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A NEW NORTH AMERICAN MASON-WASP FROM VIRGINIA, WITH NOTES ON SOME ALLIED FORMS

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A MASON-WASP, recently discovered in Virginia, belongs to an apparently undescribed form of *Odynerus tempiferus* Viereck, a species related to *O. pratensis* H. de Saussure. Both these species differ from the other North American *Odynerus* in having the entire first and the greater part of the second tergite (except for a preapical zone of coarse punctures) practically impunctate. The two species may be separated as follows:

Lateral angles of propodeum prominent, broadly triangular, with sharp apex. Clypeus (♀ ♂) scarcely or not wider than high, the apical margin slightly curved inward and with prominent, sharp lateral teeth. Humeral margin of pronotum with a low carina, which is narrowly interrupted in the middle; dorsal face of pronotum evenly rounded off into the lateral, vertical areas. Thorax short and thickset.....tempiferus

Lateral angles of propodeum broadly and evenly rounded off. Clypeus (♀ ♂) nearly one and one-third times as wide as high, the apical margin straight, its lateral angles not toothlike. Humeral margin of pronotum with a high carina, continuous across the middle; dorsal face of pronotum separated from the lateral, vertical areas by a ridge, particularly prominent and often somewhat carinate at the humeral angles. Thorax elongate.....pratensis

Genus ODYNERUS Latreille

ODYNERUS TEMPIFERUS Viereck

Odynerus (Stenodynerus) tempiferus VIERECK, Trans. Amer. Ent. Soc., vol. 33, p. 392, pl. 12, fig., 1908 (♂; Thomas Ranch, Oak Creek Canyon, 20 miles southwest of Flagstaff, Coconino County, Ariz.).

Odynerus trichiosomus CAMERON, Pomona Journ. Ent., vol. 1, p. 127, 1909 (♂; Gallinas Canyon, N. Mex.).

Viereck's description mentions only the color markings, although he adds that except for the length of the thorax his species agrees in size and structure with de Saussure's description of *O. iturbidi*, from Mexico.¹ *O. tempiferus* may, however, be recognized from Viereck's figure, which represents a *male*, not a female as marked. *O. trichiosomus* seems to be the same species, as suggested by the following excerpts from Cameron's description: "Clypeus pyriform, slightly but distinctly longer than wide, the apex with a shallow rounded incision * * *. First abdominal segment cupshaped, smooth, the second as wide as long, the basal two-thirds smooth, the apical deeply irregularly, but not very closely punctured." The length (11 mm) was probably measured from the frons to the apex of the second tergite.

Although in coloration the typical form of *O. tempiferus*, as here recognized, is strikingly different from the variety *macio*, both agree structurally in every detail. In addition to the characters mentioned in the key, *O. tempiferus* differs from *O. pratensis* in several other structural peculiarities, which may be found in the lengthy account of *macio* given below. For instance, the basal two-thirds of the second tergite are not so completely devoid of punctures in *O. tempiferus*, that area appearing much smoother in *O. pratensis*. The antennal hook of the male is shaped quite differently in the two species. *O. pratensis* does not appear to reach the size of the largest *O. tempiferus*.

Female (undescribed).—Black. Clypeus, transverse flattened hexagonal spot above interantennal ridge (sometimes including the ridge), broad margins of inner orbits from clypeus to bottom of ocular sinuses, spot at base of mandible, major part of cheeks, a streak on under side of scape, anterior half of dorsal face of pronotum, two spots on scutellum, usually most of transverse ridge of postscutellum (sometimes lacking), spots on dorsal areas of propodeum, tegulae (except median ferruginous spot), large spot on upper plate of mesepisternum (beneath base of fore wing), most of horizontal dorsal area of first tergite (except a median spot, produced posteriorly into a line), broad apical margins on succeeding tergites and sternites, lateral spots on anterior half of second tergite (sometimes very small, or connected with the apical margin), spots

¹*iturbidi* is unknown to me. II. de Saussure's description does not mention clearly st and basal two-thirds of the second tergite are impunctate.

on coxae, apices of all femora and outer sides of all tibiae, bright yellow or more or less orange-yellow. Scape, base of flagellum, mandibles, most of legs, and lateral spots on second tergite ferruginous. The edges of all yellow markings are usually more or less ferruginous, particularly on the cheeks, pronotum, second and sixth tergites, and most sternites. In one specimen the mesonotum has two ferruginous stripes. Wings subhyaline, tinged with amber-yellow, more russet toward costa, and with slight purple reflections. In one specimen the clypeus has a median blackish spot and is partly ferruginous.

