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A NEW SPECIES OF CERATOPHYUS FOUND IN CALIFORNIA

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A new species of *Ceratophyus* found in California

(Coleoptera: Scarabaeidae)

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Discovery by Stanley G. Trujillo, County Agricultural Inspector, of a small colony of an unrecognized species of *Ceratophyus* 6 miles north of Lompoc, Santa Barbara County, was first reported to the Bureau of Entomology, California Department of Agriculture, January 18, 1962. The beetles were reported abundant in scrub oak thickets on the Vandenberg Air Force Base in the area north of Lompoc. They were found tunneling downward six feet or more and pushing up white sand, forming mounds 3" to 6" high. The mounds, similar to those made by gophers, quickly elicited the appropriate common name, Gopher Beetle.

The genus *Ceratophyus* has not been reported previously from the Western Hemisphere, the five known species and several varieties occurring from Morocco, Spain, Portugal and Italy to Siberia, South Russia and Sikkim. Investigation has revealed no known specific name for this very distinct species introduced into California. It is therefore described below as new.

Ceratophyus gopherinus Cartwright, new species

Holotype male: Length 20 mm., width of pronotum 10 mm., elytra 9 mm. Black, moderately shining. Mandibles very noticeably protruding forward beyond anterior margin of the head, the mandible tips about as far forward as the tip of the clypeal horn. Each mandible much longer than wide with two strong teeth, the outer rounded, the inner acutely tipped and with a very small denticle or tooth on inner edge just in front of the labrum; upper surface concave, with very coarse, shallow punctures basally; smooth forward and outward to the thin sharp edges. Labrum edged in dull red, quadrangular, very coarsely, shallowly, setigerously punctate, the hairs moderately long and very fine; irregular margin with long, much coarser hairs. Clypeus triangularly extended forward and upward in a long, moderately acute horn which is finely, roughly sculptured with close elongate punctures and rugae; clypeus smoother and slightly concave near genal suture; head surface smooth and shining back of cly-

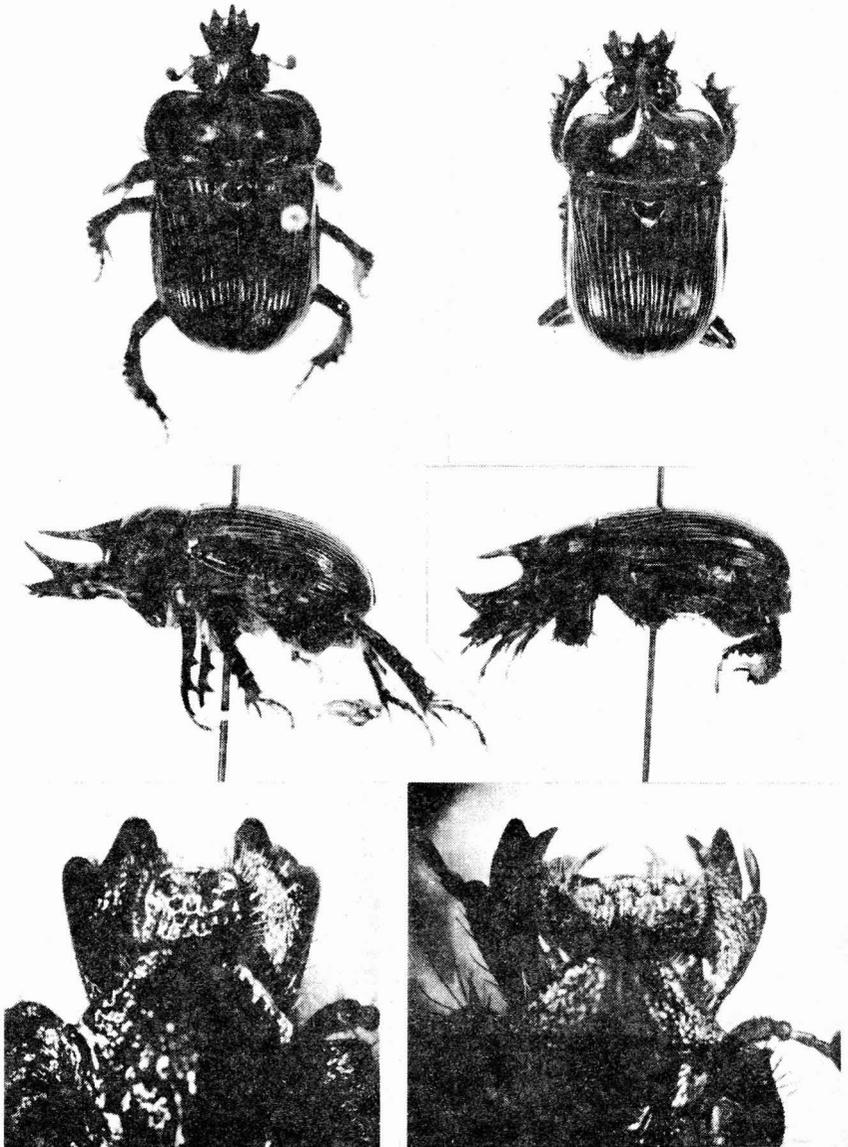


Plate I

Left: *Ceratophyus gopherinus* Cartwright, new species; right: *C. fischeri* Fischer. Bottom photos show differences in labrum.

