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Two new species of *Chrysina* Kirby
(Coleoptera: Scarabaeidae: Rutelinae)

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Two new species of *Chrysina* Kirby (Coleoptera: Scarabaeidae: Rutelinae)

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Abstract. Two **new species** of *Chrysina* Kirby (Coleoptera: Scarabaeidae: Rutelinae) are described from Oaxaca and Queretaro, Mexico: *C. pricei* Hawks and *C. robackeri* Hawks.

Key words. Rutelini, North America, taxonomy.

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Introduction

The ruteline scarab genus *Chrysina* Kirby, or jewel scarabs, includes about 130 valid species (Hawks 2017; Monzón 2017; Mora-Aguilar et al. 2018). Jewel scarabs are found exclusively in the New World from the southwestern United States south to northwestern South America. A key to species groups and species of *Chrysina* does not yet exist, and it is beyond the scope of the present work to include such a key. However, two new species are herein described in preparation for additional revisionary work and a molecular phylogenetic analysis of the genus.

Materials and Methods

This publication follows Hawks (2001) for *Chrysina* taxonomy and nomenclature, including his informal species groups. Two new species of *Chrysina* are described and diagnosed based on a template of morphological characters used by Hawks and others (e.g., Hawks 1999; Monzón 2017). Measurements are to the nearest 0.5 mm. Brief remarks are presented for each species. Holotype deposition is provided in the descriptions, and paratypes have been or will be deposited in several public and private collections when appropriate. Type depositories include the following institutions:

- California Academy of Sciences, San Francisco, CA, USA
- National Insect Collection of Mexico, National Autonomous University of Mexico, Mexico City, Mexico (CNIN)
- University of Nebraska State Museum, Lincoln, NE, USA
- National Museum of Natural History, Smithsonian Institution, Washington, DC, USA

Taxonomy

Genus *Chrysina* Kirby

Chrysina Kirby 1828 (1827): 522. Type species: *Chrysina peruviana* Kirby, by monotypy.

Plusiotis Burmeister 1844: 417. Type species: *Pelidnota victorina* Hope 1841: 11, by subsequent designation (Ohaus 1934: 16).

Pelidnotopsis Ohaus 1915: 257. Type species: *Pelidnota plusiotina* Ohaus 1912: 304, by monotypy.

Plusiotina Casey 1915: 84. Type species: *Plusiotina aeruginis* Casey 1915: 85.

***Chrysina pricei* Hawks, new species**

Figures 1–4

Type data. Holotype male (deposited at CNIN), labeled: a) “MEXICO: OAXACA / Ixtlán Distr., 35 km N / Guelatao; 2900m; 2.V - 12.VI.2017; H. Arellano”; b) on red paper, “*Chrysina / pricei* male symbol / Hawks, 2020 / HOLOTYPE”. Paratypes (73M) labeled as holotype. Paratypes (2M) labeled: “MEXICO: OAXACA / Ixtlan Distr., 35 km N / Guelatao; 2900m; 15- / 18.V.2015; H. Arellano”. Paratypes (2M) labeled, handwritten: “Mexico: Oaxaca / Ixtlan de Juarez / 9 May 1979. 10,000' / Coll.: J. Chemek”. Paratypes (2M) labeled: “Mexico. Oaxaca / La Cabaña 25 km norte / de Ixtlán. 2980 msnm. / 8 de Junio 2013 / Col. Hector Arellano”. Paratypes (3M) labeled: “MEXICO: OAXACA / Ixtlán Distr., La Cumbre / Ixtpeji; 2700–2800 m / VI.2017; H. Arellano”. Paratype (1M) labeled: “MEXICO: OAXACA / Ixtlán Distr., 20 km W / Atepec; 2900m / VI.2011; H. Arellano. Paratypes (2M) labeled: “Mexico. Oaxaca / San Antonio Cuajimoloyas / 2,900 msnm. / Julio 2013 / Colector Héctor Arellano”. Paratypes (2 M) labeled: “Mexico. Oaxaca / 10 km al sur de Atepec / 2800 m. / Junio de 2013 / Col. Hector Arellano”. Paratype (1F) labeled as holotype except “found on ground, August 2018”. All paratypes labeled on yellow paper, “*Chrysina / pricei* male or female symbol / Hawks, 2020 / PARATYPE”.

Description, holotype male. Length 24.5 mm, width 13.0 mm. Color of dorsal surface of head green with coppery reflection; pronotum and elytra mostly iridescent green; clypeus, pronotal and elytral margins purplish copper; pygidium green on disc with strong cupreous reflection laterally (Fig. 1). Ventral surface of body and legs iridescent cupreous with purplish and green reflections; tarsi brown with weak green iridescence; antennae brown, lacking iridescence (Fig. 2).

