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DESCRIPTION OF THE FEMALE OF
HOLOGYMNETIS REYESI GASCA AND
DELOYA (COLEOPTERA: SCARABAEIDAE:
CETONIINAE: GYMNETINI), WITH NEW
STATE RECORDS FOR MEXICO AND A
BILINGUAL KEY TO THE SPECIES OF
HOLOGYMNETIS MARTÍNEZ

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**DESCRIPTION OF THE FEMALE OF *HOLOGYMNETIS REYESI* GASCA AND DELOYA
(COLEOPTERA: SCARABAEIDAE: CETONIINAE: GYMNETINI), WITH NEW STATE
RECORDS FOR MEXICO AND A BILINGUAL KEY TO THE SPECIES
OF *HOLOGYMNETIS* MARTÍNEZ**

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ABSTRACT

The female of *Hologymnetis reyesi* Gasca and Deloya is described and illustrated for the first time based upon specimens from Estado de México, Mexico, **new state record**. The species is also herein reported from the state of Guerrero, **new state record**. A bilingual key in Spanish and English to all the species of *Hologymnetis* Martínez is presented and accompanied by maps showing distributions for all species in the genus.

RESUMEN

Se describe e ilustra por primera vez la hembra de *Hologymnetis reyesi* Gasca y Deloya con especímenes de Estado de México, México, **nuevo registro estatal**. También se reporta la especie para el estado de Guerrero, **nuevo registro estatal**. Se incluye una clave para todas las especies de *Hologymnetis* Martínez, con los correspondientes mapas de distribución.

Key Words: scarab beetle, morphology, distribution, Neotropics, bilingual key

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Schürhoff (1937) created the genus *Cineretis* for those species of Gymnetini lacking a strong, vertical prosternal spine behind the mentum. He included in this genus *Gymnetis argenteola* Bates, *Gymnetis cinerea* Gory and Percheron, and *Cetonia undulata* Vigors. Unfortunately, he did not designate a type species for the genus, and so the name became a *nomen nudum*. Martínez (1949) recognized this and created a new genus, *Hologymnetis*, as a replacement name and designated *Cetonia undulata* Vigors as the type species. The genus was comprehensively revised by Ratcliffe and Deloya (1992) who included in it seven species (three of which were new) distributed from the southwestern United States to southern Brazil and Paraguay. An additional new species, *Hologymnetis reyesi* Gasca and Deloya, represented by a unique male from Colima, Mexico, was described by Gasca and Deloya (2015). Here we describe the female of *H. reyesi* from the state of México and expand the description for the male based upon additional specimens.

Little is known about the natural history of *Hologymnetis* species, although Ratcliffe and Deloya (1992) reported *H. argenteola* and *H. cinerea* collected from gumming sites on *Baccharis* L. (Asteraceae) and *Acacia* Mill. (Fabaceae) and in banana traps. *Hologymnetis cinerea* adults have also been found in the detritus piles of leafcutter ants (*Atta* Fabricius) (Deloya 1988). Micó *et al.* (2001) described the larva of *H. cinerea*.

Ratcliffe and Deloya (1992) conducted a phylogenetic analysis to propose a relationship hypothesis for the species of *Hologymnetis* as well as a biogeographic study to explain the current distributions of the species. Micó *et al.* (2008) used larval and adult characters to establish a phylogenetic reconstruction of the entire subfamily and found that *Hologymnetis* was a sister clade to *Gymnetis* MacLeay+*Hoplopyga* Thomson+*Argyripa* Thomson.

MATERIAL AND METHODS

The description of the female is based upon two specimens collected with two male specimens

from Ixtapan del Oro, Estado de México in June 1994 by Svatopluk Pokorný. Additionally, one male was collected in Acahuizotla, Guerrero in May 1980 by Adolfo Ibarra; label data indicate this specimen was identified as *Gymnnetis margaritis* (Bates), and it was compared with the holotype in the BMNH by M. A. Morón in 1987. The specimens are in the personal collection of Svatopluk Pokorný (Prague, Czech Republic) and in the entomological collection of the Instituto de Ecología (Xalapa, Veracruz, Mexico).