peal horn; genae set off by a small but noticeable notch and a weak carina extending posteriorly; genae almost right angled, lateral margins subparallel, fringed with long, coarse, close hair, basally rounding sharply to the posterior margin of the eyes; the latter about half as long as the lateral margin of the gena.

Pronotum about twice as wide as long (excluding horn), ratio 10:6; very widely rounded laterally, without noticeable anterior or posterior angles, with a fine complete margin and fringe of long hair; surface very convex with a long slender horn extending forward over the head; surface of anterior slope of pronotum and narrowly posteriorly along lateral margin smooth and shining; coarsely, irregularly, deeply punctate over central disc and narrowly extending out the upper surface of the horn, disc similarly punctate gradually becoming very coarsely densely rugose laterally, basally much smoother with scattered fine to very moderate shallow punctures, midline lightly impressed basally and with scattered moderate punctures; pronotal horn densely, closely, deeply, finely punctate laterally and ventrally. Scutellum heart shaped, wider than long, without acute angles, weakly convex, surface with vague, very shallow, fine punctures.

Elytra about $1/4$ longer than wide, striae moderately deep on disc, less so laterally, strial punctures very fine, almost imperceptible, first striae interrupted by scutellum, intervals moderately convex, surface very vaguely uneven, apically the elytra smoother with striae becoming obsolete to absent at tip.

Underside quite hairy, especially metasternum which shows a fine, median keel or carina. Legs noticeably long, all coxae unusually prominent. Posterior legs placed far back, metasternum and abdomen about equal in length. Abdominal segments with surface uneven and less hairy than sternum. Pygidium weakly concave laterally, surface closely, roughly setigerously punctate, hairs fine and relatively inconspicuous. Terminal abdominal segment with fringe of long coarse hair bordering pygidium. Aedeagus distinct, see Plate II, upper right and left.

Front tibia with six lateral teeth, anterior face punctate, spur not bifid. Middle and hind tibiae arcuate, each with six prominent transverse ridges bearing a row of long, coarse, close-set hairs which give the legs a hairy appearance.

Allotype female:--Length 19 mm., width of pronotum 9.5 mm., elytra 8.5 mm. Essentially as in male except for development of horns and more extensively rough sculpture of head and pronotum. Female clypeal horn short, vertical, acute, and not overhanging anterior edge of clypeus. Median anterior area of pronotum forming a blunt, squared protuberance with sharp upper forward edge and sharp lateral corners, anterior vertical face about $3/4$ as high as wide and strongly closely punctate. Protuberance of pronotum concave immediately back of upper anterior edge, producing a sharp thin edge on vertical face.

Variation: Males vary in length from 16 to 23 mm., females from 15 to 21 mm. While the beetles generally show black only, never any iri-