Head. Form overall narrow, clypeus rounded, subsemicircular, almost flat in lateral view. Dorsal surface of frons with coarse, setose punctures laterally, becoming fine, impunctate on disc. Clypeus with surface rugopunctate basally. Anterior border of labrum deeply emarginate medially. Mandibles oval, convex; visible in dorsal view. Eye size large, bulging (Fig. 1–2), with ratio of interocular distance to width of pronotum at base = 1 : 3. Ratio of antennal club length to interocular distance = 1 : 0.75.

Thorax. Pronotal basal margin entire. Pronotal surface densely punctate with mixed small and fine punctures. Mesosternal process small, knob-like. Each elytron with 9 distinct punctate striae; punctures larger than on pronotum; interstriae with only fine punctures not visible without magnification; epipleural fold narrow, terminating at middle of metacoxae. Venter densely setose; setae very long, light brown.

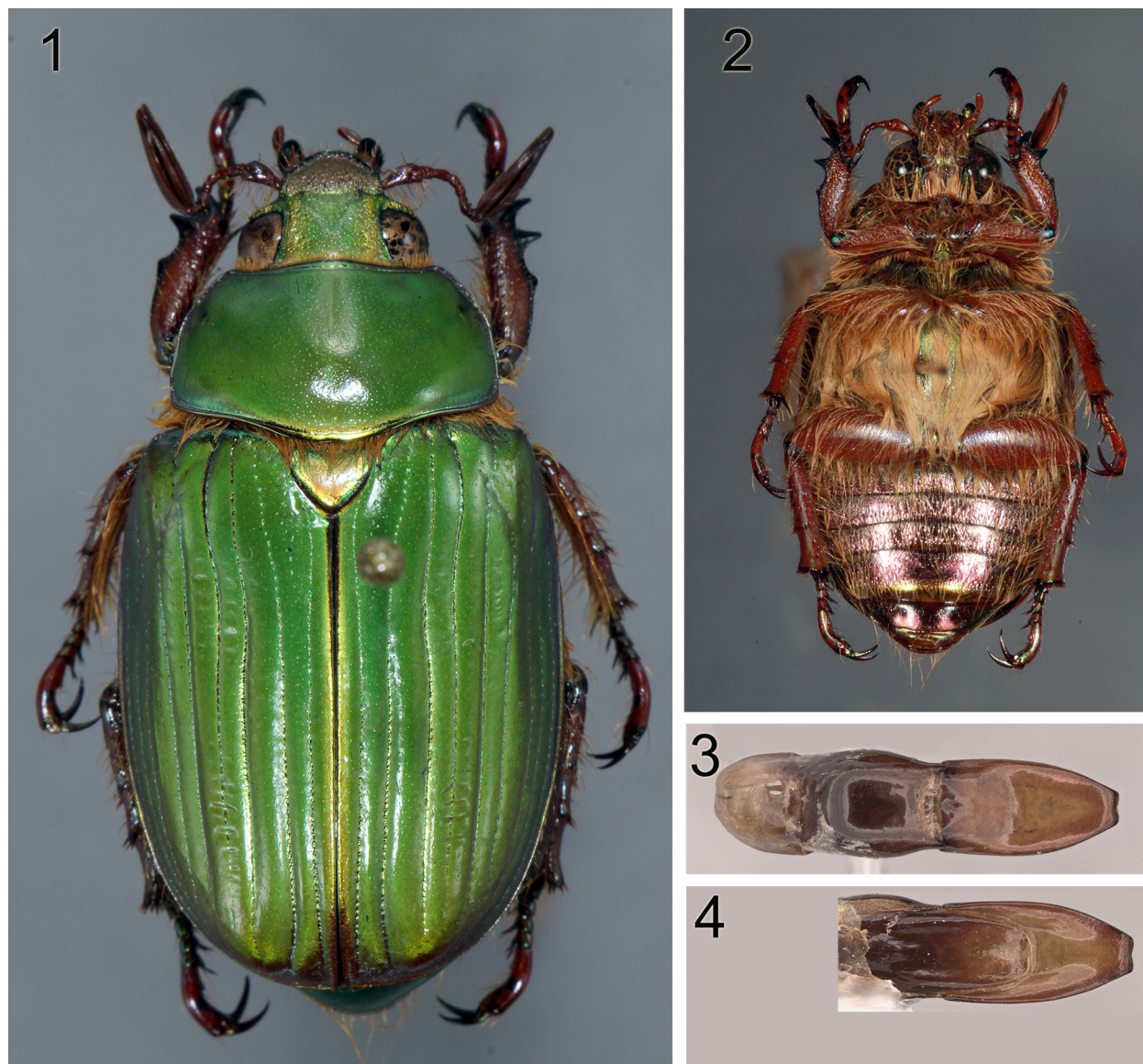
Abdomen. Pygidium overall smooth, finely rugopunctate near margins. Venter with numerous, irregularly spaced light brown setae. **Genitalia:** Genital capsule length 7.5 mm. Parameres (Fig. 3–4) almost symmetrical, subspatulate, weakly notched at apex; sinuate in lateral view; ventral keel absent. Ventral plates fused into parabola with rounded apex; apex weakly emarginate medially.

