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Research

Notes on the three closely related species of *Lycomedes* Breme (Coleoptera: Scarabaeidae: Dynastinae): *L. burmeisteri*, *L. ohausi*, and *L. bubeniki*

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Abstract

Lycomedes burmeisteri Waterhouse, *L. ohausi* Arrow, *L. bubeniki* Milani are closely related species of *Lycomedes* Breme. As *L. burmeisteri* has been enigmatic in its diagnostic traits for over a century, *L. burmeisteri* is often confused with *L. ohausi*. After Milani (2017) described a new species, *L. bubeniki*, distinguishing these three species becomes more challenging. Discussions and images of diagnostic traits of the three *Lycomedes* species are provided.

Keywords: *Lycomedes*, paramere, identification.

Introduction

Lycomedes Breme is characterized by upward-directed thoracic horn, curved and well-developed cephalic horn, and golden-brown velvety surface. Its morphologically close genus, *Spodistes* Burmeister, can be distinguished from *Lycomedes* by non-developed prosternal process and forward-directed thoracic horn (Ratcliffe et al. 2020). *Lycomedes* is distributed along the Andes. From Colombia to Peru, *Lycomedes* has been recorded in various localities and altitudes, the highest record of which is 2,800 m (Pardo-Locarno et al., 2015).

Identification of *Lycomedes* species is often unambiguous as most species are morphologically distinct, including parameres (Plate 1 and 2). Despite the uniqueness of each species, there are several groups that can be classified based on geographical distribution and morphological similarities. *L. hirtipes* Arrow, *L. ramosus* Arrow, *L. reichei* Breme, and *L. enigmaticus* Neita-Moreno & Ratcliffe share morphological features and parts of geographic distributions (Choi, 2024). Another group that shares such similarities comprises of *L. burmeisteri* Waterhouse, *L. ohausi* Arrow, *L. bubeniki* Milani. Three species are mainly recorded in Ecuador, and possesses

flat, curved and bifurcated cephalic horn, upward directed thoracic horn, small horn-like ocular canthi, blunt prosternal process, rounded simple parameres. Although paramere shape is a useful diagnostic trait for most of *Lycomedes* species, it does not reliably distinguish these three species. In small males, even external morphologies are not informative. Furthermore, a recent report of *L. burmeisteri* in Ecuador accelerated confusion among the three species. Many *L. burmeisteri* and *L. ohausi* are still mis-identified as *L. bubeniki*, or each other.

This confounding situation has been originated from the profound similarities. Here, the original descriptions, observations by later authors, and personal examinations are discussed. Actual images of horns and parameres are provided for the first time to facilitate the identification of *Lycomedes* species.

Materials & Methods

6 males (including 3 paratypes) of *L. bubeniki*, 5 males (including 1 holotype) of *L. ohausi*, 34 males of *L. burmeisteri* (including lectotype) were examined. The specimens in this study were housed in the following collections.

WCPC Wonseok Choi Private Collection, Seoul, Republic of Korea

NHM Natural History Museum, London, United Kingdom

MNHN Muséum national d'Histoire naturelle, Paris, France

MAHC Martin Hardy collection, Quebec, Canada

Specimens were examined using Nikon SMZ645 stereoscope and photographed with a Nikon D5200 and D800 (Tokyo, Japan). Sequences of images of each specimen were stacked using Zerene Stacker (Zerene Systems, Richland, WA, USA), and further adjusted using Adobe Photoshop (Adobe Inc., San Jose, CA, USA).

Diagnosis & Discussions

***Lycomedes burmeisteri* Waterhouse, 1879**

Discussion. *L. burmeisteri* is one of the most enigmatic species of the genus, not because of its rarity, but due to inconsistent descriptions. The original description by Waterhouse (1879) provided important features of the cephalic horn and elytra; cephalic horn narrow at the base, and broad and parallel near the apex, striae of elytral punctures strong near the suture. In Arrow's description of *L. ohausi* (1908), the author described several features compared with *L. burmeisteri*. *L. ohausi* is; thoracic horn apex globular in major males, clypeus lateral angle acute.

