

Article



New species of the genus *Agrilus* Curtis, 1825, from Nicaragua and Panamá (Coleoptera: Buprestidae: Agrilinae)

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Abstract

Nine new species of the genus Agrilus are herein described: A. erici **n. sp.**, A. dauberi **n. sp.**, A. goldsteini **n. sp.**, A. ivetteae **n. sp.**, A. semicinctus **n. sp.**, A. glebae **n. sp.**, A. cerrolatus **n. sp.**, A. disparifrons **n. sp.** from Nicaragua and A. grandinatus **n. sp.** from Panamá.

Key words: Coleoptera, Buprestidae, Agrilus, new species, Neotropical region, Nicaragua, Panamá

Introduction

A colleague, Manfred Niehuis from Albersweiler (Germany), wrote asking me to study his Neotropical species belonging to the genus *Agrilus* Curtis, 1825. After a first frightening look at his very large collection, I began identifying the species. I found some new species that are herein described. The problem in the study of *Agrilus* in the Neotropical region is the difficulty created by the great number of species already described (more than 1,200), and this difficulty has slowed down this study in the last few years. In the past 40 years or so, only Hespenheide (1974, 1983, 1990, 2008), Hespenheide & Bellamy (2009), Bellamy & Hespenheide (2002), Bellamy (2005), Curletti (2005), Nelson (1987) and Westcott & Hespenheide (2006) have proposed further progression in the systematics of this genus, but there is much work to do, and hundreds, maybe thousands, of species are still left to discover and describe. In light of the lack of a well-defined subgeneric classification for the New World *Agrilus*, all new species described below are placed in the nominate subgenus.

Collection abbreviations

CHAH Henry A. Hespenheide collection, Los Angeles, California, U.S.A.

CMNG Manfred Niehuis collection, Albersweiler, Germany MCCI Museo Civico di Storia Naturale di Carmagnola, Italy FODC Frode Ødegaard collection, Trondheim, Sweden

INBC Instituto Nacional de Biodiversitad, Heredia, Costa Rica SMNS Staatliches Museum für Naturkunde, Stuttgart, Germany

Agrilus erici n. sp.

(Figure 1)

Type specimens. Holotype ♂: Nicaragua, Granada, Domitila, 07–09.VI.2004, leg. Eric van den Berghe und Heinz Dauber (MCCI).

Description of holotype. Length 9.6 mm. Dorsal color black, not metallic, with exception of elytral apex that appears metallic red with strong reflections. Body elongate, with spots of yellow pubescence concentrated on pronotum and at base of elytra. Head flat, eyes large, vertex less than 1/3 of width of anterior margin of pronotum. Frons with yellow pubescence covering integument. Clypeus separated from frons by a transverse carina. Antennae long, serrate from antennomere 4. Pronotum wider at posterior 2/3, with lateral margins slightly arcuate and posterior angles obtuse. Disc irregular, with large median depression. Sculpture superficial, tending to disappear along central sulcus. Pubescence at sides and at base, like frons. Premarginal carinulae strong, straight, as long as half of pronotum. Lateral and sublateral carinae confluent at basal 1/3. Scutellum transverse, glabrous, carinate. Elytra elongate, sinuate before strongly denticulate apex, with larger tooth near middle. Disc with longitudinal carina at halfway point of width, limiting a depression along suture. Strong yellow pubescence at base, forming large spot with pubescence on basal portion of pronotum. Other small spots on remaining surface, irregularly arranged. Sterna and lateroterga black, covered with regular yellow pubescence. Legs with bronze reflection. Metatarsus very long, as long as metatibia, with first metatarsomere longer than following three (1>2+3+4). Anterior claws bifid, median and posterior mucronate. Aedeagus thin and elongate, black, sclerotized. Median lobe subacute (figure 11).

Etymology. This new species name honors of one of the collectors: Eric van den Berghe.

