

The Pan-Pacific Entomologist

VOL. XIX, No. 4

OCTOBER, 1943

THREE NEW OXYBELUS FROM SOUTHERN CALIFORNIA (Hymenoptera, Sphecidae)

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The descriptions of the following three species of *Oxybelus* from southern California are presented here in order that they may be available in connection with other investigations.

*Oxybelus cocopa*¹ Pate, new species

The superficial habitus of *cocopa* is very similar to that of the following Mojave Desert form *pitanta*, from which, however, it may be readily distinguished by the yellow clypeus and antennae, the heavy silvery vestiture, the non-foveolate mesonotal-scutellar suture, the straight non-fornicate femoral keel, the rounded squamal lobe, the obsolescent lateral propodeal carinae, and the different conformation of the clypeal lobe.

Type. ♂; In desert on Thompson Ranch, IMPERIAL COUNTY, CALIFORNIA. June 4, 1911. (J. C. Bridwell; visiting flowers of *Pilostyles Thurberi*.) [United States National Museum.]

Male. 4 mm. long. Black; the following citrinous: palpi, mandibles except red apices, clypeus, antennae, pronotum dorsally to and including tubercles, tegulae and axillary sclerites, scutellum anteriorly, postscutellum, fore and middle femora beneath, hind femora apically, all tibiae and tarsi entirely, and first five abdominal tergites with a narrow linear preapical fascia. Fulvous: femora exclusive of yellow maculation, and last abdominal segment. First two abdominal segments ferruginous. Squamae and mucro pellucid subhyaline. Wings clear hyaline, iridescent; veins and stigma light fulvous.

Head fulgid; suborbicular in anterior aspect; clypeus and front with dense appressed, silvery sericeous pile; vertex with similar decumbent pubescence; temples with a thinner but similar vestiture. Front gently convex except for flattened area below behind scapes, with fine close puncturation, width at distal end of scapes one-half the vertical eye length; vertex with puncturation somewhat coarser and more separated than that of front; ocelli in a very low triangle, the ocellocular line one-fourth the postocular

¹ After the *Cocopa*, a tribe of the Yuman Indians.

distance; temples vertically striatopunctate; temporal carinae absent but occipital carina rather well developed and slightly flanged. Antenna with scapes obterete, three-tenths the vertical eye length; pedicel obterete, one and a third as long as first flagellar article; flagellum short, thick, finely puberulent, first segment one and a half the length of second, ultimate article terete, twice the length of penult segment; interantennal distance five-sixths the anten-ocular line. Clypeus with median length one-fifth the vertical eye length; flat laterally to gently tumid discally; median lobe gently rounded out, the apex with a depressed, glabrous, nitidous flange which is obscurely quinquecrenulate marginally. Mandibles falcate; inner margins with a low obtuse dentiform angle on basal third.

Thorax with a vestiture of appressed, glistening silvery pubescence throughout. Pronotum very short, transverse, linear; dorsal face sharply carinate anteriorly to and including tubercles; lateral angles obtuse. Mesonotum gently arched, with rather close, coarse punctures; posterior margin foveate; axillae immarginate laterally; scutellum transversely subsemicircular, gently tumid, with scattered coarse punctures, bisecting carinule weak to obsolescent, lateral margins with wide pellucid flanges; postscutellum transversely sublunate, one-half length of scutellum, rugose, bisected by a carinule; squamae subequal in length to scutellum, transverse-obliquely carinulate, apices acute, inner (posterior) margins with a small rounded convex lobe which does not extend as far caudad as apices. Mucro subequal in length to scutellum, concave above, width at base one-third the length, divergent gradually to apex, the width of which is one-half the length, and with a broad shallow V-shaped excision there, the latero-apical teeth rounded. Mesopleura with coarse punctures obscured by heavy vestiture; prepectus margined anteriorly; episternal suture weakly impressed and foveolate; hypersternauli and sternostirae not evident; metapleura glabrous, horizontally costulate. Propodeum fulgid, with rather close coarse punctures throughout; dorsal face with appressed silvery sericeous pile, otherwise glabrous; posterior face with discal areole strongly margined, broadly cuneate, concave and nitidous within, closed by an acute angle above, long-stalked ventrally, lateral surfaces coarsely striatopunctate; lateral carinae well developed along dorsal face but weak to obsolescent along posterior face and simple not forked below; lateral faces horizontally striatopunctate.

