowded over most of disc, those on scutellum somewhat deeper and more distinct, with intervening spaces somewhat shining; metanotum dull, densely and finely rugose; dorsal triangle of propodeum quite sharply delimited, rather finely and completely rugose, posterior and lateral faces quite densely silvery tomentose; pleura dull, densely and rather coarsely rugose; abdominal terga shining, punctures exceedingly minute, hardly evident even on the more apical segments.

MALE—Length 6 mm.; black; antennae fuscos above, ferruginous beneath; scape, mandibles and labrum fuscos; tegulae testaceous, not maculated; collar entirely black; wings hyaline at base, becoming infuscated over apical half, veins and stigma ferruginous; maculations yellow, as follows: entire face below antennae, face marks terminated just above antennae and narrowly rounded at tip, tubercles, outer and anterior faces of front tibiae, basal third of mid tibiae, basal half of hind tibiae, narrow apical rim of all the tibiae, all spurs and tarsi; front tibiae ferruginous posteriorly; legs otherwise dark reddish; base of abdomen reddish; face narrowed below; eyes convergent; cheeks slightly narrower than eyes; scape rather slender, slightly broader than flagellum; 1st and 2nd segments of flagellum about as long as broad, others considerably longer; front coxae simple; dorsal area of propodeum slightly longer than metanotum, very coarsely reticulate, propodeum otherwise densely rugose, posterior surface bordered laterally by low carinae, deeply pitted medially; metanotum coarsely rugose; scutum deeply and closely punctate, subrugose, punctures of scutellum distinctly but not widely separated; pleura coarsely rugose; basal segment of abdomen shining, punctures very sparse, minute and obscure, 2nd and following segments more closely and distinctly but very finely punctate.

DISTRIBUTION — Florida, Louisiana, Georgia and South Carolina to Illinois and Ohio; March to July.

FLOWER RECORDS—Robertson (1929) records nelumbonis on Castalia tuberosa and Nelumbo lutea.

Crawford (1913) made fossata Metz a synonym of nelumbonis, but it is our conviction, after a study of the types of nelumbonis, fossata and schwarzi, together with the recently described ornatus, that it is instead a synonym of schwarzi. The reasons are given in a note following the description of ornatus.

Hylaeus (Prosopis) ornatus Mitchell

(Figs. 11-14)

FEMALE—Length 7-8 mm.; black, with basal segment of abdomen bright ferruginous; antennae blackish above, reddish beneath; face mostly yellow, triangular, entirely filling area between clypeus and eyes; antennae, terminated acutely above antennae, tips slightly divergent from eye margin; collar with large yellow maculae, and tubercles yellow; tegulae dark brown, sometimes maculate; wings hyaline at base, becoming infuscated apically, veins and stigma fuscous; femora blackish or fuscous; front tibiae yellowish at base, otherwise ferruginous, basal third of mid tibiae and basal half of hind tibiae yellowish, apically dull ferruginous; all tarsi ferruginous; face narrowed below; cheeks about as broad as coxae simple; dorsal area of propodeum about reticulate, posterior face bordered by a quite substriate, propodeum otherwise quite coarsely reticulate; basal half of hind tibiae yellowish, apically brown, sometimes maculated; wings hyaline maculae, closely punctate above antennae, subrugose; punctures of scutum and scutellum deep, distinct, rather close and quite coarse; pleura very coarsely rugose; as long as metanotum, very coarsely reticulate, basal segment of abdomen shining, impunctate, following segments also to some degree shining, but with very minute and rather close punctures.

MALE—Length 6-7 mm.; black, with basal segment of abdomen bright ferruginous; antennae fuscous above, ferruginous beneath, scape black; mandibles yellowish in part; labrum black; tegulae entirely fuscous; wings hyaline at base, becoming infuscated apically, veins and stigma fuscous; maculations yellow, as follows: entire face below antennae, supra-clypeal mark triangular above, face marks extending along eye margin above antennae and truncate or rounded apically, conspicuous transverse maculae on collar, tubercles, all tibiae and tarsi except that front and mid tibiae have a reddish blotch beneath, and all spurs yellow; face narrowed below; cheeks narrower than eyes; scape rather robust, diameter at apex about one and a half times that of flagellum, basal segment of flagellum slightly shorter than broad, these dimensions subequal on 2nd segment, 3rd and following segments considerably longer; front coxae simple; dorsal area of propodeum sloping, about as long as metanotum, very coarsely reticulate, substrata, propodeum otherwise quite coarsely reticulate, posterior face bordered by a quite distinct carina, this interrupted above by a central pit or excavation; metanotum coarsely rugose; scutum coarsely and very closely punctate, punctures well separated on scutellum, pleura very coarsely rugose; basal segment of abdomen shining, practically impunctate, 2nd and following segments with minute and rather close punctures; wings of 7th sternum sub-triangular, outer, slightly concave margin fringed with fine setae, apical angle attenuated, slender and elongate; distal pedicel of 6th sternum quite narrow, the truncate tip slightly incurved; penis valves of genital armature quite slender, much shorter than gonostyli, these rather robust, narrowly rounded apically.

DISTRIBUTION—Florida to the coastal plain region of North Carolina, the westernmost record being Raleigh. The period of flight is from May, in Florida to early September in North Carolina.

FLOWER RECORDS— *Cephalanthus, Hypericum, Melittotus* and *Parthenocissus.*

Metz wrongly associated the two specimens described as *Prosopis fossata.* The male was made the type, and that proves to be a synonym of *P. schwarzi* Cockerell. The female is that of *ornatus,* and as fossata cannot be used, this later name is valid.

*Hylaeus (Prosopis) schwarzi* (Cockerell)

(Figs. 11, 12 & 14)


*Prosopis fossata* Metz, 1911. Amer. Ent. Soc. Trans. 37, p. 135. 5.*


FEMALE—Length 6.5-8.0 mm.; black, antennae blackish above, more piceous beneath; face marks pale yellow or ivory, filling area between clypeus and eyes below, but diverging from clypeus above, constricted to the truncate tip just at level of antennae; collar entirely black; tubercles each with a small yellowish maculation; tegulae piceous, not maculated; wings hyaline at base, but becoming quite deeply infuscated over apical half, veins and stigma piceous; legs black, but front tibiae ferruginous anteriorly, mid tibiae with a small basal ivory spot, basal third or more of hind tibiae ivory; face somewhat narrowed below; cheeks slightly narrower than eyes; inner orbits quite strongly elevated above level of eye margin; foveae deep and distinct, separated from eye by a slightly wider space, slightly divergent from eye above; scape slender. 2nd
and 3rd segments of flagellum short, broader than long, the others about as long as broad; front coxae simple; dorsal area of propodeum sloping, about equal in length to metanotum, very coarsely reticulate, posterior and lateral surfaces very finely rugose and covered with thin silvery tomentum, margin of posterior face not conspicuously carinate; metanotum relatively smooth, dull and tessellate, impunctate; punctures of lower face sparse, shallow and obscure, area above antennae closely punctate or subrugose, becoming rather sparse on vertex; punctures of scutum and scutellum deep and distinct, close but not crowded, those on pleura below very coarse and distinct, well separated but not sparse, becoming subrugose above; abdomen impunctate, basal segment shining.

