

STENODYNERUS FUNDATUS AND RELATED SPECIES IN NORTH AMERICA (Hymenoptera, Vespidae)

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The various species of the *fundatus* group of *Stenodynerus* are among the commonest solitary wasps. Their range covers most of North America as far south as northern Mexico. They are all moderate in size, fairly slender, and possess the two pits on the front face of the pronotum which are characteristic of the genus *Stenodynerus*. They are more particularly distinguished by having no acarinarium under the short first abdominal tergite, by having a fine abundant silvery pubescence on the sides of the thorax and by the fact that the third abdominal tergite has a complete apical band.

Holotypes and allotypes of the new species and subspecies have been deposited in the California Academy of Sciences.

KEY TO THE STENODYNERUS FUNDATUS GROUP IN AMERICA NORTH OF MEXICO

1. Posterior margin of pronotum not margined with yellow or whitish along its entire length; pits on front face of pronotum separated by less than a pit diameter.....2
Posterior margin of pronotum margined at least narrowly with yellow or whitish along its entire length; pits on front face of pronotum separated by more than a pit diameter....10
2. Second tergite unspotted; abdominal markings deep yellow; second and third tergites apically reflexed, particularly in male, reflex of second tergite 2 to 3 times as high as that of third; external surface of swollen apex of male hind tibia with a distinct ridge near the middle.....*foxensis*
Second tergite spotted; male hind tibia not as above.....3
3. Apical margin of third tergite hardly thicker medially than that of fourth4
Apical margin of third tergite much thicker medially than that of fourth.....6
4. Reflexed margin of second tergite about as thick as an ocellus diameter; pronotal spots large and quadrate; markings whitish, legs mostly reddish; female clypeus with apex about as wide as length of fourth antennal segment; apical swelling of hind tibia in male with a broad pubescent horizontal sur-

- face; terminal antennal segment in male strongly curved in profile *taos*
 Reflexed margin of second tergite not as thick as an ocellus diameter; female clypeal apex about as wide as length of third antennal segment; apical swelling of male hind tibia slanting toward the inner leg surface; terminal antennal segment in male weakly curved in profile.....5
5. Second sternite very finely and sparsely punctured latero-basally; female with vertex pit usually indistinct, often hardly larger than surrounding punctures; female clypeus with coarse striatiform punctures and often mostly yellow; apex of hind tibia in male moderately and not abruptly swollen.....
 *claremontensis*
 Second sternite with moderately large, distinct, scattered punctures latero-basally; female vertex pit large and distinct; clypeus usually with fairly fine punctures and mostly or entirely black in female; body markings often reddish; apex of male hind tibia usually abruptly swollen..... *microstictus*
6. Reflexed margin of second and third tergites thickened about equally; antennal flagellum partly fulvous; markings whitish; apex of male hind tibia swollen; female vertex pit larger than an ocellus.....7
 Reflexed margin of second tergite two or more times as thick as third; female vertex pit smaller than an ocellus and relatively indistinct8
7. Dorsum of thorax nearly impunctate..... *xantianus*
 Dorsum of thorax well punctured..... *phoenixensis*
8. Antennal flagellum partly fulvous; markings usually yellow; male hind tibia distinctly swollen apically..... *anatropus*
 Antennal flagellum entirely dark; male hind tibia not swollen apically9
9. Markings whitish *papagorum papagorum*
 Markings yellowish *papagorum tinctifer*
10. Second tergite without free spots, markings mainly yellow; hind margin of second tergite 2 or more times as thick as an ocellus diameter; male middle femur with a distinct tooth at the end of a ridge; last antennal segment in male slightly bent in profile *ochrogonius*
 Without above combination of characters.....11
11. Transverse carina of first sternite angled medially; male middle femur with a tooth or sharp angle at the end of a ridge; last antennal segment in male distinctly bent in profile.....
 *fundatus*
 Transverse carina of first sternite forming a rounded or truncate projection medially; male middle femur angled medially but without a definite tooth; male last antennal segment curved in profile.....12

12. With extensive reddish markings..*fundatiformis fundatiformis*
With reddish markings restricted mainly to legs.....
.....*fundatiformis gonosceles*

STENODYNERUS PAPAGORUM (VIERECK)

Odynerus papagorum Viereck, 1908. Trans. Amer. Ent. Soc. 33: 394 (holotype, U. K.).