Legs: fore metatarsi with four slender, elongate spines. Middle and hind tibiae with several rows of slender, elongate, testaceous spines on outer faces; the latter also weakly serrate there; longer hind tibial calcar three-fourths the length of hind metatarsi. Hind femora with a short, weak, straight keel above at apex.

Abdomen with a thin vestiture of decumbent silvery pubescence; constricted between segments, the first five with pellucid,

testaceous flanges apically. Tergites with rather coarse close puncturation throughout; chromatorachides moderately developed on first six and with their caudal margins weakly serrate; third to sixth inclusive with long slender latero-apical spines; penult tergite without evident dorsolateral carinules. Pygidium elongate subrectangular, width at base one-half the length, tapering to truncate apex, the width of which is one-third the length, the disc coarsely punctate. Sternites perfulgid; more sparsely punctate than tergites; each with a transverse submedian welt; hypopygium emarginate at apex.

Female. Unknown.

Paratype. A topotypic male specimen, bearing the same data as the type, agrees with the latter in all structural details but has the scutellum entirely yellow and only the first abdominal segment fasciate.

*Oxybelus pitanta*² Pate, new species

The present Mojave Desert form is closely related to *abdominale* from which it may be distinguished by the markedly different conformation of the clypeus, the absence of temporal carinae, the narrow subhastate discal areole of the posterior propodeal face, the truncate inner squamal lobes, and the narrower mucro.

Type. ♂; Cronise, SAN BERNARDINO COUNTY, CALIFORNIA. July 9, 1938. (P. H. Timberlake; on *Chilopsis linearis* [Desert Willow].)

Male. 5 mm. long. Black; the following stramineous: mandibles except red apices, pronotal tubercles, fore and middle tibiae with a narrow stripe on outer faces, hind tibiae basally at knees, and first four abdominal tergites with a very narrow preapical fascia briefly interrupted medially. Fulvous: antennae entirely, trophi. Badeous: apex of clypeal lobe, legs distad of trochanters (hind tibiae brunnescent on outer faces), tegulae and axillary sclerites; pronotum dorsally between lateral angles obscurely sordid badeous. Ferruginous: first two and last two abdominal segments. Pelucid dilute testaceous: squamae, mucro, and apical flanges of first few abdominal tergites. Tibial calcaria testaceous. Middle and hind tarsi brunnescent. Wings clear hyaline, iridescent; veins and stigma dark badeous.

Head suborbicular in anterior aspect; clypeus and front with a moderately heavy vestiture of appressed silvery sericeous pile;

² Pitanta: The Chemehuevi name for the Serrano Indians who lived north of the San Bernardino Mountains, in the Mojave Desert.

vertex and temples with a similar but thinner pubescence, that of vertex suberect. Front with moderately coarse, subcontiguous setigerous punctures throughout; width at distal end of scapes five-ninths the vertical eye length; flat below to weakly and angularly tumid above in lateral aspect; bisected by an impression running ventrad from median ocellus. Vertex fulgid, with punctures somewhat coarser and more separated anteriorly than on front, becoming rather coarsely striatopunctate posteriorly; ocelli in a curved line, the ocellocular line one-fourth the postocellar distance; temples with vertical striatopuncturation; temporal carinae weak to absent; post-temporal region sparsely punctured above, subnitidous below; occipital carina strong, nitidous behind and below this. Antennal scapes obterete, one-third the vertical eye length; pedicel obterete, subequal in length to first flagellar article; flagellum simple, finely puberulent, second segment three-fourths length of first, last article simple, terete, twice length of penult segment; interantennal line seven-eighths the anten-nocular distance. Clypeus with median lobe one-third the vertical eye length; finely punctate throughout; flat laterally to gently tumid discally, medially with a low elongate subnitidous tubercle; median lobe with width subequal to median clypeal length, apically with a sunken, concave glabrous, nitidous bevel, the dorsal edge not completely margined but medially and laterally with a marginate dentoid angle, apical margin gently rounded out, bluntly angular medially, laterad of lobe with a small, inconspicuous tooth on each side. Mandibles slender, falcate; inner margins with a low obtuse dentoid angulation on basal third.