Endrődi redescribed both species in 1970 and 1985. In his monograph (1970), Endrődi provided identification keys to *L. burmeisteri* and *L. ohausi*, which are 'Elytra widened toward the rear, very distinctly and in places arranged in rows punctate' and 'Elytra distinctly punctate only along the suture and under the shoulders', respectively. 'Widened elytra' seems to be mis-interpretation of Arrow's description, which described the elytra of *L. ohausi* as 'not widening

at all behind the middle as in the other species'. This sentence immediately followed another sentence that comapres *L. ohausi* with *L. burmeisteri*, therefore, the described difference of elytra is likely a result of confusion. Furthermore, the description of elytral punctures also seems to be a mistake, as the holotype *L. ohausi* male shows distinct striae as similar to *L. burmeisteri* (Fig. 1a-b). Unfortunately, aforementioned identification keys were maintained until recently (Pardo-Locarno et al., 2015).

In 2017, Milani reported a new species along with a new country record of *L. burmeisteri*. Although the author didn't described detailed morphological characteristics of *L. burmeisteri* in the paper, the author's representation of horn shapes of *Lycomedes* species provides insightful visual comparison on each species (see Plate 3 in Milani, 2017). Milani concluded that *L. burmeisteri* has the following characteristics. Cephalic horn thinner in frontal view, strongly curved in lateral view, bifurcation angle narrow and bifurcated longer; thoracic horn swelling at the base, and paramere shapes (Milani, personal communication; see figures in Ratcliffe et al., 2020 and Rafael et al., 2023). Rafael et al. (2023) provided extensive works on Agaocephalini, however, *L. bubeniki* and *L. salazari* were unavailable in the dissertation. Despite the lack of information on *L. bubeniki*, the authors made important description on the cephalic horn; Frons and cephalic horn keeled in *L. burmeisteri* (Fig. 1c), whereas depressed and flat in *L. ohausi* (Fig. 1d). However, another specimen of *L. burmeisteri* from 'Frontino Rio Cauca' shows a cephalic horn without keel, but depressed as in *L. ohausi* (MNHN EC11794, this specimen was also examined and compared with types by G. Arrow in 1901).

Recently, numerous *L. burmeisteri* specimens have been recorded from various regions in Ecuador. In addition to these Ecuadorian specimens, holotypes of *L. ohausi*, *L. burmeisteri*, paratypes of *L. bubeniki*, and additional specimens in WCPC were examined. Personal observation found that punctures on elytra are highly variable traits among *L. burmeisteri* and *L. ohausi* population. Acute lateral angles of clypeus are also ambiguous, and an additional specimen with keeled cephalic horn was not found. Therefore, reliable identification traits for *L. burmeisteri* may be restricted to horns and mentum.

Distribution. Antioquia, Huila, Colombia; Carchi, Esmeraldas, Napo, Ecuador.

Diagnosis. Cephalic horn long, often curved backwards, nearly reaches apex of thoracic horn in well-developed major males (Fig. 2a), widened at near base, parallel in middle to apex, bifurcation angle narrower than *L. bubeniki* (Fig. 2b). Thoracic horn swells at the base, directed upwards, apex slightly emarginated, not forming globular folding (Fig. 2a-b). Mentum subtriangular, approximately 1.5 times longer than wide, not prominently protruded (Fig. 2c).

***Lycomedes ohausi* Arrow, 1908**

Discussion. As Milani (2017) noted, *L. bubeniki* and *L. burmeisteri* are erroneously identified as *L. ohausi* in many collections. Although identifying major males is easy, minor males are nearly indistinguishable from *L. bubeniki* and *L. burmeisteri*.

