A new species of *Gallorommа* Schlüter (Hymenoptera: Mymarommatoidea: Gallorommatidae) from the Cretaceous amber in Myanmar

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Abstract: A new species, *Gallorommа hukawugensis* Cao & Yang **sp. nov.** belonging to Gallorommatidae Gibson *et al*., 2007, is described. This specimen was collected from mid-Cretaceous amber from Myanmar. Photos and illustrations of habitus, antenna, legs, wings, metasoma and other structures are provided to facilitate recognition of this little-known genus and this new species.

Key words: amber insect; taxonomy; extinct genus and family

缅甸白垩纪琥珀古柄翅卵小蜂属 *Gallorommа* Schlüter 一新种记述（膜翅目：柄腹柄翅卵小蜂总科：古柄翅卵小蜂科）

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摘要：记述采自缅甸中白垩纪地层的古柄翅卵小蜂属 *Gallorommа* Schlüter 1 新种：胡冈谷古柄翅卵小蜂 *Gallorommа hukawugensis* Cao & Yang **sp. nov.**，提供了新种的整体、触角、足、翅、腹部及其他结构的特征插图或照片。

关键词：琥珀昆虫；分类；灭绝属

Introduction

Gallorommatidae is an extinct Mesozoic family, erected by Gibson *et al*. (2007) which contains only one genus *Gallorommа* Schlüter, 1978 and three species prior to this study: *G. bezonnaisensis*, Schlüter, 1978 from the Cenomanian Cretaceous (French), *G. agapa* (Kozlov & Rasnitsyn, 1979) from the Cenomanian Cretaceous (Taimyr, Russia) (Gibson *et al*. 2007) and *G. kachinensis* Engel & Grimaldi, 2007 from the latest Albian-earliest Cenomanian Cretaceous (Kachin, Myanmar) (Engel *et al*. 2007). This family can be easily distinguished by its uniformly sclerotized and sculptured head capsule, overlapping apical mandibles when closed, and four segmented clava of the female antenna (Gibson *et al*. 2007).

Herein a new species, *Gallorommа hukawugensis* sp. nov., is described from Hukawug Valley, Kachin State in northern Myanmar. The age of this deposit has been confirmed at 98.8 ±

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0.6 Mya Cenomanian (Shi *et al*. 2012).

Material and methods

The upper Cretaceous amber provided for this study (Fig. 1) was collected from the Hukawug Valley, Kachin State in northern Myanmar in 2016. The size of this amber is 0.92×0.65×0.28 mm.

The specimens were examined with a SZH 1500 stereomicroscope (Nikon, Tokyo, Japan). Photographs and drawings of this new species were taken with a CX31 microscope (Olympus, Tokyo, Japan) with the UV–C Optical Totally Focused System. Terminology follows Gibson *et al.* (2007).

Figure 1. The amber with *G. hukawugensis* Cao & Yang sp. nov. Red arrow shows the insect.

Taxonomy

Superfamily Mymarommatoidea Debauche, 1948
Family Gallorommatidae Gibson *et al*. 2007.
Genus *Galloromma* Schlüter, 1978. Type species: *Galloromma bezonnaisensis* Schlüter, 1978.