The following characters are used in the description: length from front of the pronotum to the apex of the elytra (the head is not included because it may or may not be deflexed and, if measured, could give a variable length depending on its orientation); width across humeri; body color and markings; interocular width (number of transverse eye diameters across the frons between the eyes); form and sculpturing of the head, pronotum, elytra, and pygidium; form of the mesometasternal process; sculpturing of the abdominal sternites; and shape of the parameres. Punctures are considered simple unless otherwise noted. Minute punctures are generally not seen with 12.5X magnification but are easily seen with 50X magnification. Small punctures are easily seen with 12.5X magnification and can be seen with the naked eye. Large punctures are easily seen without the aid of instruments. Sparse punctures are characterized by numerous puncture diameters between them. Punctures moderate in density have 3–5 puncture diameters between them. Dense punctures have only 1–2 puncture diameters or less between them.

Hologymnnetis reyesi Gasca and Deloya, 2015

(Figs. 1–7, 9, 16)

Description. Female. Length 16.0–18.0 mm; width 9.0–10.0 mm. Color dark reddish brown (Fig. 6) in specimens at hand, probably varies to smokey grey based upon color of the males. Abdominal sternites shiny dark reddish brown, sternites 1–5 with enamel-like, light brown (tan) color reduced to extreme lateral edges and with short, narrow, tan macula on anterior edge of sternites 2–5 either side of middle (Fig. 7). **Head:** Surface with punctures moderate in size and density, setigerous; setae short, tawny. Clypeal apex broadly subtruncate, feebly emarginate at middle; apical margin narrowly reflexed. Eyes large, interocular width equals 4.5 transverse eye diameters as seen from above. Scape and eye canthus with numerous, tawny setae. **Pronotum:** Surface with punctures moderate in size, sparse. Lateral margin on basal half only with strong bead. Mesepimeron with punctures moderate in size and density, setigerous; setae long, dense, tawny. **Elytra:** Surface with punctures

moderate in size and density, round to n-shaped, ocellate, minutely setigerous, some in incomplete rows on disc. Elevated sutural and discal costae absent. **Pygidium:** Surface with large, dense, crescent-shaped and c-shaped, setigerous punctures; setae minute, dark. **Venter:** Metasternum with large, dense, confluent, setigerous punctures, setae sparser than in male but still long (Fig. 7). Mesometasternal process short, extending anteriorly beyond mesocoxae but not reaching procoxae; ventral surface flat, in same plane as longitudinal axis of body; anterior surface with long, slender setae that curl around apex. In ventral view, sides of mesometasternal process taper to shiny, reddish brown, rounded apex. Abdominal sternites 1–5 with moderate to large, round to kidney-shaped, setigerous punctures on lateral fourths; setae minute, tawny. **Legs:** Protibia with 3 subequally spaced teeth.

