

Recorded only from near Ithaca, N. Y., where it occurred in some numbers in July on the winterberry, *Ilex verticillata* (L.).

GROUP B.—PLAGIOGNATHUS.

To this group belong 18 species and four varieties of our eastern forms of the genus.<sup>93</sup>

KEY TO EASTERN SPECIES AND VARIETIES OF GROUP B, PLAGIOGNATHUS.

- a. Cuneus in part or wholly black or blackish, never chiefly brown.
- b. Cuneus more or less pale at base.
- c. Scutellum in part pale.
  - d. Scutellum black along median line, the lateral margins broadly pale. 1038. *OBSCURUS*.
  - dd. Scutellum pale along median line, sometimes pale only at apex, or broadly pale with only the basal angles blackish.
  - e. Cuneus pale at base and along outer margin; femora pale to fulvous, hind ones with two rows of distinct brown or blackish spots; length, 4—4.5 mm. 1039. *FLAVOSCUTELLATUS*.
  - ee. Cuneus pale at base, but not along outer margin; femora pale to black, usually blackish at base and paler on middle, without rows of dots, sometimes with only the tips pale; length, 3.8—4 mm. 1042a. *POLITUS* var. *FLAVEOLUS*.
  - cc. Scutellum uniformly black.
    - f. Pronotum pale in front; corium chiefly pale testaceous or ivory white, its apical half with a large suboval fuscous spot; cuneus pale with a small black spot at apex. 1040. *FRATERNUS*.
    - ff. Pronotum and elytra black; cuneus with a small pale lunule at base.
      - g. Femora black, their tips pale.
        - h. Length, 4.7 mm.; beak reaching upon middle coxæ; pubescence yellowish. 1041. *INTRUSUS*.
        - hh. Length, 3.5 mm.; beak slightly surpassing hind coxæ; pubescence white. 1042. *POLITUS*.
      - gg. Femora yellowish with one or two rows of black spots on front face; pubescence yellowish; length, 4 mm. 1044a. *ANNULATUS* var. *CUNEATUS*.
  - bb. Cuneus uniformly black or fuscous like the corium, rarely slightly paler at the fracture.
    - i. Beak and legs chiefly yellowish; femora with black lines or spots.
    - j. Smaller, not over 3 mm.; femora with a few small blackish spots, but without black lines; elytra uniformly black, cuneus never pale at base. 1043. *REPETITUS*.
    - jj. Larger, length 3.8—4.5 mm.
      - k. Apical half of hind femora with black spots on front face and a black line on both upper and lower faces. 1044. *ANNULATUS*.

<sup>93</sup>The *P. mærens* Reut. (1909, 80) is a western species and the Michigan record of Townsend under that name was based on a manuscript name of Uhler, nearly twenty years before Reuter described the species.

- kk.* Apical half of hind femora with two rows of black spots on front face, but without a black line above and below.  
1045. *CARINATUS*.
- ii.* Beak and legs black or fuscous; femora without distinct line or spots.
- l.* Femora, tibiæ and antennæ obscured with fuscous or brownish-black; joint 3 of antennæ dusky to fuscous, scarcely paler than joint 2; elytra brownish-black, somewhat translucent; pubescence yellowish to dusky.  
1046. *LARICICOLA*.
- ll.* Femora black, except on extreme tips; tibiæ yellowish, but with prominent black spots.
- m.* Smaller, length 3 mm.; second antennal shorter than width of head plus width of vertex; color deep black, strongly shining, pubescence white.  
1047. *NIGRONITENS*.
- mm.* Larger, length 4.2—4.5 mm.; second antennal longer than width of head plus width of vertex.
- n.* Beak reaching upon hind coxæ; brownish-black, sometimes slightly translucent at cuneal fracture.  
1044b. *ANNULATUS* var. *NIGROFEMORATUS*.
- nn.* Beak not reaching hind coxæ; black, cuneus uniformly black like the corium.  
1048. *NIGRITUS*.
- aa.* Cuneus pale or uniformly fulvous to dark brown, sometimes dusky at apex, but never in part distinctly black.
- o.* Cuneus and whole upper surface chiefly reddish-yellow; scutellum and clavus sometimes slightly darker; tylus and loræ black.
- p.* Joint 2 of antennæ longer than width of pronotum at base; beak reaching third ventral.  
1049. *ROSICOLA*.
- pp.* Joint 2 of antennæ shorter than width of pronotum at base; beak reaching between hind coxæ.  
1050. *FULVIDUS*.
- oo.* Cuneus and upper surface not distinctly reddish-yellow; cuneus sometimes of that hue, but the apical half of corium then black.
- q.* Scutellum uniformly pale or green.
- r.* Pronotum and elytra nearly uniformly pale greenish- or straw-yellow.
- s.* Smaller, length 3.4—3.5 mm.; antennæ black, narrow tip of joint 1 alone pale.  
1051. *ATRICORNIS*.
- ss.* Larger, length 4.5—4.7 mm.; joints 1 and 2 of antennæ dark brown, 3 and 4 pale fuscous.  
1052. *BLATCHLEYI*.
- rr.* Basal half of pronotum, apical half of corium, and disk of clavus fuscous-brown or blackish.  
1053. *NUBILUS*.
- qq.* Scutellum fuscous to blackish, or with a blackish median line.
- t.* Beak not extending beyond middle coxæ; elytra black, basal one-third to one-half of embolium and corium pale; cuneus pale to fulvous, its apex frequently dusky.  
1054. *BREVIROSTRIS*.
- tt.* Beak reaching or surpassing middle of hind coxæ.
- u.* Smaller, length 3.7—4.6 mm.; pale area of corium extending back along the claval suture.  
1038a. *OBSCURUS* var. *ALBOCUNEATUS*.

- uu.* Larger, length 4.5—4.9 mm.; pale area of corium extending back along the radial vein; females with fuscous area on apical half of corium separated into two elongate spots by backward extension of pale area along radial vein.

1055. ALBORADIALIS.

1038 (1239). *PLAGIOGNATHUS OBSCURUS* Uhler, 1872, 418.

Head, sides of basal half or more of pronotum, middle of scutellum, clavus except outer margin, and a large wedge-shaped spot on apical half of corium, black or fuscous-black; calli and narrow edge of embolium dull yellow; corium with basal third and a ray extending back along claval suture to apex of commissure, dull white; basal two-thirds of cuneus whitish, apical third fuscous, edges yellowish; membrane fuscous, spot near tip of cuneus whitish, veins yellow. Joints 1 and 2 of antennæ black, their incisures paler, 3 and 4 dusky yellow; legs dull yellow, outer apical half of under surface paler on sides; hind femora with a vague bar and two rows of small dots fuscous; tips of beak and tarsi fuscous; ventrals fuscous to blackish, paler on sides. Upper surface rather thickly clothed with conspicuous inclined yellow hairs. Beak reaching first ventral. Length, 4—4.4 mm.

Wilmington, N. Y., July 12 (*Davis*). Ranges from Nova Scotia, Quebec and New England west to Victoria, B. C., Kansas and Colorado. Not recorded in the east south of New Jersey. Uhler states that in Maryland it occurs on flowers of the ox-eye daisy, and when approached attempts to hide beneath the calyx of the flowers.

1039 (—). *PLAGIOGNATHUS FLAVOSCUTELLATUS* Knight, 1923, 440.

Head with vertex and front greenish-yellow; tylus dark brown, shining, cheeks fuscous; pronotum dark brown, its narrow front and side margins and sometimes a vague median spot, greenish-yellow; scutellum as in *dd* of key; clavus and apical half of embolium and corium dark brown to blackish; basal half of corium and embolium, narrow costal margin and base and outer margins of cuneus pale, the pale hue of corium extending farther back along radial vein than along claval suture; membrane a uniform fuscous-brown, the veins paler; legs dull yellow, femora dotted as in key; under surface fuscous-black or brown with yellow pubescence. Joints 1 and 2 of antennæ dark brown; 1 about one-sixth shorter than width of vertex, its extreme tip pale; 2 four and one-half times longer than 1; 3 and 4 fuscous, 3 three-fifths the length of 2, 4 two-fifths as long as 3. Upper surface sparsely clothed with yellow pubescence. Length, 4.2—4.6 mm.

Marion Co., Ind., June 30—July 15. The known range extends from Nova Scotia and New England west to Minnesota, mainly north of latitude 40°. Host plant, the sand-bar willow, *Salix fluviatilis* Nutt.

1040 (1238). *PLAGIOGNATHUS FRATERNUS* Uhler, 1895, 51.

Oblong-oval. Color above in great part black, sparsely clothed with fine yellowish pubescence; vertex greenish-yellow tinged with blackish; front margin, median line and narrow edges of pronotum, basal third of corium and embolium, tips of clavus, anal ridge and basal half of cuneus greenish-yellow; membrane fuscous, a spot near middle and veins pale; femora blackish, paler at tips; tarsi dull yellow, the knees, spines and spots at their bases, black; under surface in great part black, the ventrals in part greenish-yellow. Joints 1 and 2 of antennæ black, 1 about two-thirds as long as width of vertex, 2 three and a half times longer than 1; 3 and 4 dusky yellow, 3 about two-thirds as long as 2, 4 one-half the length of 3. Length, 4.8 mm.

Dillsboro, N. Car., Sept. 12 (*Brimley*). The recorded range extends from New England west to Colorado, north of latitude 40°, the North Carolina specimen, determined by Knight, being the first one known from the south. New Jersey specimens received as *fraternus* from Davis and others so named from North Carolina have the scutellum yellow, and Knight states that: "Judging from a large amount of material from Colorado and the eastern states, *fraternus* Uhler appears to be nothing more than a variety of *obscurus* Uhler."

1041 (—). *PLAGIOGNATHUS INTRUSUS* Knight, 1926, 12.

Color nearly as in *politus*, the pubescence yellowish. Joint 1 of antennæ black, extreme apex pale, its length equal to width of vertex; 2 black, three and three-fifths times the length of 1; 3 yellowish to fuscous, three-fourths as long as 2; 4 fuscous, nearly three-fifths the length of 3. Length, 4.7 mm.

Recorded only from McLean and the Cranberry Lake region, N. Y. Host plant unknown.

1042 (1241). *PLAGIOGNATHUS POLITUS* Uhler, 1895, 52.

Dark shining fuscous-brown to black, sparsely clothed with whitish or yellowish inclined hairs; vertex in great part dull yellow; anal ridges and a narrow curved line along fracture of cuneus dull yellow; membrane fuscous, a vague rounded spot at middle and the veins paler; osteolar duct, tibix and tips of coxæ in great part dull yellow, knees and spines of tibix black. Joints 1 and 2 of antennæ dark brown to black, 3 and 4 pale fuscous; 1 three-fifths as long as width of vertex, 2 four and a third times longer than 1, 3 two-thirds as long as 2, 4 one-half as long as 3. Pronotum one-half wider at base than long, disk almost smooth, its sides strongly declivent. Clavus and corium very finely transversely rugose. Length, 3.5—4 mm. (Fig. 189).

Occurs throughout Indiana, June 20—Oct. 14; common locally on ragweed, flowers of goldenrod and other Compositæ.

Raleigh, N. Car., Sept. 2 (*Brimley*). Ranges from Quebec and New England west to Manitoba, Colorado and Kansas, and southwest to North Carolina. Recorded also from California. Host plants, ragweed, goldenrod, etc. The *Lygus fuscus* Prov.

(1872, 105) is stated by Van Duzee (1912, 323) to be "very close to if not identical with *P. politus* Uhl." If the two prove to be the same, Provancher's name will have priority. The color of *P. politus* varies rather widely from that above given, a paler form having been described by Knight as:

1042a (—). *PLAGIOGNATHUS*  
*POLITUS FLAVEOLUS*  
Knight, 1923, 434.