Male.—Much like the female and equally variable in the relative extent of yellow and ferruginous markings. In one specimen the second tergite is mostly yellow, shading into orange toward the middle, while several other pale markings of the body are orange rather than yellow. The mandibles, tibiae, and tarsi may be more extensively yellow than in the female.

Length (h.+th.+t.1 and 2): ♀, 12.5 to 14 mm; ♂, 11 to 12 mm; of fore wing: ♀, 14 to 15 mm; ♂, 11.5 to 12.5 mm.

Specimens examined.—Colorado: Clear Creek, 6,000 to 7,000 feet, Jefferson County, female allotype, June 29, 1922 (George P. Engelhardt, Mus. Comp. Zool.); Boulder County, female, bred from a mudnest (C. H. Hicks); Golden, 6,000 to 7,000 feet, Jefferson County, female (H. H. Newcomb); Chimney Gulch near Golden, Jefferson County, male; Custer County, female (T. D. A. Cockerell).

New Mexico: Jemez Mountains, Sandoval County, male (Woodgate); Las Vegas, female (Deacy).

Wyoming: Sheridan, Sheridan County, female (Cornell University).

Utah: Eureka, Juab County, female (T. Spaulding); Beaver Valley, two females; Beaver Creek Hills, two males; Wildcat Valley, male; South Creek, male; all Beaver County (George P. Engelhardt); Buckskin Valley, Iron County, male and female (George P. Engelhardt).

Oregon: Horse Lake, High Cascade Mountains, Lane County, male (J. C. Bridwell).

Mexico: Meadow Valley, State of Chihuahua, female (C. H. T. Townsend).

According to C. H. Hicks' observations, the typical form of *O. tempiferus* has habits similar to those of the variety *macio*.

ODYNERUS TEMPIFERUS MACIO, new variety

Characters.—Similar to *O. tempiferus*, differing principally in having bluish-black wings, darker bases of legs, and considerable reduction of the light color markings on the head, pronotum, and abdomen, which are ivory-white instead of bright yellow or somewhat orange-yellow.

Since the typical form of *O. tempiferus* was incompletely described, I feel justified in describing fully the variety *macio*.

Female.—Head (fig. 15, A) in front view broadly elliptical, slightly wider than high; seen from above, transverse, two and one-half times as wide as long, as wide as thorax; occipital margin slightly curved inward. Vertex and cheeks margined throughout by a sharp uniform carina. Cheek wide, in profile as wide as upper half of eye, gradually narrowed from middle to mandibular condyle, where it forms a narrow groove. Inner orbits at vertex one and one-fifth times as far apart as at clypeus. Upper half of frons little swollen, with distinct but shallow median saddlelike depression between anterior ocellus and interantennal ridge. Ocelli in a flattened triangle, poste-

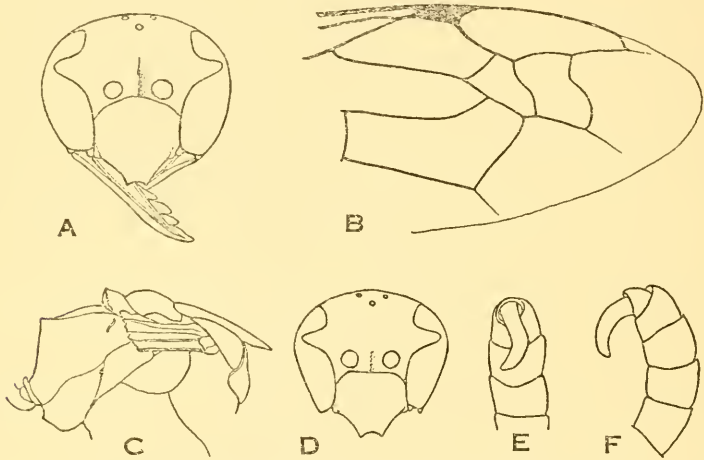


FIGURE 15.—ODYNERUS TEMPIFERUS MACIO, new variety

A-C, female: A, Head in front view; B, apical half of fore wing; C, hind portion of thorax in side view.

