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Resumen. Dos especies nuevas de escarabajos del género *Plusiotis* se describen de un bosque nuboso, 1560-1900 m en el departamento de San Marcos, Guatemala. También se describen las hembras de *P. turkheimi* Ohaus, *P. auropunctata* Ohaus y *P. quiche* Morón. Además, se registra por primera vez a *P. turkheimi* para Guatemala.

Abstract. Two new species of *Plusiotis* are described from a cloud forest between 1560-1900 m in the Department of San Marcos, Guatemala. Females of *P. turkheimi* Ohaus, *P. auropunctata* Ohaus and *P. quiche* Morón are described. *Plusiotis turkheimi* is reported from Guatemala for the first time.

Introduction

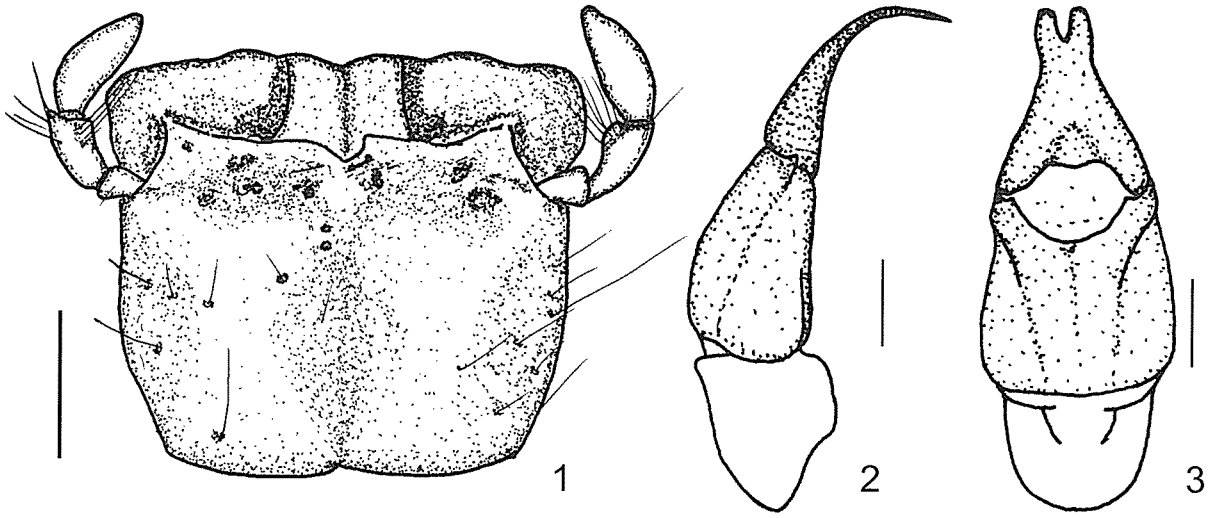
Currently the number of known species of *Plusiotis* species from Guatemala is 13 (Cano y Morón 1994, Curoe y Beraud 1994 and Monzón 1995). Recent collecting by J. Monzón in southwestern Guatemala has revealed the presence of two undescribed species and *P. turckheimi* Ohaus. These new findings bring the total number of known *Plusiotis* species for Guatemala to 16. It is very possible that more new species and new records will continue to enlarge the list as there are many cloud forests that have not been studied yet.

Materials and Methods

Comparisons of species of *Plusiotis* are based on material in the excellent monograph by Morón (1990), Universidad del Valle Arthropod Collection, and the D. Curoe (Palo Alto, California), J. P. Beraud (Cuernavaca, México), and E. F. Giesbert (California) private collections.

Plusiotis guatemalensis Monzón, Cano and Bailey, new species (Figures 1-3)