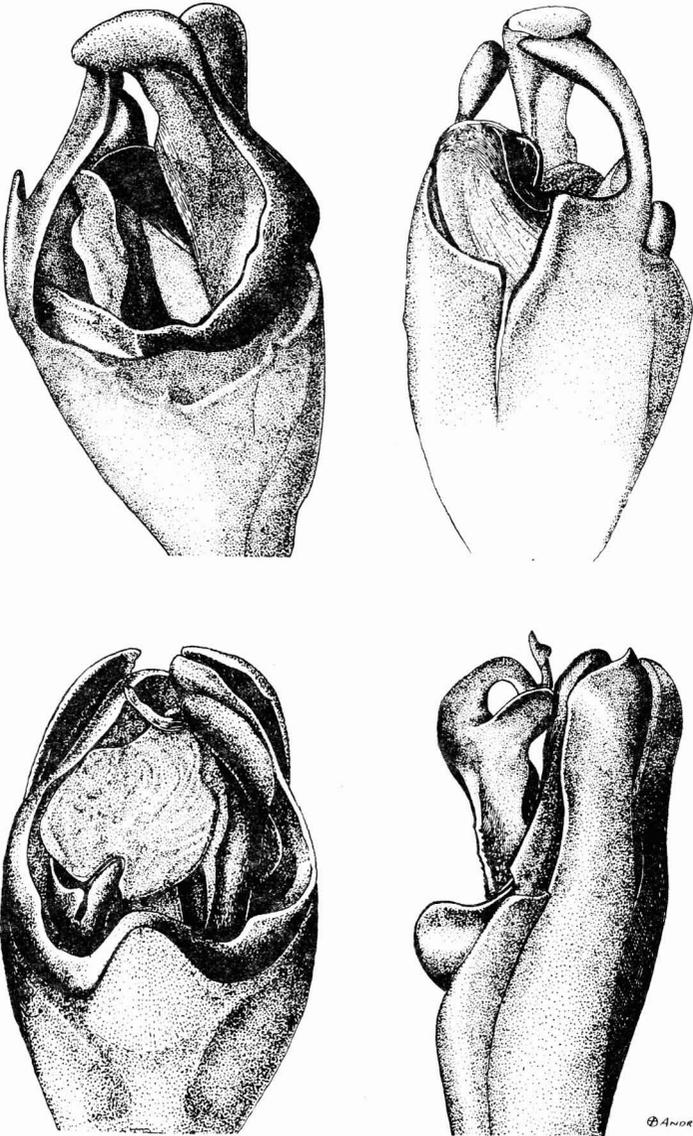


Plate II

Upper left: Dorsal view aedeagus of *Ceratophyus gopherinus* Cartwright, new species; upper right; lateral-ventral view of same. Scale 1 mm. Lower left: dorsal view aedeagus of *Ceratophyus fischeri* Fischer; lower right, lateral view of same from the left. Scale: 1 mm.

descence or other color, 60% of the females and 87% of the males show the red border of the labrum. In about 1/4 of the male specimens the labrum is longer than wide, in slightly more than 1/4 the labrum is practically square, while a little less than 1/2 show the labrum slightly wider than long. See Plate I bottom left. In females practically all show the labrum wider than long.

Type locality: Vandenberg Village, Santa Barbara Co., California. Holotype male collected, 27 Feb. 1963, by W. E. Simonds et al. USNM #68917.

Paratypes will be deposited in the following collections: California Department of Agriculture, California Academy of Sciences, Museum of Comparative Zoology, Chicago Natural History Museum, Canadian National Collection, British Museum (Natural History), Museum National d'Histoire Naturelle (Paris), Naturhistoriska Riksmuseet (Stockholm), Museum G. Frey, and U. S. National Museum.

Allotype and 105 paratypes, all from California, labelled as follows: 2 males—Lompoc, Santa Barbara Co., I-18-62, on soil, S. G. Trujillo, Cal. Dept. Agr. #62A22-38; 1 male, 1 female—Santa Maria, Vandenberg A. B., 2 Feb. 1962, R. P. Allen; 1 male, 1 female—Lompoc, 5 mi. N., Feb. 1962, J. Betz; 5 males, 5 females—Lompoc, Vandenberg Air Base, 2/7/62, LG Keenan; 1 male, 1 female—Vandenberg A. F. B., Santa Barbara Co., II-8-62, S. Trujillo, G. Beevor, Cal. Dept. Agr. #62B13-7; 3 males, 1 female—Lompoc, 5 mi. N., Santa Barbara Co., II-14-62, W. E. Simonds; 1 male—Vandenberg A. F. B., S. Barbara Co., II-19-62, in burrow, Joe Betz, Cal. Dept. Agr. #62B23-66; 4 males, 1 female—Vandenberg A. F. B. Santa Barbara Co., II-19-62, T. Gallion et al; 4 males—Lompoc, 5 mi. N., Santa Barbara Co., II-23-1962, S. G. Trujillo, F. L. Blanc; 11 males, 2 females—Vandenberg Village, Lompoc, trap, 6 Feb. 1963, S. Trujillo; 12 males, 15 females—Vandenberg Village, surface trap, 21 Feb. 1963, W. E. Simonds; 5 males, 9 females—Lompoc, Santa Barbara Co., III-IV 1962, S. G. Trujillo.

The male of *Ceratophyus gopherinus* superficially rather closely resembles *C. fischeri* Fischer but differences are actually numerous and very clear. In *C. fischeri* the labrum is twice as wide as long and slightly convex, Plate I, lower right; in *gopherinus* much narrower and flat or even slightly concave, Plate I, lower left. *C. fischeri* shows violaceous reflections, is generally smoother, the genae of different shape, the mandibles much wider and the genitalia very different, Plate II, top. In all of the species known to me, excepting only *gopherinus*, the females have two clypeal horns one behind the other. The median point or top of the clypeus extends upward in a sharp distinct horn, with a second similar horn farther back usually connected by a distinct carina. In *gopherinus* the tip horn is obsolete and the second horn is very close to the anterior tip of the clypeus.

C. gopherinus differs from all the other species I have seen in having a narrow labrum. I have examined *C. hoffmanseggi* Fairm., *polyceros* Pall., *dauricus* Jek., *sulcicornis* Fairm., and *martinezi* Lauff.; all have the wide labrum.