Distribution: Arizona (type locale), New Mexico, Colorado.

Stenodynerus papagorum tinctifer Bohart, new subspecies

Similar to typical *papagorum* except that markings are distinctly deep yellow instead of whitish yellow. Also, the second and third tergites are somewhat less strongly reflexed.

Holotype male, *allotype* female, 10 male paratypes, and 6 female paratypes, BEAR VALLEY, SANTA CRUZ COUNTY, CALIFORNIA, July, 1913 (F. C. Clark). Other specimens apparently referable to this subspecies are from SALT LAKE CITY, UTAH; LOGAN, UTAH, and JENNY LAKE, WYOMING.

Stenodynerus anatropus Bohart, new species

Male. Black, marked with yellow as follows: Mandible mostly, clypeus, first antennal segment in front, interantennal spot, orbital line, postocular spot, two spots on pronotum anteriorly, tegula mostly, spot beneath, mesonotal spot, postscutellum mostly, propodeum laterally, legs mostly, apical margin of first six tergites and second to fifth sternites, lateral spots on first and second tergites and second sternite. Inner surface of flagellum pale fulvous, hook black. Mandible apically, legs partly, tegula medially, wing veins basally, reddish. Pubescence very fine, relatively inconspicuous, silvery. Puncturation moderate, sparse on clypeus, very coarse toward apex of second tergite. Last antennal segment slender; clypeus sharply and angularly incised apically; middle femur with a prominent tooth, middle and hind femora apically swollen. Second and third tergites reflexed apically, reflexed portion of second about three times as high as that of third. Length to apex of second tergite, 7 mm.

Female. Markings as in male except that mandible is mostly blackish to red, clypeus has a dark margin and central spot, and tibiae are reddish. Clypeus well punctured and obtusely incised apically, the apical breadth about as great as length of third antennal segment. Reflexion of second and third tergites weaker than in male. Length of apex of second tergite 8.5 mm.

Holotype male, *allotype* female, and 4 male paratypes, DAVIS CREEK, MODOC COUNTY, CALIFORNIA, July, 1922 (C. L. Fox). Other paratypes (all from California), 2 males and 1 female, BUCK CREEK, MODOC COUNTY (C. L. Fox); 2 pair, SEQUOIA NATIONAL PARK; 4 males and 1 female, SUNSET VALLEY, SANTA BARBARA COUNTY (M. Cazier); 2 males and 1 female, ALTADENA (C. D. Michener); 6 males and 1 female, LA CRESCENTA (C. D. Michener and R. M. Bohart); 3 males and 6 females, SAN JACINTO MOUNTAINS, May and June.

S. anatroplus occurs commonly in California in the foothills along the coast from Trinity County to Los Angeles County including Santa Cruz Island and Mt. Diablo, along the foothills of the Sierras, and in most of the southern California mountain ranges from 2,000 to 5,000 feet elevation. I have also seen specimens from Oregon, Washington, and Nevada.

Paratypes in collections of U. S. National Museum, American Museum of Natural History, Oregon State College, California Academy of Sciences, and J. Bequaert.

STENODYNERUS CLAREMONTENSIS (CAMERON)

Odynerus claremontensis Cameron, 1905. *Invertebrata Pacifica* 1:122.

Distribution: Common throughout California (type locality, mountains near Claremont). I have also seen specimens from Nevada and Oregon.

STENODYNERUS MICROSTICTUS (VIERECK)

Odynerus microstictus Viereck, 1906. *Trans. Amer. Ent. Soc.* 32: 199 (holotype U. K.).

Odynerus gulielmi Viereck, 1908. *Trans. Amer. Ent. Soc.* 33:408.

Distribution: Kansas (type locality, Clark County), Texas, Colorado, Nevada, Arizona, California (mostly in the southern deserts), northern Mexico, Lower California.