Description: Holotype male. Length 22.0 mm; width at elytral humeri 11.0 mm; widest width (middle of elytra) 12.5 mm. Dorsal surface shiny yellowish lime green; margins golden green and light pink on the anterior half of the lateral margins; pygidium darker green and elytra with apical umbone slightly golden green. Color of venter green, with week golden green streaks. Legs with femora green with ventral side metallic greenish gold; protibia and protarsi lilac, meso- and metatibia lilac only in part of external margin. Border of clypeus and dorsum of scape pink. Head: surface of frons and clypeus uniformly punctate; punctures small, moderately dense, becoming denser towards clypeus. Clypeal disk slightly convex; apex semicircular and with the anterior border slightly reflexed; external and anterior borders slightly declivous. Frons irregularly depressed. Antennal club half the interocular width. Labium (Fig. 1). Pronotum 2.1 times wider than interocular width; surface similar to frons except punctures sparser and shallow, becoming deeper and denser towards lateral margins. Lateral margin completely beaded; basal margin with bead effaced in front of scutellum; anterior margin with bead effaced between inner border of eyes. Elytra punctate striate; sutural striae slighltly impressed, effaced in basal one fourth; punctures in striae 2-5 moderately impressed, 6-8 wide and strongly impressed; interstriae 1-2 flat, 4-5 convex, 8-9 with strong punctures similar to striae, somewhat rugose, mixed with dense and fine punctures. Elytron 14.0 mm long and 3.5 times as long as pronotum; lateral margin with complete bead. Pygidium with surface completely rugulose, apical margin with few and scattered pale setae; surface convex and prominent before apex. Venter with mesometasternal protrusion slender and long, apex rounded and slightly depressed. Metasternum sides densely, setigerously punctate. Punctures becoming ring like towards basal margin; setae dense, fine, long and buff colored.



Figures 1-3. *Plusiotis guatemalensis*, new species: (1) labium; (2-3) parameres in lateral and dorsal view respectively. Lines equal one millimeter.

Legs with foretibiae tridentate, basal tooth barely visible; dorsal surface of protibiae with fine rugose punctures, ventral surface scabrous. Genitalia symmetrical, apical one third curved ventraly with tip reaching the ninety degree angle; paramera fused with a deep and thin emargination at the apex (Figs. 2-3).

Variation: Length 22-24 mm; width at elytral humeri 10-12 mm; widest width (middle of elytra) 12-14 mm. The examined specimens form a very uniform series except in size.

Type material: Holotype male (Universidad del Valle de Guatemala) labeled "Guatemala, San Marcos, La Feria; 1560 m, cloud forest, 15-IV-1994, Col. J. Monzón". Paratypes (26 males) with data as follows: "Guatemala, San Marcos, La Feria; 1560 m, cloud forest, 15-IV-1994, Col. J. Monzón" (7 males); same data except 26-V-1994" (10 males); same data except "16-VII-1994" (7 males); same data except "8-III-1994" (2 males). Paratypes are deposited at the Universidad del Valle, Florida State Collection of Arthropods, University of Nebraska State Museum, and the private collections of M. A. Morón, D. Hawks, D. Curoe, J. P. Beraud, and E. F. Giesbert.

Etymology: This species is named after the Central American country in which it was found.

Diagnosis: A green *Plusiotis* in the Lacordairei group, characterized by the pink tibia and anterior margin of the clypeus and silver cast in the underside of the mouthpieces. *Plusiotis guatemalensis* may be readily distinguished from other members of the group by the unique form of the male genitalia.

Type locality: South facing slopes of the volcanic chain in the Tajumulco volcano area, San Marcos (western Guatemala), Central America (14711918 E.; 1962994 N. UTM).

Remarks: This is one of the many green species in the Lacordairei group (*sensu* Morón 1990). The external characters are very similar to *P. badeni* Boucard and *P. alfredolaui* Hawks, from which it can be easily differentiated by the following characters: form and curvature of the male genitalia, green color of venter and the lack of the wide purple margins. It is interesting that intensive collecting during 1994 yielded as many as 27 males and no females.

Plusiotis schusteri Monzón, Cano, and Bailey new species (Figures 4-7)

Description: Holotype male. Length 23.0 mm; width at elytral humeri 11.0 mm; widest width 12.5 mm (middle of elytra). Color of dorsum shiny yellowish green; color of venter opaque green with golden and copperish streaks. Legs similar in color to abdominal sternites but with golden margins. Base of clypeus sparsely punctate, punctures denser and rugose towards lateral margins and anterior of clypeus. Supraocular borders and ocular canthi reddish brown. Clypeal disk weakly convex; apex semiparabolic and with the

