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NEW SCOLYTIDAE (COLEOPTERA) OF SOUTHERN CALIFORNIA WITH A KEY TO THE SPECIES OF PSEUDOTHYSANOES BLACKMAN

By C. R. BRUCK

When the author described the species *Renocis penincillatus* Br.¹ he said that the species was not of economic importance. Since that time it has been the writer's misfortune to see many acres of valuable watershed of the San Gabriel Mountains destroyed by fire. This fire resulted in loss of life and great property damage by the floods caused by the following rains.

The killing of shrubs and bushes, the chief vegetation of the Southern California foothills, by insects undoubtedly increases the fire hazard. The author while making an intensive study of the bark beetles in this type of growth found several new species which are made known in this paper.

In making the key to the species of *Pseudothysanoes* Blackman the author, due to the lack of certain species, had to copy, adverbium, from Dr. Blackman's² key of this genus.

Acknowledgments for assistance afforded in making this study are due to Mr. A. J. Barton, Assistant Forester and Fire Warden, Los Angeles County Department of Forestry, for the determinations of the host plants; Dr. John Comstock and Prof. L. J. Muchmore of the Los Angeles Museum for their coöperation; Mr. Chas. S. Cressaty of Los Angeles who made it possible for the writer to accomplish the field work; and to Mr. A. T. McClay for the long series of species presented.

KEY TO SPECIES³

1. Declivital interspaces subequally elevated with a single row of spatulate bristles 2

Third and ninth declivital interspaces elevated and ornamented with a double row of spatulate bristles 7
2. Sutures of antennal club arcuate; pronotum of the males distinctly subtriangular in outline 3

Sutures of antennal club transverse; pronotum of the males faintly subtriangular in outline 6

¹ Canadian Entomologist, Vol. 65.

² Bulletin New York State College of Forestry, Sept., 1928.

³ After Blackman, Bull. N. Y. St. Col. For., Sept., 1928.

3. Sutures of antennal club uniformly curved; elytral bristles fine and faintly conspicuous 4

First suture of antennal club broadly curved, second narrowly curved; elytral bristles broadly spatulate and conspicuous 5

4. First and second sutures of antennal club subangulate; anterior margin of the pronotum widely margined in the males and armed with four asperities; anterior pronotal slope armed with few small sharp asperities; elytral striae faintly impressed *hopkinsi* Blkm.

First and second sutures of antennal club obliquely arcuate; anterior margin of the pronotum narrowly margined in the males and armed with two to four asperities; first elytral stria distinctly impressed, others not impressed *bartoni* n. sp.

5. "Pronotum⁴ with anterior area more strongly asperate; elytral declivity of males more convex, with summit well behind the middle of elytra; stria punctures moderately coarse (Eastern)" *drakei* Blkm.

"Pronotum⁵ with anterior area less strongly asperate; elytral declivity of the males more oblique, with the summit near the middle of the elytra; stria punctures coarser (Eastern)" *rigidus* (Lec.)

6. Anterior margin of the pronotum armed with two asperities; elytral declivity deeply sulcate *sulcatus* n. sp.

Anterior margin of the pronotum armed with six asperities; elytral declivity uniformly rounded *phorodendri* Blkm.

7. Third declivital interspace more strongly elevated than the ninth, first ornamented with but a single row of scale-like bristles 8

Third and ninth declivital interspaces subequally elevated, first ornamented with a double row of scale-like bristles 9

8. "Anterior⁶ margin of the pronotum scarcely serrate in the males, not serrate in the females; elytra more narrowly rounded behind, ornamented with narrower spatulate bristles; smaller (Eastern)" *lecontei* Blkm.

"Anterior⁷ margin of pronotum moderately serrate in the males, weakly serrate in the females; elytra not so narrowly rounded behind, ornamented with wider spatulate bristles; larger" *sedulus* Blkm.

⁴ Adverbium from Blackman's key, p. 200, Bull. N. Y. St. Col. For., Sept., 1928.

⁵ Adverbium from Blackman's key, p. 200, Bull. N. Y. St. Col. For., Sept., 1928.

