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(Coleoptera: Scarabaeidae: Rutelinae)**

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***Plusiotis alfredolau*, a new sibling species of  
*P. badeni* Boucard  
(Coleoptera: Scarabaeidae: Rutelinae)**

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**Abstract:** *Plusiotis alfredolau* is described from the vicinity of Fortín de las Flores, Veracruz, Mexico. It is very closely related to *P. badeni* Boucard, and is nearly indistinguishable externally. The male and female genitalia, however, are very different from those of *P. badeni*.

Key Words: Scarabaeidae, *Plusiotis*, new species.

### Introduction

During the past thirteen years or more, Mr. Terry W. Taylor and Mr. Alfred D. Lau have collected occasional specimens of a *Plusiotis* species presumed to be *P. badeni* Boucard in the vicinity of Fortín de las Flores, Veracruz, Mexico. Several of these specimens were presented to me in 1993, and upon dissection of the male and female terminalia it was apparent that they represent a heretofore undescribed sibling species of *P. badeni*.

Morón (1990) included *P. badeni* in his "lacordairei group" which, at that time, consisted of 11 species. Although he describes this group as homogeneous, he does not provide defining characters. In a preliminary evaluation of the "lacordairei group" I was unable to find definitive characters to distinguish it within the genus. A key to the approximately 80 presently recognized species of *Plusiotis* does not exist, and it is beyond the scope of the present work to include such a key. However, *P. badeni*, its new sibling species, *P. alfredolau* (together referred to as the badeni species group), and *P. turckheimi* Ohaus, which may represent the sister taxon of the badeni species group, may readily be distinguished from all other known species of *Plusiotis* by the following combination of characters: relatively small (20-26 mm in length); iridescent green dorsally, with pink, purple or pinkish-brown band along lateral margins of pronotum; male parameres subspatulate, slightly to considerably asymmetrical.

### Key to the species of the *badeni* species group and to *P. turckheimi*

1. Apical calla rounded, metallic golden; parameres slightly to strongly asymmetrical, weakly or not notched at apex; east-central Mexico. (*badeni* species group) ..... 2  
Apical calla semiconical, greenish-golden; parameres strongly asymmetrical, conspicuously notched at apex; southern Chiapas, Mexico and western Guatemala ..... *turckheimi* Ohaus
2. Ventral surface of body metallic silvery green; parameres strongly asymmetrical without conspicuous ventral "keel"; female genital plates with smoothly rounded basal margins; Hidalgo, Puebla, and Veracruz(?), Mexico .....  
..... *badeni* Boucard  
Ventral surface of body iridescent green; parameres slightly asymmetrical with conspicuous ventral "keel"; female genital plates narrowed proximally into rounded protuberances; Veracruz, Mexico ..... *alfredolau* Hawks, n. sp.

In the description of the new species, wherever applicable, I refer to the characters Morón (1990) used throughout his monograph. All measurements are rounded to the nearest 0.5 mm.

### Genus *Plusiotis* Burmeister

*Plusiotis* Burmeister, 1844, Handb. Ent., vol. 4 (1), p. 417.

Type-species: *Plusiotis victorina* (Hope).

*Plusiotis alfredolau* Hawks, new species  
 Figures 2-6.

**Male** (Fig. 2): Length 22-24 mm (holotype = 23.5 mm)(n = 9). Dorsal surface of head, pronotum, elytra, and pygidium mostly iridescent yellowish-green; clypeus and pronotum edged with band of pinkish-purple; apical calla golden; ventral surface of body iridescent green, in some specimens slightly pinkish; femora iridescent green; tibiae pinkish-purple; inner surfaces of meso- and metathoracic tibiae paler; tarsi iridescent greenish-golden to coppery; antennal scape iridescent pinkish-yellow to purplish; remainder of antenna brown; sternal setae very pale tan, fine, sparse; dorso-lateral surface of mandible with small golden patch; remainder of mandible brown with black edges.

Dorso-lateral border of mandibles slightly sinuate; mandibles internally strongly lobed, right mandible more irregularly lobed than left. Anterior border of labium slightly sinuate, notched at center. Clypeus semicircular in profile. Ratio of interocular distance to width of pronotum at base = 1 : 2.4. Ratio of antennal club length to interocular distance = 1 : 1.8. Dorsal surface of head with extremely fine punctures, visible only with magnification.