anterior border weakly reflexed. Frons irregularly depressed, with punctures similar to the base of clypeus, but sparser. Antennal club about half as long as dorsal interocular width. Labium as in Fig. 4. Pronotum 2.2 times wider than interocular width; surface similar to that of frons; disc punctured similar to frons except punctures very weak and sparse, becoming rugose towards lateral margins. Lateral margins completely beaded; bead of basal margin effaced in front of scutellum; anterior margin with bead effaced between inner border of eyes. Elytra punctate striate; striae 1-6 with punctures very fine, almost invisible; 7-9 clearly marked; interstriae 1-2 flat, 3-10 convex, 7-10 with micropunctation that gives it a somewhat rugose look, only at high magnification; lateral margin and suture yellowish green; apical umbone green with metallic reflections. Elytron 16.0 mm long and 3.2 times as long as pronotum; lateral margin with complete bead. Pygidium surface completely rugulose punctate; apical margin with very few, short, pale setae; surface weakly convex and slightly prominent before apex. Venter with mesometasternal protrusion slender and long, not reaching anterior coxae, apex slightly depressed and sharp. Metasternum sides densely setigerously punctate, punctures becoming ringlike, having a scalelike aspect; setae fine and not very long, buff colored. Legs with foretibia clearly tridentate; dorsal area of protibia with very fine punctures. Genitalia with a slight metallic shine, symmetrical, paramera fused and bidentate at apex (fig. 4). Genitalia very distinct (fig. 5-6).

Allotype. Female similar to male except as follows: length 25.0 mm; width at elytral humeri 11.5 mm; widest width (middle of elytra) 14.0 mm. Clypeal apex parabolic. Dorsal surface slightly more convex. Epipleural border very wide, extending to second sternite. Abdomen convex, last sternite without apical depression. Inferior genital plates slightly asymmetrical, medioapically prolonged into a very unique shape (fig. 7).

Variation: Length 22.5 mm to 27.0 mm, width at elytral humeri 10.5 mm to 12.5 mm, widest width (middle of elytra) 12.0 mm to 15.5 mm. Most of the type series as holotype except in size. Five specimens (4 males and 1 female) have a color variation as follows: the external margins of head, pronotum and scutellum, elytral external margin, and dorsal side of all tibia with a varying intensity of pink, from very intense to slightly vissible.

Type material: Holotype male (Universidad del Valle Collection of Arthropods) labeled "Guatemala, San Marcos, La Fraternidad; 1900 m., cloud forest, 8-V-1994, Col. J. Monzón". Allotype female (Universidad del Valle Collection of Arthropods) labeled "Guatemala, San Marcos, La Fraternidad; 1900 m., cloud forest, 26-V-994, Col. J. Monzón". Paratypes (21 males and 14 females) with data as follows: "Guatemala, San Marcos, La Fraternidad; 1900 m, cloud forest, 18-V-1994, Col. J. Monzón; same data except "26-V-1994" same data except "8-III-1994"; same data except "16-VII-1994"; same data except "VIII-1996"; same data except "X-1996"; same data except "VIII-1997"; same data except "IV-1998"; same data except "VIII-1998". Paratypes are deposited at the Universidad del Valle Collection of Arthropods; Florida State Collection of Arthropods; M. A. Morón (Xalapa, México); University of Nebraska State Museum and the D. Hawks, D. Curoe, and J. P. Beraud private collections.

Etymology: It is our pleasure to name this species in honor of Dr. J. C. Schuster, whose work has done so much to increase our knowledge of the insects, biodiversity, biogeography, and conservation in Guatemala.

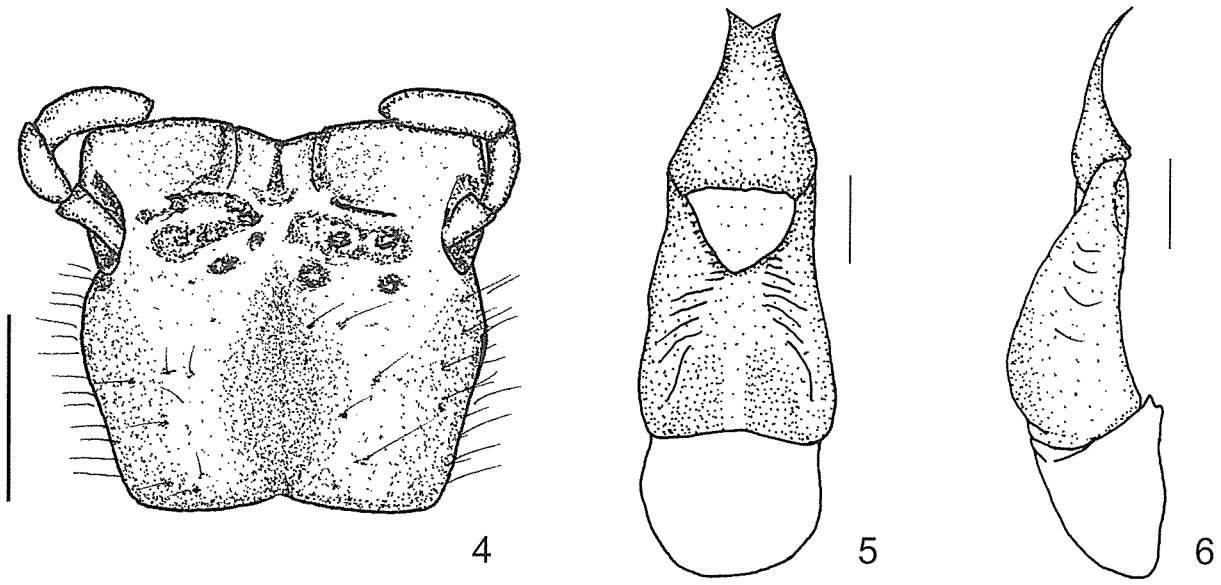
Diagnosis: A green *Plusiotis* in the Lacordairei group, characterized by having the legs green and the margins of the elytra, pronotum and scutellum yellow (except in color variations). It is very similar to *P. quiche* and *P. tecunumani* Cano y Morón, and can be distinguished from them and the other members of the group by the male and female genitalia (Fig. 2-3).