Comments. A. erici **n. sp.** belongs to a group of Neotropical species characterized by having the pronotum excavate in middle and elytra caudate. The pubescence, together with the form of the elytral apex, separates this species from all others.

Agrilus dauberi n. sp. (Figures 2, 3)

Holotype ♂: Costa Rica, Santa Rosa National Park, Guanacaste Province, D.H. Janzen, 11–14 June 1977 (INBC). Paratypes: 2 ♂ and 1 ♀, idem (INBC); 1 ♂ Parque Santa Rosa, 14.06.1977, P.J. DeVries INBC); 1 ♀, Los Almendros. P.N. Guanacaste, 01-22-7.1992 E. Lopez (INBC); 1 ♀ Nicaragua, Granada, Domitila, 07–09.VI.2004, leg. Eric van den Berghe und Heinz Dauber (MCCI); 1 ♂, Panamá, Fort Kobbe, 24.06.1973, H.P. Stockwell (CHAH).

Description of holotype. Length 6.8 mm. Dorsal color black with dark green reflection at base of elytra. Pair (1+1) of spots of pruinose pubescence at 3/4 length of elytra from which begins a stripe of pubescence less pruinose, that follows suture to apex. Vertex width of half of anterior margin of pronotum. Frons furrowed, with pubescent spot at base. Clypeus small, separated from frons by a transverse carina. Antennae short, serrate from antennomere 4. Eyes large, with genae small, black and glabrous. Pronotum wider anteriorly, with lateral margins slightly arcuate and posterior angles obtuse. Disc irregular, with two central depressions located after vertex and before scutellum. Sculpture composed of transversal striae. A stripe of white pruinose pubescence covers integuments along lateral sides, more visible in anterior angles. Premarginal carinula strong, not entire, as long as 1/3 the length of marginal carina. Submarginal and marginal carinae convergent, joined at base. Scutellum black, transversely carinate. Elytra with apex rounded and microdenticulate. Sterna black, with yellowish-white pubescent spot at lateral sides of each sternite. Same pubescence also at metepisternum and metecoxa. Legs black, all claws mucronate. Metatarsus shorter than metatibia, with the first article shorter than the sum of the following three (1<2+3+4). Aedeagus fusiform, with median lobe pointed (figure 12).

Description of paratypes. Length 8.6 and 8.8 mm. Large sexual dimorphism: females with head and pronotum gold and elytra with 8 (4+4) small, round pale yellow spots of pruinose pubescence: first pair in humeral callus; second at 1/3 the length of elytra, near suture; third at half, near lateral margins; fourth at 2/3 the length, near suture. From this last pair of spots a stripe of pubescence less pruinose begins, as in male (Figure 3).

Etymology. This new species name honors one of the collectors, Heinz Dauber.

Comments. Sexual dimorphism together with the pattern of elytral pubescent spots makes this species unmistakable from other Central America congeners.

Agrilus goldsteini **n. sp.** (Figure 4)

Type specimens. Holotype \circlearrowleft : Mexico, Chiapas, 8 mi E Rizo de Oro, Hwv. # 190, 22.VI.1985. Askevold & Heffern (MCCI). Paratypes: 1 \circlearrowleft , Chiapas, 3 mi.SE La Trinitaria, 18–19.06.1965.H.R. Burke, J.R. Meyer, J.C. Schaffner leg. (CHAH); 1 \circlearrowleft and 1 \circlearrowleft , Nicaragua, Matagalpa Dept., Cerro Iargo km 114, 28.V.2005, leg. E. van den Berghe (MCCI and CMNG).

