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DESCRIPTIONS OF SEVEN NEW SPECIES OF THE GENUS ORTHOTYLUS FIEBER (HEMIPTERA, MIRIDAE).*

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Orthotylus notabilis new species.

Allied to *basicornis* Kngt., but easily distinguished by the much larger size, shorter rostrum which only attains posterior margin of sternum, and by the fuscous markings of the male.

♂. Length 6.7 mm., width 2.1 mm. Head: width 1.17 mm., vertex .44 mm. Rostrum, length 1.63 mm., just attaining hind margin of sternum. Antennae: segment I, length .58 mm., black; II, 2.04 mm., fuscous; III, 1.15 mm., fuscous; IV, .62 mm. Pronotum: length 1.03 mm., width at base 1.82 mm.

General coloration green or yellowish green, spot on inner apical angle of corium, a confluent spot on clavi just behind cuneus, mesoscutum largely, spot

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each side on basal margin of pronotum just opposite lateral margins of mesoscutum, basal margin of calli, sometimes spot each side of frons, spot on lora, sides of thorax, sternum, and the venter, fuscous to blackish; membrane uniformly dark fuscous, veins green. Clothed with simple but rather stiff and prominent, pale pubescence. Genital claspers very similar to those of *neglectus* Kngt., but easily distinguished from that species by size and coloration.

♀. Length 6.7 mm., width 2.4 mm. Head: width 1.15 mm., vertex .52 mm. Antennae: segment I, length .62 mm., black; II, 2.07 mm., greenish yellow to dusky; III, 1 mm., yellowish to dusky; IV, .58 mm., fuscous. Pronotum: length 1.12 mm., width at base 2.04 mm. Differs from the male in the uniformly green color, except first antennal segment is black. Coloration very similar to *basicornis* but distinguished by the shorter rostrum which only attains posterior margin of sternum, and by the much larger size.

Holotype: ♂ June 13, 1923, Brookings, South Dakota (H. C. Severin); author's collection.

Allotype: ♀ July 18, 1922, Ramsey County, Minnesota (H. H. Knight).

Paratypes: 2 ♂, topotypic. 2 ♀, taken with the allotype. 8 ♂ ♀ June 5, Riley County, Kansas (P. J. Parrot). ♀ July 10, 1925, Saskatoon, Sask. (N. J. Atkinson); Canadian National collection.

***Orthotylus fuscicornis* new species.**

Allied to *hamatus* Van D., but differs in the blackish antennae, longer second antennal segment, prominent white pubescence, and in structure of the male genital claspers.

♂. Length 5.6 mm., width 1.8 mm. Head: width .99 mm., vertex .47 mm. Rostrum, length 1.48 mm., slightly exceeding posterior margin of sternum, green, black on apex. Antennae: segment I, length .48 mm.; II, 1.72 mm., exceeding the width of pronotum at base; III, .92 mm.; IV, .50 mm.; black, in pale specimens segment II may be more fuscous than black. Pronotum: length .86 mm., width at base 1.49 mm.

Color pale to bluish green, pronotum behind calli, corium, and longitudinally along middle of clavus, darker green; an arc each side of frons and confluent above, base of tylus, spot each side of vertex, collum, antennae, tip of rostrum, posterior margins of calli, the sloping lateral margins of mesoscutum, fuscous to black. Membrane whitish hyaline, veins green, anal area fuscous bordering anal vein. Dorsum clothed with prominent white pubescence, nearly as in *basicornis* Kngt. Legs green, tarsi fuscous, tibial spines yellowish. Genital claspers distinctive, right clasper in the form of a thick, ligulate process, slightly sinuate on ventral margin, curved inward only on basal third, extending beyond middle of genital segment, its apex truncate, the lower apical angle produced into a sharp point, the dorsal angle rounded, set with three or four small spine-like teeth on end margin, apical portion of clasper distinctly thickened, sub-terete as viewed from the end; basal one-third of clasper broader, rounded off at shoulder, produced distally in a thumb-like process which is nearly parallel with the main clasper, tapering to a point and bearing several small teeth-like spines which are irregularly distributed; the extreme basal portion of clasper, which is sometimes obscured by margin of genital segment, bears an erect process, the acuminate apex

of which is divided into two or three short spines. Left clasper much as in *basicornis*, but the dorsal prong shorter and tapering gradually to a point.