Remarks: It is interesting to note that this species is very similar and related to *P. quiche* and is actually sympatric. The male and female genitalia in both species is structurally very similar, although having very marked differences in both sexes.

Distribution: This species is only known from the cloud forests at the type locality on the slopes of Volcán Tajumulco, western Guatemala

Plusiotis auropunctata Ohaus (Figure 8)

Female description: Length 32-36 mm; width at elytral humeri 15.0-18.0 mm; widest width (middle of elytra) 17.0-20.0 mm. Dorsal surface shiny brown with a purple hue which goes from almost invisible to very strong; elytra with small metallic golden punctures and a very conspicuous metallic golden green band (4 mm wide) along external margins. Color of venter shiny brown with a purple hue that varies as dorsal hue. Head: surface of frons and clypeus uni-



Figures 4-6. *Plusiotis schusteri*, new species: (4) labium; (5-6) parameres in dorsal and lateral view respectively. Lines equal one millimeter.

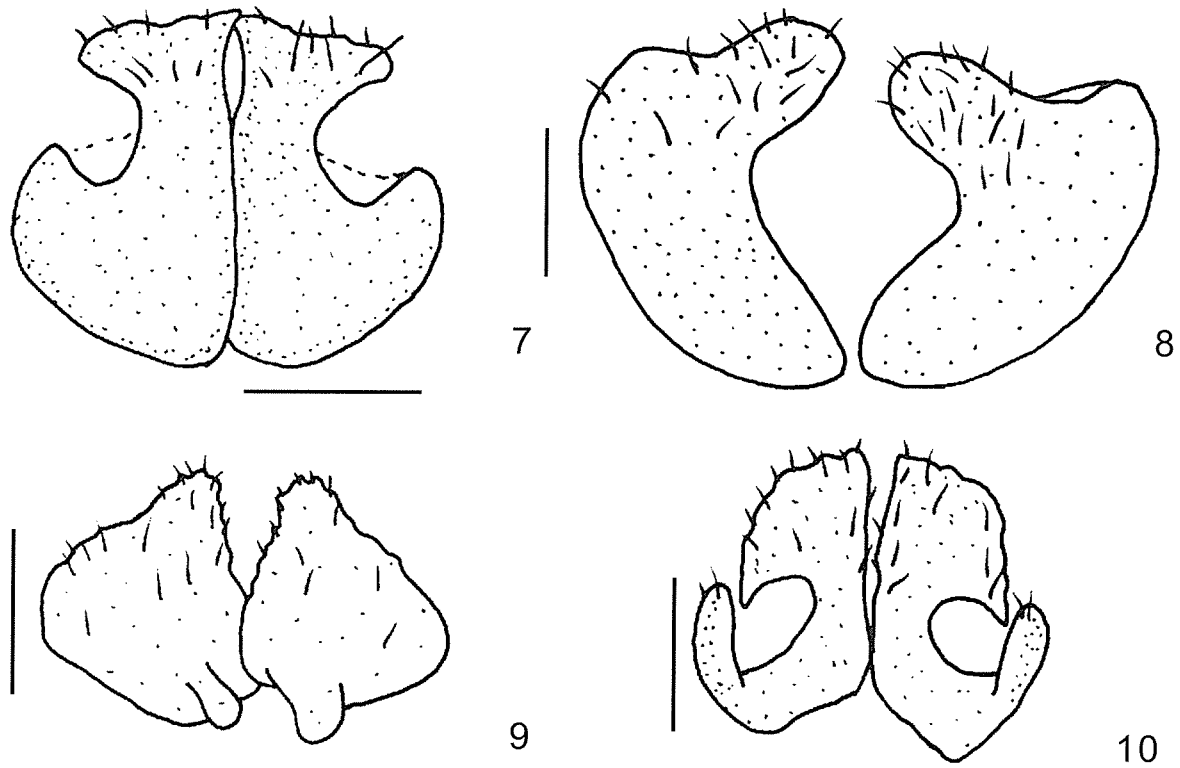
formly punctate; punctures very deep and dense, becoming deeper and confluent towards anterior margin and sides of clypeus. Clypeal disk slightly convex; apex semicircular to semiparabolic; anterior border very weakly reflexed. Frons irregularly depressed. Antennal club half the interocular width. Pronotum 2.5 times wider than interocular width; margins brown; surface similar to head except punctures wider and deeper, golden in disc, punctures becoming denser, wider, confluent and deeper towards lateral margins. Lateral margin completely beaded, bead of basal margin effaced in front of scutellum; anterior margin with bead effaced between inner border of eyes. Elytra with metallic punctures fine, not very deep, irregularly placed; striae not well defined. Elytron 22.0-22.5 mm long and 2.3-3.6 times as long as pronotum; lateral margin with complete bead. Pygidium with surface completely scabrously punctate with a deep longitudinal furrow from apex up two thirds of total height. Surface with long yellowish seta; very convex and prominent before apex. Apical margin strongly reflexed, forming a lip-like shape. Venter with mesometasternal projection short and stout, apex rounded and slightly depressed. Metasternum sides densely, setigerously punctate; punctures reticulate, becoming more abundant, deeper and wider towards upper and lateral sides; setae abundant, slender, long and yellowish. Legs with foretibia clearly tridentate; longitudinal surface of tibia rugo-punctate. Inferior genital plates (fig. 8) subcircular, strongly convex.