Pronotal basal margin absent in central region adjacent to scutellum. Pronotal surface like that of head. Mesosternal process moderately long, slightly dorso-ventrally compressed, rounded at apex.

Each elytron with 8 or 9 distinct striae, 1st, 3rd, 5th and 7th interstriae weakly punctate, punctures forming faint longitudinal lines; epipleural fold narrow, terminating just posterior to first abdominal sternite.

Genital capsule (Figs. 3-5): Length 8.5-9.5 mm (holotype = 9.0 mm). Parameres slightly asymmetrical, subspatulate, weakly notched at apex; sinuate in lateral view; thin, conspicuous, ventrally-projecting "keel"; ventral plates nearly symmetrical, acute apices curved inward towards base of keel.

**Female:** Length 23-26 mm (allotype = 24.5 mm)(n = 7). Females are virtually identical to males in terms of gross morphological and coloration characteristics. As is common in the genus, the female body is slightly more convex in profile, legs and tarsi are relatively slightly smaller, and the antennal club is shorter.

Ratio of interocular distance to width of pronotum at base = 1 : 2.4. Ratio of antennal club length to interocular distance = 1 : 2.

Inferior genital plates (fig.6) subcircular, strongly convex, irregularly emarginate along apical margin; narrowed proximally into rounded protuberances which extend beyond the base of attachment; sparse, erect, pale tan setae mainly on apical one-third.

**Type Data.** Holotype male: Mexico: Veracruz: Fortín, 1255 m, 4 June 1982, T. W. Taylor and A. D. Lau. Allotype female: Mexico: Veracruz: Córdoba, 6 July 1966, J. S. Buckett and M. R. and R. C. Gardner. Holotype deposited at the California Academy of Sciences, Type # 17250. Allotype deposited at the Essig Museum, University of California, Berkeley. Paratypes: Mexico: Veracruz: Fortín, 1255 m, T. W. Taylor and A. D. Lau: 9 July 1982 (1 female), 18 June 1988 (1 male), 26 June 1988 (1 male), 10 July 1988 (1 female), July 1988 (1 male), 2 August 1988 (1 female), 25 July 1992 (1 male), 21 July 1994 (1 male), no date (1 male); Mexico: Veracruz: Fortín, San Juan Microwave, 14 July 1993, K. and M. Hopkins (1 male, 2 females); Mexico: Veracruz: 1 mile south of Pueblo Calcahualco, 8 road miles west of Coscomatec, 25 June 1988, oak forest remnant on steep slope, 1890 m, T. W. Taylor and A. D. Lau (1 male); Mexico: Veracruz: 5 miles north of Huatusco, 29 June 1971, at light, Clark, Hart, Murray, Schaffner. Paratypes to be deposited in several public and private collections.

Most of the type specimens of *P. alfredolau* were collected by Terry Taylor and Alfred Lau in the vicinity of Fortín, Veracruz, at an elevation of 1255 meters. According to Mr. Taylor, they were collected with the aid of fluorescent ultraviolet and mercury vapor lamps placed near steep slopes where oak and evergreen forests merge. Only oaks and other tall trees remain as shade for coffee plants that are grown in the understory. The specimens were collected during cloudy or light rainy weather.

**Diagnosis.** *Plusiotis alfredolau* is nearly identical to its only known close relative, *Plusiotis badeni* (figs. 7, 10), with the following exceptions. *P. badeni* tends to be slightly smaller (length, males = 20-24 mm, n = 21; females = 22-25 mm, n = 5), and somewhat more slender when viewed dorsally. The dorsal green coloration often is more yellowish in *badeni*, and the borders of the clypeus and pronotum are a slightly darker purplish. The ventral surface of *badeni* has a conspicuous silvery-metallic shine, while the venter of *alfredolau* is iridescent. Punctures in the elytral interstriae in *badeni* tend to be smaller and fewer in number, giving *badeni* a

“smoother” appearance. The male genital capsule in *badeni* (figs. 7-9) is shorter (8-8.5 mm), much more asymmetrical, the ventral “keel” is greatly reduced, and the ventral plates are more elongate with crossed apices. The female inferior genital plates in *badeni* (fig. 10) lack the proximal protuberances found in *alfredolau* and have, instead, smoothly rounded basal margins.