In extremes of this form the vertex, front margin and middle spot of pronotum, scutellum except basal angles, base and apex of embolium, basal third or more of corium, basal half of cuneus, tibiae and middle of femora are dull greenish-yellow; remainder

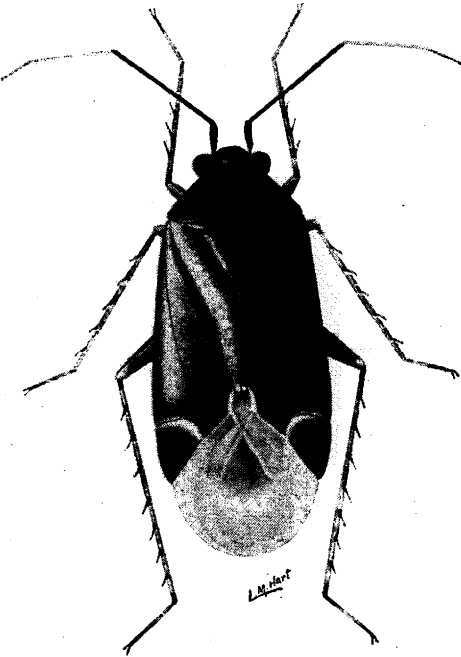


Fig. 189, X 16. (After Forbes).

of body brownish-fuscous. Size and structural characters as in *politus*.

More common in southern Indiana in late summer and autumn than typical *politus*; Starke County only in the north, Aug. 20—Oct. 10. Sherborn, Mass., Sept. 20 (*Frost*). Occurs on flowers of goldenrod, thistle and other Compositæ. All variations in color between the extremes of this and *politus* are found. The range of var. *flaveolus* as given by Knight extends from Ontario and New England to Minnesota. He states that it "appears late in the season, no doubt belonging to the second brood of *politus*, and breeding on *Solidago* and related herbaceous plants."

Examples of *politus* var. *pallidicornis* Knight, distinguished as *j* of key, p. 939, and having the same range as *flaveolus* are at hand from Porter Co., Ind., and Pottersville, N. Y.

1043 (—). *PLAGIOGNATHUS REPETITUS* Knight, 1923, 453.

Black, moderately shining, sparsely clothed with fine yellowish hairs; membrane and veins uniformly pale fuscous; legs yellowish, basal half of coxæ fuscous, apical half of femora with one or two rows of vague small fuscous spots, black spots at base of tibial spines prominent; ventrals shining black. Joints 1 and 2 of antennæ black, 1 two-thirds as long as width of vertex, 2 three and a half times as long as 1; 3 and 4 dusky yellow, 3 three-fourths the length of 2, 4 two-thirds as long as 3. Length, 3 mm.

Whiteface Mt., N. Y., Aug. 22 (*Minn. Univ. Coll.*). Occurs on conifers in Nova Scotia, New England, New York and New Jersey.

1044 (1240). *PLAGIOGNATHUS ANNULATUS* Uhler, 1895, 51.

Color a nearly uniform dull brown to blackish, more or less translucent, rather thickly clothed with yellowish to whitish pubescence; cuneus often with a small spot on inner basal angle or a narrow lunule along fracture, paler; membrane uniformly pale translucent, the veins paler; legs dull yellow, femora either with a few blackish spots and lines on outer apical half or clouded with fuscous-brown, their tips paler; basal half of coxæ, apical tarsal joint and spots and spines of tibiæ, black; under surface dark brown to blackish, the sides of ventrals often paler. Joints 1 and 2 of antennæ dark brown, 1 five-sixths as long as width of vertex, 2 four times longer than 1; 3 and 4 dusky yellow, 3 two-thirds as long as 2, 4 three-fifths the length of 3. Pronotum nearly twice as wide at base as long, minutely irregularly rugose; calli rather prominent, confluent, with an impression between their bases. Clavus finely transversely rugose; corium minutely punctate. Length, 4—4.2 mm.

Putnam and Vigo counties, Ind., June 18—Aug. 26; taken from flowers of various species of *Compositæ*. Pine Island, N. Y., June 19 (*Davis*). Ranges from Ontario and New England west to Kansas and Colorado. Variable to some extent in color, the variations forming the basis of Knight's two varieties (1923, 442), *cuneatus* and *nigrofemoratus*, as set forth in the above key.

1045 (—). *PLAGIOGNATHUS CARINATUS* Knight, 1926, 10.

Dark brownish-black, clothed with yellow pubescence; vertex yellowish; base of cuneus subtranslucent; legs yellowish, hind femora with black spots as in key. Joint 1 of antennæ black, its tip narrowly pale, one-tenth shorter than width of vertex; 2 dark brownish, black at base, male, yellowish at middle, female, four times as long as 1, its length in male equal to width of head plus width of vertex, in female one-eighth shorter; 3 and 4 dusky yellow, 3 two-thirds the length of 2, twice as long as 4. Beak reaching hind margins of middle coxæ. Length, 3.8—4.2 mm.

Recorded only from Dewitt, Va., where it was found in June on persimmon, *Diospyros virginiana* L.

1046 (—). *PLAGIOGNATHUS LARICICOLA* Knight, 1923, 452.

Head, pronotum and scutellum fuscous-black, feebly shining; vertex sometimes yellowish; color of elytra as in key; membrane fuscous, veins pale, spot near apex of cuneus hyaline; legs dull fuscous-yellow, femora with small vague brownish spots, tarsi blackish; ventrals fuscous-black, covered with an opaque bloom. Joint 1 of antennæ black, 2—4 fuscous-brown; 1 four-fifths as long as width of vertex, 2 almost four times the length of 1, 3 and 4 united as long as 2. Length, 3.6—3.9 mm.

Ithaca, N. Y., June 27 (*Minn. Univ. Coll.*). Ranges from New England west to Minnesota and Alberta, occurring in June and July on tamarack, *Larix laricina* (Du Roi).

1047 (—). *PLAGIOGNATHUS NIGRONITENS* Knight, 1923, 435.

Color as in key; base of vertex dull yellow; membrane pale fuscous, a pale triangular spot near apex of cuneus; tarsi dull yellow, apical joint blackish; ventrals shining black. Joint 1 of antennæ black, two-thirds as long as width of vertex; 2 black, tip pale, three and one-half times as long as 1; 3 dull yellow, four-fifths the length of 2; 4 dusky, two-thirds as long as 3. Beak reaching between middle coxæ. Scutellum finely transversely rugose. Elytra scabrous. Length, 3 mm.

Grand Junction, Mich., July 15 (*Ill. Nat. Hist. Surv. Coll.*). Ranges from Ontario and New England west to Michigan and Minnesota. Resembles *politus* but smaller and with shorter beak.

1048 (—). *PLAGIOGNATHUS NIGRITUS* Knight, 1923, 441.

Color a uniform black or fuscous-black, rather thickly clothed with inclined whitish hairs; membrane translucent fuscous, feebly iridescent, the veins in part paler; tibiæ, trochanters, middle of beak and tips of femora pale yellow; black spots of tibiæ conspicuous. Antennæ fuscous-black, joint 1 slightly shorter than width of vertex, 2 nearly four times longer than 1, 3 about one-half the length of 2. Eyes of male very large, as long as width of vertex. Pronotum twice as wide at base as long, disk minutely punctate, each puncture bearing a fine whitish hair. Clavus and corium finely transversely rugose. Length, 4—4.4 mm.

Marion Co., Ind., June 5 (*W. S. B.*). Sherborn, Mass., Sept. 20 (*Frost*). Aberdeen, N. Car., June 6 (*Brimley*). Recorded only from Connecticut and Colorado.

1049 (—). *PLAGIOGNATHUS ROSICOLA* Knight, 1923, 446.

Color as in *o* of key, clothed with yellowish pubescence; scutellum and disk of cuneus slightly darker than pronotum; membrane a nearly uniform fuscous, a pale spot near apex of cuneus, veins paler; legs straw-yellow tinged with brownish, femora with two rows of prominent black spots on front face, and some less distinct spots on hind one, black spots at base of tibial spines prominent; sternum piceous, ventrals brownish-yellow, genital segments blackish. Joints 1 and 2 of antennæ black, their

tips narrowly pale, 1 almost as long as width of vertex, 2 four and three-fifth times as long as 1; 3 and 4 fuscous, 3 nearly three-fourths as long as 2, more than twice as long as 4. Length, 4.3—4.5 mm.

Recorded from Maryland, Illinois and Missouri. Occurs on wild roses.

1050 (—). *PLAGIOGNATHUS FULVIDUS* Knight, 1923, 447.

Fulvo-testaceous, clothed with rather fine yellow pubescence; entire under surface black, often with a reddish tinge; membrane fuscous, veins yellowish; legs yellowish, base of hind coxæ fuscous, hind femora with one or two rows of fuscous spots on front face, knees black, spots of tibial spines small. Joints 1 and 2 of antennæ black, 1 two-thirds as long as width of vertex, 2 four times as long as 1; 3 pale fuscous, black at base, two-thirds the length of 2; 4 fuscous, three-fifths as long as 3. Length, 3.5—4 mm.

Recorded from Connecticut, New Jersey and North Carolina.

1051 (—). *PLAGIOGNATHUS ATRICORNIS* Knight, 1926, 9.

Pale greenish-testaceous, clothed with pale yellowish pubescence; pronotum green, calli yellowish; elytra sub-translucent; membrane and veins uniformly pale fuscous, a small opaque whitish spot near apex of large cell; legs pale, femora with two rows of blackish spots on front face, black spots of tibial spines distinct. Joint 1 of antennæ almost as long as width of vertex, 2 slightly more than four times as long as 1, 3 two-thirds as long as 2, 4 one-half the length of 3. Beak reaching hind margins of middle coxæ. Length, 3.4—3.6 mm.

Known only from Point Treviuton, Pa. Resembles *P. chrysanthemi* (Wolff), but antennæ black and pubescence pale.

1052 (1234). *PLAGIOGNATHUS BLATCHLEYI* Reuter, 1912a, 61.

Elongate-oval. Pale greenish-yellow fading to dull yellow, thickly clothed with conspicuous yellow inclined hairs; tylus piceous-brown; membrane pale brown, its center and veins yellowish; legs yellow, femora with two rows of brown dots on both inner and outer faces; tibiæ with extreme base and apex, spines and their basal spots, black; tarsi fuscous-brown. Joints 1 and 2 of antennæ dark brown, their extreme tips pale; 3 and 4 pale fuscous; 1 three-fourths as long as width of vertex, 2 about four times as long as 1, 3 two-thirds the length of 2, 4 one-half as long as 3. Beak reaching hind coxæ. Disk of pronotum about two-thirds wider at base than long, calli rather prominent, transverse impression behind them deep, area behind it minutely thickly punctate. Scutellum and clavus finely, transversely strigose. Corium minutely and shallowly punctate, the costal margins feebly but visibly curved. Length, 4.5—4.7 mm.

Marion, Starke, Vigo and Crawford counties, Ind., June 17—Sept. 18. Taken in numbers June 22, 1892, in Vigo County from the foliage of the swamp rose, *Rosa carolina* L. Specimens were



soon afterward sent to Prof. Uhler, who named them "*Macrotylus blatchleyi* Uhl. (Ms.)." However, he never published the description and Van Duzee later sent specimens from Hamburg, N. Y., to Dr. Reuter, who described it twenty years after my first specimens were taken. In his notes preceding the description Reuter states: "Unter dem Namen *Macrotylus blatchleyi* Uhl. mscr., habe ich aus Nordamerika eine bisher unbeschriebene Miride bekommen. Diese ist jedoch gar kein *Macrotylus*, sondern gehört zur Gattung *Plagiognathus* Fieb." Recorded only from Maine, Massachusetts, New York and New Jersey.

1053 (—). *PLAGIOGNATHUS NUBILUS* Knight, 1923, 444.

Dull greenish-yellow with fuscous markings as in key; sparsely clothed with yellow hairs; head except tylus and front half of pronotum brighter green; basal half of pronotum either with three or four fuscous stripes or wholly fuscous; scutellum, embolium and cuneus a uniform paler yellow than corium; membrane dark fuscous, paler bordering veins and near tips of cuneus; femora with brown dots as in *blatchleyi*, also with a brown line on upper face and a shorter one on inner apical half of lower face. Structural characters much as in *blatchleyi*, the relative lengths of antennal joints slightly greater. Length, 4.2—4.5 mm.

Marion and Knox counties, Ind., July 5—Sept. 18. Swept from herbage in dense woodland along streams. The known range extends from New York west to Indiana and southward to Virginia. Described as a variety of *blatchleyi* but the much more sparse vestiture, fuscous markings of upper surface and dark stripes on femora lead me to place it as a distinct species.

1054 (—). *PLAGIOGNATHUS BREVIROSTRIS* Knight, 1923, 441.