Material examined: 13 females with the following data: GUATEMALA: San Marcos, La Fraternidad, 4-III-1994, Alt. 1,900 m, J. Monzón col. (1 female); same data except VII-1994 (7 females); same data except 26-V-1994 (5 males). The specimens are deposited at the Universidad del Valle Collection of Arthropods.

Remarks: After death the females' purple shade fades almost completely. It is interesting to note that the specimens collected on March 1994 were flying in very cold weather. They started to fly about half an hour before it was completely dark, and by 8:00 p.m. nothing but moths were flying.

Plusiotis turckheimi Ohaus (Figure 9)

Female description: Length 21.5-23.0 mm; width at elytral humeri 10.5-11.0 mm; widest width (middle of elytra) 11.5-12.0 mm. Dorsal surface iridescent willow green; elytra with external margins silver; clypeus and edge of pronotum with band of purplish brown, preoccipital border willow green; sternites metallic willow green with purple hue; ventral surface of femora and tibia same color as clypeus, tarsi metallic willow green. Head: surface of frons and base



Figures 7-10. *Plusiotis* spp., female genitalia: (7) *P. schusteri*; (8) *P. auropunctata*; (9) *P. turckheimi*; (10) *P. quiche*. Lines equal one millimeter.

of clypeus moderately densely punctate; punctures small, becoming denser to rugopunctate in apical half of clypeus. Clypeal disk flat; apex semitrapezoidal to semicircular; anterior border reflexed and staight or slightly emarginate. Frons almost flat, with punctures similar to clypeus but sparser. Interocular width 1.6 times that of antennal club length. Pronotum divided with median longitudinal sulcus, poorly marked or abscent; 3.8 times wider than interocular width; disc with sparce, small and superficial punctures, becoming weaker and rugopunctate towards lateral margins. Lateral margin completely beaded, bead becoming effaced or superficially marked in front of scutellum; anterior margin with bead effaced between inner border of eyes. Elytra punctate striate; punctures in stria small, rounded and superficial; interstriae with minute punctations; lateral margin, suture and apical umbone golden green; apical border rugose. Elytron 15.0 to 16.0 mm long and 2.9 to 3.0 times as long as pronotum; lateral margin with complete bead except near apex. Pygidium surface completely rugulose punctate, laterally with scale-like punctures; apical margin with very few, short, pale setae; surface weakly convex and slightly prominent before apex, with a "v" shaped, very conspicuous keel. Venter with mesometasternal protrusion slender and very long, reaching anterior coxae, apex slightly depressed. Metasternum sides moderately setigerously punctate either side of mesometasternal protrusion; setae fine and not very long, buff colored. Legs with foretibia clearly tridentate; dorsal area of foretibia with fine punctures. Inferior genital plates (fig. 9).