♀. Length 5.6 mm., width 1.8 mm. Head: width 1.02 mm., vertex .56 mm. Antennae: segment I, length .47 mm.; II, 1.57 mm.; III, .86 mm.; IV, .46 mm. Pronotum: length .83 mm., width at base 1.57 mm. Coloration usually paler than in the male, dark markings of the dorsum usually lacking except on base of tylus; antennae greenish yellow above, the black color restricted to ventral aspect of segment I, and fuscous only on base of segment II.

Holotype: ♂ August 12, 1925, South Fork, Colorado (H. H. Knight); author's collection.

Allotype: same data as the type.

Paratypes: 16 ♂ ♀, taken with the types on willow (*Salix* sp.). COLORADO—7 ♂ ♀ Aug. 19, 1898, Dixon's Canyon, near Fort Collins; ♀ June 25, 1900, Fort Collins; ♂ July 31, 1900, Ridgway; ♂ ♀ June 16, 1900, Rocky Ford (E. D. Ball). 3 ♀ Aug. 12, 1925, Pagosa Springs (H. H. Knight). UTAH—♂ Sept. 17, 1925, Kaysville (G. F. Knowlton).

***Orthotylus ramus* new species.**

Suggestive of *chlorionis* Say, but size somewhat larger, pubescence pale yellowish; distinguished by the large and remarkably branched male genital claspers.

♂. Length 3.9 mm., width 1.5 mm. Head: width .71 mm., vertex .38 mm.; eyes and shape of head about as in the female of *chlorionis*. Rostrum, length 1.21 mm., reaching to middle of intermediate coxae. Antennae: segment I, length .29 mm.; II, 1.21 mm.; III, .77 mm.; IV, .44 mm.; yellowish green, last segment dusky. Pronotum: length .59 mm., width at base 1.12 mm.

Uniformly green or yellowish green, membrane pale, veins green. Clothed with simple pale yellowish pubescence. Genital characters distinctive, right clasper forked near base, forming two long, curved acuminate arms, the lower one curving across and nearly touching the dorsal prong of left clasper, while the dorsal arm curves inward and forward to middle of genital segment; left clasper with dorsal prong near base, terminating above in a point which may have two or three small teeth, lower arm thicker, following the segment wall beyond median line where it curves inward to a point; dorsal margin of genital segment with a strong chitinous spine projecting posteriorly.

♀. Length 4.1 mm., width 1.54 mm. Head: width .74 mm., vertex .42 mm. Antennae: segment I, length .30 mm.; II, 1.36 mm.; III, .83 mm.; IV, .46 mm. Pronotum: Length .62 mm., width at base 1.15 mm. Very similar to the male in form, pubescence and coloration.

Holotype: ♂ June 22, 1918, Mercer County, Ohio (R. F. Hussey); author's collection.

Allotype: taken with type.

Paratypes: ♀, topotypic. ♀ July 3, 1920, Berrien County, Michigan (R. F. Hussey), taken on *Carya* sp. ♀ July 31, 1916, Batavia; ♀ July 8, 1920, Ithaca, New York (H. H. Knight), both specimens taken on hickory (*Carya*). ♂ June 24, 1897, Ames, Iowa (E. D. Ball).

Orthotylus ulmi new species.

Allied to *translucens* Tucker, but more robust, eyes more transverse on posterior margins; distinguished by the shorter rostrum which does not attain hind margins of intermediate coxae.

♂. Length 3.5 mm., width 1.2 mm. Head: width .71 mm., vertex .266 mm.; hind margin of head nearly transverse, eyes only slightly curved, large and prominent. Rostrum, length 1.09 mm., reaching a little over middle of intermediate coxae. Antennae: segment I, length .28 mm., thickness .089 mm.; II, 1.3 mm., thickness .059 mm.; III, .99 mm.; IV, .38 mm.; yellowish green, last two segments fuscous, segment II sometimes dusky. Pronotum: length .44 mm., width at base .93 mm.

Uniformly green, head, scutellum, ventral aspect and legs, more yellowish green; membrane pale, veins green; tip of rostrum and apices of tarsi fuscous. Clothed with simple pale yellowish pubescence, more than half of the hairs on hemelytra recumbent, suggestive of very fine sericeous pubescence. Genital claspers small, not easily distinguished from *translucens* without dissection.