Black, clothed with prominent yellowish pubescence; elytra with pale markings as in key; membrane fuscous, paler bordering tip of cuneus, veins yellowish; femora black, their tips, and sometimes base, pale; tibiae dull yellow, knees, spines and spots at base, black; under surface black. Joints 1 and 2 of antennæ black, 1 almost as long as width of vertex, 2 four times as long as 1; 3 and 4 fuscous, 3 two-thirds the length of 2, nearly twice as long as 4. Female shorter and more robust than male, the pale color along claval suture spreading over outer margin of clavus; legs more broadly pale. Length, 4—4.6 mm.

Spruce Brook, Newfoundland, Aug. 9 (*Minn. Univ. Coll.*). Ranges from there and New England west to New York and Michigan.

1055 (—). *PLAGIOGNATHUS ALBORADIALIS* Knight, 1923, 439.

Black or fuscous-black, clothed with grayish-yellow pubescence; scutellum brownish on basal angles, rarely yellowish with median line

black. Elytra with pale markings as in key; membrane uniformly fuscous, male, veins and a vague spot near cuneus pale, female; legs pale to yellowish, femora with two rows of black spots on both inner and outer faces; under surface black with pale pubescence. Joints 1 and 2 of antennæ black, 2 narrowly pale at tip; 1 as long as width of vertex, 2 slightly more than four times the length of 1, twice as long as width of head across eyes; 3 and 4 pale fuscous, 3 three-fifths as long as 2, nearly twice as long as 4. Female more robust and more broadly pale than male, pronotal disk broadly pale. Length, 4.5—5 mm.

Starke Co., Ind., June 18 (*W. S. B.*). Cranberry Lake, N. Y., July 20—23 (*Minn. Univ. Coll.*). The recorded range extends from Ontario, and New England west to Ithaca, N. Y., mainly in the mountainous regions.

#### GROUP C.—PLAGIOGNATHUS.

To this group, as defined in the key, belong 15 species and five varieties of our eastern forms. The varieties are mere color forms, but as the key is based mainly on color characters, they are included in order that the student may be less confused in the naming of his species.

#### KEY TO EASTERN SPECIES AND VARIETIES OF GROUP C, PLAGIOGNATHUS.

- a. Scutellum and often the whole upper surface black.
- b. Elytra uniformly brownish translucent; pronotum and scutellum black. 1056. *SUFFUSCIPENNIS*.
- bb. Elytra uniformly black or blackish with pale.
- c. Cuneus pale or reddish, basal third or more of corium pale.
- d. Hind femora black, their tips only pale. 1057. *ALBONOTATUS*.
- dd. Hind femora dull yellow with two rows of conspicuous black dots on outer face and one on inner.
- e. Cuneus red; base of corium tinged with reddish. 1057a. var. *TINCTUS*.
- ee. Cuneus pale yellowish translucent; base of corium not tinged with reddish. 1058. *DEBILIS*.
- cc. Cuneus chiefly black; basal angles of corium not or scarcely pale.
- f. Femora pale or fulvous, usually spotted with black.
- g. Hind femora with two rows of prominent black spots on front face; joint 1 of antennæ black, narrowly pale at tip; beak reaching middle of hind coxæ.
- h. Joint 2 of antennæ in both sexes shorter than width of pronotum at base; length, 3.3—3.8 mm.
- i. Cuneus uniformly black like the corium; length, 3.6—3.8 mm. 1059. *PUNCTATIPES*.
- ii. Cuneus narrowly pale at base; length, 3.3 mm. 1060. *DISPAR*.
- hh. Joint 2 of antennæ longer than, male, or equal to, female, width of pronotum at base; length, 3.8—4 mm. 1061. *INOPINUS*.

- gg.* Hind femora pale, a single black spot on lower margin near apex; joint 1 of antennæ pale, blackish at base, joint 2 with basal fourth black; beak reaching first ventral. 1062. DAVISI.
- ff.* Femora black, their tips alone pale.
- j.* Cuneus with a pale lunule at base; joint 2 of antennæ with basal one-fourth black; membrane uniformly fuscous. 1042b. POLITUS var. PALLIDICORNIS.
- jj.* Cuneus uniformly black like the corium; joint 2 of antennæ pale yellow, narrowly black at base, its tip dusky; form suboval; deep black, strongly shining. 1063. FLAVICORNIS.
- aa.* Scutellum pale or fulvous, sometimes dark brownish, frequently with median line blackish, but with basal angles pale; elytra more or less pale, in darkest forms brownish-black, but always somewhat translucent.
- k.* Upper surface uniformly greenish-yellow, clothed with prominent black pubescence; antennæ with base of joints 1 and 2 and a ring before apex of 1, black. 1064. CHRYSANTHEMI.
- kk.* Upper surface darkened or marked with fuscous, pubescence pale; antennæ not marked as in *k*.
- l.* Joint 2 of antennæ uniformly pale, sometimes, narrowly dusky at base, joint 1 black; femora with black spots.
- m.* Scutellum and cuneus wholly pale. 1065. ALBATUS.
- mm.* Median line of scutellum and apical half of cuneus blackish. 1065a. var. VITTISCUTIS.
- ll.* Joint 2 of antennæ black or fuscous at base.
- n.* Scutellum uniformly colored, or with median line paler than basal angles.
- o.* Femora pale or fulvous, with rows of distinct black spots; scutellum uniformly pale or with median line pale and basal angles dark; color rosy pink or fulvous tinged with dark brown. 1066. DELICATUS.
- oo.* Femora, except tips, dark with black spots vague; scutellum usually wholly dark fuscous-brown, similar to the whole upper surface. 1067. CORNICOLA.
- nn.* Scutellum with median line blackish, the sides pale or fulvous.
- p.* Cuneus uniformly pale.
- q.* Beak not reaching tips of middle coxæ; propleura clothed only with slender hairs; femora distinctly spotted with black. 1068. REPLETUS.
- qq.* Beak reaching hind coxæ; propleura clothed with silky pubescence; apical half of femora black without distinct spots. 1057b. ALBONOTATUS var. COMPAR.
- pp.* Cuneus fulvous or blackish toward apex.
- r.* Beak reaching first ventral; basal half of corium and more or less broadly each side of claval suture white; pale areas never fuscous, dark ones distinctly black. 1069. SIMILIS.
- rr.* Beak not reaching beyond middle of hind coxæ.

- s. Elytra, except along base of radial vein, dark brown or fuscobrownish; general color yellowish-testaceous to fulvous; sides of pronotum and median line of scutellum dark brown or fuscous. 1070. CARYÆ.
- ss. Elytra black; outer half of clavus, basal half of corium and extending along claval suture to apex, pale translucent. 1068a. REPLETUS var. APICATUS.

1056 (—). *PLAGIOGNATHUS SUFFUSCIPENNIS* Knight, 1923, 454.

Dark brown, shining; sparsely pubescent with very fine yellowish hairs; pronotum and scutellum blackish-brown; membrane pale fuscous-brown, veins yellowish; legs dull yellow, coxæ except tips, fuscous; femora usually with two rows of minute dark spots on inner and outer faces; under surface dark brown to blackish, shining, clothed with very fine yellowish prostrate hairs. Joint 1 of antennæ dark brown, narrowly paler at base and apex, two-thirds as long as width of vertex; 2 dusky yellow, darker at base, three and a half times longer than 1; 3 and 4 yellowish, 3 three-fifths as long as 2, 4 two-thirds as long as 3. Pronotum twice as wide at base as long, calli large, low, confluent, disk minutely transversely rugose. Clavus more coarsely, transversely rugose, corium almost smooth. Length, 3.2—3.4 mm.

Recorded only from Maine and Minnesota. Host plant, black spruce, *Picea mariana* (Mill.).

1057 (—). *PLAGIOGNATHUS ALBONOTATUS* Knight, 1923, 437.

Head black, base of vertex slightly paler; pronotum black, in female often with median pale spot; scutellum black, basal angles sometimes pale; elytra black, the basal third and apex of embolium, corium, and to some extent of clavus, anal ridges, and entire cuneus, greenish-yellow; membrane uniformly fuscous, veins paler; femora, except at base and tip, black; coxæ and tibiæ pale yellow, the knees, spines and spot at base of each, black; under surface black, ventrals of female paler on sides. Antennæ with joint 1 and base of 2 black, remainder pale yellow; joint 1 four-fifths as long as width of vertex, 2 three and one-half times longer than 1, 3 two-thirds as long as 2, 4 two-thirds the length of 3. Pronotum almost twice as wide at base as long, sides and basal margin straight, calli distinct, confluent, disk, as well as that of scutellum, minutely granulate. Elytra and pronotum sparsely clothed with fine yellowish suberect hairs; costal margins of former feebly but visibly curved. Length, 3.3—3.5 mm.

Porter Co., Ind., Sept. 26. Ranges from New England west to the Dakotas and Colorado. Occurs on the meadow-sweet, *Spiræa salicifolia* L. Knight (loc. cit.) described two color varieties, *tinctus* and *compar*, distinguished by the characters given in key. The former occurs in the east ranging south to North Carolina, the latter he records only from Maine and New York.

1058 (—). *PLAGIOGNATHUS DEBILIS* sp. nov.

Greenish-yellow, thickly clothed above with conspicuous inclined yellowish hairs; tylus, cheeks and loræ dark brown, shining; pronotum wholly fuscous-black, male, front half only fuscous-black, female; scutellum of the same hue, its extreme tip pale; inner half of clavus and a large ill-defined spot on inner apical half of corium more or less fuscous; cuneus and embolium pale yellowish-translucent, the former rarely with a vague median fuscous spot; membrane fuscous, veins yellowish; legs dull yellow; hind femora with black dots as in *dd* of key; front and middle femora each with two rows of small vague brown dots; tibiæ with conspicuous black spots at base of spines; third joint of tarsi and claws fuscous; under surface blackish-bronzed, shining. Joint 1 of antennæ black, three-fifths as long as width of vertex, its apical incisure yellow; 2 dull yellow, basal sixth black, apex dusky, three and half times as long as 1; 3 and 4 dusky yellow, 3 one-half as long as 2, 4 two-fifths the length of 3. Beak reaching apex of middle coxæ. Length, 3.5—3.7 mm.

Marion Co., Ind., June 16—July 15. Frequent on the sandbar willow, *Salix fluviatilis* Nutt.

1059 (—). *PLAGIOGNATHUS PUNCTATIPES* Knight, 1923, 450.

Black, moderately shining, clothed with grayish- or pale yellowish pubescence; membrane uniformly fuscous, veins paler; legs pale yellow to fulvous, coxæ fuscous, hind femora with spots as in *g* of key, spots at base of tibial spines small, obsolete toward apex; under surface fuscous-black, clothed with very fine pale pubescence. Joint 1 of antennæ black, two-thirds as long as width of vertex; 2, yellowish, basal sixth blackish, four times as long as 1; 3 pale yellowish, two-thirds as long as 2; 4 dusky, three-fifths the length of 3. Beak reaching middle of hind coxæ. Length, 3.6—3.8 mm.

Ithaca, N. Y., June 27 (*Minn. Univ. Coll.*). Recorded only from there and Bloomfield, Pa.

1060 (—). *PLAGIOGNATHUS DISPAR* Knight, 1923, 451.

Fuscous-black, thinly yellowish pubescent; vertex yellowish; cuneus as in key; membrane pale fuscous, paler at middle and near apex of cuneus, veins yellowish to dusky; legs straw-yellow, hind coxæ, except tips, fuscous; front face of hind femora with two rows of minute fuscous spots, a group of similar spots on apical third of posterior face, spots at base of tibial spines very small; under surface black, finely pubescent. Antennæ as in *punctatipes*, joint 1 three-fourths as long as width of vertex. Length, 3.3—3.5 mm.

• Dixon, Ill., May 31 (*Ill. Nat. Hist. Surv. Coll.*). Ranges from southern New England west to Michigan and Illinois, occurring on hickory. Described as a variety of *punctatipes*, but afterward (1926, 11) raised by Knight to specific rank on account of slight differences in male genitalia.

1061 (—). *PLAGIOGNATHUS INOPINUS* Knight, 1926, 11.

Dark brownish-black, clothed with yellowish pubescence; base of vertex and side margins of mesoscutum dull yellow; tip of embolium and inner basal angles of cuneus pale; membrane fuscous, veins and area along tip of cuneus paler; legs straw-yellow, femora with black spots as in *dispar*, black spots at base of tibial spines larger. Joint 1 of antennæ two-thirds as long as width of vertex; 2 yellow, fuscous at base, four and two-thirds times as long as 1; 3 yellowish to dusky, two-thirds as long as 2, 4 dusky, nearly three-fifths as long as 3. Length, 3.8—4 mm.