*Plusiotis badeni* has been recorded to occur in the Mexican states of Hidalgo, Puebla, and Veracruz (Morón, 1990). During this study, I examined over 40 specimens of *P. badeni* from several localities in Hidalgo and Puebla; I have not yet seen specimens of true *badeni* from Veracruz. *P. badeni* is not known to be sympatric with *P. alfredolau*. In fact, no other species of *Plusiotis* is known from the immediate vicinity of Fortín, Veracruz. Ratcliffe, Jameson, and Taylor (1992) indicate that *P. badeni* occurs near Pueblo Calchualco, Veracruz, which is the type locality of *P. diana* Ratcliffe and Taylor. Their reference is to the paratype specimen of *P. alfredolau* listed above.

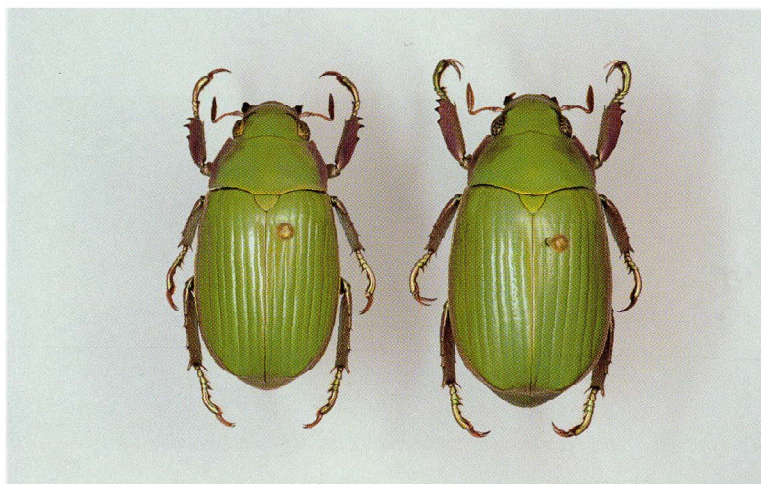
**Etymology.** It is with great pleasure that I name this new *Plusiotis* species for Mr. Alfred Lau, a good friend and collecting companion of my friend and fellow *Plusiotis* enthusiast, Terry Taylor. It is especially appropriate to name this species *alfredolau* since Mr. Lau collected part of the type series and is a resident of the type locality, Fortín, Veracruz.

### Acknowledgements

My sincere appreciation is extended to Terry W. Taylor for providing most of the type series, for bringing this new species to my attention, and for his comments on an early draft of the manuscript. Many thanks also are due to Karen and Mike Hopkins (Tempe, Arizona), Daniel J. Curoe (Palo Alto, California), Brett C. Ratcliffe (University of Nebraska), John A. Chemsak (University of California, Berkeley) and Edward G. Riley (Texas A & M University) for loaning to me additional specimens and providing information about this species. I am also grateful to David H. Headrick and Martin M. Barnes of the University of California, Riverside for reviewing the manuscript. David Adamson of Redlands, California, has spent many hours during the past year perfecting the photography of *Plusiotis* beetles. I am grateful to him for the excellent color photo of *P. badeni* and *P. alfredolau*. Many thanks to Robert E. Woodruff of the Florida State Collection of Arthropods for his helpful suggestions on the preparation of the SEM prints used in this paper.

### Literature Cited

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 Ratcliffe, B. C., M. L. Jameson, and T. Taylor. 1992. Insecta Mundi 6(1): 62, figs. 2, 6-11.



Figures 1-2: 1. *P. badeni*, male, dorsal view; 2. *P. alfredolau*, male paratype, dorsal view.

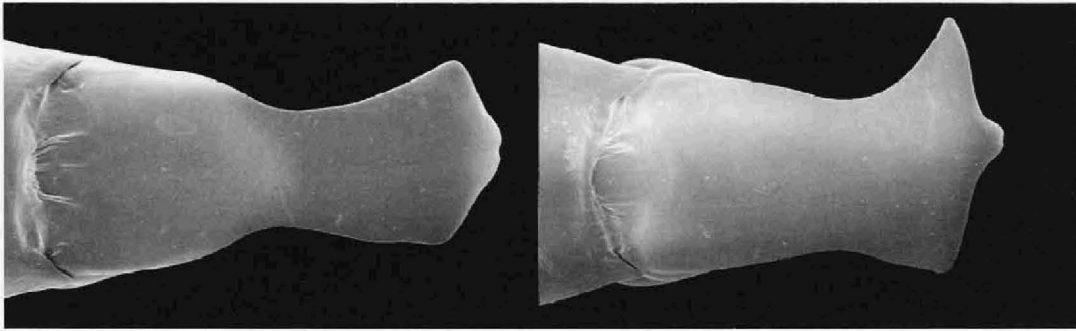


Figure 3: *P. alfredolai* paratype, male genital capsule, dorsal view.