***Galloromma hukawugensis* Cao & Yang sp. nov.** (Figs. 1–13)

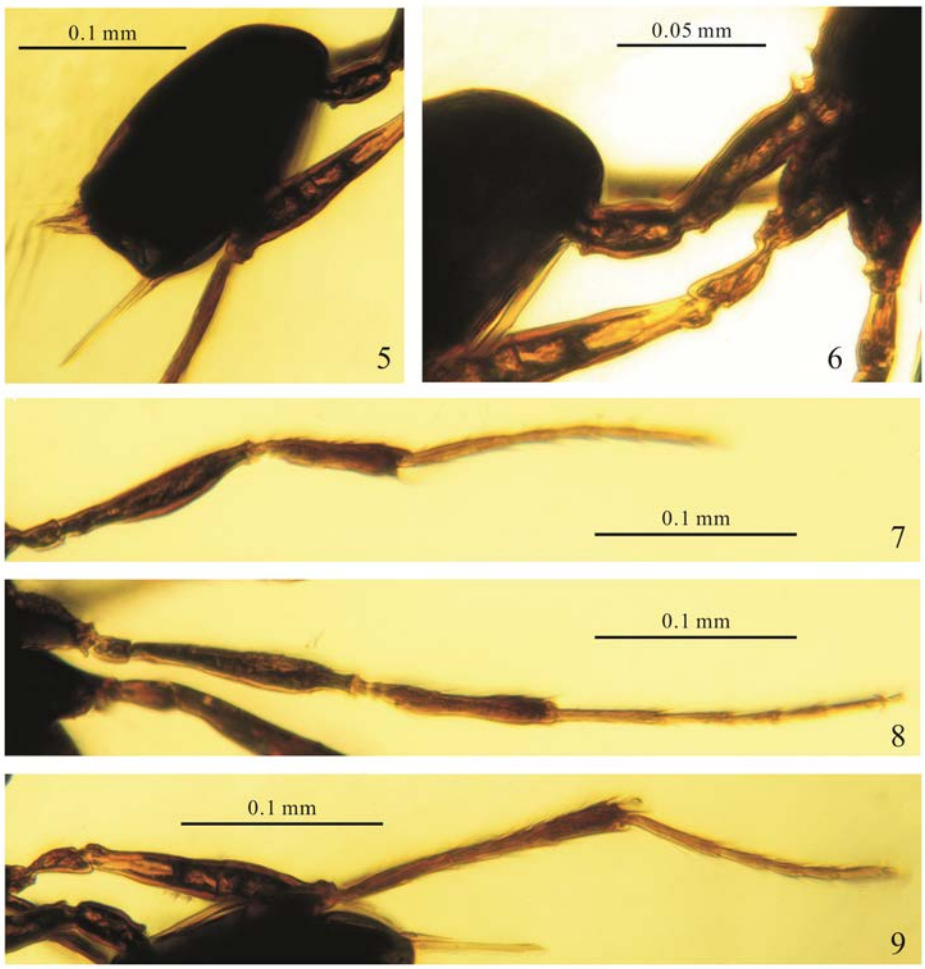
Holotype. ♀, "Amber-01002", deposited in the Entomological Museum of the Chinese Academy of Forestry. Hukawug Valley, Kachin State in Northern Myanmar; lower most Cenomanian, upper Cretaceous.

Description. Body length 0.475 mm; forewing length 0.382 mm (Fig. 2). Body light brown to brown; head, thorax, abdomen brown; antennae, legs, petiole light brown; eyes dark brown.

Figures 2–4. 2. Habitus of *G. hukawugensis* Cao & Yang sp. nov., lateral view; 3. Right antenna, lateral view; 4. Left and partial right forewings, dorsal view.

Head (Figs. 2, 3, 10). Head length 0.086 mm; head height 0.114 mm. Eye large, 1/2 as long as head length and 1/3 of head height, with several ommatidia but number not visible. Three ocelli present, far from each other, middle ocellus near occipital ridge, and lateral ocelli short distance above eyes. Occipital plate smaller than frontal plate, separated by occipital ridge, both plates wrinkled. Mandibles small, not exodont. Antenna 13-segmented (Figs. 3, 10), scape as thick as pedicel, three times thicker than funicle, but clava more developed and bulgy; length ratios of 13 segments: 3 (scape) : 1.5 (pedicel) : 1.1 (funicle 1) : 1.2 (funicle 2) : 1.2