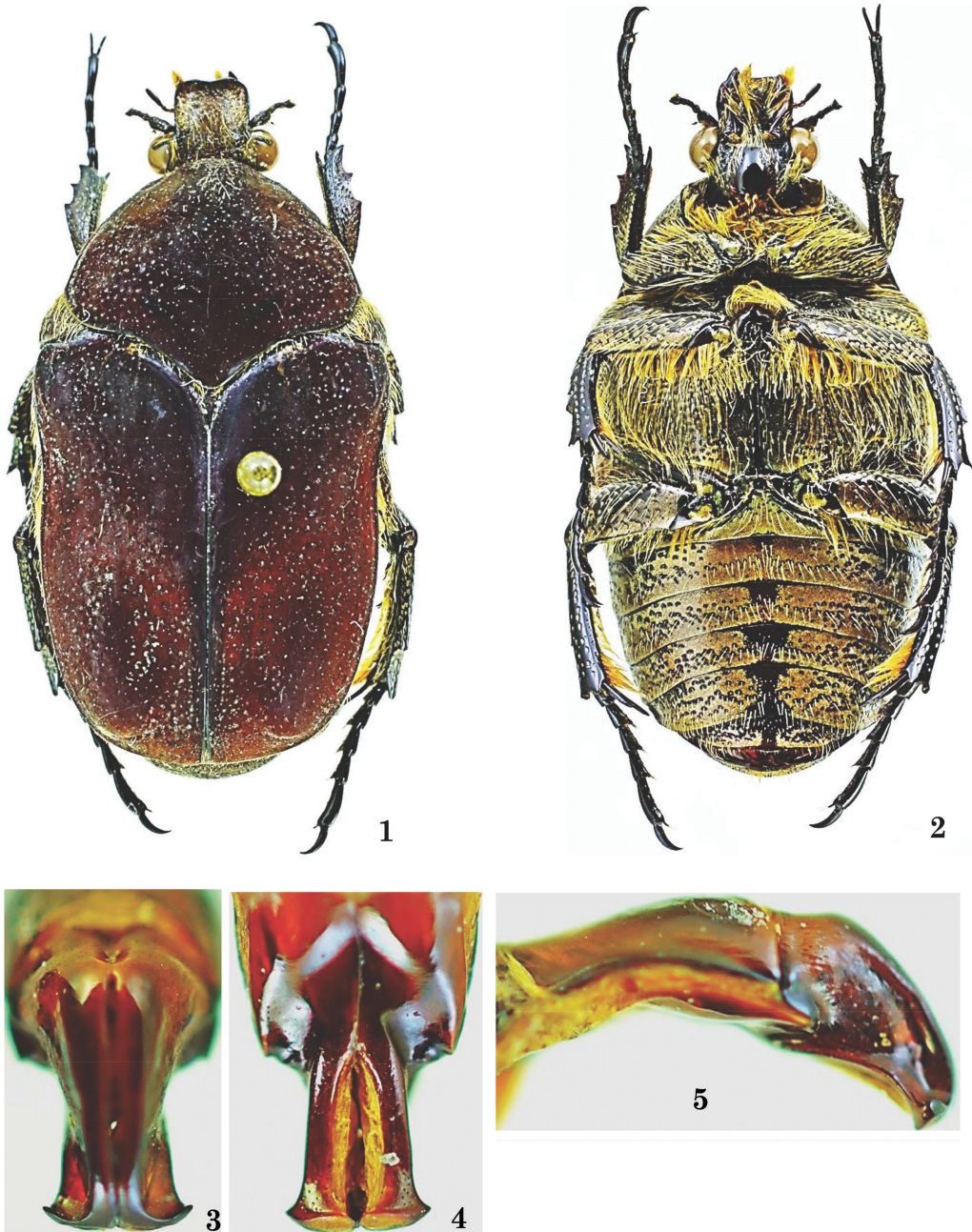
Male. The following characteristics vary from the female and expand the original description based on the male holotype. Length 17.0–18.0 mm; width across humeri 9.0–10.3 mm. Color dorsally opaque smokey grey to dark reddish brown (Fig. 1). Pronotum of grey specimens with light brown, longitudinal line at center, reddish brown specimens lacking line. **Elytra:** Punctures small to large, moderately densely punctate, punctures round to kidney-shaped, u-shaped near apex. Elevated costae absent or sutural costa and 2 discal costae weakly elevated, discal costae terminating at apical umbone. **Pygidium:** Setae pale or dark. **Venter:** Color shiny, dark reddish brown overlain with enamel-like, grey or light to dark brown (Fig. 2); abdominal sternites 1–5 completely smokey grey or light brown with moderate to large, round to kidney-shaped, setigerous punctures that extend across entire sternite; setae long, dense. **Parameres:** In caudal view, base broadly rounded and abruptly tapering to elongated shaft with laterally projecting tooth at apex. In lateral view, phallobase twice as long as parameres (Figs. 3–5, 9).

Distribution. *Hologymnnetis reyesi* was described from one specimen collected 18.2 km south of Colima, Colima, Mexico. The new specimens reported here are from Ixtapan del Oro, Estado de México, and Acahuizotla, Guerrero (Fig. 16), which are **new state records**. This extends the known distribution of *H. reyesi* approximately 360 km to the east and 484 km to the southeast.

Locality Records. MEXICO (6): COLIMA (1): Colima (probably the municipality of Ixtlahuacán). GUERRERO (1): Acahuizotla. ESTADO DE MÉXICO (4): Ixtapan del Oro.

Temporal Distribution. May (1), June (5).