MALE—Length 7.0-7.5 mm.; black; antennae black above, brownish-ferruginous beneath, scape entirely black; mandibles and labrum black; collar and tegulae entirely black; wings deeply infuscated apically, becoming hyaline at base, veins and stigma fuscescent; maculations pale yellow or ivory, as follows: clypeus, sometimes black in part above, supra-clypeal area variable, lateral face marks protruding above antennae rather narrowly along eye margin and truncate at apex, tubercles with a very small spot, basal third of hind tibiae and hind basitarsi except tip; mid basitarsi somewhat whitened at base; front tibiae ferruginous anteriorly; legs otherwise black; face narrowed below; cheeks narrower than eyes in lateral view; scape rather robust, slightly curved, apex slightly broader than flagellum; 1st and 2nd segments of flagellum subequal, about as long as broad, following segments slightly longer; front coxae simple; dorsal area of propodeum sloping, about equal in length to metanotum, coarsely reticulate, posterior and lateral surfaces also coarsely reticulate, a sharp carina on each side delimiting these surfaces, the carina interrupted medially by a deep cavity; metanotum more finely but very densely rugose; punctures of scutum rather fine and densely crowded over most of disc, those of scutellum somewhat more coarse and distinctly separated, although close, pleural punctures very coarse and well separated below, becoming somewhat finer and densely crowded or rugose above; punctures of abdomen very fine but quite deep and distinct, sparse on the shining basal segment, close on the others; 3rd and 4th abdominal sterna each with a shining, impunctate, basal, median elevation, that on the 4th usually hidden beneath the apical portion of the 3rd sternum.

FEMALE—Length 8 mm.; black, including antennae, labrum, mandibles, entire face above clypeus and face marks; triangular lateral face marks, tubercles and two maculae on collar ivory; clypeus ferruginous; tegulae with ferruginous maculae; wings subhyaline basally, becoming slightly infuscated apically, veins and stigma fuscescent to blackish; 1st and 2nd segments of abdomen brownish-ferruginous, the 2nd with a narrow, apical, blackish rim, the 3rd brownish-ferruginous at extreme base, abdomen otherwise blackish; legs in large part brownish-ferruginous, the front and middle femora somewhat blackened; face somewhat narrowed below; cheeks slightly narrower than eyes; facial foveae extremely narrow but quite distinct, closely paralleling upper margin of eyes, slightly diverging from eye margin at upper end; basal segment of flagellum subequal to pedicel, the 2nd segment slightly shorter, following segments slightly increasing in length; punctures of face shallow, well separated on areas below antennae, more close and fine but obscure above, very fine, shallow and obscure on vertex and cheeks; punctures of scutum slightly more coarse, deep and distinct, not crowded, those on scutellum slightly more sparse, the surface rather smooth, pleural punctures rather indistinct, shallow and irregular; abdominal terga practically impunctate.

MALE—Length 7 mm.; black, including labrum, mandibles, and antennae above; flagellum more piceous beneath; basal segment of abdomen and all tibiae and tarsi brownish-ferruginous, apical portions of femora of the same color; tegulae brownish, the wings subhyaline basally, becoming somewhat infuscated apically. Veins and stigma piceous: clypeus.

FLOWER RECORDS—Hydrocotyle umbellata, Medicago lupulina, Melilotus alba, Sagittaria and Salix.

Schwarzzi is very closely related to nelumbonis, although the red base of the abdomen in nelumbonis will readily separate them. In addition, the metanotum in the female of nelumbonis is very short and flat, and is densely and finely rugose. In schwartzi the metanotum is longer, more convex and quite smooth, although blackish and tessellate. In the males, the basal elevations of the 3rd and 4th abdominal sterna are poorly developed or completely absent in nelumbonis.

_Hylaeus (Prosopis) volusiensis_

Mitchell


FEMALE—Length 8 mm.; black, including antennae, labrum, mandibles, entire face above clypeus and face marks; triangular lateral face marks, tubercles and two maculae on collar ivory; clypeus ferruginous; tegulae with ferruginous maculae; wings subhyaline basally, becoming slightly infuscated apically, veins and stigma fuscescent to blackish; 1st and 2nd segments of abdomen brownish-ferruginous, the 2nd with a narrow, apical, blackish rim, the 3rd brownish-ferruginous at extreme base, abdomen otherwise blackish; legs in large part brownish-ferruginous, the front and middle femora somewhat blackened; face somewhat narrowed below; cheeks slightly narrower than eyes; facial foveae extremely narrow but quite distinct, closely paralleling upper margin of eyes, slightly diverging from eye margin at upper end; basal segment of flagellum subequal to pedicel, the 2nd segment slightly shorter, following segments slightly increasing in length; punctures of face shallow, well separated on areas below antennae, more close and fine but obscure above, very fine, shallow and obscure on vertex and cheeks; punctures of scutum slightly more coarse, deep and distinct, not crowded, those on scutellum slightly more sparse, the surface rather smooth, pleural punctures rather indistinct, shallow and irregular; abdominal terga practically impunctate.

MALE—Length 7 mm.; black, including labrum, mandibles, and antennae above; flagellum more piceous beneath; basal segment of abdomen and all tibiae and tarsi brownish-ferruginous, apical portions of femora of the same color; tegulae brownish, the wings subhyaline basally, becoming somewhat infuscated apically. Veins and stigma piceous: clypeus.

DISTRIBUTION — Massachusetts to Florida; April to September in the North, to December in Florida.
supraclypeal area, lateral face marks, tubercles and two small spots on collar ivory, the lateral face marks extending slightly above antennae; rounded; scape not maculated; face narrowed below; cheeks narrower than eyes, basal segment of flagellum subequal to pedicel in length, the 2nd and following segments becoming slightly longer; punctures of maculated areas of face fine but rather deep and distinct, well separated but not sparse, those above antennae very close and fine, but rather deep and distinct, slightly separated on vertex, becoming somewhat more sparse on cheeks below; punctures of scutellum rather close, deep and distinct, those on scutellum somewhat more sparse and coarse, the surface moderately shining; pleural punctures slightly more coarse and more distinctly separated than those on scutellum; metanotum finely rugose; dorsal area of propodeum rather coarsely rugo-striate, lateral areas smoother, only finely roughened, punctures obscure, posterior face with a rather deep median sulcus; abdominal segments quite smooth and shining, punctures exceedingly minute, barely visible.