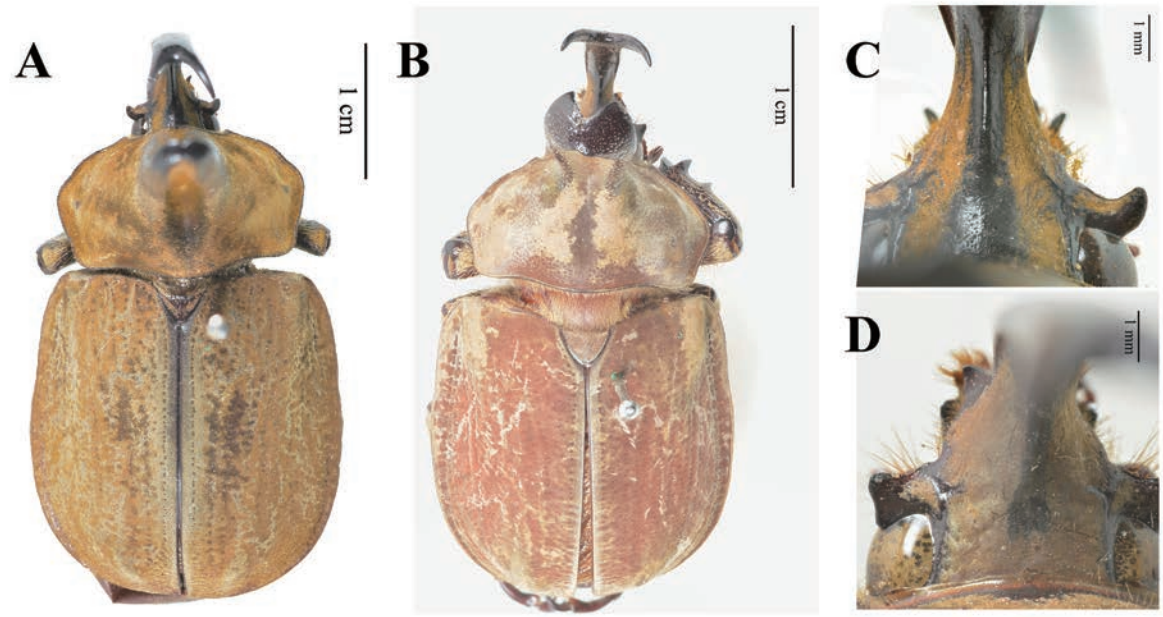

Figure 1. Holotype males of *Lycomedes burmeisteri* and *Lycomedes ohausi*. (A) Dorsal habitus of *L. burmeisteri*. (B) Forsal habitus of *L. ohausi*. (C) Keeled frons and anterior part of cephalic horn of *L. burmeisteri*. (D) Depressed frons of *L. ohausi*.