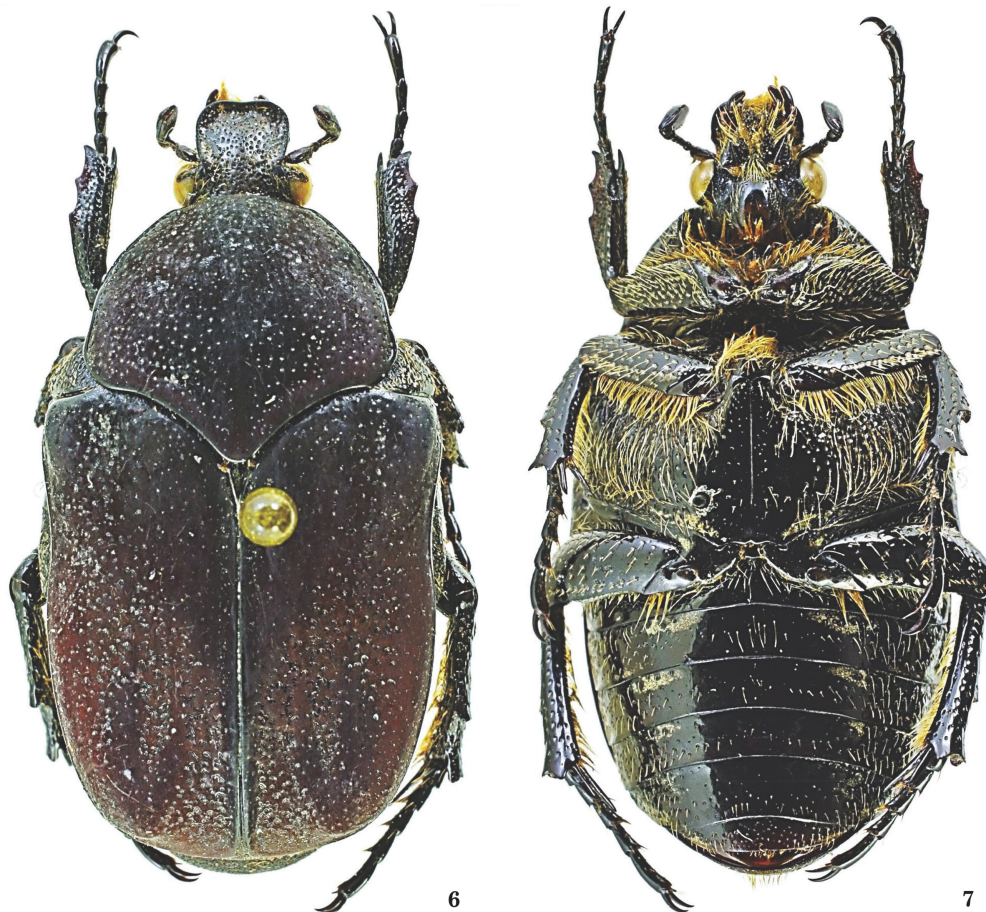
Diagnosis. *Hologymnnetis reyesi* is distinguished by its velutinous, smokey grey to dark reddish brown color on the dorsum and enamel-like, light brown or grey color on the abdominal sternites



Figs. 1–5. *Hologymnetis reyesi*, male. 1) Dorsal habitus; 2) Ventral habitus; Parameres: 3) Dorsal view; 4) Ventral view; 5) Lateral view. Photographs by Jiri Zidek.

(extensive in males, greatly reduced in females); meso- and metasternal areas of the meso-metasternal process contiguously joined by shiny, dark reddish brown coloration; long, dense setae

on the metasternum; and parameres broadly rounded at their bases and with a laterally projecting tooth at their apices (Figs. 3, 9). *Hologymnetis reyesi* is sympatric with *H. cinerea* and *H.*



Figs. 6–7. *Hologymnetis reyesi*, female. 6) Dorsal habitus; 7) Ventral habitus. Photographs by Jiri Zidek.

margaritis but is distinguished by the long, dense setae on the metasternum in *H. reyesi* (short and sparse in *H. cinerea* and *H. margaritis*), and the parameres are different (compare Figs. 9, 10, and 12). In addition, the abdominal sternites in both sexes of *H. cinerea* are completely shiny black, whereas they are light brown or grey in *H. reyesi*.