Male paratype variation (n = 87). Length 23.0–27.5 mm. Width 11.5–14.0 mm. About one third of paratypes differ from the holotype in having the marginal cupreous color more strongly golden. In these specimens the clypeus is more or less concolorous with the head.

Female paratype variation (n = 1). Length 26.0 mm. Width 13.5 mm. The only known female differs from the holotype in the following aspects. The body is slightly more convex in dorsal and lateral views, the legs and tarsi are relatively slightly smaller, and the antennal club is much shorter. The eyes are much smaller (about one-half the diameter of those of males) and not bulging. The ratio of antennal club length to interocular distance = 1 : 1.6. The inferior genital plates are subcircular and convex.

Diagnosis. *Chrysina pricei* is most similar to *C. sagacita* Hawks, but averages more robust, is a slightly darker green, and has slightly longer antennal clubs in the males. Compared to *C. sagacita*, *C. pricei* has a clypeus that is more circular, a shorter pronotum, the legs are more robust, and the ventral coloration is more purplish-cupreous. It also is similar to *C. orizabae* (Bates), but *C. pricei* averages smaller, the legs are less robust, the eyes are relatively larger, it has a shorter interocular distance, the interocular region is more convex, and the pronotum is relatively shorter.

Etymology. I am pleased to name this new species for my friend and colleague, Kelly Price. Kelly has contributed significantly to my research on *Chrysina*, and has collaborated with me on a few projects for more than ten years. He has tirelessly and generously contributed to me very interesting specimens and samples for DNA sequencing. Kelly first brought this species to my attention.



Figures 1–4. *Chrysina pricei* Hawks, **new species**. 1) Adult male dorsal habitus. 2) Adult male ventral habitus. 3) Male genitalia, dorsal view. 4) Male genitalia, ventral view.

Remarks. This is the fourth species in a species complex containing *C. orizabae* and *C. sagacita* which are distributed in the Transverse Volcanic Range and southward through the Sierra Juárez in Mexico, and *C. antonkoslovi* Monzón found in western Honduras. Previously, *C. antonkoslovi* was placed by Monzón (2017) in the Adelaida Group of Hawks (2001). All four species are unique within the genus in that the adults do not feed and possess atrophied digestive tracts (Hawks, pers. obs.), occur at high elevations, the males possess large eyes and long antennal lamellae, and both sexes have dense, long setae ventrally. This species complex is related to the Auripes Group (sensu Hawks 2001) based upon both morphological and molecular evidence (Hawks, in prep.). The single female of *C. pricei* was found crawling on the ground, which also is typical of this complex in that the females apparently never fly or come to lights and are rarely collected.

***Chrysina robackeri* Hawks, new species**

Figures 5–12

Type data. Holotype male (deposited at CNIN), labeled: a) “MEXICO: Queretaro / Pinal de Amoles / 21°9′; –99°39′; 2600 m / VIII.2017; local collector”; b) on red paper, “*Chrysina / robackeri* male symbol / Hawks, 2020 / HOLOTYPE”. Paratypes (17M, 6F) labeled as holotype. Paratypes (3M, 1F) labeled as holotype, except “VII.2017”. Paratypes (1M, 1F) labeled: “Mexico: Queretaro / Pinal de Amoles 2500m / 24 July 2006 D. C. Robacker. Paratypes (1M, 1F) labeled: “Mexico: Queretaro / Pinal de Amoles / November 2015 / D. B. Thomas. Paratype female labeled: “Mexico: Queretaro / Pinal de Amoles elev. 8000′ / 21 July, 2007 / D. C. Robacker”. Paratype male labeled: “Mexico; Queretaro, 16-VIII-06 / Pinal de Amoles, El 7943′ / N21°07.89′; W 99°37.80′ Hg-UV / D. Thomas, D. Robacker, J. Burne”. Paratypes (1M, 1F) labeled: “MEXICO: Queretaro / Sierra Gorda; 2850m / VII.2013; local collector.” Paratypes (4M, 1F) labeled: “MEXICO: Queretaro / Pinal de Amoles / 21°9′; –99°39′; 2600 m / VI.2014; local collector”. Paratypes (2M) labeled: “MEXICO: Queretaro / Pinal de Amoles / 21°9′; –99°39′; 2550 m / VII.2016; local coll.”. All paratypes (28M, 10F) with paratype label on yellow paper, “*Chrysina / robackeri* male or female symbol / Hawks, 2020 / PARATYPE”.