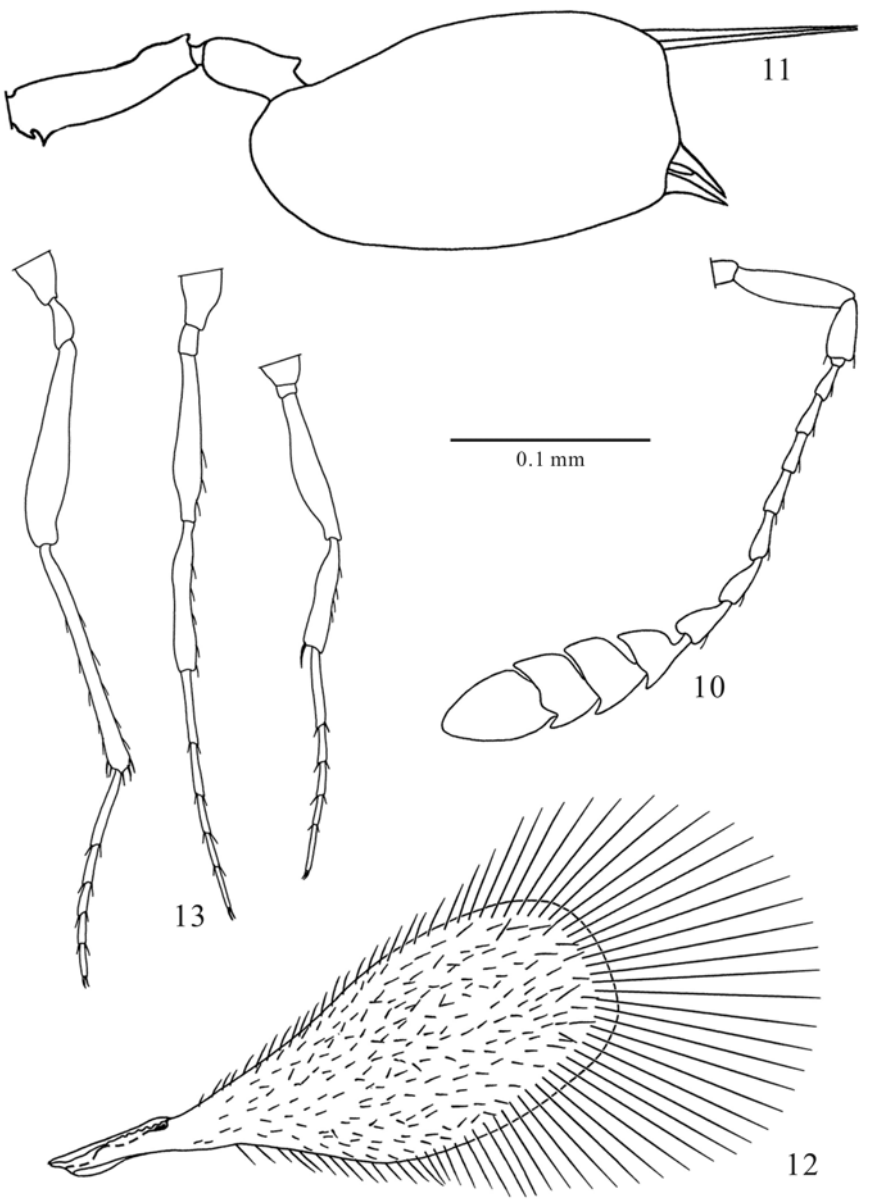
(funicle 3) : 1.3 (funicle 4) : 1.4 (funicle 5) : 1.5 (funicle 6) : 1.5 (funicle 7) : 1.2 (clavus 1) : 1.2 (clavus 2) : 1.2 (clavus 3) : 2.5 (clavus 4); scape and pedicel smooth, with several thin setae apically, funicles 1–7 with sparse long setae, clava composed of 4 segments, first three segments trapeziform with sharp lateral angles apically, last clavus bullet-shaped.



Figures 5–9. *G. hukawugensis* Cao & Yang sp. nov. 5. Gaster, lateral view; 6. Petiole, lateral view; 7. Left fore-leg, lateral view; 8. Left mid-leg, dorsal view; 9. Left hind-leg, lateral view.

Mesosoma (Fig. 2). Pronotum invisible in dorsal view, but in lateral view oblong shaped, without sharp acute posterodorsal angle, nearly fused with propleura (with a crack between), together forming a protective shield of fore coxa. Mesoscutum developed, slightly swollen and imbricate. Scutellum combined with metanotum as long as propodeum.