**DISTRIBUTION**—Florida. The holotype and allotype are from Volusia County, and were found in a bait trap in March. Recently another female has been received, and this was found in a Mediterranean fruit fly trap in Dade County, May 3, 1957 (C. E. Shepard) [Florida State Plant Board].

*Hylaeus (Hylaeus) cressoni cressoni* (Cockerell)

(Figs. 11, 13 & 14)


*Prosopis cressoni* Metz, 1911. Amer. Ent. Soc. Trans. 37, p. 105. δ. (classification)


*Hylaeus cressoni* Hicks, 1926. Colo. Univ., Studies 15, p. 221. (biology)

*Hylaeus cressoni* Robertson, 1929. Flowers and Insects, Lancaster, Pa., Science Press. (flower records)


**FEMALE**—Length 4 mm.; black; antennae piceous above, testaceous beneath; face marks yellow, triangular, terminated acutely on eye margin slightly above level of antennae; tubercles yellow; tegulae piceous, with an anterior yellowish spot, wings subhyaline veins and stigma brownish; collar entirely black; basal two-thirds of outer face of front tibiae yellow, mid tibiae with a very small, basal, yellow spot, basal third of hind tibiae yellow, spurs pale yellow, legs otherwise dark; face rather narrow below; facial foveae deep and distinct, narrowly linear, separated from eye by a slightly wider space, only very slightly divergent from eye above; basal segment of flagellum about as long as broad, slightly shorter than pedicel, 2nd segment shorter, slightly broader than long; cheeks and eyes of about equal width in lateral view; front coxae not at all angulate; dorsal area of propodeum quite extensive, longer than metanotum, coarsely striate; punctures of face below antennae sparse and very shallow and obscure, very close and fine above antennae, becoming obscure on cheeks and vertex; deep and distinct on scutum and scutellum, interspaces about equal to diameter of punctures; pleura dull, densely tessellate, punctures very shallow, sparse and obscure; punctures of abdomen very minute, more distinct on shining basal segment, closer and more obscure on following segments.

**MALE**—Length 3.5-4.0 mm.; black; antennae brownish-piceous, scape black, maculated anteriorly; collar black; tegulae piceous; wings subhyaline, veins and stigma brownish; mandibles and labrum black; maculations orange-yellow as follows: anterior line on scape, entire face below antennae, face marks, continued above antennae as narrow rounded lobes separated from eye margin and partially surrounding antennal fossa, tubercles, front tibiae except posterior face, base and apex of mid tibiae, basal third and apical rim of hind tibiae, all the tarsi and spurs; face narrow and elongate; cheeks narrower than eyes in lateral view; basal segment of flagellum short, broader than long, following segments about as broad as long; thoracic punctures rather fine, but deep and distinct, interspaces on scutum and scutellum about equal to diameter of punctures, slightly more sparse on pleura; dorsal area of propodeum slightly longer than metanotum medially, coarsely rugo-striate; abdominal punctures very fine, sparse medially on shining basal segment, closer but more obscure on following segments.

**DISTRIBUTION**—Southeastern Canada and the New England states, west to Minnesota, southward to Georgia; May to October.

**FLOWER RECORDS**—Being in flight throughout the warmer parts of the year, *cressoni* visits a wide range of plants, collections having been made on species of the following genera: *Anethum, Apocynum, Castanea, Ceanothus, Crataegus, Toxicodendron,*

The clypeus in females of cressoni is subject to some variation in that it is narrowed and shallow. obscure and rather sparse, in lateral view; front coxae rounded laterally; facial foveae and tegulae piceous; scape and tegulae entirely black; wings lightly infuscated, veins and stigma brownish-ferruginous; mandibles and labrum black; maculations yellow, as follows: entire face below antennae, supraclypeal mark extending narrowly upward between antennae, lateral face marks broadly truncate at a point just above antennal fossa and slightly divergent from eye margin above, a small spot on each scape, on each tegula and tubercle, outer face of front tibiae, basal spot on mid tibiae, nearly basal half of hind tibiae, mid and hind basistarsi and spars; front tarsi and apical segments of others reddish; eyes convergent below; cheeks slightly narrower than eyes in lateral view; scape very broadly dilated apically, apical breadth more than half its length; 1st and 2nd segments of flagellum shorter than broad, following segments about as broad as long; front coxae rounded laterally; thoracic punctures deep and distinct, close but not crowded on scutum and pleura, slightly more separated on scutellum and pleura; dorsal area of propodeum rather extensive, coarsely striate; basal segment of abdomen shining, sparsely and minutely punctate, following segments dull, somewhat more closely punctate, but punctures very obscure.

MALE—Length 5.0-6.5 mm.; black; antennae and tegulae piceous; scape and tegulae with a yellow spot; collar entirely black; wings slightly dusky apically, veins and stigma brownish-ferruginous; mandibles and labrum black; maculations yellow, as follows: entire face below antennae, supraclypeal mark extending narrowly upward between antennae, lateral face marks broadly truncate at a point just above antennal fossa and slightly divergent from eye margin above, a small spot on each scape, on each tegula and tubercle, outer face of front tibiae, basal spot on mid tibiae, nearly basal half of hind tibiae, mid and hind basistarsi and spars; front tarsi and apical segments of others reddish; eyes convergent below; cheeks slightly narrower than eyes in lateral view; scape very broadly dilated apically, apical breadth more than half its length; 1st and 2nd segments of flagellum shorter than broad, following segments about as broad as long; front coxae rounded laterally; thoracic punctures deep and distinct, close but not crowded on scutum and pleura, slightly more separated on scutellum and pleura; dorsal area of propodeum rather extensive, coarsely striate; basal segment of abdomen shining, sparsely and minutely punctate, following segments dull, somewhat more closely punctate, but punctures very obscure.

FLOWER RECORDS—Acer apicatum, Aruncus, Ceanothus, Chrysanthemum, Houstonia, Rubus, Rosa, Rubus and Taraxacum.