Thorax more or less fulgid; dorsum and pleura with a moderate vestiture of appressed silvery pubescence, and with moderately coarse, close punctures throughout. Pronotum short, transverse; flat dorsally, anteriorly with a high, erect, arched, laminate carina, notched medially, mucronate at lateral angles, from which descends a vertical carinule, and continuous onto tubercles. Mesonotum simple; mesonotal-scutellar suture impressed, foveolate; scutellum transversely subrectangular, gently tumid, coarsely punctate, bisected by a low carinule, lateral margins with broad pellucid flanges; postscutellum one-half length of scutellum; squamae large, broad, flat, subequal in length to scutellum, transversely-obliquely carinulate, apex subacute, inner (posterior) margins with a lobe subtruncate just before apex. Mucro subequal in length to scutellum; flaring from base (width there one-third the length) to apex (width there two-thirds the length) which is roundly excised, the lateroapical angles broadly rounded; concave above, with no trace of carinules or rugulae within. Mesopleura with prepectus sharply margined anteriorly; episternal suture impressed, foveolate; hypersternauli moderately impressed; sternostirae trisinate, moderately developed, running obliquely forward and beneath to the sharply margined anterior edge of mesosternum; metapleura glab-

rous, fulgid, with parallel, horizontal costulae. Propodeum fulgid; dorsal face with a very thin vestiture of short suberect light hair, otherwise glabrous; with moderate puncturation throughout; dorsal face traversed on each side by oblique, subparallel, somewhat irregular rugulae; posterior face on disc with a large, deep, sharply margined, narrow subobhastate areole, trigonally acute and closed above, glabrous, nitidous, perfulgid within, long-stalked ventrally, laterad of which surface is traversed by horizontal, subparallel, somewhat irregular rugulae; lateral carinae well developed for entire length, erect and sublamine dorsally, and simple but with a faint indication of a fork ventrally below; lateral faces with arcuate subparallel rugulae.

Legs: fore metatarsi simple, with four small spinules. Middle and hind tibiae with several rows of long testaceous spines on outer faces; longer hind tibial calcar slender, acuminate, seven-eighths the length of hind metatarsi; hind femora with a fornicate keel above at apex.

Abdomen fulgid; moderately constricted between the segments; with a thin vestiture of short decumbent hair, the tergites somewhat silvery fasciate caudally. Tergites with moderately coarse puncturation throughout; first bisected by a weak impression; first three with chromatorachides, that of third weak, of first two moderately well developed and weakly serrate caudally; third to sixth inclusive with large strong latero-apical spines; penult without evident dorsolateral carinules apically; pygidium subrectangular, slightly longer than wide at base, tapering to apex, the width there one-half the basal width, disc coarsely punctate, apex subtruncate. Sternites subfulgid, more sparsely punctate than tergites, second to sixth with a transverse preapical welt.

Female. Unknown.

Paratypes. Two topotypical males, bearing the same data as the type except that one was taken at flowers of *Asclepias erosa*, agree with the type in all essential features of livery and structural detail.

*Oxybelus puente*³ Pate, new species

The weakly margined, edentate upper edge of the clypeal bevel, the subtrigonal discal areole of the posterior propodeal face, and the more weakly angulate front differentiate *puente* from its nearest relative *fossor* Rohwer and Cockerell, of which *umbrosus* Mickel is the male.

Type. ♂; RIVERSIDE, CALIFORNIA. July 9, 1933. (P. H. Timberlake; taken in copula, flying over sand.)

³ After the Puente Hills between Whittier and Riverside, California.