Description of holotype. Length 6.6 mm. Head and pronotum black. Elytra red on external half, with a black stripe on internal half, along suture. Vertex width more than 1/3 of anterior margin of pronotum. Frons flat, lightly furrowed, covered by regular white pubescence. Antennae black, short, serrate from antennomere 5. Pronotum strongly gibbous especially anteriorly, near anterior margin, convex. Lateral margins slightly arcuate, wider in middle, with posterior angles obtuse. Anterior margin gibbous. Disc with superficial sculpture, forming vertical striae, with exception of top of anterior hump, where it is rounded and concentric. Premarginal carinula regularly arcuate, not entire. Lateral carinae subparallel anteriorly, joining before base. Anterior edge of prosternal lobe rounded, entire. Prosternal plate truncate, enlarged at apex. Scutellum concave, without transversal carina. Elytra with apex rounded and microdenticulate. Black stripe along suture is posed in a small depression. All surfaces covered by short white pubescence, more condensed in perisutural depression, but always shorter than the pubescence present on frons and pronotum. Ventral side black, covered with regular white pubescence. Last visible sternite widely sinuate. Legs black. Anterior claws bifid, median and posterior mucronate. First metatarsomere shorter than sum of the following three (1<1+2+3). Aedeagus black, sclerotized, regularly widened anteriorly (figure 13).

Description of paratypes. Length 6.4 mm (\circlearrowleft) and 7.3 mm (\hookrightarrow). These specimens from Nicaragua have pubescence in perisutural sulcus of elytra more visible. Ventral side and legs with copper reflections. Female with anterior claws mucronate like median and posterior and color of external half of elytra copper instead of red.

Etymology. This species is named after a friend Jessica Goldstein, for her contributions in the management of the Lepidoptera collection of MCCI.

Comments. Concentric sculpture on the anterior hump of pronotum; conformation of prosternal plate; antennae dentate from 5th antennomere and scutellum concave without carina, make *A. goldsteini* **n. sp.** anomalous and unmistakable in the American *Agrilus* fauna. The color pattern of the elytra is similar to *A. asperulus* Waterhouse, 1889. This latter differs by the smaller shape, transversal sculpture of pronotum, a rounded head, and premarginal carinula absent or barely visible.

Agrilus ivetteae n. sp. (Figure 5)

Type specimens. Holotype ♀: Nicaragua, Dept. Granada, Domitila, 26–30.12.2003, leg. E. van den Berghe, auf *Caelespina* sp. (Fabaceae) (SMNS). Paratypes: 2♀, Nicaragua, Granada, Domitila, 20.V.2004, leg. v. d. Berghe, Dauber Heinz (CMNG and MCCI), 2♂, idem, 20–30.X. 2004 and 29–31.05.2004, van den Berghe leg. (MCCI), 1♂, Nicaragua, Playa la flor, 05.2004 (MCCI), leg. Eric van den Berghe und Dauber Heinz (MCCI); 1♂ and 1♀, Costa Rica, Palo Verde, 10 m, P.N. Palo Verde, Prov. Guanacaste, A. Gutierrez, 25 mar. a 21 abr. 1992, L-N 259000, 388400 (INBC); 2♂, idem, M. Ortiz (INBC); 1♀, idem. 17.07.1990, *Acacia*, D.S. Verity coll.; 1♂, Prov. Guanacaste, Los Almedros, P.N. Guanacaste 23.03–18.04.1994 E. López (INBC); 1♂, Prov. Punta[renas], R.B. Carara, Est Quebrada Bonita, R. Guzman (INBC).

Description of holotype. Length 5.0 mm. Dorsally tri-colored: head red, pronotum green, elytra brown. Vertex rounded longitudinally sculptured, width 1/3 of length of anterior margin of pronotum. Frons gold, glabrous, with transverse sculpture. Clypeus without basal carina. Antennae short, serrate from antennomere 5. Cheeks very small, pubescent, with a sulcus on base where the first two antennomeres are lodged at rest. Pronotum wider in middle, sinuate before posterior angles which are acute. Disc glabrous, with sculpture composed of transversal striae. Slightly longitudinally furrowed in middle. Premarginal carinulae curved, not entire, as long as ¼ of pronotum. Marginal carinae separate from base. Scutellum bronze, transversely carinate. Elytra with apices rounded and microdenticulate. Disc with two (1+1) white elongated spots of pubescence at 1/3 of length; a line of brilliant white pubescence coats the suture before apex. Ventral surface bronze, brilliant, almost glabrous. All claws mucronate. Metatarsus shorter than metatibia, with first metatarsomere shorter than sum of following two (1<2+3).