Hylaeus (Hylaeus) grossicornis
(Swenk & Cockerell)
very small stripes adjacent to lower half of eye, and yellow basal half of the front and hind tibiae; wings hyaline, violaceous, veins brownish-testaceous, the stigma more piceous; face somewhat narrowed below, the eyes converging; cheeks about as broad as eyes; foveae deep and distinct, elongate, closely parallel to upper portion of eye; antennae quite short, segments of flagellum about as broad as long, the 2nd and 3rd segments much broader than long; surface of face, vertex and cheeks dull, tessellate, punctures exceedingly minute and obscure, hardly visible; thorax narrow and elongate, scutum dull, finely tessellate, punctures shallow, well separated over most of the disc; scutellum somewhat more shining, the punctures somewhat more distinct but more sparse; metanotum smooth but dull and tessellate; dorsal triangle of propodeum finely and irregularly rugose along basal margin, rounded posteriorly; pleura rather dull, punctured about as dorsum of thorax; abdominal terga dull except the somewhat shining basal segment, punctures exceedingly minute, hardly visible.

MALE—Length 4 mm.; black, including tubercles and collar of pronotum; clypeus, supra- clypeal area, lateral face marks, tarsi and tibiae in part, yellow, lateral face marks triangularly acute above, ending at level of an tennae; outer face of front tibiae entirely yellow, mid tibiae narrowly yellow at base and apex, and basal half of hind tibiae yellow; scape with a narrow, elongate, anterior, yellow stripe, flagellum piceous above, more brownish-testaceous beneath, segments somewhat longer than broad, but the basal and 2nd segments very short; wings hyaline, violaceous, veins and stigma brownish-testaceous; supra- clypeal area elongate, more than half the length of the clypeus; cheeks much narrower than eyes; face above antennae somewhat shining, with numerous rather close but shallow punctures; surface of cheeks smooth, practically impunctate; thorax narrow and elongate, scutum dull and tessellate, punctures fine and rather close in general, scutellum somewhat more shining, punctures more widely separated and distinct; metanotum narrow, dull but smooth; dorsal triangle of propodeum finely and obscurely rugose, more or less rounded posteriorly; pleura more shining, punctures rather deep and distinct, rather close but not crowded; abdominal terga shining, punctures exceedingly minute and indistinct, hardly visible even on the more apical segments.

DISTRIBUTION—Texas to North Carolina, north to Minnesota, Wisconsin and Michigan; April to June.

FLOWER RECORDS—Crataegus, Dauc us and Parthenocissus.

_Hylaeus (Hylaeus) labiatifrons_
(Cockerell)

_Prospis labiatifrons_ Cockerell, 1896. Psyche. 7 (Sup.), p. 437. 8.

MALE—Length 5 mm.; black, with the following parts yellow: clypeus, elongate supera- clypeal area, lateral face marks which partially surround antennal fossa, base of mandibles, tubercles, anterior maculation on tegulae, apex of all femora, and all tibiae and tarsi; collar entirely black; flagellum piceous, basal segment much shorter than broad, subequal to pedicel, segment 2 nearly twice as long; punctures of scutum close and fine, but deep and distinct, those on scutellum more sparse; pleura shining, punctures deep and distinct, about equal to those on scutum but more widely separated; metanotum very finely tessellate; dorsal area of propodeum coarsely rugose, lateral faces smooth but dull; abdominal terga shining, segment 1 practically impunctate, 2-4 with minute, well separated punctures.

DISTRIBUTION—Georgia.

Metz (1911) considered this a synonym of _cressoni_. No other material other than the type has been seen, and this rather brief description was made from the type.

_Hylaeeus gaigei_ (Cockerell)


FEMALE—Length 5.5 mm.; black; antennae more piceous; face marks yellow, very small and narrow, adjacent to inner orbits but not in actual contact with eyes, and separated widely from clypeal margin; collar with reduced and obscure, yellow maculae; tuber- cles yellow; tegulae entirely piceous; wings subhyaline, veins and stigma brownish; legs black, but front tibiae with a small, obscure, yellowish, basal spot, and basal fourth of hind tibiae yellow; spurs yellowish; face slightly narrowed below; eyes only moderately convergent; cheeks subequal to eyes in lateral view; foveae rather short, narrow and deep, separated from eye by a space of about equal width, slightly divergent from eye above; 2nd and 3rd segments of flagellum slightly broader than long, all others with length and breadth about equal; front coxae simple; dorsal area of propodeum sloping, slightly longer than metanotum, coarsely reticulate, posterior face finely reticulate, subcarinate laterally, lateral faces somewhat shining, shallowly punctate; lower half of face minutely lineolate, with sparse, shallow and obscure punctures; face

FLOWER RECORDS—_Crataegus, Dau- cus and Parthenocissus._
tum dull, finely and rather closely punctate; scutellum more shining, punctures more coarse, deep and distinct; pleura rather dull, punctures rather shallow, well separated but not sparse; basal segment of abdomen shining, minutely punctate, very sparsely so over central portion of disc; following segments less shining, more closely but still very minutely punctate.

**DISTRIBUTION**—Michigan is the type locality.

This species is based entirely on the female and is thus uncertain, both as to its validity and its systematic position. It is very similar to females that have been associated with *rudbeckiae* and may actually be synonymous with that species.

_Hylaeus (Hylaeus) rudbeckiae_

(Cockerell & Casad)

*Prosopis rudbeckiae* Cockerell and Casad, 1895.


*Prosopis rudbeckiae subdigitata* Cockerell, 1896. *Psyche* 7 (Sup.), p. 31.  


**MALE**—Length 4.5 mm.; black; antennae piecous above, ferruginous beneath; scape maculated anteriorly; mandibles and labrum black; tegulae ferruginous, maculated; wings subhyaline, veins and stigma brownish-ferruginous; maculations pale yellow, as follows: entire face below antennae, supraclypeal mark elongated and rounded above, reaching level of upper margin of antennal fossa, lateral face marks abruptly constricted at lower edge of antennal fossa, produced narrowly upward, ending in a rounded knob just above antennae and widely separated from eye margin; scape with an elongate yellow mark anteriorly; tubercles, a pair of lines on collar, and a large anterior spot on tegulae, yellow; front tibiae yellow anteriorly, mid tibiae at extreme base, and basal half of hind tibiae; all spurs and basitarsi pale yellow, other tarsal segments reddish; legs otherwise piecous; face constricted below; cheeks narrower than eyes in lateral view; scape robust, diameter at apex considerably greater than that of flagellum; basal segment of flagellum about half as long as broad, these dimensions subsquial on the 2nd and following segments; front coxae simple; dorsal area of propodeum slightly longer than metanotum, coarsely reticulate, posterior surface truncate, obscurely reticulate, subcarinate laterally, lateral surfaces finely rugose; punctures of scutellum rather fine, but deep and distinct, rather close, but with shining interspaces evident; punctures of scutellum slightly larger and more widely separated; pleural punctures about the size of those on scutum, but more sparse, interspaces tessellate; abdomen quite deeply and distinctly though very finely punctate, rather sparsely so on basal segment medially, but otherwise quite close.