Known only from Harrisburgh, Pa., where it was taken in June on sycamore.

1062 (—). *PLAGIOGNATHUS DAVISI* Knight, 1923, 452.

Black or brownish-black, clothed with erect, rather sparse yellowish hairs; membrane brownish-fuscous, veins and narrow area bordering tip of cuneus paler; legs yellowish, apical third of front femora with a dark line on upper face, hind femora as in key, tarsi yellowish, third joint fuscous; under surface brownish-black. Joints 1 and 2 of antennæ as in key, 1 two-thirds as long as width of vertex, 2 three and a fourth times the length of 1; 3 and 4 yellowish, dusky at base, 3 about three-fifths the length of 2, but little longer than 4.

Known from a single female taken June 20 by W. T. Davis on Pine Island, N. Y.

1063 (—). *PLAGIOGNATHUS FLAVICORNIS* Knight, 1923, 436.

Deep black, strongly shining, clothed with yellowish to dusky pubescence; membrane and veins wholly dark fuscous; femora as in key, tibiæ pale, knees and spots at base of spines black; sternum, black, opaque, ventrals shining black. Joint 1 of antennæ black, its tip pale, three-fourths as long as width of vertex; 2 as in key, as long as width of base of pronotum; 3 and 4 fuscous, 3 nearly three-fourths the length of 2, 4 two-thirds as long as 3. Beak scarcely reaching hind margin of middle coxæ. Mesoscutum broadly exposed. Scutellum minutely transversely rugose. Female more robust than male. Costal margins distinctly curved, elytra much broader just in front of cuneus than at base. Length, 3.3—3.5 mm.

Sun Lake, Ill., Aug. 9 (*Ill. Nat. Hist. Surv. Coll.*). A species of the Transition Life Zone, ranging from Ontario and New England west to Illinois and Minnesota. Host plants, the sweet fern, *Comptonia peregrina* (L.), and sweet gale, *Myrica gale* L.

1064 (—). *PLAGIOGNATHUS CHRYSANTHEMI* (Wolff), 1804, 151.

Elongate, subparallel, male, more oval, female. Greenish-yellow to grayish-green, clothed with prominent inclined blackish hairs, pronotum usually a clearer green; membrane pale fuscous, iridescent, a white triangular area near apex of cuneus and a small subquadrate black spot near apex of small cell; legs greenish-yellow, front face of femora with

two or three rows of black spots, black spots of tibiæ large; ventrals greenish-yellow. Antennæ yellowish, joint 1 with black rings as in key, shorter than head; 2 black at base, three times longer than 1; 3 and 4 filiform, 3 two-thirds the length of 2, 4 two-fifths as long as 3. Beak reaching second ventral. Length, 3.8—4.3 mm.

Ithaca, N. Y., June 30 (*Minn. Univ. Coll.*). Chalfont and Muswell Hill, England, July—August (*British. Mus. Coll.*). A European species known in this country from Ontario, New England and New York. Host plant the oxeye daisy, *Chrysanthemum leucanthemum* L. As already noted, American records have mostly been under the name *Oncotylus punctipes* Reut.

1065 (1237). *PLAGIOGNATHUS ALBATUS* Van Duzee, 1915, 116.

Pale greenish-translucent, rather thickly clothed with whitish hairs; tylus and cheeks piceous; sides, or at least the basal angles, of pronotum, inner half or more of clavus and inner apical half of corium, strongly tinged with fuscous; membrane pale translucent with cells and ray along the margins dusky; hind femora with two rows of small vague blackish dots on outer face, tibiæ with black spots at base of spinules very small, apical half of tarsi and tip of beak fuscous; under surface yellow, female; ventrals and sterna black, male. Joint 1 of antennæ black, pale at tip, two-thirds as long as width of vertex; 2 and 3 yellow, 2 three and a half times longer than 1, 3 two-fifths the length of 2; 4 dusky, one-third as long as 3. Pronotum nearly twice as wide at base as long, sides feebly sinuate, hind margin almost straight, calli large, contiguous; disk, as well as that of clavus, and corium very minutely punctate, each puncture bearing a fine whitish hair. Length, 4—4.2 mm.

Marion Co., Ind., June 26. Dunedin, Fla., April 13; swept from low herbage along the margin of a moist hammock; the first records for both states. Not before recorded south of the District of Columbia. Ranges from New England west to California. Knight (1923, 445) gives the sycamore, *Platanus occidentalis* L., as the host plant. He there describes two varieties, one of which, *vittiscutis*, is a mere color form found on butternut and distinguished only by characters given in key. The other, *similis*, I regard as a valid species, and it is described below.

1066 (1230). *PLAGIOGNATHUS DELICATUS* (Uhler), 1887a, 34.

Pale brownish-yellow, often with a pinkish tinge; front of head each side with a short fuscous stripe; calli sometimes blackish or bordered behind by an impressed fuscous line; scutellum as in key; elytra tinged with fuscous-brown; cuneus with base and margins paler than the reddish disk; membrane dusky hyaline, a median area and spot each side near tip of cuneus whitish; legs dull yellow, femora as in key; tibial spines and spots at base and tips of tarsi blackish; ventrals dark brown,

sometimes reddish-yellow. Joint 1 of antennæ fuscous, pale at tip, two-thirds as long as width of vertex; 2 brownish-yellow, fuscous at base, one-fourth longer than pronotum; 3 and 4 dusky, 3 three-fifths as long as 2, 4 two-thirds the length of 3. Beak reaching upon hind coxæ. Pronotum very feebly punctate, clavus rather coarsely so. Length, 3—3.5 mm.

Batavia, N. Y., June 25 (*Minn. Univ. Coll.*). Described from Georgia. Recorded from New Jersey, Kansas and California. Occurs on honey locust, *Gleditsia triacanthos* L.

1067 (—). *PLAGIOGNATHUS CORNICOLA* Knight, 1923, 450.

Dark reddish- or fuscous-brown, thickly clothed with rather coarse semiprostrate yellow hairs; vertex in part, anal ridges, edge of costal margin and tip of embolium paler; membrane pale brownish translucent, veins yellowish; femora dark brown, their tips yellow; coxæ and tibiæ dull yellow; under surface shining brown, sides of ventrals in part paler. Joint 1 of antennæ and basal third of 2 dark brown to blackish; 1 slightly more than half as long as width of vertex; 2 nearly four times longer than 1, its apical two-thirds dull yellow; 3 and 4 pale fuscous, 3 nearly three-fourths as long as 2, 4 three-fifths the length of 3. Pronotum twice as wide at base as long, minutely and sparsely punctate. Length, 3.2—3.7 mm.

Marion and Vigo counties, Ind., June 3—15; beaten from dogwood, *Cornus alternifolia* L. Recorded from Massachusetts, New York and Virginia. Host plants, various species of *Cornus*.

1068 (—). *PLAGIOGNATHUS REPLETUS* Knight, 1923, 449.

Head black, paler on vertex; pronotum black, middle of disk and area between and in front of calli pale yellow; scutellum as in *m* of key; elytra black, margins of clavus, basal third and line along claval suture of corium, embolium, cuneus and anal ridge, yellowish translucent; membrane fuscous, narrow area near tip of cuneus hyaline, veins pale yellow; legs straw-yellow, hind coxæ fuscous, apical half of hind femora brownish and with two rows of black spots; tibiæ with knees, spaces and spots at their base black, tarsi fuscous; ventrals brownish-black. Joint 1 of antennæ black, its tip yellowish, three-fourths as long as width of vertex; 2 yellowish, basal fourth blackish, five and a third times the length of 1; 3 yellowish, fuscous at base, nearly one-half as long as 2; 4 dusky-yellow, as long as width of vertex. Length, 3.9 mm.

The typical form is known only from Batavia, N. Y.; the variety *apicalis* Knight, as differentiated in *ss* of key, from Connecticut and New York.

1069 (—). *PLAGIOGNATHUS SIMILIS* Knight, 1923, 445.

Greenish-yellow, thinly clothed with yellowish hairs; tylus, cheeks and loræ dark brown; pronotum with middle of disk and area in front of calli greenish-yellow, remainder dark brown; mesoscutum, broad median stripe of scutellum, inner half or all of clavus, a large spot on



apical half of corium and embolium, and spot on apical half of cuneus, dark brown; membrane with cells and a submarginal stripe on apical half brown, remainder of apical half and veins pale; hind femora dull yellow, with two rows of dark spots, front and middle femora with rows of smaller spots; under surface chestnut-brown, shining, the sides of ventrals in part pale. Joint 1 of antennæ black, its tip pale, two-thirds as long as width of vertex; 2 pale yellow, basal fourth black, three and a half times longer than 1; 3 and 4 yellowish, 3 two-thirds the length of 2, 4 five-eighths as long as 1. Pronotum twice as wide at base as long, calli large and low, separated by an impressed line; disk minutely punctate. Length, 3.5—3.8 mm.

Marshall Co., Ind., June 11; beaten from its host plant, *Alnus incana* (L.). Described as a variety of *albatus* Van D.

1070 (—). *PLAGIOGNATHUS CARYÆ* Knight, 1923, 448.

Color as in key, clothed with fine pale yellow pubescence; tylus and lower half of face fuscous; pronotum dark brown, middle of disk and calli more or less yellowish; scutellum brownish-yellow, median stripe and mesoscutum brownish-black; elytra as in key, basal half of embolium, anal ridges and inner basal angle of cuneus yellowish-translucent; membrane fuscous, veins yellowish, small spot near apex of cuneus whitish; legs straw-yellow tinged with dusky, femora often with two rows of small vague black spots on front face; ventrals fusco-yellowish. Joint 1 of antennæ black, its tip pale, three-fourths as long as width of vertex; 2 yellowish with fuscous ring at base, the apex dusky, four and two-fifths times the length of 1; 3 and 4 dusky yellow, 3 three-fifths as long as 2, 4 three-fifths the length of 3. Length, 3.4—3.9 mm.

Ithaca, N. Y., June 22 (*Minn. Univ. Coll.*). Recorded elsewhere from Batavia, N. Y., and Agricultural College, Miss. Occurs on hickory and pecan.

#### V. *MICROSYNAMMA* Fieber, 1864, 74.

Elongate-oval species having the head feebly exserted, twice as wide across eyes as long, its front pointed, subvertical; vertex convex, its crest almost level with upper margin of eyes; beak reaching hind coxæ; antennæ shorter than body; eyes large, prominent; pronotum trapezoidal, nearly twice as wide at base as long, sides straight, disk slightly declivent forward, hind margin straight; elytra entire, slightly surpassing abdomen, clavus convex, deflected to corium, cuneus and membrane slightly deflexed; femora rather stout, hind ones flattened on sides. One introduced European species occurs in the eastern states.

1071 (—). *MICROSYNAMMA BOHEMANNI* (Fallen), 1829, 106.

Fuscous-brown, shining, clothed with short yellow hairs; head with base of vertex and a streak along inner side of each eye yellowish; disk

of pronotum and scutellum often with a yellowish median line; mesoscutum with basal angles dull yellow; clavus with inner margin sometimes narrowly black, basal half of claval suture pale; basal third of corium and line extended back along claval suture, dull yellow; cuneus brown, basal fourth or more pale; membrane pale brownish-hyaline, slightly iridescent, inner cell and margin of outer one darker brown, veins whitish; coxæ pale yellowish, femora piceous-brown, extreme base and tips pale; tibiæ dull yellow, the dark spots at base of spines distinct; tarsi yellowish, third joint and claws brown; ventrals black or dark brown, shining. Antennæ fuscous-brown, tip of joint 1 narrowly pale; joint 1 clavate, two-thirds as long as width of vertex, 2 slightly thickened toward apex, three times as long as 1; 3 and 4 filiform, 3 two-thirds the length of 2, 4 one-half as long as 3. Length, 3.2—3.7 mm.

Honeoye Falls, N. Y., June 27 (*Minn. Univ. Coll.*). Deal, England (*British Mus. Coll.*). Known in this country from Newfoundland, Vermont, New York, Michigan and Colorado. Breeds on willow.