STENODYNERUS PHOENIXENSIS (CAMERON)

Ancistrocerus (*Nortonia*?) *phoenixensis* Cameron, 1908. *Trans. Amer. Ent. Soc.* 34:225.

Distribution: Arizona (type locality, Phoenix), Colorado, Utah, Nevada.

STENODYNERUS TAOS (CRESSON)

Odynerus taos Cresson, 1868. Trans. Amer. Ent. Soc. 1:381 (err. typ.) (holotype, A.N.S.P.).

Odynerus taos Cresson, 1872. Trans. Amer. Ent. Soc. 4:243.

Odynerus cressoni Cameron, 1908. Trans. Amer. Ent. Soc. 34:198.

Distribution: New Mexico (type locality), Texas, South Dakota, Nebraska, Colorado, Arizona, Wyoming.

Stenodynerus foxensis Bohart, new species

Male. Black, clypeus, first antennal segment in front, inter-antennal spot, mandible partly, orbital line, postocular spot, tegula anteriorly, hind mesonotal angle, whitish yellow; front margin of pronotum, legs partly, line across postscutellum, apical margin of tergites 1 to 6 and sternites 2 to 6 (bands on 4-6 broken), yellow; inner margin of flagellum, legs partly, wing veins basally, reddish; wings lightly brown stained. Pubescence minute, dense, silvery. Puncturation moderate, sparse on clypeus, coarse on second tergite subapically and on third sternite. Breadth of clypeus at apex as great as $\frac{3}{5}$ the length of antennal segment 3; last antennal segment large, stout, fitting into a groove in segment 10; interocellar area slightly swollen; middle femur with a distinct tooth; middle and hind tibiae apically swollen, that of hind tibia with a sharp external tooth-like ridge. Apical margins of second and third tergites reflexed, that of second about 3 times as high as that of third. Length to apex of second tergite 7.5 mm.

Female. Markings, pubescence, and puncturation about as in male except as follows: Flagellum black, clypeus black save for a basal spot, apical bands on sternites 4 to 6 complete, clypeus moderately punctured. Depression of vertex about as large as an ocellus. Apical breadth of clypeus about $\frac{3}{5}$ as great as length of third antennal segment. Length to apex of second tergite 8 mm.

Holotype male, *allotype* female, 10 male paratypes, and 1 female paratype, BABOQUIVARI MOUNTAINS, ARIZONA, July to August, 1924 (collection of C. L. Fox, O. C. Poling, collector); 1 male paratype, 14 miles east of ORACLE, ARIZONA, July 27, 1924 (E. P. Van Duzee); 1 male paratype, LOWELL RANGER STATION, PIMA COUNTY, ARIZONA, July 20, 1916; 1 male paratype, PATAGONIA, ARIZONA, August 8, 1940 (W. L. Swisher); 1 female paratype, WILLOW CREEK MOUNTAINS, NEW MEXICO, July, 1933. Paratypes in collections of U. S. National Museum, California Academy of Sciences, and J. Bequaert.

STENODYNERUS XANTIANUS (SAUSSURE)

Odynerus xantianus Saussure, 1870. Rev. Mag. Zool. 22:103.

Odynerus xanthianus Saussure, 1875. Smithsn. Misc. Publ. 254: 324.

Distribution: Common in many parts of Lower California (type locality, Cape St. Lucas), also occurring uncommonly in the southern deserts of California.

STENODYNERUS FUNDATIFORMIS (ROBERTSON)

Odynerus fundatiformis Robertson, 1901. Trans. Amer. Ent. Soc. 27:200.

Distribution: Florida (type locality, Inverness) Georgia, South Carolina, Mississippi, Arkansas, Texas.

***Stenodynerus fundatiformis gonosceles* Bohart, new subspecies**

Black, marked with whitish yellow. Reddish markings restricted mainly to legs. Clypeus well punctured; interantennal tubercles present; posterior margin of pronotum yellowish; male last antennal segment small and slender; male middle femur angled but hardly toothed medially; male hind tibia scarcely swollen; apical margins of tergites 2 and 3 reflexed, that of two about as high as an ocellus diameter, that of three less than half so high. Wings brown stained, violaceous.