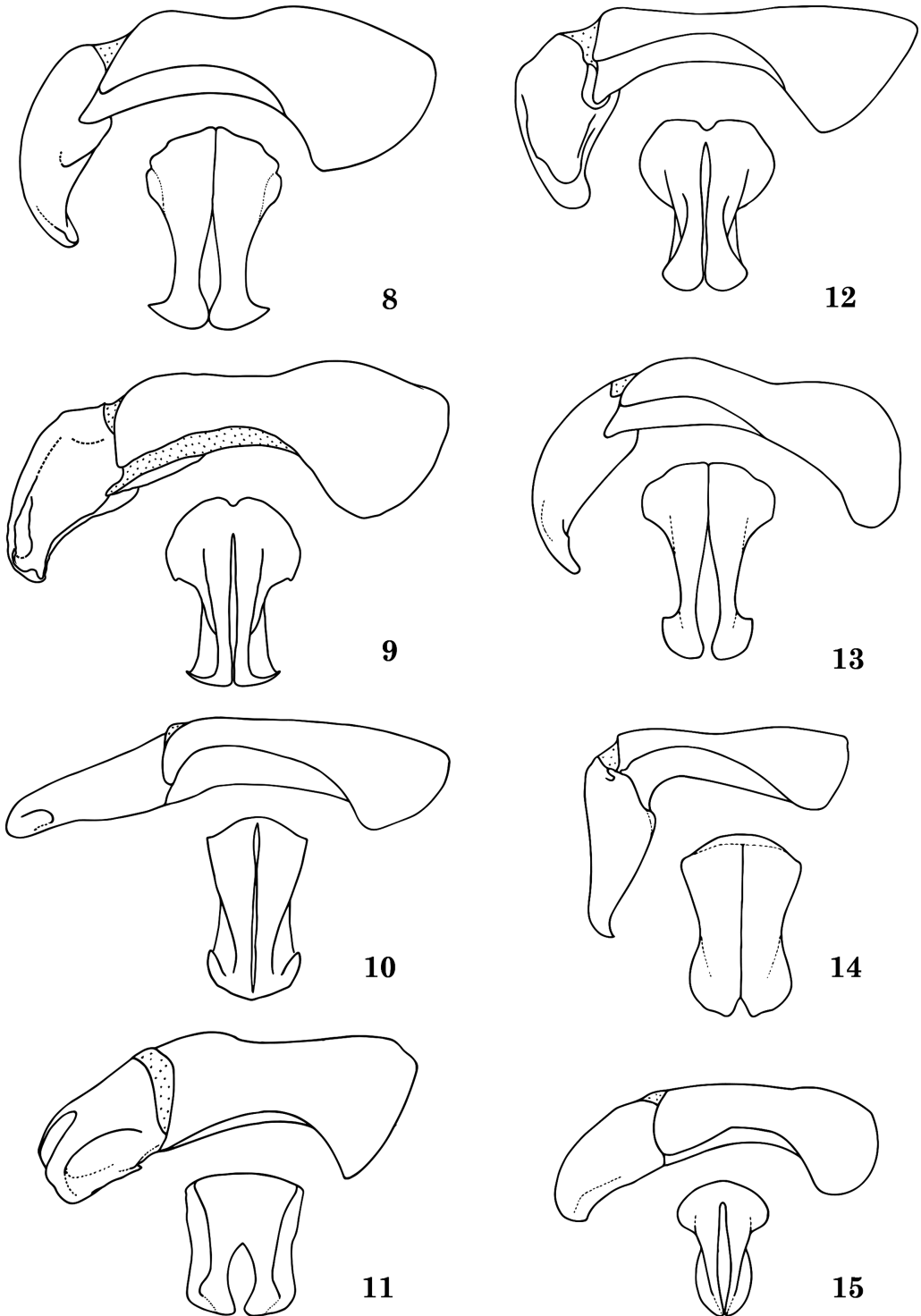
Natural History. The specimens from Ixtapan del Oro were all found dead in a water tank at an elevation of 1,800 m. The habitat of Ixtapan del Oro is montane tropical forest with pines, cedar, and oaks interspersed with farms, and that of Ixtlahuacán is tropical deciduous forest. The habitat of Acahuizotla is an ecotone composed of subdeciduous and deciduous tropical forest (600–1,000 m) and oak forest (1,100 m). Several new scarab species have been described from Acahuizotla during the last three decades, e.g., *Cotinis ibarraii* Deloya and Ratcliffe, 1988 (Cetoniinae), *Onthophagus villanuevai* Delgado and Deloya,

1990 (Scarabaeinae), *Iridisoma acahuizotlensis* Delgado and Moron, 1991 (Cetoniinae), and *Chasmodia jamesonae* Delgado, 1997 (Rutelinae).

KEY TO ADULTS OF THE SPECIES OF *HOLOGYMNETIS*

Males can be distinguished externally from females by their narrower protibia, sharply pointed metatibial spurs (rounded in females), and usually slightly concave abdomen (straight or weakly tumescent in females).

- 1. Venter nearly completely shiny black in both sexes, sternites laterally often with cretaceous markings.....2
- 1'. Venter brown to grayish brown, smokey grey, or pale brassy green or blue, weakly shiny or weakly to strongly metallic; females



Figs. 8–15. *Hologymnetis* species, parameres (caudal and lateral views). 8) *H. argenteola*; 9) *H. reyesi*; 10) *H. cinerea*; 11) *H. kinichahau*; 12) *H. margaritis*; 13) *H. moroni*; 14) *H. undulata*; 15) *H. vulcanorum*.