Description of paratypes. Sexual dimorphism is very marked and I add the males to typical series only because I am supported by the shared opinion of H. Hespenheide. In males (from 4.4 to 4.9 mm) elytral pubescence is uniform, and color of pronotum is bronze, as elytra; aedeagus thin, lengthened and parallel (figure 14). Females: length 5.4 and 5.6 mm. No differences are observable from the holotype.

Comments. *A. ivetteae* **n. sp.** may be compared with *A. biformis* Hespenheide, 1988 described from Mexico, for having a similar color pattern, with pronotum green and elytra bronze with a pubescent spot at 1/3 of the length. The species described by Hespenheide is immediately and easily distinguishable by having the head more rounded, basal angles of pronotum not acute, pruinose pubescent spots on humeral callus and at basal laterotergum, and for not having a perisutural pubescent line at apex.

Etymology. This species is named after wife of one of collectors: Ivette van den Berghe for her help and assistance in research of her husband.

Agrilus semicinctus **n. sp.** (Figure 6)

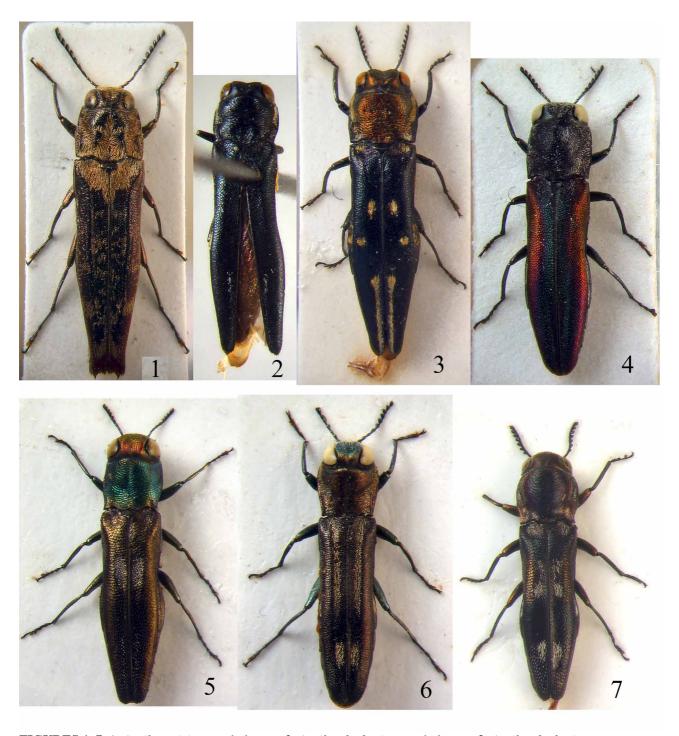
Type specimens. Holotype ♂: Nicaragua, Granada, Domitila, 07–09.06.2004, leg. Eric van den Berghe und Heinz Dauber (MCCI). Paratypus: ♂, idem (CMNG); 1 ♀, idem (CHAH).