Holotype male, *allotype*, female, and 1 female paratype, BABYLON, LONG ISLAND, NEW YORK, June, 1936 (F. Blanton). Other paratypes, MINNESOTA: 1 male, St. Anthony Peak (H. H. Knight); 1 male, Pine City (H. S. Telford). NEW JERSEY: 1 male, Milltown; 1 pair, Lakehurst; 2 females, Browns Mills. VIRGINIA: 1 male, Petersburg; 1 female, Cape Henry (L. Lacey). NORTH CAROLINA: 1 male, Bryson City (J. C. Crawford); 3 females, Black Mountains (W. Beutenmuller); 2 females, Southern Pines. MISSOURI: 1 female, Brandon (E. C. Van Dyke); 1 female, Ozark Lake (E. C. Van Dyke). ALABAMA: 1 female, Tuskegee (R. H. Beamer). ARKANSAS: 1 female, Eureka Springs (E. C. Van Dyke). FLORIDA: 1 female, De Funiak Springs.

Paratypes in collections of U. S. National Museum, University of Kansas, California Academy of Sciences, and J. Bequaert.

***Stenodynerus ochrogonius* Bohart, new species**

Male. Black, marked with whitish yellow as follows: mandible basally, clypeus, scape in front, interantennal spot, orbital line,

postocular spot, front margin of pronotum broadly and hind margin narrowly, tegula partly, spot beneath, postero-lateral angle of mesonotum, line across postscutellum, legs partly, apical margins of tergites 2 to 6 and sternites 2 to 4. Mandible apically, inner surface of flagellum faintly, tegula and legs partly, wing veins basally reddish. Wing membrane nearly transparent. Punctuation moderate to coarse, moderate on clypeus, coarse toward apical margins of abdominal segments 2 and 3. Pubescence fine and silvery. Clypeus sharply two-pointed, moderately incised apically, apical breadth about half the length of the third antennal segment. Last antennal segment broad, flattened, somewhat bent in profile. Weak interocular swellings present. Middle femur with a strong tooth, hind tibia abruptly swollen apically. Second and third tergites reflexed apically, reflex of second almost 3 times that of third. Length to apex of second tergite 8.5 mm.

Female. About as in male with following exceptions: Clypeus black save for a pale basal crescent, orbits with a spot only, flagellum black, propodeum with a lateral yellow spot. Vertex pit considerably larger than an ocellus. Apical breadth of clypeus about as great as length of third antennal segment. Length to apex of second tergite 9 mm.

Holotype male, *allotype* female, 31 male paratypes, and 17 female paratypes, BABOQUIVARI MOUNTAINS, ARIZONA, June to October, 1924 (C. L. Fox collection, O. C. Poling, collector). Other paratypes, 7 males and 11 females, SANTA RITA MOUNTAINS, ARIZONA (F. H. Snow, B. E. White); 5 males and 1 female, OAK CREEK CANYON, ARIZONA (G. E. and R. M. Bohart). I have also seen specimens from PATAGONIA, SONORITA, ORACLE, CHIRICAHUA MOUNTAINS, SANTA CATALINA MOUNTAINS, and HUACHUCA MOUNTAINS, ARIZONA; WILLOW CREEK MOUNTAINS, NEW MEXICO; and BROWNSVILLE, TEXAS.

S. ochrogonius is closely related to *S. huasteca* Saussure from Mexico. The former is a more robust species, however, with the second and third tergites more reflexed and the male last antennal segment larger and less distinctly bent.

STENODYNERUS FUNDATUS (CRESSON)

Odynerus fundatus Cresson, 1872. Trans. Amer. Ent. Soc. 4:242 (holotype, A.N.S.P.).

Distribution: Texas (type locality), Oklahoma, Missouri, Alabama.



Bohart, R. M. 1944. "Stenodynerus fundatus and related species in North America (Hymenoptera, Vespidae)." *The Pan-Pacific entomologist* 20, 69–75.

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