- with at least central third of sternites bare, black or dark reddish brown..... 3
- 2. Dorsum unicolorous (smokey grey, greyish olive, cinnamon, brown, or black). Parameres as in Fig. 10. Sonora, Mexico to Guatemala (possibly Honduras) (Fig. 16).....*H. cinerea* (Gory and Percheron)
- 2'. Dorsum black or piceous and distinctly patterned with cretaceous bands; bands present longitudinally on pronotum and radiating from midline on elytra, bands occasionally reduced or nearly absent. Parameres as in Fig. 14. Southern Brazil, Paraguay, eastern Bolivia (Fig. 18).....*H. undulata* (Vigors)
- 3. Venter brassy green (usually with coppery reflection) or dull grayish olive or bluish gray (rarely blue) with or without coppery reflections..... 4
- 3'. Venter opaque smokey grey, grayish brown, yellowish brown, or tan in males, females similar but brown or grey color greatly reduced..... 5
- 4. Venter bright, shiny, brassy green, usually with distinct reflection. Protibia with teeth subequally spaced. Parameres as in Fig. 8. Arizona, USA to Durango, Mexico (Fig. 16).....*H. argenteola* (Bates)
- 4'. Venter dull grayish olive or bluish gray (rarely blue) with or without coppery reflections. Protibia with median tooth distinctly closer to apical tooth than to basal tooth. Parameres as in Fig. 13. West-central Mexico (Pacific slope to the Sierra Madre Occidental) (Fig. 17).....*H. moroni* Ratcliffe and Deloya
- 5. Mesometasternal process with shiny black apex (mesosternum) usually sharply and transversely delineated from smokey grey shaft (metasternum). Parameres with apicomedian ridges tapering to a point (Fig. 15). El Salvador (Fig. 17).....*H. vulcanorum* Ratcliffe and Deloya
- 5'. Mesometasternal process completely dark reddish brown or piceous or with shiny apex (mesosternum) and shaft (metasternum)

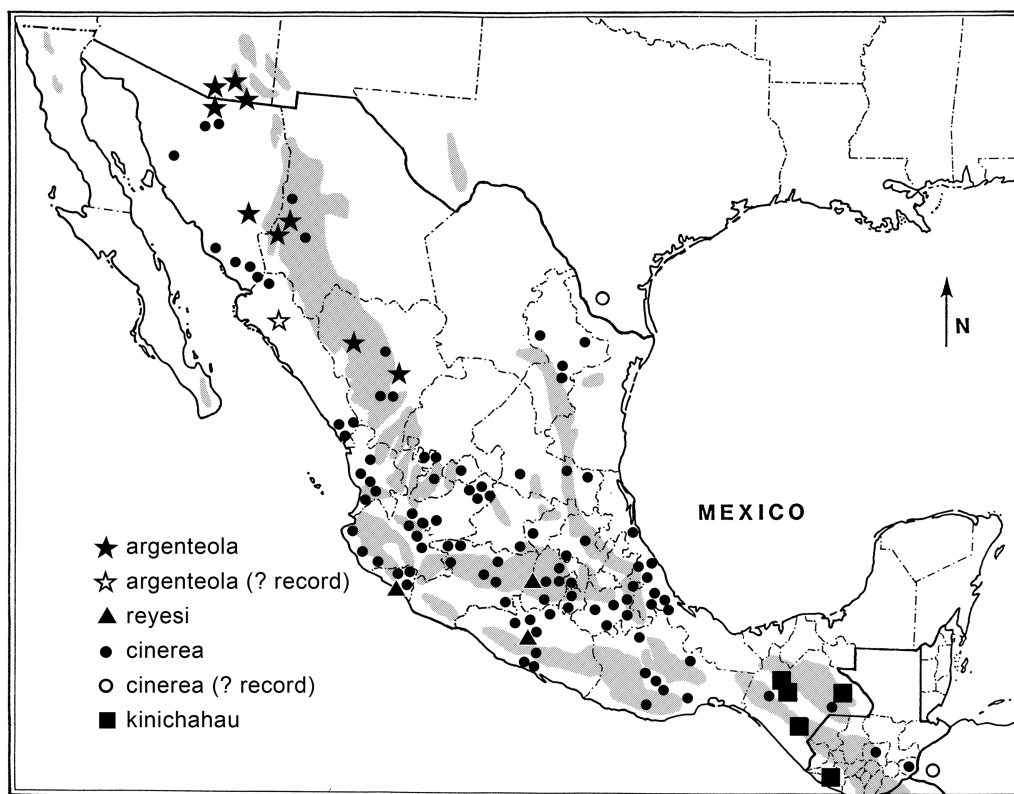


Fig. 16. Distribution map for *Hologymnetis argenteola*, *Hologymnetis reyesi*, *Hologymnetis cinerea*, and *Hologymnetis kinichahau*.