♀. Length 3.5 mm., width 1.2 mm. Head: width .67 mm., vertex .326 mm. Antennae: segment I, length .29 mm.; II, 1.18 mm.; III, .84 mm.; IV, .37 mm. Pronotum: length .46 mm., width at base 1 mm. Very similar to the male in form, pubescence, and coloration.

Holotype: ♂ June 18, 1921, Phalen Park, St. Paul, Minnesota (H. H. Knight); author's collection.

Allotype: taken with the type.

Paratypes: 12 ♂ ♀, taken with the types on elm (*Ulmus* sp.). MINNESOTA—2 ♂ July 12, 1919, Hennepin County; ♀ July 10, 1924, Ramsey County (H. H. Knight). NEW YORK—♂ 4 ♀ July 19, 1916, Batavia; ♀ July 8, 1920, Ithaca (H. H. Knight), taken on *Ulmus* sp. ♀ Aug. 1-7, Wanakena (C. J. Drake). ONTARIO—♀, "Ottawa." QUEBEC—♂ July 28, 1915, Roberval (G. Beaulieu).

Orthotylus ute new species.

•Aspect suggestive of *ornatus* Van D., but more elongate and the basal angles of pronotal disk fuscous; genital claspers indicate a relationship with *affinis* Van D., but right clasper with basal prong produced dorsally into a thick prong which forms a part of the crescent shaped hook.

♂. Length 6.6 mm., width 1.9 mm. Head: width 1.01 mm., vertex .37 mm. Rostrum, length 1.74 mm., nearly attaining hind margins of intermediate coxae. Antennae: segment I, length .64 mm.; II, 2.25 mm.; III, 1.12 mm.; IV, .62 mm.; black. Pronotum: length .86 mm., width at base 1.6 mm.

Clothed with rather prominent, suberect, pale yellowish pubescence. Dorsum fuscous to black, embolium, basal half of corium, and cuneus pale translucent; mesoscutum except lateral declivities, and more or less broadly on middle and apex of scutellum, yellowish to pale; calli and basal angles of pronotal disk fuscous to black; head pale, frons except spot on median line, tylus except apex, and lora, fuscous to black; collar, a broad ray across top of coxal cleft and extending to spread along basal margin to humeral angles, blackish; metapleura,

side of venter, and base of genital segment, blackish. Membrane and veins fuscous, paler on middle and apically. Coxae pale, femora greenish, tibia dusky, tarsi fuscous. Genital claspers distinctive, suggestive of *affinis* in the half crescent formed by the apical half, but basal prong produced dorsally into a thick arm, while the apical half of crescent is thicker, blunt at apex and bearing a single small spine. Left clasper with the basal prong short, produced much like a large blunt tubercle.

♀. Length 6.5 mm., width 2 mm. Head: width 1 mm., vertex .50 mm. Antennae: segment I, length .64 mm.; II, 2.22 mm.; III, 1.21 mm.; IV, .62 mm. Pronotum: length .89 mm., width at base 1.66 mm. Very similar to the male in pubescence, but coloration somewhat paler, the dark color on pronotum more restricted to basal angles and posterior margins of calli; clavus more fuscous brown, while the pale areas of the corium are here more extended.

Holotype: ♂ August 11, 1925, Ute Creek, Fort Garland, Colorado (H. H. Knight); author's collection.

Allotype: same data as the type.

Paratypes: ♂ 2 ♀, taken with the types on alder (*Alnus* sp.). ♀ Aug. 7, 1925, Stonewall, alt. 8500 ft., near Trinidad, Colorado (H. H. Knight), swept from *Populus latifolia* which grew near alders. ♀ July 23, 1907, Pine, Colorado (C. A. Hill). ♀ July 18, Park County, Montana (A. A. Nichol). ♀ July 20-25, 1920, Yellowstone National Park, Wyoming (A. A. Nichol).

***Orthotylus piceicola* new species.**

Distinguished by the small size, fuscous and green coloration, and remarkably developed male genital claspers; dorsum of male fuscous, with cuneus only greenish; female dorsum green, head, calli, and scutellum only fuscous.