**DISTRIBUTION**—Minnesota, Wisconsin, Ontario and Connecticut; June, July and August. These records are based upon females and are thus somewhat uncertain. Metz records this species from Alabama, New Jersey and Canada, but whether or not these records were based on the more reliably determined males or not, is not known by this writer.

_Hylaeus (Hylaeus) saniculae_

(Robertson)

(Fig. 11)


*Prosopis saniculae* Robertson, 1929. *Flowers and Insects, Lancaster, Pa., Science Press._ (flower records)

**FEMALE**—Length 3.5-4.5 mm.; black, including collar and tubercles; antennae brownish above, testaceous beneath; face marks very small or absent, consisting of short linear maculations adjacent to lower end of eye separated from clypeus, and terminated at level of upper margin of clypeus; tegulae brownish, not maculated; wings subhyaline, veins and stigma brownish; front and mid tibiae with small, basal, yellow spots, spurs and basal third or fourth of hind tibiae yellow, legs otherwise dark; face slightly narrowed below; facial foveae deep and distinct, separated from eye by a slightly wider space, hardly divergent from eye above; basal segment of flagellum about as long as broad, shorter than pedicel, 2nd and 3rd segments broader than long, following segments about as long as broad; cheeks and eyes subsquial in width in lateral view; front coxae simple; dorzal area of propodeum slightly longer than metanotum, rather coarsely reticulate, face below antennae dull, tessellate, punctures obscure, those above antennae close and fine, but rather obscure, hardly evident on cheeks; scutum closely, finely, deeply and distinctly punctate, punctures on scutellum somewhat more coarse and more
distinct and rather sparse, surface somewhat tessellate but shining slightly; basal segment of abdomen somewhat shining, with scattered, very minute punctures toward apical margin, punctures on following segments close but very obscure, surface less shining.

MALE—Length 3.5 mm.; black, including collar, tubercles, mandibles, labrum, scape and tegulae; antennae obscurely reddened beneath toward apex, otherwise black; wings hyaline, veins and stigma piceous; clypeus yellow; supraclypeal area with a median, elongate, yellow spot; lateral face marks narrow, separated from clypeus by a narrow black line, terminated at level of antennae on eye margin; front coxae reddish-yellow, with a dark posterior spot; mid tubiae mostly piceous, with obscure, yellowish, basal and apical areas, basal third of hind tubiae yellow; hind basitarsi yellow, with a reddish apex, tarsi otherwise more ferruginous; face narrowed below; supraclypeal area elongate, more than half the length of the clypeus; cheeks very slightly narrower than eyes in lateral view; scape rather robust, diameter at apex about twice that of pedicel; 1st and 2nd segments of flagellum broader than long, following segments about as long as broad, the more apical ones slightly longer; front coxae simple; dorsal area of propodeum about twice the length of the metanotum, coarsely reticulate, posterior and lateral surfaces relatively smooth; face with a shallow but distinct depression above lateral face marks, between bases of antennae and eyes; scutellum dull, punctures rather fine and close but not crowded, those on scutellum more coarse and deep, metanotum finely and densely rugose; pleural punctures fine and relatively sparse, interspaces obscurely tessellate; surface of abdomen finely roughened, rather dull, basal segment with very minute and sparse punctures, these closer but obscure on the following segments.

DISTRIBUTION — Ontario, Massachusetts and New York, west to Minnesota, southward to Tennessee and Georgia; June, July and August.

FLOWER RECORDS — *Achillea* and *Apocynum cannabinum*. Robertson (1929) gives the following host records: *Amorpha fruticosa*, *Aruncus sylvestris*, *Clethra alnifolia*, *Crataegus crus-galli*, *Cryptotaenia canadensis*, *Euphorbus americanus*, *Heteromeles marshallii*, *Polygonum scandens*, *Sanicula canadensis*, *S. marilandica*, *Tanetitis integerrima* and *Thaspium aureum trifoliatum*.

Metz (1911) considered this to be insep-ted to the extent of maculation of the face, this view might be justified, but the shallow, definite facial depressions found in *saniculae*, but not evident in any of the specimens of *cressoni* so far examined, would indicate that the two probably are distinct. The female described here as representing *saniculae* is the small, almost completely black form of *cressoni* according to Metz. This correlation of sexes seems logical, but further supporting evidence that it is the correct one is needed.

**Hylaeus (Hylaeus) stevensi**

(Crawford) (Figs. 11-14)

*Prospis stevensi* Crawford, 1913. Canad. Ent. 45, p. 155. ?

FEMALE—Length 5-6 mm.; black, antennae piceous above, more testaceous beneath; face marks pale yellow, filling area between clypeus and eyes, abruptly truncate at level of antennae; tubercles, transverse marks on collar, tegulae anteriorly, pale yellow; posteriorly the tegulae are ferruginous; wings very lightly infuscated, veins and stigma brownish; tibiae yellow at base, legs otherwise dark; face narrowed below; cheeks slightly more than half as broad as eyes in lateral view; facial foveae rather short and obscure, linear, separated from eyes by about an equal space, not at all divergent above; basal segment of flagellum about as long as broad, 2nd and 3rd segments distinctly broader than long, 4th nearly as long as broad, the following segments fully so; punctures of face below antennae shallow, obscure and sparse, more coarse, deep and distinct above antennae, well separated but not sparse; very coarse and deep on thorax above, quite close over most of scutum, somewhat more sparse on scutellum, and even more coarse and close on pleura; dorsal area of propodeum quite extensive, hardly distinguishable from metanotum, both very coarsely rugose; abdomen shining, very finely but distinctly punctate, rather sparsely so on basal segment, closer on the more apical segments.

MALE—Length 4-6 mm.; black; antennae pale ferruginous, scape blackish, maculated; tegulae more piceous, maculated; wings lightly infuscated, veins and stigma brownish-piceous; mandibles and labrum black; maculations cream-colored, as follows: entire face below antennae, supraclypeal mark extended upward between antennae, lateral face marks obliquely truncate above antennae, very slightly divergent from eyes above, narrow anterior stripe on scapae, large blotch on tegulae, transverse
and hind tibiae, and mid and hind basitarsi; other tarsal segments, including entire front tarsi and anterior face of front tibiae more ferruginous; face narrow, elongate; eyes convergent below; cheeks about half as wide as eyes in lateral view; scape slender, no broader than flagellum, slightly curved, basal segment of flagellum considerably broader than long, length and breadth of 2nd and following segments subequal; front coxae simple; dorsal area of propodeum rather extensive, hardly distinguishable from metanotum, both being very coarsely rugose, scutum and scutellum shining, very coarsely and deeply punctate, punctures well separated but not sparse, punctures on pleura even more coarse and quite close; abdomen deeply and distinctly, although relatively finely punctate, rather sparsely so on basal segment, closer on the more apical segments.