Wing (Figs. 4, 12). Forewing pedunculate, totally with 79 marginal setae, discal setae short and spine-like, apical setae hair-like, but demarcation line not clear; marginal vein thick, interior side denticulate, about 1/5 length of forewing; submarginal vein less sclerotized, not much clearer; stigmal vein very short.



Figures 10–13. *G. hukawugensis* Cao & Yang sp. nov. 10. Antenna, lateral view; 11. Abdomen, lateral view; 12. Forewing, dorsal view; 13. Left legs (from left to right: hind leg, mid leg, fore leg).

Legs (Figs. 7–9, 13). Fore-leg: femur slightly thicker than tibia, and 1.3 times length of tibia; tibial spur straight, 1/4 length of first tarsus (Fig. 13), ratio of tarsi: 2.5 : 1 : 1: 0.9 : 1.2. Mid-leg: femur 1.2 times length of tibia, tibia with several long setae, tarsi length 0.8 times length of femur and tibia combined, ratio of 5 tarsal segments: 2 : 1.5 : 1 : 1 : 1.5. Hind-leg: femur length 0.85 times length of tibia, apical tibia with 3 long setae, ratio of 5 tarsal segments: 2 : 1.2 : 0.9 : 0.8 : 1.

Metasoma (Figs. 2, 5, 11). Two-segmented straight tubular petiole connecting propodeum and gaster, length of anterior segment twice as long as posterior one, petiolar segments smooth and hairless, inserted anteriorly ventral center of gaster. Gaster oblong in lateral view, surface smooth and hairless, posterior margin of gaster straight, visible ovipositor 1/3 as long as gaster.

Diagnosis. This species can be easily distinguished from the other three species in the genus by several following attributes. (1) Temporal and spatial distribution, *G. hukawugensis* sp. nov. came from Northern Myanmar; the age of this deposit has been confirmed at 98.8 ± 0.6 Mya Cenomanian. (*G. kachinensis* is also from this area and of the same age; *G. agapa* was located at Taimyr, Northern Europe, 95 Mya Cenomanian; *G. bezonnaisensis* was located at French, 100 Mya Cenomanian). (2) Body length of *G. hukawugensis* sp. nov. is 0.475 mm. (Body length of *G. kachinensis* is 0.56 mm, which is 18% larger than this new one). (3) Clava of *G. hukawugensis* sp. nov. is five times as thick as funicle. (Clava of *G. kachinensis* is 2.5 times thickness of funicle). (4) *G. hukawugensis* sp. nov. with extruded ovipositor 1/3 as long as whole gaster (Visible ovipositor of *G. kachinensis* is slightly longer than gaster). (5) *G. hukawugensis* sp. nov. with anterior medial area of first gastral tergum smooth and hairless. (Anterior medial area of first gastral tergum has patch of distinct erect or suberect setae in *G. kachinensis* and *G. agapa*).

Remarks. The taxonomic position of this family was well discussed by Gibson *et al*. (2007); it was erected as a new family and so far contains only this unique genus *Galloromma* Schlüter. This fourth species of the genus also supports the taxonomy, which accords with the generic characteristics.

Etymology. The specific epithet is based on the Hukawug Valley, Myanmar, where this amber originates.

Discussion

The life history and behavioral information of this family is still unknown. One unique aspect we know is that members of this genus are parasitoids that parasitize some tiny hosts based on its body size. So far, our main understanding resides in the importance of body features for classification and evolution. According to Gibson *et al.* (2007), two extinct genera *Galloromma* and *Archaeromma* are at base of superfamily Mymarommatoidea. Most of their features are the same as in extant genera, considering that some features have evolved, such as marginal setae of forewing very long, arising distinctly from within periphery of disc apically, and metasoma 8-segmented with first two segments tubular. This monophyletic group models the creation of new features while preserving old features over time, explaining how extant species are derived from another species from a long time ago.

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