Material examined: 2 females with the following data: GUATEMALA: San Marcos, Aldea La Feria, 26-V-1994, Alt. 1560 m, J. Monzón col. (1 female); same data except 28-IV-1998, 1600 m (1 female).

Remarks: This species has an interesting set of characters that may suggest moving this species into another genus (Morón, 1990). The "v" shaped keel in the pygidium is very unusual and not present in any other species of *Plusiotis*.

Plusiotis quiche Morón (Figure 10)

Female description: Length 26.0-28.0 mm; width at elytral humeri 13.0-13.5 mm; widest width (middle of elytra) 14.0-15.5 mm. Dorsal surface shiny yellow-

ish green; elytra with external margins and suture golden to golden green; clypeal and pronotal margins yellowish green, specially ocular canthi and margins; sternites green to yellowish green; apex of femur and base of tibia yellowish green with golden reflections, tarsi golden green. Head: surface of frons and base of clypeus moderately densely punctate; punctures small, becoming denser to rugopunctate in apical half of clypeus. Clypeal disk flat, apex rounded semitrapezoidal; anterior border rounded, almost straight or poorly emarginated. Frons irregularly depressed, with punctures similar to base of clypeus but sparser. Interocular width 2.2-2.5 times that of antennal club length. Pronotal disc with punctures minute and sparse, denser and deeper towards lateral margins; 2.0-2.3 times wider than interocular width. Lateral and basal margins completely beaded, bead becoming very weak in front of scutellum; anterior margin with bead effaced between inner border of eyes. Elytra punctate striate; punctures in striae superficial and minute; first striae effaced on anterior third; interstriae with many small punctures; lateral margin and suture yellowish green; apical umbone green. Elytron 18.0 to 18.5 mm long and 3.0 to 3.6 as long as pronotum. Pygidium surface completely rugulose punctate; apical margin with few pale setae; surface convex towards sides and prominent before apex. Venter with mesometasternal protrusion short, not reaching anterior coxae; apex depressed. Metasternum sides moderately setigerously punctate either side of mesometasternal protrusion; setae fine, not very long and pale buff colored. Legs with foretibia tridentate, basal tooth short. Inferior genital plates conspicuously inverted anchor shape (fig. 10).

Material examined: 5 females with the following data: GUATEMALA: San Marcos, La Fraternidad, 26-V-1994, Alt. 1850 m, J. Monzón col. (3 females); same data except VII-1994 (1 female); GUATEMALA: Zacapa, Sierra de las Minas, Cerro del Mono, 9-VI-1993, Alt. 2150 m, J. Monzón, W.B. Warner and J. Ryan col. (1 female).

Plusiotis turckheimi Ohaus
NEW COUNTRY RECORD

This species was previously known to occur only in México, and from one single (the male holotype) collected in Soconusco, Chiapas (Morón 1990). The following specimens represent a new country record: GUATEMALA: San Marcos, aldea La Feria, 26-VI-1994, Alt. 1560 m, J. Monzón col. (1 female); same data except V-1994 (2 males); same data except VII-1994 (2 males) in Universidad del Valle Collection of Arthropods.

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References Cited

Cano, E. B. y M. A. Morón. 1994. Una nueva especie guatemalteca de *Plusiotis* Burmeister del grupo *Lacordairei* (Coleoptera: Melolonthidae, Rutelinae). Folia Entomológica Mexicana 91:1-8.

Curoe, D. J. y J. P. Beraud. 1994. A new *Plusiotis* Burmeister from Mexico (Chiapas) and Guatemala. (Coleoptera: Scarabaeidae). Giornale Italiano di Entomologia 36(7):31-33.

Monzón, J. 1995. Guatemalan *Plusiotis* and *Chrysina* (Coleoptera: Scarabaeidae: Rutelinae): new records. Insecta Mundi 9(3-4): 347-349.

Morón, M.-A. 1990. The beetles of the world, Volume 10, Rutelini 1: *Plusiotis, Chrysina, Chrysophora, Pelidnotopsis, Ectinoplectron.* Sciences Nat. Venette. 145 pp.