Figure 7: *P. badeni*, male genital capsule, dorsal view.

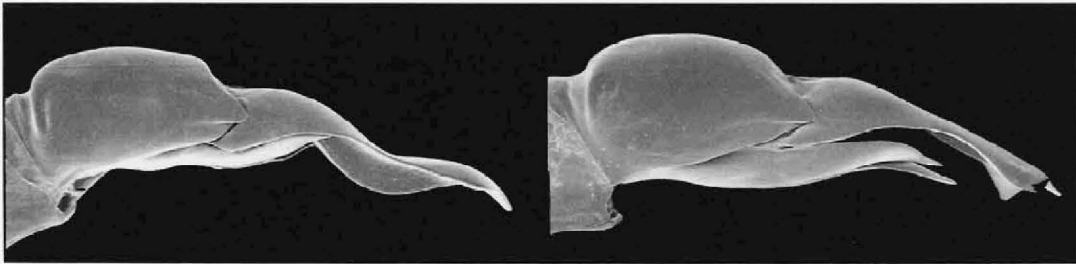


Figure 4: *P. alfredolai* paratype, male genital capsule, lateral view.

Figure 8: *P. badeni*, male genital capsule, lateral view.

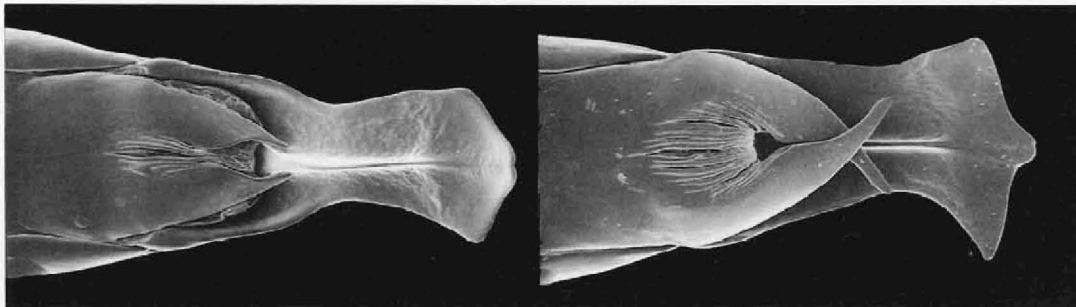


Figure 5: *P. alfredolai* paratype, male genital capsule, ventral view.

Figure 9: *P. badeni*, male genital capsule, ventral view.

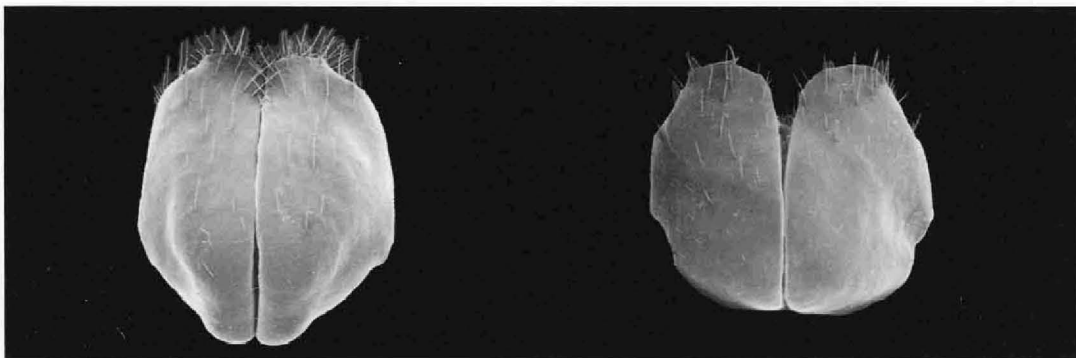


Figure 6: *P. alfredolai* paratype, female genital plates, posteroventral view.

Figure 10: *P. badeni*, female genital plates, posteroventral view.