DISTRIBUTION—In the East this species has been collected in Michigan, New York, New Jersey, Indiana, District of Columbia, Virginia, North Carolina and Georgia, as also in Quebec and Ontario. It is in flight from May until September.

FLOWER RECORDS—Only one flower collection record has been made, one specimen having been collected on cow-pea (*Vigna sinensis*), at Raleigh, North Carolina.

**Hylaeus (Hylaeus) teleporus**

(Lovell) (Fig. 11)


FEMALE—Length 4.0-4.8 mm.; black; antennae piceous above, testaceous beneath; face marks yellow, narrow and elongate, not entirely filling area between clypeus and eyes, terminated acutely on eye margin slightly above level of antennae; tubercles yellow; tegulae brownish-fuscous, not maculated; wings subhyaline, veins and stigma brownish-ferruginous; collar entirely black; basal half of outer face of front tibiae yellow; mid tibiae with a very small basal yellow spot; spurs and basal third of hind tibiae yellow, legs otherwise dark; face narrowed below; facial foveae deep and distinct, linear, separated from eyes by about an equal space, very slightly divergent from eyes above; basal segment of flagellum about as long as broad, shorter than pedicel, 2nd and 3rd segments broader than long, the following with length and breadth subequal; cheeks slightly narrower than eyes in lateral view; front coxae simple; dorsal area of propodeum sloping, slightly longer than metanotum, rather coarsely striate, face below antennae tessellate, sparsely, shallowly and obscurely punctate, punctures deep, distinct and close above antennae, these shallow and obscure on cheeks and vertex; punctures deep, distinct, close and rather fine on scutum, those on scutellum more coarse and slightly more widely separated; pleura dull, punctures rather shallow and indistinct; 1st and 2nd segments of abdomen somewhat shining, deeply, distinctly, rather sparsely and minutely punctate, punctures on following segments becoming obscure.

MALE—Length 3.5-4.0 mm.; black, including mandibles, labrum and collar; antennae piceous above, ferruginous beneath; scape black, sometimes with a small yellow maculation anteriorly; tegulae brownish-ferruginous; wings subhyaline, veins and stigma brownish-ferruginous; entire face below antennae yellow; supraclypeal mark long, pointed between antennae; lateral face marks abruptly truncate at level of antennae, each with a short narrow extension bordering outer side of antenna fossa, widely rounded from eye, rounded above, little if any clavate; tubercles yellow; front tibiae reddish-yellow, posterior face ferruginous; mid tibiae yellow; mid and hind basitarsi and spurs pale yellow, other tarsal segments more ferruginous; face narrowed below; cheeks slightly narrower than eyes in lateral view; face with a shining shallow depression on each side between upper extension of face marks and eyes; scape rather slender, diameter at apex only slightly greater than that of pedicel; 1st and 2nd segments of flagellum nearly twice as broad as long, 3rd and following segments with length and breadth about equal; front coxae simple; dorsal area of propodeum slightly longer than metanotum, rather coarsely reticulate, posterior face truncate, very finely rugoso-punctate, subcarinate laterally, lateral faces somewhat shining, closely and finely but shallowly and obscurely punctate; metanotum dull, closely, finely and obscurely punctate; punctures of scutum deep and distinct, fine and rather close, not crowded; those of scutellum slightly more coarse and sparse; pleural punctures rather coarse, well separated, surface between somewhat shining, obscurely tessellate; basal segment of abdomen distinctly and quite deeply punctate, punctures fine but not minute, rather close in general, those on following segments becoming minute and obscure.

DISTRIBUTION—The type locality is Southern Pines, North Carolina. Specimens have been identified also from New Jersey, Indiana, Michigan, Virginia and Ontario. It is in flight in the South from April to August.

FLOWER RECORDS—*Rubus* and *Salvia officinalis*. 
Hylaeus (Hylaeus) verticalis verticalis (Cresson)

(Figs. 11-14)


FEMALE—Length 6-7 mm.; black; antennae black, more piceous beneath; face marks orange-yellow, narrow and elongate, terminated on eye margin at level of antennae; collar and tegulae not maculated; tubercles yellow; wings quite deeply infuscated, veins piceous; basal fourth of hind tibiae yellow, legs otherwise black; face somewhat narrowed below; facial foveae deep and distinct, linear, separated from margin of eye by a slightly wider space, quite strongly divergent from eye above, but tip somewhat nearer to eye than to lateral ocellus; cheeks and eyes subequal in width in lateral view; basal segment of flagellum fully as long as broad, 2nd segment considerably shorter, following segments about as broad as long; front coxae very slightly angulate laterally; face below with sparse and very obscure punctures, those above antennae fine, deep, close and distinct, coarse and rather sparse between eyes and ocelli, very fine and close on vertex back of ocelli; punctures of scutum deep and distinct, close but not crowded, more sparse on shining scutellum and pleura; basal segment of abdomen shining, well separated on shining pleura; basal segment of abdomen shining, quite sparely and minutely but distinctly punctate, punctures on 2nd segment somewhat closer, more deep and distinct, rather obscure on the following segments.

DISTRIBUTION—Southeastern Canada and the New England states, west to Minnesota, southward to North Carolina; May to August.

FLOWER RECORDS—Apocynum and Geranium.

The characters used to separate verticalis females from those of ellipticus are unsatisfactory. It seems probable that there is an overlapping in these characters between populations of the two species, and wherever possible, determinations should be based upon the males.

Hylaeus (Cephalylaeus) basalis (Smith)

(Figs. 12 & 14)


FEMALE—Length 8-9 mm.; entirely black, with neither facial nor thoracic maculations; facial foveae well developed, linear, separated from eyes by a wider space, slightly diverging from eyes above; basal segment of flagellum slightly longer than pedicel or 2nd segment, which are subequal; cheeks broader than eyes; malar space very short, almost absent; pleural punctures slightly more coarse and sparse than those of scutum, subequal to those of scutellum; abdomen shining and impunctate at base, becoming more closely punctate and dull apically, but the punctures exceedingly minute and obscure; tegulae reddish-piceous; wings lightly infuscated; antennae and legs obscurely reddened.