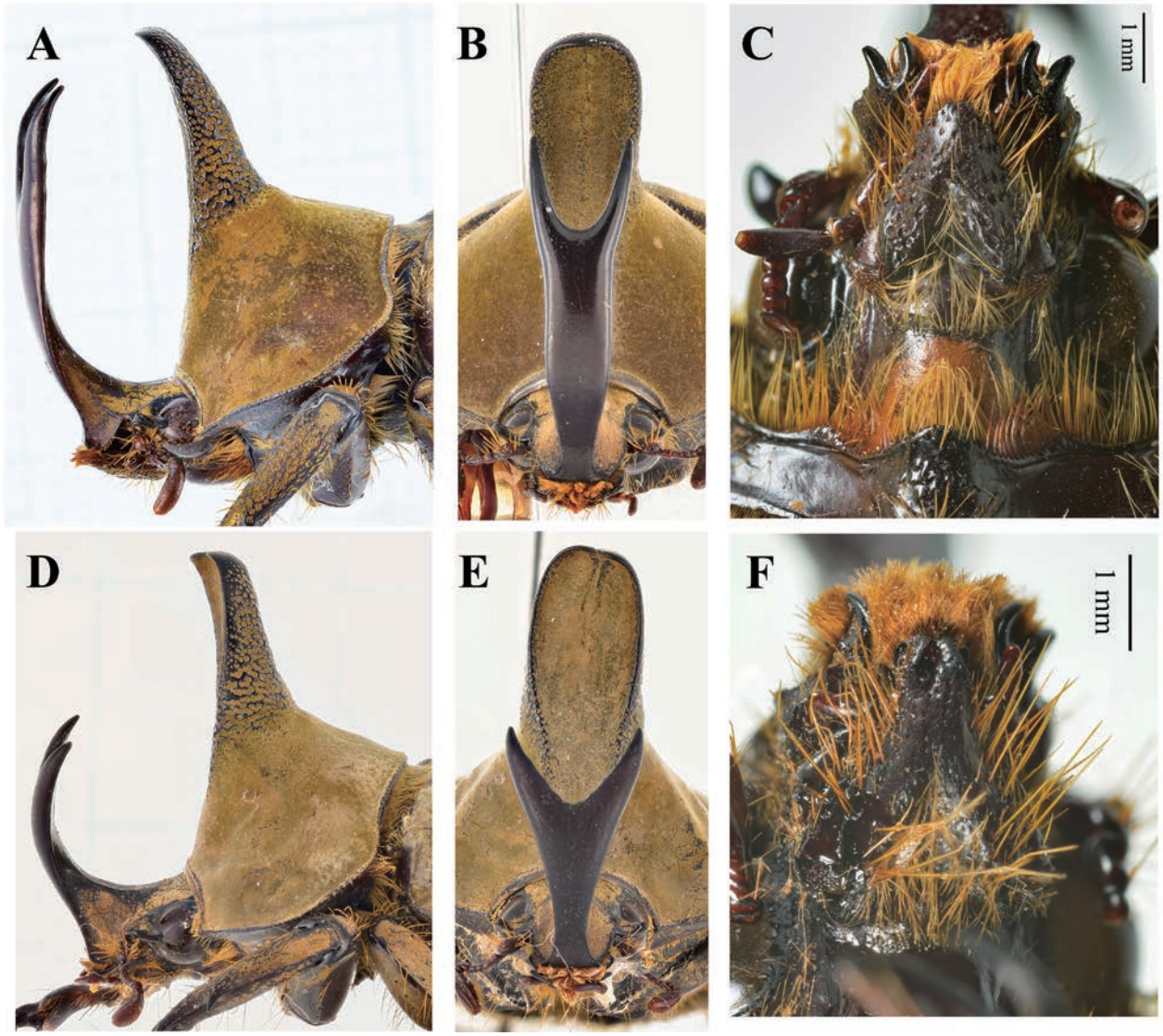

Figure 2. Lateral and frontal view, and mentum of *Lycomedes burmeisteri* and *Lycomedes bubeniki*. *L. burmeisteri*, (A) lateral view, (B) frontal view, (C) mentum. *L. bubeniki,* (D) lateral view, (E) frontal view, (F) mentum.

Distribution. Piura, Peru; Ecuador.

Diagnosis. Major males can be easily distinguished by thoracic horn with globular apex (Plate 1). Cephalic horn subparallel, shorter than *L. burmeisteri*. Mentum elevated in the middle, medially narrow depression.

***Lycomedes bubeniki* Milani, 2017**

Discussion. Milani (2017) described the species that has long been enigmatic. Interestingly, Milani's paratypes and additional specimens in WCPC are all distributed in Cordillera Occidental, Cordillera Real, and the Inter-Andean Depression (Cotopaxi, Pichincha, Azogues, Tungurahua, and Guayas). Contrary, Ecuadorian *L. burmeisteri* specimens deposited in WCPC are distributed in Cordillera Oriental (Napo and Tulcán, Carchi). *L. bubeniki* and *L. burmeisteri* may be isolated geographically.

Distribution. Cotopaxi, Pichincha, Azogues, Tungurahua, Guayas, Ecuador.

Diagnosis. Cephalic horn short and stout, never exceeds base of thoracic horn (Fig. 2d), bifurcation angle broad (Fig. 2e). Mentum slender, depressed or not elevated (Fig. 2f).

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References

Arrow, G. J. (1908). A contribution to the classification of the coleopterous family Dynastidae. *Transactions of the Entomological Society of London*, 56(2), 321–358.

Choi, W. (2024). Allometry of Lycomedes reichei Breme, 1844 and allied species. *Proceedings of the National Institute of Ecology of the Republic of Korea*, 5(1), 1-9.

Endrödi, S. (1970). Monographie der Dynastinae 3, tribus: Agaocephalini. *Acta Zoologica Academiae Scientiarum Hungaricae*, 16, 27–96.

Endrödi, S. (1985). The Dynastinae of the World. *Dr. W. Junk Publisher*, Dordrecht, Netherlands. 800 pp.

Milani, L. (2017). Sinopsi del genere Lycomedes Breme (Coleoptera, Scarabaeidae, Dynastinae, Agaocephalini) com ridescrizione di Lycomedes ohausi Arrow maschio, descrizione di Lycomedes ohausi Arrow femmina e di una nuova specie dall'Ecuador. *Giornale italiano di Entomologia*, 14(62), 755–774.

Pardo-Locarno, L.C., Moreno, A.V. & Rohringer, R.S. (2015). Nueva especie de Lycomedes Brème, 1844 (Coleoptera: Melolonthidae: Dynastinae) de los Andes colombianos y clave para identificación de las especies. *Insecta Mundi*, 455, 1–14.