D-F, male: D, Head in front view; E, tip of antenna from below; F, tip of antenna in side view.

rior pair twice as far apart as from the anterior, slightly less than from eyes, about as far from eyes as from occipital margin. Inter-ocular area flat with median longitudinal linear groove. Vertex medially with two minute hairy foveae, close together and slightly nearer occipital margin than posterior ocelli. Antennae twice as far apart as from eyes; ridge between them low. Clypeus very broadly pear-shaped, scarcely wider than high, disk slightly flattened, upper part moderately convex, with weak preapical concavity; lower subocular portion about as long as interocular part; truncate apex about one-fifth greatest width of clypeus, very slightly incurved with short but sharp, toothlike lateral edges. Antennae rather long and slender, flagellum scarcely swollen apically; scape slender, distinctly curved,

much less than half length of flagellum; third segment about one and one-half times as long as fourth; fourth to sixth longer than wide; seventh and eleventh almost square; eighth to tenth slightly wider than long; twelfth about as long as basal width. Mandible straight, nearly as long as eye; apex blunt, hardly curved; inner margin with four narrow notches producing broad, bluntly rounded teeth. Maxillary palpi 6-segmented; four basal segments gradually shorter, three terminal segments combined much longer than third; labial palpi 4-segmented. Thorax (fig. 15, C) short and very stubby, sides almost parallel, narrowed slightly anteriorly; seen from above little longer than greatest width, in profile almost as high as long. Humeral margin of pronotum slightly curved inward, margined dorsally by a very fine carina, interrupted medially, on sides more sharply carinate to anterior coxae; humeri very broadly rounded; pronotum without carina between dorsal horizontal and lateral vertical areas. Mesonotum about as wide as long, nearly pentagonal in outline, with broadly rounded anterior margin, very slightly convex, with mere traces of notauli and parapsidal furrows posteriorly, anterior fourth with fine, impressed median line. Tegula semielliptical, nearly twice as long as wide, with somewhat carinate margins; posttegula forming a broad lobe, somewhat curved upward, with blunt apex. Scutellum rectangular, about three times as wide as long, very slightly raised, disk somewhat flattened, with a fine median longitudinal impressed line, deep mesonotal suture foveolate, with longitudinal riblets; postscutellar suture moderately impressed, not foveolate. Postscutellum convex, with a short anterior horizontal area and much longer, posterior, vertical portion (part of the concavity of propodeum), separated by a sharply crenulate, transverse crest (of 8 to 10 irregular teeth), narrowly interrupted medially by a groove. Median mesepisternal groove very deep, complete, transversely ribbed; prepectal suture present in lower part only as a fine carina, running obliquely to near base of mid coxa. Propodeum very short, squarely and vertically truncate behind, swollen laterally; dorsal areas very broadly separated medially by vertical face of postscutellum; concavity wide and deep, divided by a low, broad, smooth longitudinal ridge, which expands suddenly into a broad triangle along hind margin of postscutellum; no superior ridges; inferior and lateral ridges bluntly rounded, without carinae or teeth; lateral angles prominent, broadly triangular, with sharp apex; lateral areas slightly concave. Abdomen short and very stubby. First tergite short, transverse, with faint trace of median impressed line posteriorly, as broad as thorax and scarcely narrower than second; seen from above, broadly semielliptical in outline, width of hind margin little over median length; transition between vertical and horizontal areas evenly but strongly convex and rounded off; hind margin

translucent, not thickened or raised. Second tergite about twice as wide as long, moderately and evenly convex; hind margin slightly thickened but not raised or translucent; preapical, coarsely punctate area depressed, more strongly laterally. Apical margins of succeeding tergites normal, of third very slightly thickened. Second sternite evenly and rather markedly convex toward base, with basal median furrow; deep basal transverse groove with irregular longitudinal riblets. Apical margins of sternites simple. Legs normal. Wings with usual type of venation (fig. 15, B); radial cell rather elongate, broadest before middle (at second intercubitus), apex narrowly truncate, with short appendicular vein; second cubital more than four times as long on cubitus as on radius; third cubital much shorter than second, much higher than long, slightly wider on radius than on cubitus; third intercubitus very wavy.