#### VI. CHLAMYDATUS Curtis, 1833, 197.

Small oblong or oblong-oval species having the head slightly broader than and contiguous with apex of pronotum, its front subvertical; eyes large, widely separated; vertex convex, obtusely margined at base; beak reaching or surpassing middle coxæ; antennæ about two-thirds the length of body, joint 1 half as long as width of vertex, 2 three times longer than 1; 3 and 4 more slender, 3 two-thirds as long as 2, 4 three-fifths the length of 3; pronotum trapezoidal, twice as wide at base as long, sides and hind margin straight, disk convex, feebly declivent forward; mesoscutum narrowly exposed; scutellum triangular, equilateral; elytra usually entire, surpassing abdomen; hind femora stout, saltatorial; joint 2 of hind tarsi shorter than 3, 1 two-thirds as long as 2.

Three species occur in our territory. They were formerly mostly recorded under the generic name *Agalliastes* Fieb.

#### KEY TO EASTERN SPECIES OF CHLAMYDATUS.

- a. Front and middle femora wholly pale; hind ones black; length, 2.5 mm. 1072. ASSOCIATUS.
- aa. All the femora in part or wholly fuscous or black; tibiæ pale to dull yellow.
  - b. Femora black, their tips only pale; spines of tibiæ without a dark spot at base; length, 2.3 mm. 1073. SUAVIS.
  - bb. Apical third or more of femora pale; spines of tibiæ each with a distinct dark spot at base; length, 2.8 mm. 1074. PULICARIUS.

1072 (1260). *CHLAMYDATUS ASSOCIATUS* (Uhler), 1872, 419.

Oblong, subparallel, male; suboval, female. Black or fuscous-black, shining, sparsely clothed with fine black, suberect hairs; membrane dusky translucent, feebly iridescent, joints 1 and 2 of antennæ black, 3 and 4 and sometimes apex of 2 dusky yellow; front and hind coxæ, hind femora except tips and spines of tibiæ black; remainder of legs pale yellow; tips of tarsi and beak piceous. Beak reaching tips of hind coxæ. Front of pronotum less narrowed and calli more distinct than in our other two species. Length, 2.5 mm. (Fig. 190).

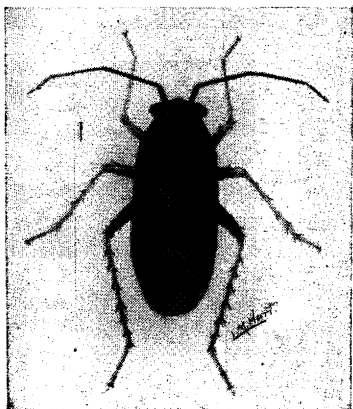


Fig. 190, X 12. (After Forbes).

Marion and Putnam counties, Ind., May 22—Oct. 5; frequent locally on both great and common ragweeds, flowers of *Cratægus*, etc. (W. S. B.). Swannanoa, N. Car., Oct. 5 (*Brimley*).. Ranges from Que-

bec and New England west to the Pacific and southwest to North Carolina, Texas and New Mexico. Forbes (1900, 88) reports it as somewhat injurious to sugar beets. The elytra in some specimens taken in early summer are more fuscous-brown and more thickly pubescent with grayish hairs than those of later dates.

1073 (1259). *CHLAMYDATUS SUAVIS* (Reuter), 1876, 92.

Smaller and more oval than *associatus*. Color much the same; all the coxæ and femora black; tibiæ dull yellow to fuscous, their spines black, and, as in *associatus*, without spots at base; antennæ sometimes wholly fuscous-black, more often with apical half of joint 2 and all of 3 and 4 dusky yellow. Pronotum with front narrower and calli less evident than in *associatus*. Length, 2—2.3 mm.

Marion, Knox and Posey counties, Ind., Aug. 19—Sept. 22; swept from roadside herbage. Dunedin, Fla., Jan. 20—April 4; swept from ferns along the margins of hammocks. Raleigh and Hendersonville, N. Car., June—July (*Brimley*). Ranges from Ontario and New York west to Kansas and southwest to Florida, Texas and California. Host plant, ragweed.

1074 (1258). *CHLAMYDATUS PULICARIUS* (Fallen), 1807, 95.

Oblong-oval. Fuscous-black, sparsely clothed with short grayish or yellowish hairs; membrane and veins uniformly blackish, iridescent;

tibiæ and tarsi pale, joint 3 of tarsi and claws black; ventrals black. Antennæ with joint 2 except tip and base of 1, black, remainder pale brownish-yellow. Female more robust than male, with legs and antennæ more broadly pale; sometimes brachypterous, then broadly oval with elytra reaching only to tip of abdomen, the membrane very short. Length, 2.8—3 mm.

Rock Creek, N. Y., July 4 (*Minn. Univ. Coll.*). Donau-Aubei, Wien (*British Mus. Coll.*). A European species, known in this country only from New York, where it breeds on plantain. Occurs in Europe on dwarf willow.

#### VII. CAMPYLOMMA Reuter, 1878, 52.

Differs from *Chlamydatus* chiefly by the characters given in the generic key. One species is known.

1075 (1267). CAMPYLOMMA VERBASCI (Meyer), 1843, 70.

Oblong-oval. Pale greenish- or straw-yellow clothed with suberect dusky pubescence; tylus often black; head, mesoscutum and base of scutellum tinged with reddish-yellow, disk of cuneus pale brownish; membrane uniformly dusky hyaline; under surface blackish-brown; legs yellowish, femora and tibiæ spotted with black. Antennæ dull yellow, apical half or less of joint 1 and narrow base of 2 black, the relative length of the joints nearly as in *Chlamydatus*. Length, 2.5—2.9 mm.

Le Sueur Co., Minn., Sept. 13 (*Minn. Univ. Coll.*). Payerbach, Austria (*British Mus. Coll.*). A European species recorded in this country from Quebec, Ontario, New England, New York and British Columbia. Host plant, mullein, *Verbascum thapsus* L. Occurs also on apple, where it feeds on the honey dew of aphids.

#### VIII. LEUCOPÆCILA Reuter, 1907b, 24.

Small oblong or wedge-shaped shining species having the head broader across eyes than apex of pronotum, its front vertical, vertex flat, not margined; eyes large, overlapping and contiguous with front angles of pronotum; beak reaching or slightly surpassing hind coxæ; pronotum short and wide, base but little wider than vertex, hind angles prominent, slightly nodulose, base broadly and shallowly concave, calli indistinct; mesoscutum broadly exposed; elytra entire, distinctly surpassing abdomen, male, slightly so, female; membrane long and narrow, cuneus horizontal; hind femora short, stout; hind tibiæ long, slender, without black spots; joints 2 and 3 of hind tarsi subequal, 1 shorter. One species is known.

1076 (1249). *LEUCOPÆCILA ALBOFASCIATA* Reuter, 1907b, 26.

*Male*—Oblong, narrowed behind. Head, pronotum and scutellum black or very dark brown, shining; elytra pale yellow, sparsely pubescent with inclined yellowish hairs; costal margin and outer apical third of corium, base and apex of clavus, and cuneus except narrowly at base, dark brown; basal half and veins of membrane yellowish translucent, apical half fuscous; femora dark brown, their tips yellow; tibiæ dull yellow, hind ones darker at base; tarsi piceous-brown. Joint 1 of antennæ stout, black, clavate or obconical, surpassing tylus by half its length; 2 dark brown, thickly hirsute, subfusiform, compressed, grooved beneath, about twice as long as 1; 3 and 4 brown, much more slender, 3 slightly longer than 2, 4 about one-fifth the length of 3. Clavus and corium finely transversely rugose. Length, 2—2.2 mm. *Female*—Shorter and more parallel. Antennæ more slender, joint 1 but slightly surpassing tylus, 2 slender at base, much thickened toward apex. Elytra not or but slightly surpassing abdomen; cuneus as broad at base as long. Length, 1.5—1.8 mm.

Caxambus, Fla., March 8 (*W. S. B.*). Raleigh, N. Car., Sept. 4 (*Brimley*). A neotropical species described from Jamaica and hitherto recorded in this country only from Bellaire, Fla.; Pennsylvania and California. Wirtner (1904, 202) mentioned it, under the name of *Rhinacloa forticornis* Reut., as "common in hay fields at Greensburg, Pa., July to September; abundant in fields where the grain has been cut." Specimens were sent by him to Reuter, who corrected his identification. Van Duzee (1914, 31) states that near San Diego, Cal., it is "common in alfalfa fields throughout the year."

## SUBTRIBE II.—PHYLINI.

### KEY TO GENERA OF SUBTRIBE II, PHYLINI.

- a. Joint 2 of antennæ slender in both sexes, never exceeding the thickness of joint 1.
- b. Color greenish-yellow, elytra with more or less conspicuous fuscous markings; pseudarolia attached only at base of claw, tips free and extending to middle of claw (pl. X, fig. 2).

#### IX. REUTEROSCOPIUS, p. 950.

- bb. Color not as in b; pseudarolia usually minute, connate and not extending free for a space greater than base of attachment.
- c. Tylus well separated from the front by a distinct suture.
- d. Second antennal shorter than width of head across eyes; tibiæ usually black, strongly spinose; form short, ovate, conspicuously clothed with both appressed scale-like hairs and suberect pubescent ones.

#### X. LEPIDOPSALLUS, p. 951.

- dd. Second antennal as long as or longer than width of head; tibiæ usually pale, with dark spot at base of spines; form more elongate; scale-like hairs of elytra less conspicuous.

#### XI. PSALLUS, p. 954.

- cc. Tylus merged with the front, the suture separating them wanting or very obscure; legs pale, femora not spotted; second antennal annulate with black. XII. CYLLOCEPS, p. 960.
- aa. Joint 2 of antennæ more or less strongly thickened or flattened, at least its apical half distinctly thicker than joint 1.<sup>94</sup>
- e. Head distinctly produced in front of eyes; color black or fuscous-brown clothed with conspicuous white scale-like pubescence.
- f. Joint 2 of antennæ strongly swollen in male, slender in female; elytra, including cuneus, wholly black. XIII. CRIOCORIS, p. 960.
- ff. Joints 1 and 2 of antennæ strongly swollen in both sexes; elytra fuscous-brown, cuneus with tip and a lunule at base yellowish. XIV. EXCENTRICUS, p. 961.
- ee. Head not or scarcely produced in front of eyes.
- g. Beak not surpassing middle coxæ; joint 2 of antennæ clavate in female, terete and much thicker in male, but slightly longer than 3 and 4 united. XV. RHINACLOA, p. 962.
- gg. Beak reaching or surpassing hind coxæ; joint 2 of antennæ much swollen and thickened toward apex at least in female, subequal in length to 3 and 4 united. XVI. ATRACTOTOMUS, p. 963.

### IX. REUTEROSCOPIUS Kirkaldy, 1905, 268.

Small elongate-oblong, smooth pubescent species having the head longer than wide, declivent, prolonged in front of eyes, vertex convex, not margined at base; eyes rather small, contiguous to pronotum; antennæ slender, shorter than body, joint 1 not reaching tip of tylus; beak reaching hind coxæ; pronotum trapezoidal, slightly longer than width of apex, base twice as wide as apex, sides straight, base truncate, disk convex, feebly declivent forward; mesoscutum narrowly exposed; elytra entire, surpassing abdomen; hind tibiæ very long, their spines black but without spots at base. Two species occur in our territory.

#### KEY TO EASTERN SPECIES OF REUTEROSCOPIUS.

- a. Femora dull yellow without fuscous spots; apex of corium with fuscous cross-bar. 1077. ORNATUS.
- aa. Femora thickly flecked with small pale fuscous spots; corium with only inner apical angle fuscous. 1078. SULPHUREUS.

1077 (1213). REUTEROSCOPIUS ORNATUS (Reuter), 1876, 90.

Dull greenish-yellow, basal half of pronotum darker green; scutellum, clavus and a bar across apical fourth of corium fuscous-brown to black; membrane fuscous, veins sometimes paler; legs dull yellow, tarsi darker; under surface greenish-yellow, genital segments often darker. Joints 1 and 2 of antennæ dull yellow, 1 three-fourths as long as width of

<sup>94</sup>Not thicker than joint 1 in female of *Criocoris saliens* (Reut.) nor in male of *Atractotomus magnicornis* (Fall.).

vertex, 2 four times longer than 1; 3 and 4 dusky yellow, united slightly longer than 2. Length, 3—3.4 mm.