⁶ Adverbium from Blackman's key, p. 200, Bull. N. Y. St. Col. For., Sept., 1928.

⁷ Adverbium from Blackman's key, p. 200, Bull. N. Y. St. Col. For., Sept., 1928.

9. Front of head of male plano-concave below; anterior margin of pronotum with from four to eight asperities; striae punctures of elytra rather fine; first and second declivital interspaces not granulate above *gambetti* Blkm.

Front of head of male convex below; anterior margin of pronotum with seven asperities; striae punctures rather coarse; first and second declivital interspaces coarsely granulate above *barberi* Blkm.

PSEUDOTHYSANOE BARTONI N. Sp.

Length 1-1.5 mm. Front of male convex between the eyes, densely, closely, finely granulate punctate, very opaque, sparsely clothed medially with moderately long coarse hairs; small, deep fovea behind epistomal margin; sutures of antennal club obliquely arcuate. Pronotum slightly wider than long, 0.9:0.7, subtriangular in shape, very sparsely clothed with short coarse hairs, constricted near anterior margin, impressed dorsally from the constriction to behind the summit; anterior margin narrowly margined, armed medially with from two to four small, sharp asperities; anterior slope armed with numerous small sharp asperities; posterior slope densely, closely, finely granulate; sides more glabrous, faintly sparsely punctate. First elytral striae impressed, more deeply on the declivity, punctures small, separated by more than their own diameter; interspaces smooth and flat, faintly rugose on the disk, clothed with a single row of short spatulate hairs interspaced with a few longer ones; declivity with no distinctive differences of the elytra.

The female differs from the male by having frontal fovea deeper, larger, extending to between the eyes; pronotum without asperities on anterior margin and less distinctly subtriangular.

This species is closely related to *P. hopkinsi* Blkm. but is readily separated by having but two to four asperities on the anterior pronotal margin, numerous asperities on the anterior pronotal slope, and by the lack of vestiture of the elytral striae.

The author took a very long series of this species from dead and dying twigs of *Malvastrum thurberi* at Saddle Peak, Santa Monica Mts., Calif., XII-16, 1933. Mr. A. T. McClay took a long series of this species from the same host plant at Pacoima, Calif.

The holotype and allotype will be retained in the author's collection; one pair of paratypes will be sent to Dr. E. C. Van Dyke at the University of California to be deposited in his collection at the California Academy of Sciences; one pair will be sent to Dr. J. M. Swaine to be deposited in the collection at the Canadian National Museum; one pair will be deposited in the collection of the Los Angeles Museum; and ten pairs will be retained in the author's collection.

PSEUDOTHYSANOE SULCATUS N. Sp.

Length 1.25-1.75 mm. Front of male shallowly impressed; impression flat, granulate punctate, moderately clothed with short hairs, densely fringed with long hairs; antennal scape clavate, sparsely clothed with long hairs, club slightly longer than the funicle, septate, sutures transverse. Pronotum slightly wider than long, 0.9:0.7, slightly subtriangular in shape, moderately densely clothed with short, thick, scale-like hairs on anterior slope becoming finer and more sparse on the sides and posterior slope; sides and posterior slope densely, closely, finely granulate, opaque; summit closely, densely serrate; on the anterior slope the serrations are less dense, larger, and more acute than on the summit; anterior margin with two small, acute median teeth. Elytral striae marked only by a row of very widely spaced, very short, very indistinct hairs; interspaces marked only by a row of very widely spaced, short, scale-like hairs; elytral surface opaque, densely, closely, finely granulate; first and second declivital interspaces impressed at summit forming a deep sulcus; posterior half of declivital face flat, vestiture and markings same as on the elytra.

Front of female deeply concave; concavity densely clothed with short coarse hairs; vestiture of antennal scape longer and denser than in the male; serrations on anterior slope of pronotum coarser but more sparse, summit coarsely granulate but not serrated; elytral striae very faintly, very indistinctly impressed.

This species is readily separated from any of the others of this genus by the sulcus formed by the first and second declivital interspaces being deeply impressed.