Ratcliffe, B.C., Cave, R.D. & Paucar-Cabrera, A. (2020). The Dynastine Scarab Beetles of Ecuador (Coleoptera, Scarabaeidae, Dynastinae). *Bulletin of the University of Nebraska State Museum,* 32: 1–586.

Sobral, R., & Grossi, P. C. (2023). Sobral, R. Taxonomy of Agaocephalini Burmeister, 1847 (Coleoptera, Melolonthidae, Dynastinae). In: Instituto Nacional de Pesquisas da Amazônia.

Waterhouse, C.O. (1879). Descriptions of new Coleoptera from Medellin, Colombia recently added to the British Museum collection. *Cistula Entomologica*, 2(21), 421– 429.

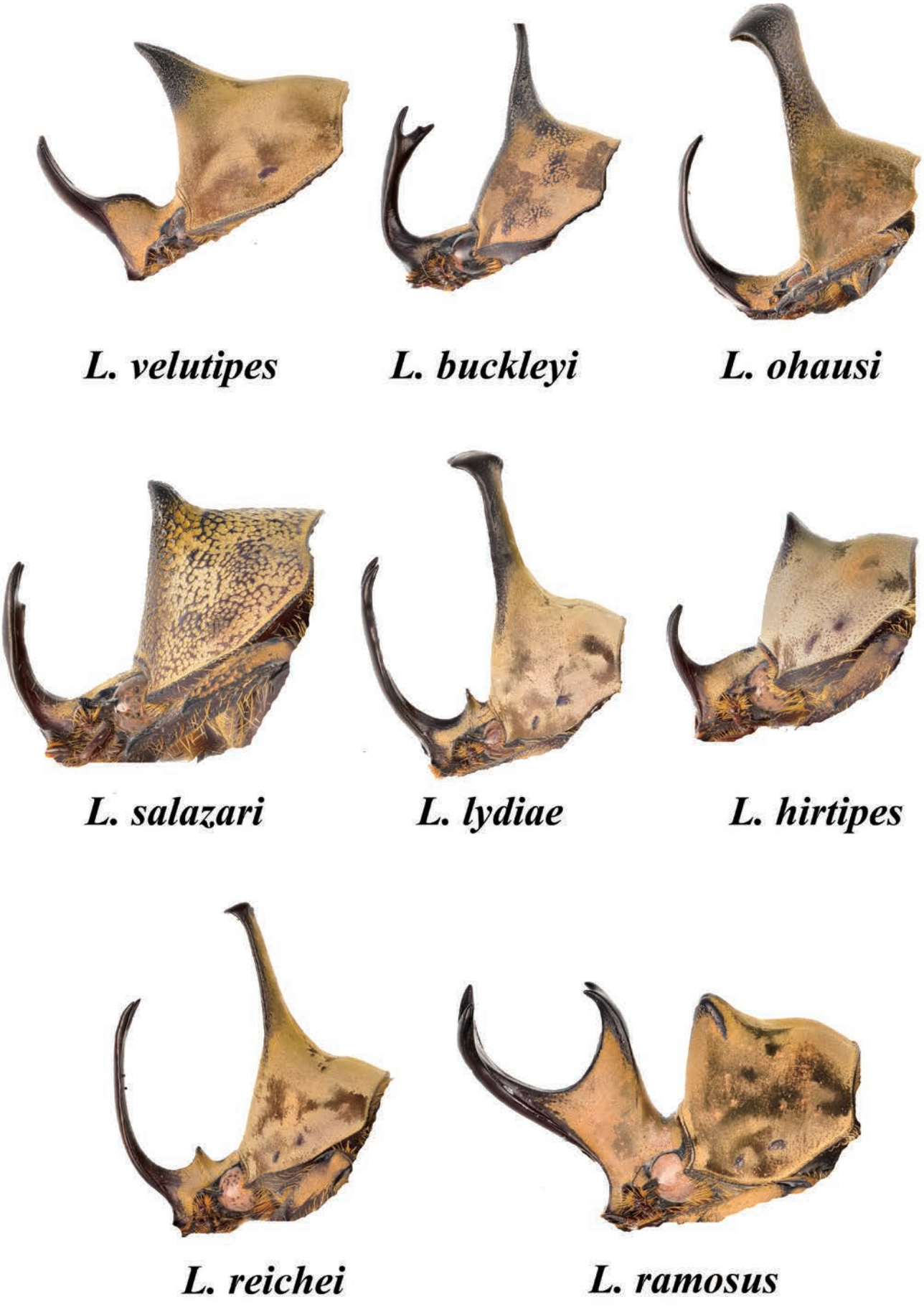

Plate 1. Lateral view of horns of *Lycomedes* species (except *L. enigmaticus, L. burmeisteri,* and *L. bubeniki*).