Vertex and cheeks fairly uniformly covered with scattered medium-sized punctures, those on frons much coarser and closer. Mandibles almost impunctate. Disk of clypeus with uniformly scattered small punctures and traces of irregular longitudinal folds; sides and base more finely and densely punctate. Pronotum, mesonotum, and scutellum rather densely covered with a mixture of medium-sized and small punctures; those of mesopleura very much coarser, producing a reticulate or somewhat striolate appearance; upper half of metapleura transversely striolate, lower half almost smooth; postscutellum coarsely punctate, except the smooth posterior portion. Propodeum: Dorsal areas coarsely punctate, subreticulate; lateral areas strongly obliquely striate; concavity obliquely striate laterad of median ridge. Tegulae with few minute punctures anteriorly and posteriorly. Abdomen: First tergite (under a hand lens) impunctate; basal three-fourths of second tergite with widely scattered minute punctures, coarsely and densely punctured, depressed preapical area extending forward laterally; remaining tergites coarsely punctate but gradually decreasing to sixth, which bears only a few small and many fine punctures; punctures of sternites small and much scattered, but larger and closer before apex of second. Pubescence short and rather inconspicuous, mostly brownish black or black, more grayish on frons and sides of propodeum.

Black. An elongate spot on base of mandible, extreme upper sides of clypeus, narrow inner orbits from clypeus to near base of ocular sinuses, narrow streaks in upper half of cheeks along outer orbits, anterior half of dorsal area of pronotum, tegulae, except for a brownish median spot, small spot on upper plate of mesepisternum, two spots on scutellum, large spots covering most of dorsal areas of propodeum, most of dorsal area of first tergite (except a large median pentagonal black spot, produced posteriorly into a

linear point), narrow apical margins of second and third tergites (sometimes faint or absent on third), spots near apices of fore and mid femora, and outer sides of all tibiae, ivory-white. One female has also an ivory-white spot on frons above interantennal carina, while another has two obscure preapical spots on clypeus. Knees, inner side of tibiae, most of tarsi, claws, and tibial spurs, russet. Wings uniformly strongly infuscate, bluish black with purplish reflections; veins and stigma black.

Male.—Similar to female except as follows: Head (fig. 15, D), seen in front, subcircular, only slightly wider than high. Frons scarcely depressed above interantennal ridge. Vertex without foveae. Clypeus relatively shorter and wider; its truncate apex nearly one-third of the greatest width of clypeus, distinctly though shallowly curved inward, with blunt lateral edges. Antennae (fig. 15, E-F) somewhat more swollen apically; fourth to eighth segments longer than wide; ninth to eleventh about as long as wide and somewhat swollen; twelfth very long; thirteenth long, slender, strongly curved, with blunt, rounded tip; twelfth and thirteenth folded under, the twisted apex of thirteenth reaching to near base of tenth. Mandible much shorter than eye.

Sculpture much as in the female, but frons less coarsely punctate; clypeus smooth with a few scattered, small punctures.

Coloration as in the female, but clypeus and labrum entirely, most of outside of mandibles, under side of scape, triangular interantennal spot and ventral spots on mid coxae ivory-white. Spots of scutellum and dorsal areas of propodeum small or lacking.

Length (h.+th.+t.1 and 2): ♀, 12 to 13 mm; ♂, 11 to 12 mm; of fore wing: ♀, 13.5 to 14 mm; ♂, 10 to 11 mm.

Specimens examined.—Virginia: Mouth of Tobacco Creek, about 25 miles from Fredericksburg (between Essex County and Carolina County), seven females (holotype and paratypes) and five males (allotype and paratypes) bred from a mudnest collected by David I. Bushnell, Jr. The nesting habits are described elsewhere.² Holotype (U.S.N.M. no. 51697), allotype, and some of the paratypes at the United States National Museum; other paratypes at Museum of Comparative Zoology, Cambridge, Mass., where there is also a female paratype, from an old collection, without locality.