Frequent throughout southern Indiana, less so in the northern counties, June 10—Sept. 13. Dunedin, Fla., Oct. 28—April 13 (*W. S. B.*). Agricultural College, Miss. (*Weed*). Recorded from Sanford and Crescent City, Fla. Occurs on weeds and other low herbage along roadsides and on ferns in dense woods and hammocks. Ranges from Ontario and New England west to Colorado and Kansas, and southwest to Florida, Texas and the West Indies. The older records were under the generic name *Episcopus* Reut., which was preoccupied. A color variety with outer half of clavus pale and cross-bar of corium reduced to a spot on each, is known as variety *avidus* (Dist.). Host plant, ragweed.

1078 (1217). *REUTEROSCUS SULPHUREUS* (Reuter), 1907b, 23.

Dull yellow, often with a greenish tinge; clothed with yellowish to fuscous hairs, each arising from a minute fuscous spot, also with minute tufts of silvery scale-like hairs arranged in rows on median line and outer margins of head and pronotum, and disks of clavus and corium; inner apical angles of corium, tip of clavus and spot on inner margin of cuneus, fuscous; membrane hyaline, with minute fuscous spots near apex and on margins just behind tip of cuneus. Length, 3.3 mm.

Rock Island, Tex., June 9 (*Minn. Univ. Coll.*). A neotropical species, described from Jamaica and recorded from Estero, Tampa and Sevenoaks, Fla., by Van Duzee and from Massachusetts and Missouri by Knight. Occurs on ragweed.

#### X. *LEPIDOPSALLUS* Knight, 1923, 470.

"Form short, ovate; body clothed with closely appressed scale-like pubescence, interspersed with more erect simple pubescent hairs; head broad; antennal segment 2 in length not equal to width of head; tibiæ strongly spinose; claws and pseudarolia as shown in pl. X, fig. 3." (*Knight*).

This genus was founded by Knight with *Sthenarus rubidus* Uhl. (1895, 41), the No. 1256 of the Van Duzee Catalogue, as the genotype. Seven species are known from the eastern states.

##### KEY TO EASTERN SPECIES OF *LEPIDOPSALLUS*.

- a. Beak not reaching beyond hind coxæ.
- b. Second antennal scarcely longer than length of pronotum.
- c. Larger, length, 3.2—3.5 mm.; joints 3 and 4 of antennæ united slightly longer than joint 2; color black and reddish (wholly

- black in var. *atricolor*), embolium and cuneus usually strongly reddish. 1079. RUBIDUS.
- cc. Smaller, length, 2.7 mm.; joints 3 and 4 of antennæ united equal to or slightly shorter than 2; color wholly black. 1080. MINUSCULUS.
- bb. Second antennal as long as pronotum plus the dorsal width of an eye; length not over 3 mm.
- d. Color above black; length, 2.7 mm. 1081. OLSENI.
- dd. Color above reddish, or yellowish tinged with fuscous.
- e. Joints 1 and 2 of antennæ wholly yellowish; elytra in great part reddish.
- f. Femora dull red, paler at tips; whitish scales of upper surface elongate. 1082. MINIATUS.
- ff. Femora wholly pale yellow; whitish scales of upper surface oval, conspicuous. 1083. AUSTRALIS.
- ee. Joint 2 of antennæ blackish, pale at middle, female, yellowish, apical third fuscous, male; elytra dull yellowish-translucent, often tinged with fuscous. 1084. PUSILLUS.
- aa. Beak reaching or surpassing third ventral; joints 1 and 2 of antennæ pale yellowish; sides of ventrals without scale-like hairs. 1085. CLARICORNIS.

1079 (1256). *LEPIDOPSALLUS RUBIDUS* (Uhler), 1895, 41.

Elongate-oval. Head, front half or more of pronotum and scutellum, fuscous-black; elytra and basal half of pronotum varying from pale fuscous-brown to blackish, the base of corium usually paler; membrane uniformly fuscous, veins yellowish; legs black or brownish, often in part reddish, tibiæ with prominent black spines; ventrals reddish-brown to black, shining, thinly clothed with silvery scales. Joint 1 of antennæ dark brown, less than half as long as width of vertex; 2 reddish-yellow, dusky at base and apex, or wholly blackish, four times as long as 1, in female more slender with apical half more thickened than in male; 3 and 4 dusky-yellow, 3 three-fifths as long as 2, 4 one-fifth shorter than 3. Pronotum nearly twice as wide at base as long, disk minutely transversely wrinkled. Elytra finely scabrous. Length, 3—3.5 mm.

Marion Co., Ind., July 10—15; beaten from willow (*W. S. B.*). Savanna, Ill., July 21—Aug. 11; taken from willows on sand-bars (*Ill. Nat. Hist. Surv. Coll.*). Recorded from Bellaire, Fla. Ranges from New England and New York west to Kansas and Colorado, and southwest to Florida, Texas and Cuba. Breeds on willow. The melanistic form, var. *atricolor* Knight, with scales silvery-gray, often occurs with the typical form on the same clump of willows.

1080 (—). *LEPIDOPSALLUS MINUSCULUS* Knight, 1923, 472.

Broadly oval. Black, moderately shining, the silvery scales very prominent, truncate at apex; membrane and veins uniformly fuscous;



legs black, tarsi fuscous, some of the tibial spines more than twice as long as the thickness of tibia; ventrals black, clothed with silvery scales. Joints 1 and 2 of antennæ black, 2 cylindrical, equal in thickness to 1, one-fifth longer than width of pronotum at base; 3 and 4 pale fuscous, 3 three-fifths as long as 2, 4 two-thirds the length of 3. Length, 2.4—2.6 mm.

Recorded only from White Plains, N. Y., where it was taken July 10 by Bueno on apple.

1081 (—). *LEPIDOPSALLUS OLSENI* Knight, 1923, 473.

Oblong-oval, flattened above. Black with pubescence as in the other species, the silvery scales scarcely truncate at tip; membrane pale fuscous, veins reddish-brown; legs black, tibiæ tinged with reddish. Joint 1 of antennæ one-half as long as width of vertex, 2 four times as long as 1, feebly thickened from base to apex, more slender than 1; 3 one-half as long as 2. Length, 2.7 mm.

Described from a single female taken July 28 by Olsen at Pigeon Cove, Mass.

1082 (—). *LEPIDOPSALLUS MINIATUS* Knight, 1926a, 226.

Oblong-oval. Above fuscous-brown and reddish, sparsely clothed with conspicuous appressed scale-like hairs and finer suberect brownish ones; head fuscous or reddish-fuscous; pronotum fuscous-brown at middle, the sides reddish; mesoscutum and scutellum reddish to fuscous; elytra in great part fuscous-brown, cuneus and usually the apical third or more of embolium, a clearer red; membrane pale brownish translucent, veins reddish or yellowish; femora reddish, their apical fourth pale yellow; tibiæ dull yellow with conspicuous black spines, coxæ and tarsi fuscous; under surface dull yellow, ventrals tinged with reddish. Joints 1 and 2 of antennæ wholly pale yellow, 3 and 4 dusky yellow; 1 very short, scarcely one-half as long as width of vertex, 2 feebly but visibly thickened from base to apex, four times longer than 1, 3 and 4 united one-fifth shorter than 2, 4 two-thirds as long as 3. Pronotum twice as wide at base as long, apex two-thirds as wide as base, disk minutely transversely wrinkled. Costal margins of elytra broadly but distinctly curved. Length, 2.8—3 mm.

Dunedin, Ft. Myers and Hillsboro Canal, Fla., Feb. 19—April 8; beaten from foliage of live oak and wax-myrtle, sifted from the mucky debris of an extinct wet weather pond and swept from low herbage along the bay front. Known also from South Carolina.

1083 (—). *LEPIDOPSALLUS AUSTRALIS* sp. nov.

Elongate-oval. Dull red, above thickly clothed with conspicuous, oval appressed whitish scales, intermixed with short inclined blackish hairs; scutellum, embolium and cuneus a somewhat brighter red; mem-

brane pale fuscous hyaline; legs wholly a pale straw-yellow, tibial spines, third tarsal and claws blackish. Joints 1 and 2 of antennæ pale yellow, 1 two-fifths as long as width of vertex; 2 feebly thickened toward apex, four and a half times as long as 1; 3 and 4 fuscous, 3 three-fifths the length of 2, 4 one-half as long as 3. Tylus broad, feebly convex, the suture at base scarcely evident. Scutellum with a distinct median concavity. Length, 3 mm.

Dunedin, Fla., Feb. 8; one female taken at desk light. Allied to *miniatus* but very distinct by the characters given above and in key.

1084 (—). *LEPIDOPSALLUS PUSILLUS* Knight, 1926a, 227.

Oblong, sides subparallel, male, more broadly oval, female. Dull greenish-yellow, sparsely clothed with suberect dusky hairs and scattered appressed deciduous silvery scale-like ones; scutellum, disk of basal half of pronotum, and often the greater part of corium, tinged with greenish-fuscous; line along claval suture often fuscous-brown; membrane dusky-hyaline, the veins slightly darker; legs dull yellow without black spots, spines of tibiæ blackish, the dark spots at base very small; ventrals greenish-yellow, darker on sides. Joint 1 of antennæ dull yellow, only about one-third as long as width of vertex; 2 as in key, visibly thickened apically, female, cylindrical, with apical third only fuscous, male, four times as long as 1; 3 and 4 dusky-yellow, more slender, 3 one-third longer than 4. Beak reaching between middle coxæ. Pronotum and elytra finely scabrous. Length, 1.8—2.4 mm.

Dunedin, Gainesville, Canal Point, Miami and R. P. Park, Fla., Oct. 25—April 15. Common in autumn and spring on tall dead grasses and other herbage along the margins of ponds and sloughs; in winter hibernating in bunches of dead vines and Spanish moss.

1085 (—). *LEPIDOPSALLUS CLARICORNIS* Knight, 1923, 471.

Oblong-oval. Brownish-black, the upper surface only with scale-like pubescence; membrane and veins pale brownish; legs brownish-black, tips of femora and coxæ slightly paler; tibiæ pale yellowish, their spines without black spot at base, tarsi pale, tips fuscous; under surface dark brownish, clothed only with fine brownish hairs. Joint 1 of antennæ pale yellowish, three-fifths as long as width of vertex, 2 uniformly yellowish, dusky-pubescent, four times as long as 1. Beak reaching base of ovipositor. Length, 3.1 mm.

Described from a single female taken May 29 by Davis at Lakehurst, N. Jer.

#### XI. *PSALLUS* Fieber, 1858, 321.

Oblong or elongate, subparallel, shining pubescent species having the head wider across eyes than apex of pronotum, its

front subvertical, tylus narrow, compressed, vertex feebly convex, not carinate at base; eyes large, coarsely faceted, contiguous to pronotum, larger in male than female; antennæ shorter than body, joint 2 as long as or longer than width of base of pronotum; beak reaching or surpassing middle coxæ; pronotum trapezoidal, sides straight or nearly so, disk feebly convex, declivent forward, hind margin truncate; mesoscutum narrowly exposed; elytra entire, surpassing abdomen; cuneus feebly deflexed, its fracture weak. Twelve species have been recorded from the eastern states. The genus, as treated, includes the two eastern species of *Apocremnus* Fieb., listed by Van Duzee.

## KEY TO EASTERN SPECIES OF PSALLUS.

- a. Femora pale, or pale with black spots but without black line on upper margin.
- bb. Cuneus either red or yellow flecked with reddish dots; femora pale tinged with red and spotted with brown or fuscous; cuneus pale at base; larger, length, 3.5—4 mm.
- c. Upper surface greenish- or straw-yellow, thickly flecked with reddish-brown dots. 1086. GUTTULOSUS.
- cc. Upper surface carmine red, more or less heavily tinged with fuscous. 1087. ALNICOLA.
- bb. Cuneus not red or flecked with reddish dots.
- d. Upper surface greenish- or yellowish-white, thickly flecked with minute brownish or fuscous dots; femora with rows of black dots. 1088. SERIATUS.
- dd. Upper surface not greenish-yellow; femora without black dots.
- e. Upper surface uniformly black; femora pale. 1089. STROBICOLA.
- ee. Upper surface mainly reddish-brown to piceous-black; femora usually in great part reddish-brown. 1090. VARIABILIS.
- aa. Femora dark brown or blackish, often pale to yellowish with spots, but then always with a dark line on upper margin.
- f. Joint 2 of antennæ longer than three-fourths the width of pronotum at base.
- g. Scutellum with side margins more or less pale (if wholly black, then cuneus pale); cuneus pale yellowish tinged with fuscous, slightly infuscated at apex. 1091. ALNICENATUS.
- gg. Scutellum wholly black; cuneus always with blackish, frequently pale at base, but legs and elytra never tinged with fulvous.
- h. Beak reaching first ventral; elytra uniformly black; femora black, their tips pale; length, 3.6 mm. 1092. MORRISONI.
- hh. Beak scarcely reaching hind coxæ; base of cuneus and usually tip of embolium and spot on base of corium pale; length, 4—4.6 mm. 1093. PARSHLEYI.
- ff. Joint 2 of antennæ equal to or shorter than three-fourths the width of pronotum at base.