MALE—Length 8-9 mm.; entirely thorax and abdomen black; head and legs blackish except for the following pale yellow maculations; outer half of scape, entire face below antennae but excluding labrum and mandibles, apical third of inner face of front femora, front tibiae anteriorly, basal and apical spots on mid tibiae and basitarsi, basal third and an apical spot on hind tibiae and basitarsi; tarsi otherwise reddish; antennae and tegulae reddish-piceous; wings lightly infuscated; scape enormously enlarged, fully as broad as long, and...
cheeks broader than eyes; thorax rather closely and deeply punctate throughout; abdomen very finely and obscurely punctate, rather sparsely so toward base.

**DISTRIBUTION** — Southern Canada, from British Columbia to Nova Scotia and Newfoundland, south to Idaho, Colorado, Wisconsin, Michigan and New York; May to August.

**Hylaeus (Paraprosopis) packardi** Mitchell

FEMALE—Length 4.5 mm.; black; antennae brownish-ferruginous, paler beneath, scape picaceous; tegulae picaceous; wings subhyaline, veins brownish-mandibles and labrum black; maculations cream-colored as follows: clypeus, supra-clypeal area, lateral portions of face extending along inner orbits and ending acutely on eye margin above antennae, small spot on tubercles, entire front tibiae except a slight amount of ferruginous posteriorly, basal fourth and apical rim on mid and hind tibiae, all tarsi except the reddened more apical segments; collar and tegulae entirely dark; eyes convergent below; cheeks slightly more than half the width of eyes in lateral view; thoracic punctures deep and distinct, close but not contiguous on scutum and scutellum, slightly more coarse on pleura, interspaces dull and tesselate; abdomen shining at base, punctures minute, well separated, becoming closer but very obscure on the following segments which are less shining.

**DISTRIBUTION** — The two specimens forming the type series were collected in Maine and New York, the latter specimen in September. No additional specimens have been seen.

**Hylaeus (Paraprosopis) georgicus** (Cockerell)

(Figs. 11 & 14)

**Prosopis georgica** Cockerell, 1898. Psyche 7 (Sup.), p. 438. δ.


MALE—Length 4 mm.; black; antennae brownish-ferruginous above, testaceous beneath; scape black above, yellow beneath; mandibles and labrum black; tegulae ferruginous, maculated; wings subhyaline, veins and stigma ferruginous; femora blackish, more or less yellowish at apex, tibiae and tarsi yellow, but tibiae with reddish blotches beneath; tibercles yellow; collar with two transverse yellow maculae; face below antennae entirely yellow; face marks truncate above antennae, not at all divergent from eye margin; face narrow below; eyes strongly convergent; cheeks narrower than eyes in lateral view; scape short, broadly dilated, width at apex nearly equal to length, 1st and 2nd segments of flagellum very short, about half as long as broad, 3rd segment nearly equal to the first two combined; front coxae simple; dorsal area of propodeum extensive, considerably longer than metanotum, finely reticulate; thoracic punctures fine but deep and distinct, separated by about a puncture width on scutum, more sparse on pleura; abdomen nearly impunctate, the punctures so minute as to be in evident except to a slight degree on basal segment.

**DISTRIBUTION** — Georgia is the type locality, though it has also been collected in New York and North Carolina. Following are the collection records of this rare species: 1 δ, Ithaca, N. Y., July 17 [M.C.Z.]; 1 δ, Raleigh, N. C., May 8, 1951 (on Pyrca casta); 1 δ, Wake Co., N. C., April 22, 1954 (on Crataegus); 1 δ, Wake Co., N. C., April 22, 1955 (on Crataegus) (all T. B. Mitchell).

**Hylaeus (Paraprosopis) floridanus** (Robertson)

(Figs. 11, 12 & 14)


**Prosopis modestus** Metz (in part), 1911. Amer. Ent. Soc. Trans. 37, p. 121.

**Prosopis floridanus** Robertson, 1929. Flowers and Insects, Lancaster, Pa., Science Press. (flower records)

**FEMALE**—Length 4.5 mm.; black; antennae fuscous above, ferruginous beneath; face marks yellow, subtriangular, entirely filling space between clypeus, eyes and antennae, extending rather broadly along eye margin to a rounded apex at about half the distance from antennae to top of eye; clypeus with a small, median, subapical, yellow spot; transverse maculae on collar, tubercles and small anterior spot on tegulae, yellow; wings subhyaline, veins and stigma ferruginous; basal half of front and hind tibiae and basal third of mid tibiae yellow; all spurs and basal half of hind basitarsi pale yellow, legs otherwise dark; face narrowed below; cheeks considerably narrower than eyes in lateral view; foveae finely linear, separated from eye by a slightly wider space, widely divergent from eye above, ending about midway between eyes and lateral ocelli; 2nd segment of flagellum about half as long as broad, 1st segment only...
slightly broader than long, 3rd and following segments with these dimensions subequal; front coxae simple; dorsal face of propodeum slightly longer than metanotum, posterior face sharply truncate, subcarinate laterally, very finely rugose, lateral faces more shining, obscurely punctate; metanotum densely tessellate or subrugose; clypeus finely tessellate, with numerous shallow obscure punctures; face above antennae closely and deeply punctate, subrugose medially; scutum deeply, distinctly and quite closely punctate, punctures on scutellum not so close, punctures of pleura well separated, slightly larger than those on scutum; abdomen rather shiny, distinctly and closely but very minutely punctate, even on basal segment.

MALE—Length 4 mm.; black; antennae brownish-ferruginous, the scape black; tegulae brownish, with a small, yellowish, anterior spot; wings subhyaline, veins brownish; mandibles and labrum black; maculations cream-colored, as follows: clypeus, supercypeal area and lateral portion of face extending along inner orbits above antennae and rounded above, two narrow lines on collar, tubercles, anterior face of front tibiae and basitarsi, basal third and apical spot on mid tibiae, basal half and apex of hind tibiae, mid and hind tarsi, with apical joints reddened, and spurs; eyes convergent below; cheeks about half width of eyes in lateral view; punctures of scutum deep and distinct, close but not crowded anteriorly, slightly more sparse posteriorly, as also on pleura; very fine but distinct and well separated on abdomen basally, becoming closer and obscure apically.

DISTRIBUTION—Specimens of floridanus have been seen from the following Eastern states: Minnesota, Michigan, Illinois, Kentucky, North Carolina, Georgia and Florida. There seem to be two flights in North Carolina; one in the spring, from April to July, and a fall flight in September and October. Although none have been collected in August, it is possible that it is a continuous extended flight or a succession of overlapping generations throughout the season.

FLOWER RECORDS — Spring host plants are Erigeron quercifolius, Ilex, Polygonella polygama and Pyracantha, while in the fall it visits Aster and Solidago. Robertson (1929) records this species on Cornus paniculata and Eulophus americanus.