- usually broadly joined by a broad, longitudinal, piceous region. Parameres apically not acuminate.....6
6. Mesosternal process broadly subquadrate in ventral view, apex broadly rounded. Parameres subquadrate in caudal view (Fig. 11). Chiapas, Mexico to southwestern Guatemala (Fig. 16)*H. kinichahau*
Ratcliffe and Deloya
- 6'. Mesosternal process narrow in ventral view, apex narrowly rounded. Parameres in caudal view expanded at apex (Figs. 9, 12).....7
7. Metasternum with long, dense, tawny setae (Figs. 2, 7). Pronotum lacking pale, longitudinal, median line. Parameres in caudal view with laterally projecting tooth at apex (Fig. 9). Central Mexico (Colima, Guerrero, and Estado de México) (Fig. 16)
.....*H. reyesi* **Gasca and Deloya**
- 7'. Metasternum glabrous or with only minute, sparse, tawny setae. Pronotum with pale, longitudinal, median line. Parameres in caudal view with apex rounded (Fig. 12).

Southern Mexico (Sierra Madre Occidental to Chiapas) (Fig. 17).....
.....*H. margaritis* (Bates)

CLAVE PARA LOS ADULTOS DE LAS ESPECIES DE *HOLOGYMNETIS*

Los machos pueden ser diferenciados de las hembras en su morfología externa por tener las protibias estrechas, espolones metatibiales agudos (redondeados en las hembras), y usualmente con el abdomen ligeramente cóncavo (recto o ligeramente convexo en las hembras).

1. Vientre negro, casi completamente brillante en ambos sexos, lados de los esternitos frecuentemente con marcas cretáceas2
- 1'. Vientre marrón a marrón grisáceo, gris humo o de color verde pálido o con brillos azul metálico débiles a fuertes; hembras con al menos el tercio central de los esternitos abdominales glabros, negros u oscuro de color marrón rojizo3