- i. Second antennal just equal to width of head, female, slightly greater, male; hind femora fusco-brownish to black, front and middle ones more yellowish; each with two black spots on upper margin of apical half. 1094. WALDENI.
- ii. Second antennal distinctly longer than width of head.
- j. Antennæ pale, pubescence dusky; legs dark brown or black, tibiæ and tips of femora pale, tibial spines with small fuscous spots at base. 1095. PICEICOLA.
- jj. Antennæ black, or at least joint 1 black.
- k. Legs testaceous to brownish, femora sometimes nearly black, but their tips never pale, hind pair much swollen; coxæ and tibiæ more or less tinged with reddish. 1096. ANCORIFER.
- kk. Legs chiefly black; femora black, tips of front and middle ones pale; coxæ deep black; tibiæ pale, their spines with black spot at base. 1097. DRAKEI.

1086 (1215). *PSALLUS GUTTULOSUS* Reuter, 1876, 89.

Dull greenish-yellow, thickly sprinkled with small reddish-brown or fuscous spots; pronotum with a vague pale median stripe; cuneus dull yellow, usually heavily tinged with red, its extreme base pale hyaline; membrane pale dusky brown, paler near apex of cuneus, veins yellowish; legs greenish-yellow, femora with numerous scattered reddish-brown dots, more conspicuous on hind ones; tibial spines black, each with a small fuscous spot at base; under surface straw yellow; ventrals tinged with reddish. Joints 1 and 2 of antennæ pale yellow; 1 three-fourths as long as width of vertex, 2 four times as long as 1; 3 dusky yellow, 4 fuscous, the two united two-thirds the length of 2. Length, 3.5—3.7 mm.

Ormond, Sanford, Lake Wales, Ft. Myers and Dunedin, Fla., March 16—April 6. Beaten from foliage of shrubs along the margins of hammocks and swept from herbage along the bay front. Recorded from Bellaire and Jacksonville, Fla.; Georgia, Texas, Colorado and Lower California.

1087 (—). *PSALLUS ALNICOLA* Douglas & Scott, 1871, 62.

Color as in key, clothed with scattered patches of long appressed yellowish hairs; disk of pronotum with a few scattered minute fuscous spots; tip of scutellum brownish, of clavus narrowly blackish; cuneus carmine red, its basal margin yellowish; membrane fuscous-black, marbled with whitish, veins reddish; legs red, apical halves of femora dotted with black, tibiæ with distinct black spots at base of spines, tarsi brownish-yellow; ventrals piceous, genital segment red. Joint 1 of antennæ reddish-brown, three-fourths as long as width of vertex; 2 brownish-yellow, paler toward base, three and one-half times as long as 1; 3 and 4 dusky, 3 two-fifths as long as 2, 4 one-half the length of 3. Length, 3—3.6 mm.

Cheshunt and Leominster, England, Aug. 13—29 (*British Mus. Coll.*). A European species recorded in this country from

New Hampshire, New York and Minnesota. Host plant, *Alnus rugosa* (Du Roi).

1088 (1218). *PSALLUS SERIATUS* (Reuter), 1876, 91.

Pale greenish-yellow, thickly flecked with minute reddish-brown or fuscous dots; head and margins of pronotum sometimes a deeper yellow; extreme tip of cuneus often dark brown; membrane pale hyaline, the basal half vaguely fuscous, veins yellow; legs greenish yellow, femora dotted with fuscous; tibial spines and spots at their base black, the spots conspicuous; tarsi fuscous; under surface straw-yellow, finely pubescent. Joints 1 and 2 of antennæ yellow, dotted with black; 1 two-thirds as long as width of vertex; 2 four times longer than 1, nearly as stout, male, more slender, female; 3 and 4 fuscous, much more slender, united slightly shorter than 2. Pronotum more than twice as wide at base as long; calli rather prominent, well separated; disk, as well as that of elytra, with suberect black hairs intermixed with very fine prostrate ones. Length, 2.5—2.8 mm.

Dunedin, Fla., March 28—April 16; swept from grasses along the margins of hammocks and ponds (*W. S. B.*). Claremont, Cal. (*Gerhard*). Recorded from Sevenoaks, Tampa and Atlantic Beach, Fla. Ranges from Maryland southwest to Arizona and from Colorado to the Pacific. The Claremont specimens are smaller, paler, with fewer dots on antennæ and smaller ones on hind femora than those from Florida.

1089 (—). *PSALLUS STROBICOLA* Knight, 1923, 467.

Fuscous-black, clothed with closely appressed silvery-gray hairs mixed with suberect dusky ones; membrane and veins uniformly fuscous; legs yellow, coxæ blackish, paler at tips; tibial spines black, without black spots at base. Antennæ yellow, joint 1 one-half as long as width of vertex, 2 five and three-fifth times as long as 1, 3 two-thirds the length of 2, 4 three-fifths as long as 3. Beak reaching first ventral. Length, 3.1—3.5 mm.

St. Anthony Park, Minn., July 14 (*Minn. Univ. Coll.*). Recorded elsewhere only from Quebec and New York. Breeds on white pine, *Pinus strobus* L.

1090 (1244). *PSALLUS VARIABILIS* (Fallen), 1807, 88.

Head dull yellow to black; antennæ straw-yellow, base of joint 1 black; pronotum and scutellum usually black or brownish-black; elytra variable, reddish-yellow to piceous, corium in dark specimens with outer half dark brown, tinged with reddish; cuneus reddish-brown or black, its base narrowly pale; membrane fuscous, iridescent, often with a vague curved pale streak at middle, a white mark between cells and tip of cuneus, basal half of outer cell white, veins brown; legs reddish-brown to blackish, in darker forms the femora more or less yellowish apically, tibiae yellow with short erect black spines arising from black spots;

tarsi yellowish, joint 1 and sometimes 3 brown. Antennæ straw-yellow, joint 1 dark at base, two-thirds as long as width of vertex, 2 three and one-half times the length of 1, 3 three-fifths as long as 2, 4 one-third the length of 3. Upper surface clothed with short appressed yellow hairs. Length, 3 mm.

Epping Forest, England, June 10—15 (*British Mus. Coll.*). A European species recorded in this country from Ontario and New York.

1091 (—). *PSALLUS ALNICENATUS* Knight, 1923, 466.

Elongate, sides subparallel, male, suboval, female. Head fuscous-black, vertex yellowish-brown; pronotum blackish, basal half paler; elytra yellowish-brown to dusky, subtranslucent, clavus and apical half of corium tinged with fuscous; membrane pale fuscous, a hyaline paler spot near tip of cuneus, veins yellowish; legs dull yellow, femora with two rows of black spots on outer face and a vague dark line above; knees, tibial spines and spot at base of each, black; ventrals black, yellowish-pubescent. Joint 1 of antennæ black, tip pale, almost as long as width of vertex; 2 fuscous-brown, tip and often the middle, paler, about four times as long as 1; 3 and 4 pale fuscous, 3 three-fourths as long as 2, 4 three-fifths the length of 3. Beak reaching first ventral. Length, 3.7—4.5 mm.

Ithaca, N. Y., July 26 (*Minn. Univ. Coll.*). Ranges from Nova Scotia and New England west to Minnesota. Breeds on hoary alder, *Alnus incana* (L.).

1092 (—). *PSALLUS MORRISONI* Knight, 1923, 464.

Elongate, subparallel, male, suboval, female. Black or fuscous-black, thickly clothed with appressed silvery hairs; membrane uniformly fuscous, veins slightly paler; femora as in key; ventrals black, with scale-like pubescence on sides. Joint 1 of antennæ black, four-fifths as long as width of vertex; 2 dark brown, paler at middle, three and two-third times longer than 1, in male as long as width of pronotum at base; 3 brownish-yellow, three-fourths the length of 2; 4 pale fuscous, two-thirds as long as 3. Length, 3.2—3.6 mm.

Cramer and Lake Co., Minn., Aug. 10—15 (*Minn. Univ. Coll.*). Recorded only from Massachusetts, where it was collected from sweet fern and goldenrod.

1093 (—). *PSALLUS PARSHLEYI* Knight, 1923, 465.

Head black, vertex somewhat paler; pronotum and scutellum black, both they and elytra clothed with pale appressed scale-like hairs and suberect yellowish ones; elytra black, with pale markings as in key; membrane fuscous, a pale spot near tip of cuneus, veins dusky; legs straw-yellow, apical halves of femora with two rows of spots and a line above and below, tibiæ with knees, spines and spot at base of each spine, black, tarsi fuscous; under surface black, shining, pale pubescent. Joints 1 and

2 of antennæ brownish-black, 1 almost as long as width of vertex, 2 four times as long as 1; 3 and 4 dusky yellow, 3 two-thirds as long as 2, 4 slightly more than half the length of 3. Length, 4—4.5 mm.

Hennepin Co., Minn., Aug. 2 (*Minn. Univ. Coll.*). Recorded from Massachusetts, New York and Minnesota. Occurs on the low birch, *Betula pumila* L. A form with femora black, tips pale and corium wholly brownish-black is var. *fuscatus* Knight.

1094 (—). *PSALLUS WALDENI* Knight, 1923, 468.

Oblong, suboval. Fuscous-brown, pronotum and elytra clothed with erect pubescent hairs, intermixed with appressed paler ones; membrane pale fuscous, veins paler; legs yellowish to fuscous-brown, femora with dark spots as in key; tibiæ with two rows of prominent black spines, each with a large black spot at base; tarsi fuscous; ventrals black. Joints 1 and 2 of antennæ black, finely pale pubescent, 1 scarcely one-half as long as width of vertex, 2 four times as long as 1; 3 and 4 fuscous-brown, 3 two-thirds as long as 2, 4 two-thirds the length of 3. Beak reaching middle of hind coxæ. Length, 2.5 mm.

New Haven, Conn., May 30 (*Walden*). Known only from there.

1095 (—). *PSALLUS PICEICOLA* Knight, 1923, 469.

Oblong, sides subparallel. Head and pronotum brownish-black, elytra fuscous-brown, pubescence yellowish; base of cuneus and tip of embolium pale translucent, remainder of cuneus reddish-brown; membrane pale fuscous, paler at middle and near tip of cuneus, veins tinged with reddish; legs as in key; ventrals brownish-black tinged with reddish, pale pubescent. Joints 1 and 2 of antennæ dull yellow, 1 three-fifths as long as width of vertex, 2 three and one-third times as long as 1; 3 and 4 dusky, 3 three-fifths as long as 2, 4 slightly shorter than 3. Beak reaching first ventral. Head strongly vertical, subcompressed. Length, 2.8—3 mm.

Canby, Minn., June 24 (*Minn. Univ. Coll.*). Recorded only from New York and Minnesota. Breeds on spruce.

1096 (1243). *PSALLUS ANCORIFER* Fieber, 1858, 336.

Elongate-oval. Brownish-black to black, moderately shining, thickly clothed with yellowish appressed pubescence intermixed with suberect blackish hairs; elytra often brownish or brownish-yellow, cuneus sometimes reddish; color of legs as in key. Joint 1 of antennæ black, half as long as width of vertex; 2 slender, black, brownish apically, one-fourth longer than width of head across eyes; 3 and 4 dusky yellow, 3 three-fifths the length of 2, 4 two-fifths as long as 3. Beak reaching hind coxæ. Length, 3.8—4.2 mm.

Washington, D. C., June 19 (*Minn. Univ. Coll.*). Southern France (*British Mus. Coll.*). A European species ranging in this

country from New England west to New York and southwest to District of Columbia. Recorded also from California. Occurs on apple and alder.

1097 (—). *PSALLUS DRAKEI* Knight, 1923, 464.

Elongate, sides feebly curved. Black, strongly shining; clothed with the usual two types of pubescence; membrane and veins fuscous, a small hyaline spot near tip of cuneus; color of legs as in key; ventrals black, strongly shining, silvery-pubescent on sides. Antennæ black, joint 1 five-eighths as long as width of vertex, 2 four times as long as 1, 3 three-fifths the length of 2, 4 two-thirds as long as 3. Beak reaching between hind coxæ. Length, 4—4.4 mm.