In coloration, the variety *macio* resembles somewhat *Odynerus bidens* de Saussure, *Ancistrocerus quadrisectus* (Say), and *Monobia quadridens* (Linnaeus), which occur in the same territory. There are, however, differences among the four species in the arrangement of the ivory-white markings, and structurally they are not in the least related. The variety *macio* differs from all the others in the impunctate first and basal two-thirds of second tergite. From the

² Proc. U. S. Nat. Mus., vol. 84, p. 89 ff., 1936.

Monobia it is separated also by having 4-segmented labial and 6-segmented maxillary palpi. It lacks the transverse carina on the first tergite of the *Ancistrocerus*. *O. bidens* has a differently shaped clypeus, the cheeks considerably widened behind the eyes, the post-scutellum without a crenulate transverse ridge, and the concavity of the propodeum separated from the dorsal areas by a more or less distinct carina (forming an upper tooth divided by a notch from the sides of the postscutellum).

ODYNERUS PRATENSIS H. de Saussure

Odynerus pratensis H. DE SAUSSURE, Rev. Mag. Zool., ser. 2, vol. 22, p. 61, 1870 (♀ ♂; "America borealis"); Smithsonian Misc. Coll., vol. 14, no. 254, p. 292, 1875 (♀ from Cape St. Lucas, Lower California; ♂ from New Mexico).

Odynerus clusinus CRESSON, Trans. Amer. Ent. Soc., vol. 4, p. 234, 1872 (♀ ♂; Texas; types collected by Belfrage, therefore probably from Bosque County).

Cresson's *clusinus* and de Saussure's *pratensis* were based upon the same species, even though de Saussure's description does not mention that the first and most of the second tergites are smooth and impunctate.

The typical form of *O. pratensis* is mostly ferruginous, with a few black blotches or spots, particularly on the vertex and mesonotum, and with many yellow markings, most of the tergites and sternites having broad apical yellow margins, always widened anteriorly on the first and sometimes also on the second tergite. Wings subhyaline, tinged with amber-yellow and very slightly violaceous. Length (h.+th.+t.1 and 2): ♀, 11.5 to 12.5 mm; ♂, 8.5 to 10.5 mm; of fore wing: ♀, 10.5 to 11.5 mm; ♂, 8.5 to 11.5.

Specimens examined.—Texas: New Braunfels, Comal County; Ozona, Crockett County; Devils River near Comstock, Val Verde County; Fort Davis, Jeff Davis County; Valentine, Presidio County; Fedor, Lee County.

New Mexico: Rio Grande Canyon, south of Taos, Taos County.

Arizona: Flagstaff, Coconino County; Post Creek Canyon near Fort Grant (Pinaleno Mountains), Graham County; Congress Junction, Yavapai County.

Many females and males.

ODYNERUS PRATENSIS BRUMALIS, new variety

Male.—Mainly black, extensively marked with yellow and with a few ferruginous blotches. Clypeus, frons to upper margin of ocular sinuses (except two black oblique spots above antennal sockets), most of cheeks and mandibles, under side of scape, anterior portion of dorsal face of pronotum wholly or only medially, ridge of postscutel-

lum broadly, tegulae anteriorly and posteriorly, spot in upper plate of mesepisternum, broad apical margins of tergites 1 to 6, most of sternites 1 to 6, under sides of coxae, tips of femora, and outer side of tibiae, bright yellow; margins of first and second tergites considerably widened laterally, that of second connected with rounded lateral spots. The ferruginous color is never extensive; it may cover most of the scape, base and hook of flagellum, most of dorsal face of pronotum, two spots on scutellum, much of sides of propodeum, most of legs (except where yellow), sides of first and second tergites bordering yellow markings, and seventh tergite and sternite; elsewhere the yellow is often edged with ferruginous. Wings subhyaline, with a slightly yellowish tinge, veins brownish, more russet anteriorly, radial cell slightly infusate and somewhat violaceous.

Length (h.+th.+t.1 and 2): 9.5 to 11 mm; of fore wing, 9.5 to 11.5 mm.

Specimens examined.—Washington: Wawawai, Whitman County, three males (holotype and paratypes) (W. M. Mann); Almota, Whitman County, one male (paratype) (A. L. Melander). All at the Museum of Comparative Zoology.