Male. 5 mm. long. Black; the following deep stramineous: mandibles except red apices, scape anteriorly and annulate at base and apex, pedicel, pronotum dorsally to and including tubercles, scutellum with a small spot at each anterior lateral corner, inner margins of squamae, fore femora apically and beneath, middle and hind femora narrowly annulate at apex, all tibiae on outer faces, fore tarsi entirely, middle and hind metatarsi, axillary sclerites, and first abdominal tergite with a narrow transverse preapical line on each side. Abdomen bright ferruginous. Apex of clypeal lobe castaneous. Flagellum with first few segment brunneous, becoming bright fulvous apically. Middle and hind tarsi beyond first segment sordid fulvous. Pellucid dilute testaceous: tegulae, squamae, apical two-thirds of mucro. Wings clear hyaline, iridescent; veins and stigma badeous.

Head suborbicular in anterior aspect; clypeus and front with a moderate vestiture of appressed silvery pile; vertex and temples with similar but thinner pubescence, that of vertex suberect. Front with rather coarse, subcontiguous punctures throughout except below behind antennal scapes; width at distal end of scapes two-thirds the vertical eye length; flatly concave below behind scapes to transversely subangularly tumid a little above them, bisected by a fine impression running ventrad from median ocellus. Vertex fulgid, anteriorly with punctures somewhat coarser than front, becoming punctatostriate posteriorly; ocelli in a very low broad triangle, inner margins of hind ocelli with a glabrous, nitidous, subtuberculate welt, ocellocular line one-fourth the postocellar distance; temples vertically striatopunctate; temporal carinae entirely absent. Antennal scapes obterete, one-third the vertical eye length; pedicel obterete, four-thirds the length of first flagellar article; flagellum finely puberulent, inconspicuously incrassate distad, first two segments subequal in length, last article simple, terete, twice the length of penult segment; interantennal line seven-tenths the antennocular distance. Clypeus with median length one-fourth the vertical eye length; flat laterally to tumid discally, bisected by a weak arched keel; median lobe with apical width five-thirds the median clypeal length, apically with a narrow, transverse, linear, concave, glabrous nitidous bevel, submarginate above, apical margin shallowly bisinuate, weakly angulate medially and sharply so laterally and in addition with a rounded emargination laterad of which is a strong mucronate tooth. Mandibles falcate; inner margins at basal third with a weak obtuse dentiform angle.

Thorax fulgid; dorsum with a rather sparse clothing of declivous aeneous hair; pleura with a more noticeable vestiture of appressed silvery pubescence. Pronotum short; dorsal face flat, anteriorly with a moderate, cristate carina distinctly interrupted at lateral angles. Mesonotum perfulgid, with large close punctures, disc with a broad shallow longitudinal concavity, coarsely

foveolate posteriorly; scutellum transversely subrectangular, flatly tumid, coarsely punctate, bisected by a low carinule, lateral margins with pellucid laminate flanges; postscutellum transversely rugose, three-sevenths (.43) the length of scutellum; squamae large, subequal in length to scutellum, transversely carinulate, apices acute, inner (posterior) margins with a lobe subtruncate a little before apices. Mucro one and four-tenths the length of scutellum; flaring from base (width one-third the length of mucro) to apex (width two-thirds length of mucro) which is deeply excised (depth of excision one-fourth the length of mucro), the latero-apical angles rounded, concave above and crossed one-fourth way from base by a transverse carina. Mesopleura with moderately coarse, close punctures throughout; prepectus sharply margined anteriorly; episternal suture impressed, foveolate; hypersternauli weak; sternostirae moderate, bisinuate, running obliquely forward and beneath to the sharply margined anterior edge of mesosternum. Metapleura glabrous, perfulgid, with parallel, horizontal costulae. Propodeum perfulgid; with a very thin and inconspicuous vestiture of puberulent hair; dorsal face traversed laterally by oblique, subparallel, somewhat irregular rugulae between which surface is finely punctate; posterior face discally with a sharply marginate, deep concave, narrow subcampanulate areole which is closed and finely, irregularly areolate above, glabrous, nitidous within, long-stalked ventrally, laterad of which surface is traversed by subhorizontal, subparallel, irregular rugulae between which surface is finely punctate; lateral carinae strong throughout, sublamineate above, widely and strongly forked ventrally below; lateral faces traversed by subparallel, somewhat irregular fine rugulae.