Recorded from the Cranberry Lake region of New York and Nordegg, Alberta.

## XII. *CYLLOCEPS* Uhler, 1893, 711.

Elongate-elliptical or subparallel. Head short, vertical, tylus projecting a little in front of eyes, vertex convex, not margined at base; beak reaching behind middle coxæ; pronotum trapezoidal, almost flat, sides with a calloused margin, calli large, almost contiguous, hind margin feebly sinuate; scutellum equilateral, convex; elytra entire, much surpassing abdomen, pale translucent; membrane almost as long as corium, joints 2 and 3 of tarsi subequal. One species occurs in Florida.

1098 (1268). *CYLLOCEPS PELLICIA* Uhler, 1893, 712.

Pale brownish-yellow, shining, minutely pubescent. Head yellow, median line and tylus black; pronotum dull yellow, tinged with brownish toward base; scutellum dark brown; elytra pale translucent, inner margins of clavus and corium fuscous, vein at base of membrane piceous; membrane pale fuscous, veins brownish; legs pale yellow, femora dusky at base, tips piceous; ventrals yellow, dusky at middle, orange red on sides; genital segments piceous. Joint 1 of antennæ black, its base and apex yellowish; remainder dusky yellowish, joint 2 four times as long as 1, 3 three-fourths as long as 2. Pronotum finely scabrous, transversely wrinkled, sparsely and finely punctate. Scutellum with a vague median carina. Length, 3 mm.

A neotropical species described from Cuba and St. Vincent and recorded from Biscayne Bay, Fla.

## XIII. *CRIOCORIS* Fieber, 1858, 319.

Oblong-oval, subopaque black species having the head pointed, declivent, distinctly prolonged in front of base of antennæ, inserted in thorax to eyes, vertex convex, not margined; beak reaching middle coxæ; pronotum trapezoidal, sides feebly



concave at middle, base truncate, two-thirds wider than apex, disk feebly convex, calli small, rounded, not contiguous; meso-scutum almost concealed; scutellum small, almost flat; elytra entire, surpassing abdomen, cuneus large, feebly deflected; upper surface clothed with conspicuous deciduous appressed whitish scale-like hairs, intermixed with fine suberect black ones. One species occurs in the eastern states.

1099 (1223). *CRIOCORIS SALIENS* (Reuter), 1876, 88.

Oblong-oval, broader in female. Head, pronotum and scutellum black, feebly shining; elytra fuscous-black, subopaque; membrane fusco-

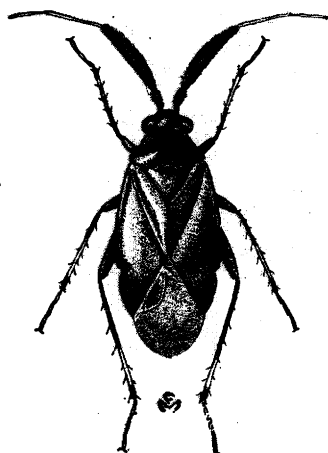


Fig. 191, Male X 11. (Original).

translucent, with a white dash near apex of cuneus; legs fuscous-brown, apical two-thirds of tibiae and basal half of tarsi dull yellow, the spines black. Female with joint 1 of antennæ blackish-brown, three-fourths as long as width of vertex; 2 yellow, base blackish, apex dusky, much more slender than 1, as long as pronotum; 3 fuscous, paler at base, three-fifths as long as 2; 4 fuscous, scarcely one-third as long as 3. Male with joints 1 and 2 fuscous-brown, 1 clavate, 2 subfusiform, concave on outer side, thickly pilose, much thicker and nearly four times longer than 1; 3 and 4 much thinner, dusky yellow, 4 two-fifths the length of 3. Length, 2.7—3 mm. (Fig. 191).

Marion Co., Ind., May 19—June 6; swept from low herbage along the densely wooded banks of streams. Ottawa, Ont., June 29 (*Van Duzee*). Recorded from Quebec, Ontario, New Jersey, New York, Texas and California. The *C. canadensis* Van D. (1912a, 511) is a synonym, differing only in the largely pale second antennal of female.

#### XIV. *EXCENTRICUS* Reuter, I, 1878, 89.

Small oval, pubescent species having the head triangular, as broad across eyes as long, its front declivent; vertex not carinate; eyes large, contiguous to pronotum, but slightly overlapping its front angles; pronotum short, subtrapezoidal, its sides declivent, humeral angles rounded, hind margin broadly concave, disk smooth, calli obsolete; mesoscutum narrowly exposed; scutellum broad, triangular, equilateral; elytra entire, widened behind, surpassing abdomen; cuneus strongly de-

flected, its fracture deep; joints 2 and 3 of hind tarsi subequal, 1 shorter. Two species are known from North America, one occurring in Florida.

1100 (—). *EXCENTRICUS MEXICANUS* Van Duzee, 1923b, 163.

Oval, widest behind middle. Head, pronotum and scutellum fuscous-brown, shining, elytra slightly paler; cuneus brown, its tip and basal lunule yellowish; membrane fuscous, veins yellowish, a pale hyaline spot on apical half and another on inner margin of cell; femora brown, tibiae dull yellow, spines very slender, pale brown, third tarsal and claws brownish; under surface blackish-brown, shining. Joints 1 and 2 of antennæ brown, strongly swollen; 1 subclavate, three-fifths as long as width of vertex; 2 cylindrical, twice as long as 1; 3 and 4 much more slender, 3 yellowish, two-thirds as long as 2, 4 dusky, one-half the length of 3. Upper surface thinly clothed with suberect dusky hairs and appressed deciduous whitish ones. Length, 2.5 mm.

Dunedin, Fla., April 7; swept from flowers of farkleberry, *Batodrendon arborcum* (Marsh.). Recorded heretofore only from Lower California.

#### XV. RHINACLOA Reuter, 1876, 88.

Head transverse, its front vertical, but slightly produced in front of antennæ; eyes large, coarsely granulated, in male occupying the whole of sides of head; beak not passing middle coxæ; pronotum short, base truncate, much wider than apex, sides straight, disk feebly declivent forwards; elytra entire, much surpassing abdomen; cuneus short, its fracture deep. One species occurs in Florida, another in the southwestern states.

1101 (—). *RHINACLOA SUBPALLICORNIS* Knight, 1926a, 225.

Oblong-oval. Head, pronotum and scutellum fuscous-brown, both they and elytra thickly clothed with deciduous silvery scale-like hairs, intermixed with dark suberect ones; elytra brownish-yellow, subtranslucent, inner half of corium often fuscous-brown; embolium dull yellow, its apical third and disk of cuneus usually red; membrane fuscous-brown, in fresh specimens clothed with silvery scales, veins reddish; femora brown, more or less tinged with fuscous, their tips paler; tibiae yellowish with spines and spots at their base black; under surface fuscous-brown, clothed with silvery hairs. Joint 1 of antennæ dark brown, one-half as long as width of vertex, male, two-fifths as long, female; 2 cylindrical, male, subclavate, female, dull yellow, apical third blackish, four and a half times as long as 1, male, one-fourth shorter, female; 3 and 4 dusky yellow, 3 slender, cylindrical, three-fifths as long as 2, 4 fusiform, one-half the length of 3. Length, 2—2.5 mm.

Frequent throughout the southern third of Florida, Dec. 4—April 5. Occurs on ferns in dense hammocks and on herbage along the roadsides. Recorded also by Barber as *R. forticornis* Reut., a Texas species, from Biscayne Bay, Fla.

XVI. ATRACTOTOMUS Fieber, 1858, 317.

Small oblong-oval species having the body sparsely clothed with whitish or yellowish appressed scale-like hairs, intermixed with fine, suberect darker ones; head transverse, its front subvertical, not produced in front of eyes, tylus narrow, compressed; beak reaching or surpassing hind coxæ; pronotum with base truncate, much wider than apex, sides straight, disk inclined toward apex; elytra entire, surpassing abdomen, cuneus short, its fracture often deep; hind femora swollen, tibiæ with black spines. Two introduced European species and one variety occur in our territory.

KEY TO EASTERN SPECIES OF ATRACTOTOMUS.

- a. Joint 2 of antennæ swollen, subequal in thickness in both sexes; front margin of pronotum and base of head clothed with prominent suberect pale yellowish hairs; host plant, apple. 1102. MALI.
- aa. Joint 2 of antennæ rather slender in male, strongly swollen in female; pronotum and head without pubescence as in a.
- b. Second antennal distinctly longer than width of head; larger, length 3—3.5 mm.; host plant, pine. 1103. MAGNICORNIS.
- bb. Second antennal in female subequal in length to width of head; smaller, length 2.5 mm.; host plant, hemlock.

1103a. var. BUENOI.

1102 (—). ATRACTOTOMUS MALI (Meyer), 1843, 63.

Dark brown or black, the two types of pubescence conspicuous; membrane dark fuscous, veins and a small spot near tip of cuneus paler; legs brown or black, tibiæ paler toward apex, their tips and those of tarsi blackish. Joints 1 and 2 of antennæ black or dark brown, 1 clavate, two-thirds as long as width of vertex, 2 strongly swollen, subfusiform, thickly clothed with stiff forward-inclined hairs, three and one-half times as long as 1; 3 and 4 dusky yellow, very slender, united as long as 2, 4 one-half the length of 3. Length, 3.2—3.5 mm.

Theydon Bois, England, July (*British Mus. Coll.*). Recorded by Knight (1924, 65) from Wolfville, Nova Scotia, where it was predaceous on a green apple aphid.

1103 (—). ATRACTOTOMUS MAGNICORNIS (Fallen), 1807, 99.

Elongate, subparallel, male, suboval, female. Head, pronotum and scutellum black or dark brown; clavus and corium usually chestnut-brown or tinged with reddish, cuneus often dark brown; membrane pale fuscous, veins yellowish, cells brownish; femora fuscous-brown to black; tibiæ yellowish-white to brownish with minute darker spots at base of

spines; tips of tarsi and claws blackish. Joints 1 and 2 of antennæ dark brown or black, thickly clothed with short, stiff black hairs; 1 nearly three-fifths as long as width of vertex; 2 as in *aa* of key, four and two-third times the length of 1; 3 and 4 filiform, dusky yellow, 3 nearly three-fifths as long as 2, 4 four-fifths the length of 3. Beak reaching first ventral. Length, 3 mm.

Hollington and New Forest, England, August (*British Mus. Coll.*). A European species recorded in this country only from Ithaca, N. Y., where it was found on *Pinus sylvestris* L.

1103a (—). *ATRACTOTOMUS MAGNICORNIS* BUENOI Knight, 1923, 461.

Smaller and more ovate than *magnicornis*. Color fusco-blackish, not tinged with reddish as there; membrane uniformly fuscous; legs blackish, tibiæ slightly paler; ventrals blackish, dusky-pubescent. Joint 2 of antennæ in female shorter, only four times the length of 1; in male longer, five times the length of 1. Length, 2.5 mm.

White Plains, N. Y., June 25 (*Minn. Univ. Coll.*). Known only from there, where it was taken on hemlock and spruce by Bueno.

Family XXX. HYDROMETRIDÆ Billberg, 1820, 67.

#### THE MARSH-TREADERS.

Extremely slender bugs having the body linear, subcylindrical; head much longer than pronotum, porrect; eyes large, placed slightly behind its middle; antennæ 4-jointed, filiform, inserted on the sides of the enlarged front of head; ocelli absent; beak 3-jointed, very slender, shorter than head, inserted between the ends of the deflexed cheeks; pro- and mesonota subequal in length, slightly wider than head, their sides parallel; elytra usually absent, when present, elongate, linear, reaching fifth or sixth dorsal; legs elongate, very slender; tarsi 3-jointed, their claws apical.

The family is represented by a single genus comprising fewer than a dozen described species. They live among the weeds and grasses growing in stagnant water or on the near-by mud or muck flats, and feed mainly upon minute living forms of aquatic life. They walk slowly about over the surface film of water, and when disturbed attempt to conceal themselves among the fallen and tangled vegetation rather than by flight or quick movement. The principal literature treating of our species is by Say, 1832; Uhler, 1884; Martin, 1900; Bueno, 1905, and Hungerford, 1920, 1923.