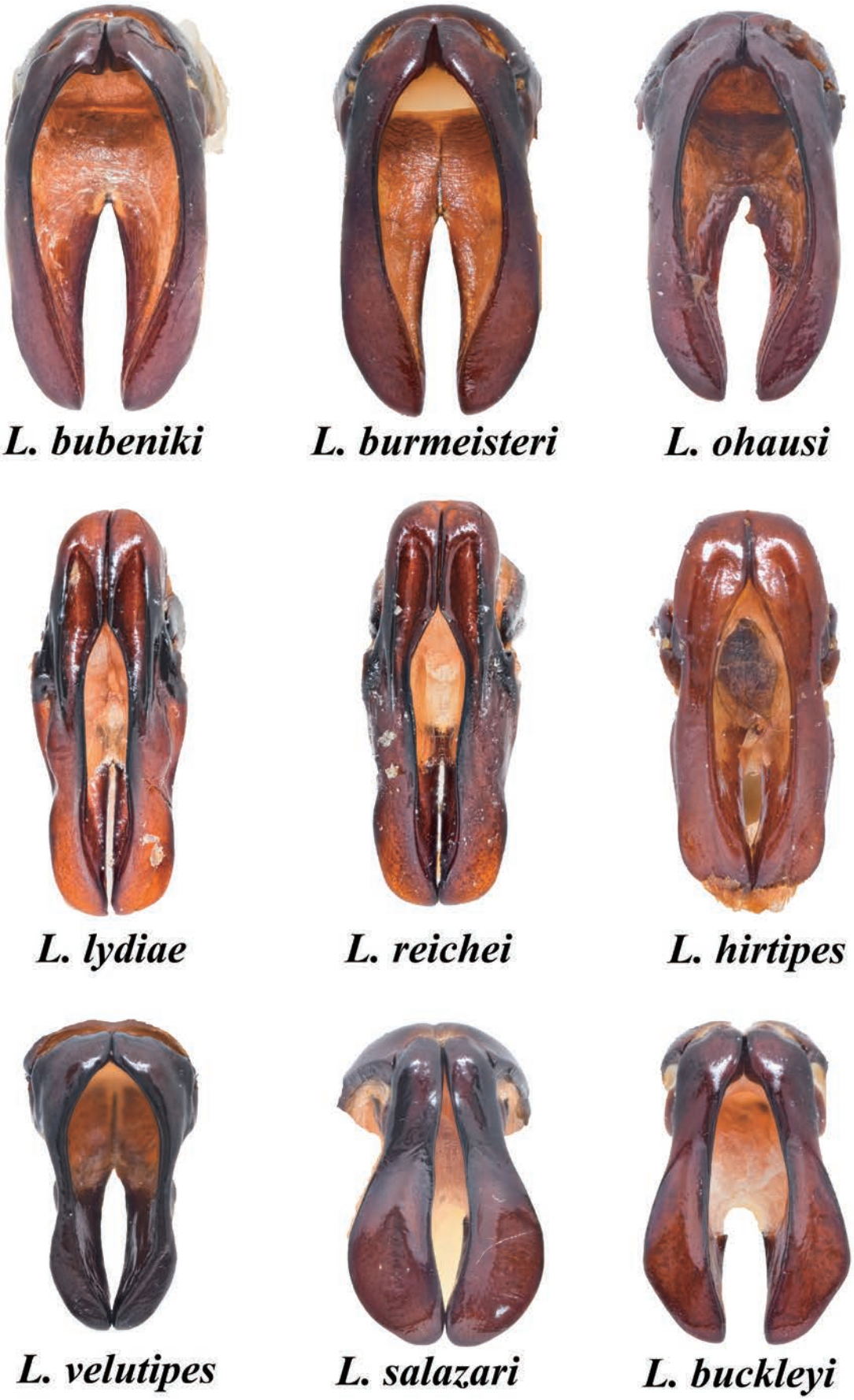

Plate 2. Frontal view of parameres of *Lycomedes* species (except *L. enigmaticus* and *L. ramosus*).