Legs: fore metatarsi with three short stiff spines. Middle and hind tibiae with several rows of declinate testaceous spines on outer faces; longer hind tibial calcar slender, acuminate, about three-fourths (.76) the length of hind metatarsi; hind femora with a short, sharp, subfornicate keel above at apex.

Abdomen fulgid; very slightly constricted between segments; with a very thin vestiture of short decumbent silvery hair. Tergites with moderately coarse, separated punctures throughout; first bisected by a moderate impression; first two with moderate, welt-like chromatorachides; fourth to six inclusive with large strong latero-apical spines; penult without dorsolateral carinules apically; pygidium subquadrate, slightly broader than long, tapering slightly from base to apex where the width is subequal to the length, disc very coarsely punctate, apex subtruncate. Sternites more finely punctate and more heavily pubescent than tergites; second to fourth with a transverse pre-apical welt; sixth and seventh with caudal margins deeply angularly excised.

Allotype. ♀; Topotypical. Same data as type.

Female. 5 mm. long. Agrees with the male (type) except in the following features:

Livery much the same but antennae largely light brunneous; abdominal dorsum bisected by a broad light fuscous streak.

Vestiture similar but clypeus, front, temples and mesopleura with heavy sericeous pile; pygidium with appressed ferruginous setulae.

Head with width of front at distal end of scapes eight-tenths the vertical eye length. Antennal scapes about four-tenths (.39) the vertical eye length; pedicel two and a half times length of first flagellar article which is two-thirds length of second; interantennal distance five-eighths the antennocular distance. Clypeus with median length about one-fourth (.242) the vertical eye length; flat laterally to very gently tumid discally, medially with an elongate, subcompressed tubercle; median lobe with apical width about twice the median clypeal length, apically with a narrow, transverse, deflexed, nitidous, glabrous bevel, immarginate above, apical margin bisinuate medially and thus obscurely tridentate, the latero-apical angles in addition with a large strong tooth.

Thorax in general the same as male.

Legs: fore metatarsi with five spines. Middle and hind tibiae strongly spinose on outer faces.

Abdomen perfulgid; with punctures more separated on tergites. Pygidium flat, trigonal, one and a fifth times as long as broad at base, apex broadly rounded, disc with coarse, close, setigerous punctures.

Paratypes. CALIFORNIA: RIVERSIDE: July 9, 1933; (P. H. Timberlake; flying over sand): 2 ♂, 2 ♀; May 25, 1928; (P. H. Timberlake; on *Erigonum fasciculatum* [California Buckwheat]): 2 ♂; August 29, 1926; (P. H. Timberlake; on *Polygonum lapathifolium*, 1 ♂; September 20-24, 1931; (P. H. Timberlake; on *Baccharis viminea* [Mulefat]): 2 ♂; September 30, 1934; (P. H. Timberlake; on *Baccharis emoryi* [Waterwillow]): 2 ♂; October 9, 1929; (P. H. Timberlake; on *Eriogonum gracile*): 1 ♀. WHITTIER, LOS ANGELES COUNTY; August 11, 1920; (P. H. Timberlake; on *Foeniculum vulgare* [Fennel]): 3 ♂. CLAREMONT, LOS ANGELES COUNTY; (C. F. Baker): 1 ♂, 1 ♀. CUSHENBURY SPRINGS, SAN BERNARDINO COUNTY; September 1, 1936; (P. H. Timberlake; on *Lepidospartum squamatum* [Scale-Broom]): 1 ♂.

The paratypes agree with the typical pair in all essential details. The males taken at Riverside, September 20-24, 1931, are smaller, melanic specimens, as is also the male from Cushenbury Springs. A number have a distinct fuscous streak down the back of the abdomen.