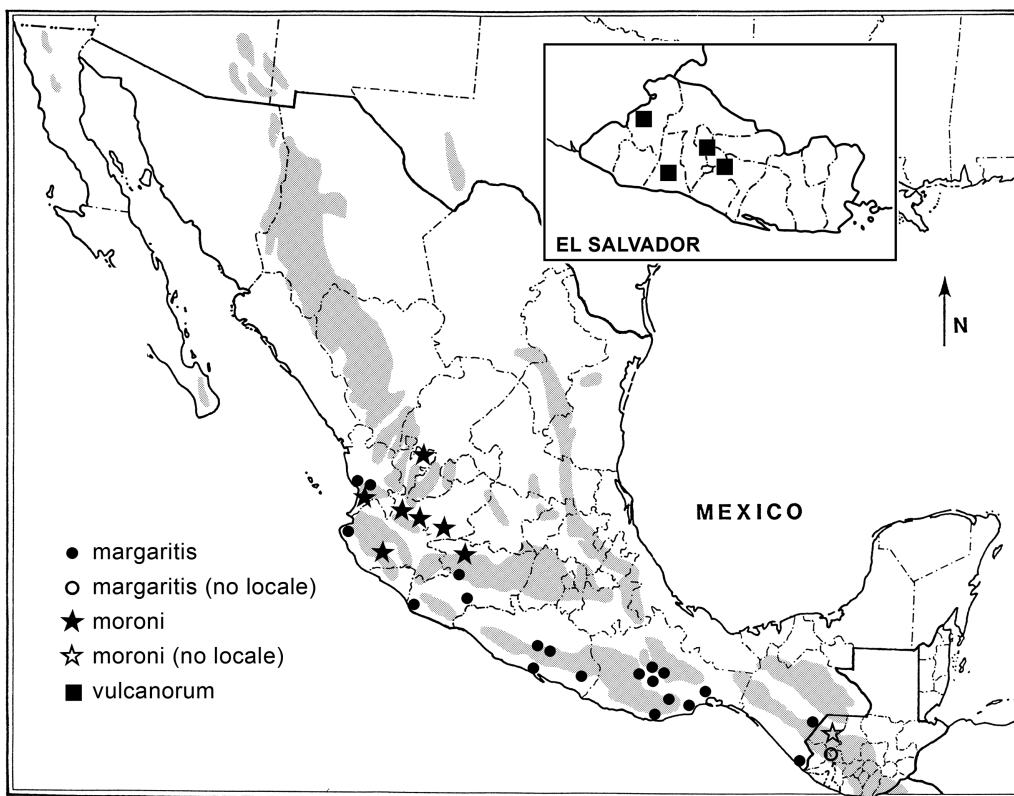


Fig. 17. Distribution map for *Hologymnetis margaritis*, *Hologymnetis moroni*, and *Hologymnetis vulcanorum*.

- 2. Dorso unicolor (gris humo, de color grisáceo de oliva, canela, marrón o negro). Parámetros como en la Fig. 10. Sonora, México hasta Guatemala (posiblemente Honduras) (Fig. 16) ***H. cinerea* (Gory y Percheron)**
- 2'. Dorso negro o negro brea con bandas cretáceas; bandas longitudinales sobre el pronoto y que irradian de la línea media en los élitros, algunas veces las bandas reducidas o casi ausentes. Parámetros como en la Fig. 14. Sur de Brasil, Paraguay, Bolivia oriental (Fig. 18)..... ***H. undulata* (Vigors)**
- 3. Vientre verde metálico (frecuentemente con reflejos cobrizos) u oliva grisáceo opaco o gris azulado (raramente azul) con o sin reflejos cobrizos 4
- 3'. Vientre gris humo opaco, color marrón grisáceo, marrón amarillento o marrón en los machos, hembras similares, pero de color marrón o gris muy reducidos 5
- 4. Vientre verde brillante metálico cobrizo, por lo general con reflejos diferentes. Protibia con dientes subigualmente separados. Parámetros como en la Fig. 8. Arizona, EEUU hasta Durango, México (Fig. 16) ***H. argenteola* (Bates)**
- 4'. Vientre de oliva grisáceo opaco a gris azulado (raramente azul), con o sin reflejos cobrizos. Protibia con el diente medio más cerca del diente apical que del diente basal. Parámetros como en la Fig. 13. Occidente central de México (vertiente del Pacífico de la Sierra Madre Occidental) (Fig. 17)..... ***H. moroni* Ratcliffe y Deloya**
- 5. Proyección meso-metaesternal con el ápice negro brillante (mesoesternón), por lo general transversalmente delimitada por el eje gris-humo (metaesternón). Parámetros con crestas apicales, la mediana aguzada (Fig. 15). El Salvador (Fig. 17) ***H. vulcanorum* Ratcliffe y Deloya**
- 5'. Proyección meso-metaesternal completamente oscura de color marrón rojizo o píceo o con brillo en el vértice (mesoesternón) y eje (metaesternón), por lo general unidas por una amplia región longitudinal píceo. Parámetros apicalmente no acuminados 6
- 6. Proyección mesoesternal generalmente subcuadrada en vista ventral, ápice ampliamente redondeado. Parámetros subcuadrados en vista caudal (Fig. 11). Chiapas, México hasta suroeste de Guatemala (Fig. 16) ***H. kinichahau* Ratcliffe y Deloya**
- 6'. Proyección mesoesternal estrecha en vista ventral, ápice redondeado con el margen estrecho. Parámetros en vista caudal expandidos en el ápice (Figs. 9, 12) 7



Fig. 18. Distribution map for *Hologymnetis undulata*.

- 7. Metaesternón densamente setoso, amarillo rojizo (leonado) (Figs. 2, 7). Pronoto sin línea longitudinal media pálida. Parámetros en vista caudal con dientes apicales que sobresalen lateralmente en el ápice (Fig. 9). México (Colima, Guerrero y Estado de México (Fig. 16)..... ***H. reyesi* Gasca y Deloya**
- 7'. Metaesternón glabro o solamente con diminutas y escasas sedas rojizas. Pronoto con línea longitudinal media pálida. Parámetros en vista caudal con ápice redondeado (Fig. 12). Sur de México (Sierra Madre Occidental de Chiapas) (Fig. 17)..... ***H. margaritis* (Bates)**

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