The author collected a long series of this species from dead and dying twigs of *Ceanothus integerrimus* on Mt. Wilson, Calif. and from *C. divaricatus* on Henniger Flats, Mt. Wilson, Calif.

The holotype and allotype will be retained in the author's collection; one pair of paratypes will be sent to Dr. E. C. Van Dyke at the University of California to be deposited in his collection at the California Academy of Sciences; one pair will be sent to Dr. J. M. Swaine to be deposited in the collection of the Canadian National Museum; one pair will be deposited in the collection of the Los Angeles Museum; and ten pairs will be retained in the author's collection. All type material is designated from specimens taken on *Ceanothus integerrimus*.

PHLÆOSINUS GRANULATUS N. Sp.

Length 1.5-2 mm. Front of male densely, minutely granulate except on the deep concavity between the eyes; concavity glabrous, very sparsely punctate with moderate punctures,

fringed with numerous short hairs; antennal club longer than funicle and scape combined, 1.25:1.00, first and second segments of antennal club subequal, first suture subarcuate, second slightly obliquely arcuate, third segment as long as the first and second combined and divided medially by a strongly oblique row of short hairs and with a faint row at the apex. Pronotum wider than long, 5.00:3.5; sides strongly arcuate, slightly constricted behind the anterior margin, constriction very faintly impressed on the dorsum; very densely, minutely granulate on the disk and sides, glabrous on the anterior half which is densely moderately punctate; sparsely clothed with short erect hairs. Elytra with striae half as wide as the interspaces, shallowly impressed, less distinct on the sides; striae densely, closely, finely granulate obliterating the striae punctures; interspaces plano-convex, densely, closely, finely granulate with a distinct row of small, widely spaced granules, sparsely clothed with short hairs; declivity sparsely clothed with short hairs, declivital face densely, minutely granulate punctate, very densely, closely, finely granulate at the summit and apex; first and third interspaces slightly elevated, more distinctly on the summit, serrations very sparse, moderately large, and acute at the summit, a single moderately large tooth on the declivital face, and one large one at the apex, second and fourth interspaces with very small granular serrations, widely spaced, the entire length of the interspace. Mesasternum precipitous.

The female differs from the male by having the front plano-convex, naked, densely, minutely granulate punctate. Elytral interspaces are less opaque on the disk, declivital serrations are smaller, less acute, and more numerous, the declivital interspaces are more densely pubescent.

P. granulatus is distinguished from *P. swaini* Br. by the very dense, close granules of the elytra and pronotum and by having small granular serrations on the second and fourth declivital interspaces. It is readily separated from *P. russus* Sw. by having the pronotal sides strongly arcuate and by having a row granular-like elevations on the elytral interspaces.

This species was taken in long series from under the bark of dead and dying twigs and branches of *Cupressus forbesi* in Santa Ana Canyon, Orange Co., Calif., XII-10-1933 by the author.

The holotype, allotype, and ten pairs of paratypes are retained in the author's collection; one pair will be sent to Dr. E. C. Van Dyke at the University of California to be deposited in his collection at the California Academy of Sciences; one pair will be sent to Dr. J. M. Swaine to be deposited in the collection at the Canadian National Museum; and one pair will be deposited in the collection at the Los Angeles Museum.

PSEUDOCRYPTHALUS MACLAYI N. Sp.