Description of holotype. Length 5.8 mm. Body narrowed, dorsal color bronze. Vertex, between eyes, ¼ of width of anterior margin of pronotum, furrowed in middle. Frons dark green, with white pubescence at base. Clypeus without transverse carina. Antennae short, serrate from antennomere 4. Pronotum wider anteriorly, regularly narrowed posteriorly, with posterior angles obtuse. Disc convex, but slightly furrowed in middle. Sculpture with transversal, thin and numerous striae. Ivory pubescence at sides. Premarginal carinula is broken in two parts: posterior rectilinear, divergent in respect to lateral margin, as long as 1/3 of pronotum, and anterior parallel to lateral margin, joining anterior angle. Lateral carinae joined at base. Scutellum transversely carinate. Elytra with apices rounded and microdenticulate. Disc with two (1+1) lines of perisutural ivory colored pubescence from base to 3/5 of length. Two (1+1) pubescent spots of same color at 4/5 of length. Ventral side darker, with spots of pubescence at base of ventral sterna. Pubescence also at metepisterna and metecoxa. Anterior claws bifid, with internal spur shorter; median and posterior mucronate. Metatarsus as long as metatibia; basal article as long as sum of following four (1=2+3+4+5); second metatarsomere as long as sum of following two (2=3+4). Aedeagus black, sclerotized, with parameres fusiform anteriorly and median lobe rounded (figure 15).

Description of paratype. Length 5.8 mm. No differences are observable from holotype.

Etymology. After incomplete stripe of perisutural pubescence.

Comments. By the pronotum shape together with the elytral pubescence, this species is unique in the Central America fauna.



Agrilus grandinatus **n. sp.** (Figure 7)

Type specimens. Holotype ♀, Panamá, Pr. Nat. Metropolitano, 19 May 1996, leg. F. Oedegaard, on *Arrabidaea candicans* (MCCI). Paratypes: 1♀, idem, 2 Februar 1995, leg. F. Oedegaard on *Pithecoctenium crucigerum* (FODC); 1♀, Panamá, Parque Nat. Metropolitano, Dosel, *Castilla elastica*, 23.IV.1999, H. Barrios (MCCI); 1♀, idem, on *Seranja mexicana*, leg. F. Oedegaard (CHAH).

Description of holotype. Length 4.3 mm. Head copper, pronotum dark bronze, elytra black with a bronze reflection anteriorly if strongly lighted and another transversal bronze stripe before middle. Body narrow, elongated. Vertex more than half the width of head, with punctiform sculpture. Eyes barely visible from above, rounded in lateral view. Frons glabrous, with copper reflections. Clypeus flat, without a transverse carina. Antennae short, serrate from antennomere 5. Pronotum gibbous anteriorly, depressed posteriorly, widest before middle, with lateral margins rounded and widely sinuate before posterior angles, which are acute. Anterior margin advanced in middle, between eyes. Sculpture oblique, superficial, with a spot of white pubescence on anterior angles. Premarginal carinula absent. Marginal carinae subparallel, separate from base. Anterior prosternal lobe rounded and entire. Prosternal plate with lateral margins parallel. Scutellum with two transversal carinae: first in anterior margin and second after middle. Elytra with apices rounded and microdenticulate. Disc with rounded spot of white pubescence in humeral callus and at 3/4 of length. Another spot, more lengthened, rests before middle, along suture, on stripe of bronze color. Other brief thin and scattered brilliant spots of pubescence are found at apical fifth. Spot of white pruinose pubescence at base of first lateroterga. Ventral surface black, with spot of white pubescence covering integuments at sides of second ventral sterna and at metecoxa. Legs bronze, claws bifid. Metatarsus brief, shorter than metatibia, with first article as long as sum of following two (1=2+3).

Description of paratypes. Both specimens are 4.1 mm in length. In these specimens scattered pubescence at apex is not observable and median spot is divided in two, resembling configuration of 4 (2+2) closed spots.

Etymology. "Grandinatus" meaning hailed, for round pubescent spots.

Comments. The description of this species is published in this work, despite the fact it is not found in CMNG. It is included because the presence of a specimen coming from "Argentinien, Missiones, Puerto Ignazu, 3–18.XII.1990, Foerster leg." in CMNG that is very similar to these specimens from Panamá. The South American specimen (\mathcal{P}) has not been added to paratypes for being larger and having a more elongated body, waiting further material confirming the identity.