♂. Length 4.4 mm., width 1.4 mm. Head: width .72 mm., vertex .355 mm. Rostrum, length 1.15 mm., scarcely attaining hind margins of intermediate coxae. Antennae: segment I, length .29 mm.; II, 1.06 mm.; III, .68 mm.; IV, .38 mm. Pronotum: length .58 mm., width at base 1.11 mm.

Color fuscous black, cuneus green to fuscous; lora, genae, rostrum except apex, and legs green or yellowish green, tibiae more or less fuscous; membrane and veins uniformly dark fuscous. Clothed with yellowish to fuscous, simple, recumbent pubescence. Genital claspers distinctive, left clasper forming three prongs, basal prong curved above along segment wall, acuminate, the apex curved backward to near tip of oedaeagus; the ventral main trunk attaining tip of genital segment where it divides, forming two widely divergent, acuminate prongs, one of which points distad. Right clasper moderately broad, a thick prong at base which curves above to near median line, its apex abruptly acute; distal portion of clasper rounded below, the dorsal margin continued in a narrower and somewhat flattened, downcurved point, the outer margin of which bears several small teeth.

♀. Length 4.3 mm., width 1.4 mm. Head: width .75 mm., vertex .38 mm. Antennae: segment I, length .29 mm.; II, 1.12 mm.; III, .74 mm.; IV, .35 mm. Pronotum: length .59 mm., width at base 1.18 mm. More green than the

male, ventral surface, pronotum except calli, and the hemelytra green, the shade of green very near that of spruce needles; membrane and veins uniformly light fuscous; antennal segment II greenish to dusky, darker on base and apex.

Holotype: ♂ August 12, 1925, Wolf Creek Pass, Colorado (H. H. Knight); author's collection.

Allotype: ♀ August 8, 1925, above Stonewall, alt. 9000 ft., near Trinidad, Colorado (H. H. Knight).

Paratype: ♀, taken with the allotype on spruce (*Picea* sp.). Dr. C. J. Drake also took two specimens on spruce.

***Orthotylus nyctalis* new species.**

Allied to *lateralis* Van D., very similar in color but form more slender; differs chiefly in structure of male genital claspers.

♂. Length 5.1 mm., width 1.4 mm. Head: width .86 mm., vertex .266 mm. Rostrum, length 1.33 mm., slightly exceeding middle of intermediate coxae. Antennae: segment I, length, .35 mm.; II, 1.62 mm.; III, broken; fuscous black, segment II uniformly dusky yellow. Pronotum: length .56 mm., width at base 1.24 mm.

Coloration nearly as in *lateralis*; differs chiefly in the genital claspers. Left clasper more slender and with two short dorsal prongs where *lateralis* has only one; right clasper decurved on apex and devoid of spines, dorsal margin with a single prominent spine at basal third, and two other spines just before the decurved apex.

Holotype: ♂ July 8, 1921, University Farm, St. Paul, Minnesota (Wm. E. Hoffman), collected at light; author's collection. A teneral female specimen is at hand, Aug. 14, 1924, Cranberry Lake, New York (E. A. Hartley), but it is not fit for description.

Orthotylus lateralis Van Duzee. This species is at hand from Illinois and Minnesota, while it has been recorded previously only from Kansas and Colorado as given in the original description. Records: ♂ June 25, 1921, University Farm, St. Paul, Minnesota (Wm. E. Hoffman), collected at light. ♀ July 21, 1912, Willow Springs, Illinois (W. J. Gerhard), collected on poplar. Very likely this species will be found to breed on poplar since it differs widely from the *Salix* inhabiting species.

Orthotylus compsus Reuter, Ofv. Finska Vet.-Soc. Forh., xlix, 1906-1907, No. 5, p. 14.

I took four female specimens July 1, 1917, Helotes, Texas, which agree in every particular with the description of *compsus* Reuter. The species was described from Jamaica, from a single specimen collected by Mr. Van Duzee, and as far as I am aware it has not since been recorded elsewhere. This species is distinguished by its small size (length 2.3 mm.), yellowish ground color, the hemelytra, including cuneus and areoles, marked with numerous irregular coagulated spots of bluish green: clothed with prominent simple, pale yellowish pubescence; antennal segment II just equal (♀) to width of pronotum at base.