Length 2 mm. Front densely finely granulate, densely, very minutely, shallowly punctate, moderately densely clothed with short coarse hairs, longer hairs on the epistomal margin, distinctly impressed between the eyes; lateral borders of the impression clothed with short, narrow, very coarse, brown, tooth-like hairs and armed medially on each side with a prominent, coarse, granule-like tooth; epistomal margin armed with a small median granule and clothed with long hairs; antennal club short and stout, sparsely clothed with short stiff hairs. Pronotum wider than long, 1.4:0.9, densely clothed with short brown and white scales hiding the pronotal surface; scales forming pattern of white with a light brown arrow head-shaped median spot on the disk and a lateral dark brown spot, the anterior border of which has two prominent teeth, one acute, the other rounded and shorter; the posterior border is armed with three equally prominent, subacute teeth; sides strongly arcuate, strongly impressed behind the anterior margin; anterior margin broadly rounded, fringed with recurved short, broad, scale-like hairs. Elytra densely clothed with short, brown and white scales forming brown and white bands across the elytra, the anterior band is brown and narrow, becoming very narrow laterally, the third band is as wide as the white second band, the posterior margin attains the summit of the declivity; striae distinctly impressed with moderate, deep punctures separated by less than their own diameter from which arises a very fine, very short, very inconspicuous hair; interspaces plano-convex, armed with a single median row of upright, very broad, brown, spatulate hairs; declivity steep, clothed with white scales on the declivital face surrounded by brown scales; first and second interspaces flat, finely granulate, minutely punctate, vestiture when present is of white, short scales but unarmed with the broad spatulate hairs of the elytra; striae punctures small, shallow, separated by several times their own diameter.

Frontal variations are that the tooth-like hairs are shorter and less numerous in some specimens; the vestiture laterally of the impression is often sparse or lacking. On the declivity the striae often do not attain the posterior margin. These may be sexual differences but due to the intergradation of the extremes the writer does not find them constant enough to name them as definite sexual characters.

This species is readily separated from *P. brittaini* Sw. and *P. cridellei* Sw. by the more dense vestiture of the elytra; characters of the elytral declivity; and by the serrations on the lateral brown spots of the pronotum.

This species was described from 352 specimens collected by Mr. A. T. McClay; six were taken by beating *Encelia californica* in Westwood Hills, Calif., one on V-1-1935, one on V-

11-1935, and one on VI-28-1935; two were dug out from under the bark-like epidermal layer of the same host, same locality on XII-25-1935, twenty more on XII-30-1935; 324 specimens were taken by Mr. McClay and the author at the same locality from the same host plant on I-26-1936.

The holotype will be retained in the author's collection with twenty-five paratypes; one paratype will be sent to Dr. E. C. Van Dyke at the University of California to be deposited in his collection at the California Academy of Sciences; one will be sent to Dr. J. M. Swaine to be deposited in the collection at the Canadian National Museum; one will be deposited in the collection at the Los Angeles Museum, and twenty-five will be sent to Mr. McClay.

CARPHOBORUS CRESSATYI N. Sp.

Length 1.5-3 mm. Front of male plano-convex, slightly impressed behind the epistomal margin, entire front moderately clothed with moderately long scale-like hairs; armed with a medial granular-like tubercle between the eyes; epistomal margin fringed with sparse long hairs; cephalic portion minutely granulate punctate; sutures of antennal club strongly, obliquely arcuate, tip of club rounded to conform with sutures. Pronotum wider than long, 1.3:1.0, very densely, minutely punctate, densely clothed with very short scale-like hairs; sides distinctly subparallel on posterior two-thirds, strongly narrowly anteriorly and distinctly constricted behind the anterior margin; very densely, finely punctate, punctures deeper on the posterior two-thirds than on the anterior third; densely clothed with very short scale-like hairs. Elytral striae distinctly impressed with large, deep, closely placed punctures; interspaces plano-convex, densely, finely, closely punctate, densely clothed with very short scale-like hairs, wider than the striae except on the declivity where the first is as wide as the striae, the second narrower, and the third wider; first and third declivital interspaces very sparsely armed with acute tubercles, slightly longer than the scale-like hairs.

The female differs from the male by having the front deeply impressed between the eyes; impression densely, finely granulate-punctate, and densely fringed with long hairs; serrations of the declivital interspaces larger and more numerous than in the males.

This species⁸ according to the key to species of this genus by Bruck comes in the group with *C. simplex* Lec. *C. vandykei* Br. but is readily separated from *C. simplex* Lec. by the sutures of the antennal club being strongly obliquely arcuate and is separated from *C. vandykei* Br. by having the second elytral interspace distinct the entire declivital length.

⁸ Key to Species of Genus *Carphoborus* Eichhoff, Can. Ent., May, 1933.