Description, holotype male. Length 27.5 mm, width 13.5 mm. Color of dorsal surface of head, pronotal disc, elytra, pygidium yellowish green with darker green reflections; clypeus, pronotum golden pink laterally; apical calli gold (Fig. 5). Ventral surface (Fig. 8) of body and femora darker iridescent green; tibiae internally green; apex of femora, tibiae externally purplish brown with pink and green iridescence; tarsi with weak green iridescence; antennal scape brown with brownish green iridescence dorsally; remainder of antenna brown.

Head. Form overall broad, clypeus subtrapezoidal with truncate, upturned apex; disc slightly tumid in lateral view. Dorsal surface with irregularly spaced small punctures. Clypeus with surface more densely punctate. Anterior border of labrum broadly, shallowly emarginate medially. Mandibles somewhat square, convex; visible in dorsal view. Eye size normal. Ratio of interocular distance to width of pronotum at base = 1 : 2.2. Ratio of antennal club length to interocular distance = 1 : 1.5.

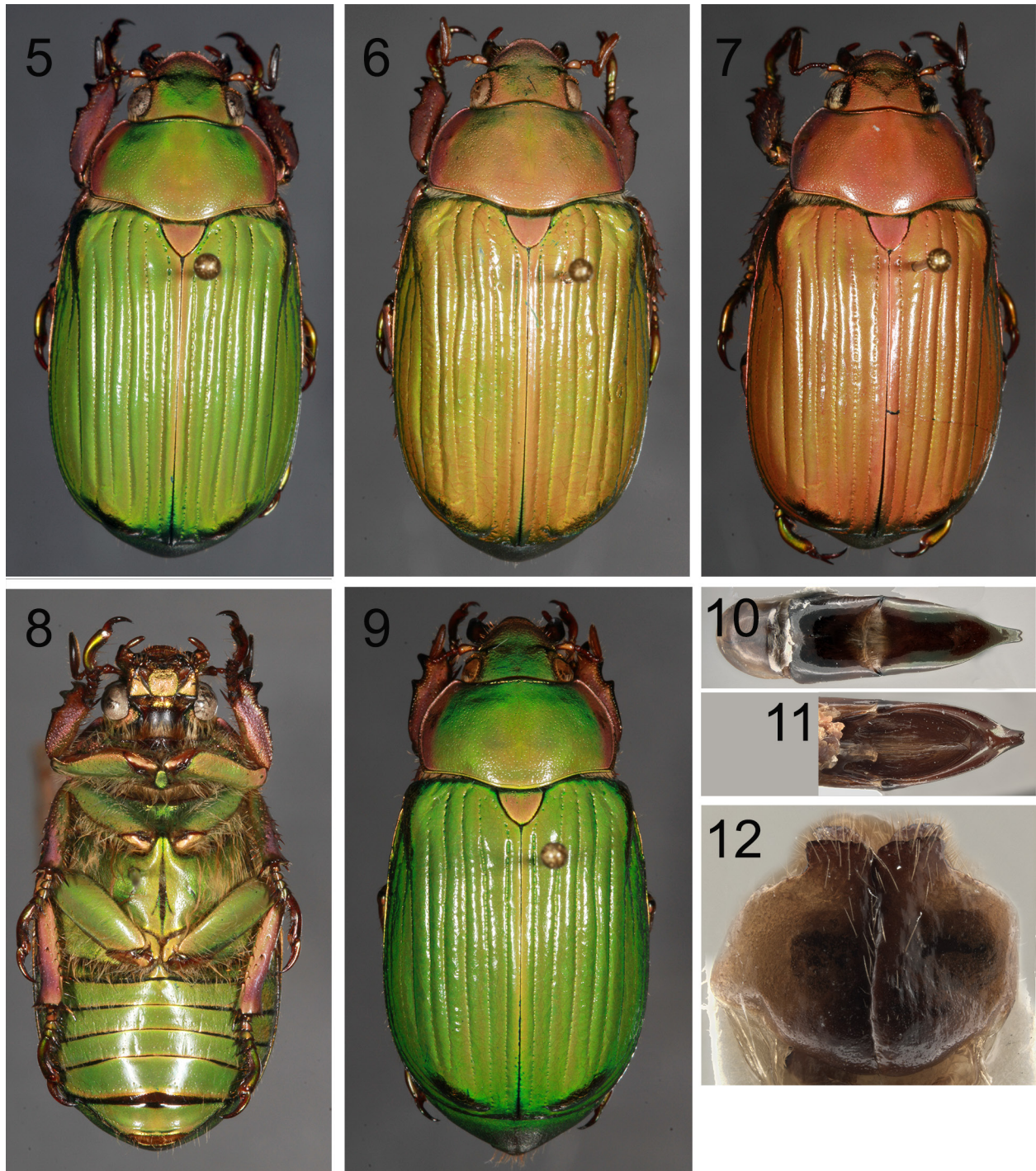
Thorax. Pronotal basal margin entire. Pronotal surface densely punctate with mixed small and minute punctures. Mesosternal process moderately produced. Each elytron with 9 distinctly impressed, punctate striae; punctures larger than on pronotum; interstriae with only fine punctures not visible without magnification; epipleural fold broad basally, narrowing abruptly in basal third, gradually narrowing after to apex. Venter moderately setose; setae long, light brown.