Agrilus glebae n. sp. (Figure 8)

Type specimens. Holotype \circlearrowleft : Nicaragua, Granada, Domitila, 07–09.VI.2004, leg. Eric van den Berghe und Heinz Dauber (SMNS). Paratypes: $1 \circlearrowleft$, idem, 20.IV.2004 (CMNG); 69 \circlearrowleft and \hookrightarrow , Nicaragua, Dept. Rivas, Chacocente, 1–10.IV.2006 (and several other dates), leg. Eric van den Berghe (CMNG, CHAH and MCCI); 10 \circlearrowleft and \hookrightarrow , Nicaragua, Dept. Rivas, Rancho Santana, 6–7.XII.2003, leg. van den Berghe (CMNG and MCCI).

Description of holotype. Length 6.3 mm. Dorsal color uniform bronze, pubescent. Vertex narrow, 1/3 width of head, with punctiform sculpture. Frons with green reflection, covered by long white pubescence which is not pruinose. Clypeus broad, transverse, without transverse carina. Eyes large, elongated. Antennae long, serrate from antennomere 4. Pronotum elongated, wider anteriorly, with lateral margins slightly rounded, just sinuate at angles, which appear acute. Disc regularly pubescent, depressed at sides and with two shallow central depressions, one behind vertex and one before scutellum. Sculpture superficial forming indistinct striae. Premarginal carinula plainly evident, joining anterior angle, but interrupted in middle, forming two segments: the basal curved more than 1/3 the length of pronotum, bisecting basal angle, and the anterior straight parallel to lateral margin, longer than half the length of pronotum. Marginal carinae joined at base. Scutellum large, with large transverse carina. Elytra with apex rounded. Disc covered with white pubescence more concentrated and yellowish in the 4 (2+2) spots along suture: the first more elongated at 2/3 the length of disc, the second, triangular, at 4/5 the length. Ventral color bronze like dorsal, uniformly pubescent. Anterior claws bifid, median with external spur bifid and internal mucronate, posterior mucronate. Metatarsus long but shorter than metatibia, with first metatarsomere as long as sum of following three (1=2+3+4).

Description of paratypes. Length from 4.3 to 6.4 mm. Anterior prosternal lobe rounded, prosternal plate enlarged at apex and apical margin of last visible abdominal sterna rounded. Females are distinguishable by copper from, all claws mucronate and metatarsomeres shorter. Aedeagus black, sclerotized, with median lobe serrate at sides and apex rounded (figure 16).

Etymology. This is one of the more common and less showy species in the Niehuis collection. For this reason, the name chosen refers to more humble people living in Middle Ages: the "servus glebae" (from latin gleba = clod of earth).

Comments. A. glebae **n. sp.** is similar to A. exsapindi Vogt, 1949 described from Mexico. It differs from Vogt's species by having the vertex more narrow, pronotum more elongate with anterior margin more advanced between the eyes, premarginal carinulae curved and elytral apex rounded and shorter.



FIGURES 8–10. 8. Agrilus glebae n. sp., holotype. 9. Agrilus cerrolatus n. sp., holotype. 10. Agrilus disparifrons n. sp., holotype.

Agrilus cerrolatus n. sp. (Figure 9)

Type specimens. Holotype ♂: Nicaragua, Matagalpa Dept., Cerro Largo km 114, 28.5.2005, leg. E. van den Berghe (MCCI).

Description of holotype. Length 5.6 mm. Uniform bronze, with white spots of pubescence on elytra. Vertex half width of head, slightly furrowed in middle, with transversal rounded striae at base. Frons with green reflection, transversely striate, with short pubescence visible in profile only. Clypeus not carinate. Eyes large, with cheeks narrow. Antennae serrate from antennomere 5. Pronotum swollen anteriorly, depressed posteriorly, wider in anterior half, slightly sinuate before base, with posterior angles obtuse. Anterior edge advanced in middle, before eyes. Disc longitudinally furrowed in middle, with superficial oblique sculpture.