The holotype, allotype, and ten pairs of paratypes are retained in the author's collection; one pair of paratypes will be sent to Dr. E. C. Van Dyke to be deposited in his collection at the California Academy of Sciences; one pair to Dr. J. M. Swaine to be deposited in the collection at the Canadian National Museum; and one pair of paratypes will be deposited in the Los Angeles Museum.

C. cressaty was taken under the bark of dead and dying twigs and branches of *Pseudotsugae macrocarpa* in long series by the author at Arroyo Seco, Los Angeles Co., Calif., XII-25-1933.

PSEUDOHYLESINUS SERRATUS N. Sp.

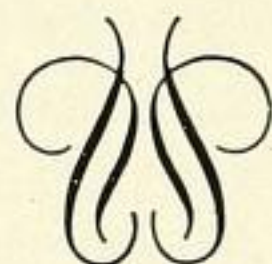
Length 3-3.5 mm. Front slightly longer than wide, densely, coarsely granulate punctate, very shallowly and narrowly impressed behind the epistomal margin, very sparsely clothed with indistinct hairs; epistomal area divided by a short, low, indistinct carina; epistomal margin sparsely clothed with short hairs; beak wider than between the eyes, wider than long; vortex densely, closely, finely, shallowly granulate punctate. Pronotum wider than long, 1.7:1.1, densely closely, moderately, prominently granulate punctate on the disk, granules more prominent on the sides, less prominent and fewer on the anterior third with the punctures larger and shallower; densely clothed with short, broad, white and brown scales interspersed with short stiff bristles, white scales more abundant on the sides; a longitudinal stripe of white scales extends anteriorly from the base to the dorsal impression; sides subparallel, convergent for over half the length, then suddenly strongly constricted; constriction extending across the dorsum; anterior margin broadly rounded, fringed with a row of short, stiff, widely spaced, coarse, upright hairs. Elytral striae as deep as wide, punctures small, deep, separated by at least two times their diameter; interspaces convex, densely clothed with short, broad scale-like hairs obliterating the surface, scales brown and yellow forming patchy patterns of brown and yellow spots variable in size, pattern, and dominance in color; the immature specimens have more yellow than brown whereas the more mature specimens have more brown which is more dominant, the interspaces are armed with a single row of prominent, very widely spaced granules; alternate interspaces of the declivity distinctly elevated and armed with prominent, widely spaced serrations, those of the seventh and ninth interspaces larger than those of the first, third, and fifth; in a few of the specimens the first and third interspaces are more indistinct; this may be a sexual character; the second declivital interspace is increasingly narrowed apically until it is obsolete midway of the declivital face.

This species is closely related to *P. nebulosus* Lec. but is readily separated by the subparallel sides of the pronotum and

by the distinct serrations on the declivital interspaces and by the alternately elevated interspaces.

P. serratus was taken from dead limbs and trunk of *Pseudotsugae macrocarpa* at West Fork San Gabriel Canyon, Los Angeles Co., Calif., XII-29-1934 by Mr. Roy Kessinger of Altadena, Calif.

A series of fourteen specimens were examined, seven of which were immature, lighter in color. The holotype and ten paratypes are retained in the author's collection; one paratype will be sent to Dr. E. C. Van Dyke at the University of California to be deposited in his collection at the California Academy of Sciences, one will be sent to Dr. J. M. Swaine to be deposited in the Canadian National Museum, and one will be deposited in the Los Angeles Museum.



A SYNOPTIC REVISION OF THE SUBFAMILY
HYLESININAE (SCOLYTIDAE-COLEOPTERA)
OF WESTERN NORTH AMERICA
NORTH OF MEXICO¹

By C. R. BRUCK

The only extensive work on the family Scolytidae of North America was published in 1918 by Swaine, and dealt with Canadian Bark Beetles (Swaine, 1918). That publication included only the more northern members of the family. Due to the lack of complete keys and descriptions, workers have encountered much difficulty in studying our western and southern members of this group of destructive forest insects. Because of work

¹ This paper was originally written as a thesis for M. S. degree at the University of California in 1932. The author has revised and brought the original paper up to date for this publication. Due to the great length the paper will appear in six installments.