Abdomen. Pygidium finely, densely rugopunctate; punctures small. Venter glabrous except segments 2–4 with sparse rows of setose punctures; setae much shorter than on thorax. **Genitalia:** Genital capsule length 9.5 mm. Parameres (Fig. 10–11) almost symmetrical, hastate, notched at apex; recurved in lateral view; ventral keel absent. Ventral plates fused into parabola with rounded apex; emarginate medially.

Male paratype variation (n = 28). Length 26.5–29 mm, width 12.5–15.0 mm. Except for variation in size, male paratypes are very similar to the holotype. Two specimens represent light pinkish-orange (Fig. 6) and darker pink (Fig. 7) color morphs.

Female paratype variation (n = 10). Length 30–35 mm, width 17–20.5 mm. Females (Fig. 9) are nearly identical to males in terms of gross morphological and coloration characteristics, but can be readily distinguished by the last abdominal segment which lacks a membranous apex. As is common in the genus, the female body is slightly more convex in profile, legs and tarsi are relatively smaller, and the antennal club is slightly shorter. The ratio of antennal club length to interocular distance = 1 : 2. The inferior genital plates (Fig. 12) are broadly falcate with truncate apices.

Diagnosis. *Chrysina robackeri* is a member of the Adelaida Group (sensu Hawks 2001), and is most similar to *C. difficilis* (Morón). In *C. robackeri* the clypeus is subtrapezoidal and centrally green whereas in *C. difficilis* the clypeus is trapezoidal and a more solid pinkish-brown color. As compared to *C. robackeri*, *C. difficilis* is more densely setose ventrally, more parallel-sided in dorsal view (especially in males), a slightly darker green, and the parameres taper more abruptly. *Chrysina robackeri* previously was incorrectly identified as *C. citlaltepētlamayatlī* (Blackaller-Bages and Delgado) by Morón and Nogueira (2016). *Chrysina citlaltepētlamayatlī* is more robust and a brighter yellowish-green than both *C. robackeri* and *C. difficilis*, and the parameres are more similar to those of



Figures 5–12. *Chrysina robackeri* Hawks, **new species**. 5) Adult male dorsal habitus, typical coloration. 6) Adult male dorsal habitus, light pinkish-orange color morph. 7) Adult male dorsal habitus, pink color morph. 8) Adult male ventral habitus. 9) Adult female dorsal habitus. 10) Male genitalia, dorsal view. 11) Male genitalia, ventral view. 12) Female genitalia, ventral view.

C. difficilis. These three species, while clearly related according to morphological and molecular evidence (Hawks, in prep.), are likely completely isolated in their respective high elevation mountainous habitats in eastern Mexico.

Etymology. This new species is named for my friend and colleague, David C. Robacker, who first collected and brought it to my attention. He also has provided me with fresh samples of many *Chrysina* species, including *C. robackeri*, for my molecular phylogenetics work. I am grateful to David for his many contributions over a span of more than 20 years to my research on Jewel Scarabs.

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