FIGURES 11–18. 11. Agrilus erici n. sp., holotype, aedeagus in dorsal view, 3 mm. 12. Agrilus dauberi n.sp., holotype, aedeagus in dorsal view, 1.4 mm. 13. Agrilus goldsteini n. sp., holotype, aedeagus in dorsal view, 1.5 mm. 14. Agrilus ivetteae n. sp., paratype, aedeagus in dorsal view, 1.5 mm. 15. Agrilus semicinctus n. sp., holotype, aedeagus in dorsal view, 1.8 mm. 16. Agrilus glebae n. sp., paratype, aedeagus in dorsal view, 1.8 mm. 17. Agrilus cerrolatus n. sp., holotype, aedeagus in ventral view, 1.2 mm. 18. Agrilus disparifrons n. sp., paratype, aedeagus in dorsal view, 1.5 mm.

Thin white pubescence is observable on sides. Prehumeral carina more than 1/3 the length of pronotum. Marginal carinae joined at base. Scutellum transversely carinate. Elytra squared at apex which is microdenticulate. Disc with short white pubescence, with exception of six (3+3) elongated spots more dense and evident, along suture, at callus, before middle, and at ¾ of length. Between these perisutural spots disc appears glabrous. Ventral side with uniform short, white pubescence, more dense at lateroterga and at metecoxa. All claws simply mucronate. Metatarsus shorter than metatibia, with first metatarsomere as long as sum of following 3 (1=2+3+4). Aedeagus black, sclerotized: median lobe with apex rounded (figure 17).

Etymology. For partial latinisation of locality name: largo = latus.

Comments. For the above mentioned characters A. cerrolatus **n. sp.** is unmistakable for the congeneric Central American species with 6 (3+3) pubescent spots on elytra.

Agrilus disparifrons n. sp. (Figure 10)

Type specimens. Holotype \circlearrowleft : Nicaragua, Granada, Domitila, 07–09.06.2004, leg. Eric van den Berghe and Heinz Dauber (SMNS). Paratypes: $5 \circlearrowleft$ and $2 \circlearrowleft$, idem (CMNG and MCCI); $2 \circlearrowleft$, idem (CHAH).

Description of holotype. Length 5 mm. Uniformly dark bronze dorsally, with exception of green vertex. Vertex wider than 2/3 width of head, furrowed. Frons metallic green, with a dimple at base, covered with white pubescence; remaining surface glabrous. Eyes large, broader at base. Clypeus raised in regards to frons, separated by a transversal carina. Antennae serrate from antennomere 4. Pronotum wider on anterior side, regularly narrowed towards base, but with posterior angles right. Disc depressed at sides, and covered anteriorly with white pubescence. Sculpture superficial, longitudinal at sides and transverse in middle. Premarginal carina absent. Marginal carinae subparallel, separate at base. Scutellum large, transversely carinate posteriorly. Elytra with apices rounded and microdenticulate. Six (3+3) spots of white pubescence, first pair in humeral callus, second elongated from after callus to the middle of elytra, third rounded at posterior ³/₄ of elytra. White pubescence at base of first lateroterga and uniformly covering remaining laterotergae. Abdominal sterna with spots of same pubescence at base. White pubescence also on metepisternum and metecoxa. Claws mucronate. Metatarsus as long as metatibia, with first metatarsomere nearly as long as the sum of following four (1=2+3+4+5).

Description of paratypes. Length from 4.2 to 5.5 mm. In well preserved specimens, the pubescence on pronotum and sterna is pruinose. Females are distinguished by their bigger shape and by frons being yellow-gold or copper. Aedeagus is thin, lengthened, with median lobe acuminate (figure 18).

Etymology. For sexual dichromism in the head.

Comments. A. disparifrons **n. sp.** is similar to A. limpiae Knull, 1941 described from the southcentral United States (Kansas, Oklahoma, Texas), but differs by these principal characters: smaller dimensions, premarginal carinula absent, marginal carinae of pronotum subparallel, not joined at base, presence of a pubescent dimple at base of frons, and aedeagus slender and lengthened.

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