Metz considered this species a synonym of modestus, and the same error has been carried over into the Catalog of Hymenoptera (Muesebeck, et al. 1951. p. 1051).

**Hylaeus (Metziella) potens (Metz)**

*Prosopis potens* Metz, 1911. Amer. Ent. Soc. Trans. 37, p. 103. ♀.


The male of *sparsus* Cresson agrees reasonably well with the description of *potens*, but Metz does not mention the angular or spinose character of the front coxae. This could have been an oversight, and if so, the two probably are the same. The genitalia and 7th and 8th sterna are the same, so far as the Metz figures would indicate. The type of *potens* has not been seen by the writer. The type locality is Montreal, Quebec.

**Hylaeus (Metziella) sparsus (Cresson)**

(Figs. 11-14)


*Prosopis thaspis* Robertson, 1898. Acad. Sci. St. Louis, Trans. 8, p. 43. ♀.

*Prosopis modestus* Metz (in part), 1911. Amer. Ent. Soc. Trans. 37, p. 121.


FEMALE—Length 6-7 mm.; black; antennae piceous above, ferruginous beneath; face marks yellow, subtriangular, not nearly filling space between clypeus and eyes, terminating acutely on eye margin at level of antennae; tubercles yellow; collar black; tegulae piceous; wings subhyaline, veins and stigma brownish; basal third of hind tibiae yellow, legs otherwise entirely dark; face broad below, eyes slightly convergent; facial foveae deep and distinct, linear, separated from eye by an equal space, lower end above level of antennae, upper end slightly divergent from eye; basal segment of flagellum subequal to pedicel, 2nd segment much shorter, 3rd about as long as broad; cheeks very slightly broader than eyes in lateral view; front coxae acutely, triangulary produced on outer side, almost spinose; punctures coarse but shallow, well separated over clypeus and supercypeal area, more close, fine and deep above antennae, becoming rather sparse and obscure on vertex, cheeks practically impunctate; punctures deep and distinct on thorax, separated by about equal spaces on scutum, more fine and sparse on scutellum, sparse on shining pleura; dorsal area of propodeum very short, surface mostly vertical, with a few inconspicuous
Hylaeus (Metziella) hydrangeae

**Mitchell**


**FEMALE—Length 4.5 mm.; black; antennae piceous above, ferruginous beneath; face marks yellow, subtriangular, nearly filling space between clypeus and eye, but short, terminated by a recurved line extending from upper corner of clypeus to eye at level of antennae; tubercles yellow; collar yellow lateral-ly, these maculae separated by about an equal area of black; tegulae brownish, with a small yellow anterior spot; wings lightly infused, veins and stigma brownish; front and mid tibiae with a basal yellow spot, basal third of hind tibiae yellow, legs otherwise dark; spurs yellowish; face broad below; eyes slightly convergent; facial foveae quite fine, linear, lower end considerably above level of anten-

nae, upper end strongly divergent from eye, ending at about mid point between eye and lateral ocellus; basal segment of flagellum slightly shorter than pedicel, about as long as broad, 2nd segment much shorter, broader than long, following segments becoming successively longer; cheeks and eyes subequal in width in lateral view; front coxae triangular on outer side, the apex somewhat rounded, not at all spinose; punctures of clypeus and supraclypeal area very sparse and obscure, nearly impunctate, close and fine but shallow and obscure above antennae, on cheeks and on vertex, fine and rather close on scutum and scutellum, somewhat more sparse on pleura; dorsal area of propodeum extensive, fully twice as long as the metanotum, with coarse, more or less parallel striae; abdomen not visibly punctate, basal segment shining.

**DISTRIBUTION—With only the unique type specimen so far recorded, adequate distribution data are lacking. The type locality is Cruso, Haywood Co., North Carolina, which has an elevation of about 3,000 ft. The type was collected in June, on Hy-

_drangea._
shining, punctures less close and more coarse; pleura tessellate, punctures rather fine and sparse; abdomen impunctate.

DISTRIBUTION—Since the description of the unique type, five more females have been received, records of which follow:
1 ♀, Plantation Key, Fla., November 27, 1955; 2 ♀♀, Saddlebunch Keys, Fla., December 29, 1953 (on Flaveria linearis); 1 ♀, Key Largo, March 27, 1957 (all H. V. Weems, Jr.) [Florida State Plant Board]; 1 ♀, Key Largo, Fla., April 10, 1955 (T. B. Mitchell, on Metopium toxiferum).

Hylaeus metopii new species

Female—Length 5 mm.; antennae, clypeus, labrum, mandibles, legs including coxae, and basal segment of abdomen ferruginous; lateral face marks somewhat more testaceous; pair of narrow lines on collar, apical margin of tubercles, and a spot on the tegulae, ivory; wings hyaline, violaceous, veins and stigma piceous; head very slightly broader than long, face narrowed below, eyes converging, cheeks slightly narrower than eyes; foveae rather short, but deep and distinct, closely parallel to upper end of eye; segments 1, 2 and 3 of flagellum broader than long, following segments about as long as broad; face above antennae dull, punctures rather fine, quite deep and distinct, closely crowded; cheeks dull, punctures apparently close, but minute and obscure; thorax short, almost as broad as long, scutum quite closely, deeply and regularly punctate over entire disc, scutellum somewhat more sparsely punctate; metasternum finely and rather closely but distinctly punctate beneath the rather dense pubescence; dorsal area of propodeum exceedingly short, rounded to the posterior surface, smooth and shining, with just a very few minute basal irregularities; pleura somewhat shining, punctures above very fine and rather close, becoming somewhat more coarse and distinct below; basal abdominal tergum shining, minutely but rather distinctly punctate, punctures rather close laterally, more scattered medially, apical margin with a short white fascia on each extreme side; following segments dull, punctures exceedingly minute and close, hardly distinguishable.

Types—Holotype: Female, Key Largo, Fla., April 10, 1955 (T. B. Mitchell, on Metopium toxiferum) [author's coll]. Paratypes: 8 ♀♀, topotypical (Mitchell); 35 ♀♀, topotypical; 1 ♀, Stock Is., Fla., Dec. 27, 1954 (H. V. Weems, Jr.). Paratypes are in the collections of the State Plant Board of Florida and in the author's collection.
### Table 2—Distribution of species of *Hylaeus* by states.

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Figure 11—Facial view of males of species of *Hylaeus*.
Figure 12—Facial view of females of species of Hylaenus and of male of H. basalis.
Figure 13—Sterna 7 (right) and 8 in males of *Hylaeus*.
Figure 14—Dorsal (left) and ventral aspects of male genital armature in species of *Hylaeus*; sterna 7 and 8 of males of *H. georgicus*, *H. floridanus* and *H. basalis*. 