

New record of genus *Lymaenon* Walker (*Hymenoptera: Mymaridae*) from India

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Abstract

The present study pertains to the first record of three species of the genus *Lymaenon* Walker from India. Three species: *Lymaenon taizensis*, *Lymaenon naiquanlini* and *Lymaenon gracilentus* are being recorded for the first time from India.

Keywords: *Lymaenon*, first record, India, *Hymenoptera*, Chalcidoidea, taxonomy

Introduction

The *Mymaridae* family, which comprises the tiny insects, is a member of the Chalcidoidea superfamily. The H-shaped suture pattern on the front of the head distinguishes members of this family, sometimes known as fairy flies, from other chalcid wasps. The *Mymaridae* family comprises 117 genera and approximately 1,400 species worldwide (Noyes, 2023) [10], with 38 genera and 194 species identified in India (Manickavasagam and Athithya, 2018) [8]. All Mymarid egg parasitoids develop within the eggs of other insects. Because these insects are exclusively egg parasitoids for a wide range of insect orders, including Lepidoptera, Coleoptera, Diptera, and Orthoptera (Huber, 2006) [6], the taxonomy of *Mymaridae* is essential. Kashmir Valley (Jammu and Kashmir), state of India served as the location of the study. This is the first methodical investigation of Mymarids in the Kashmir Valley. The *Mymaridae* family is primarily represented by the genus *Lymaenon* Walker which includes in the present report.

Materials and Methods

Specimens were taken from a variety of environments in the districts of Anantnag, Budgam, and Pulwama, which act as the collection location for the Kashmir Valley, J&K, India. The environments included grass fields, rice paddies, vegetable gardens, orchards, and herbs. Samples were immediately put into vials with 70% ethyl alcohol for preservation after being collected. Using a stereozoom microscope (Olympus SZX16), the newly collected Mymarid specimens were sorted before being stored in Eppendorf tubes containing 70% ethyl alcohol. The Noyes (1982) [9] procedures were used to prepare the slides. The Olympus SZX16 stereo zoom microscope was used for dissections, while the CILIKA Patented Digital Head Technology slide microscope, which was connected to an 8-megapixel camera on an iPad, was used to take pictures and measurements.

Results

Order: *Hymenoptera*

Superfamily: Chalcidoidea

Family: *Mymaridae*

Genus: *Lymaenon* Walker

Genus *Lymaenon* Walker: *Lymaenon* Walker 1846: 49–50 [11]. Type species: *Lymaenon acuminatus* Walker, by subsequent designation by Gahan & Fagan 1923: 82 [5].

Gonatocerus (Lymaenon) Walker: Triapitsyn 2013a: 39–40.
Lymaenon Walker: Huber 2015: 12 (key), 41–51; Amer *et al.* 2017: 2–5 [7, 12].

Diagnosis

Female body length is 0.70–1mm. The majority of *Lymaenon* females often possess an unbroken club and an eight-segmented funicle. Distinct subantennal sulci that come together ventrally are frequently present on the face. A distinguishing feature of some species is that the cubital row of setae on the forewing may or may not reach the base of the marginal vein. The anterior scutellum is transverse and shorter than the posterior, and there is no transverse ridge on the pronotum. In brief, the petiole and the mesophragma do not extend into the gaster.

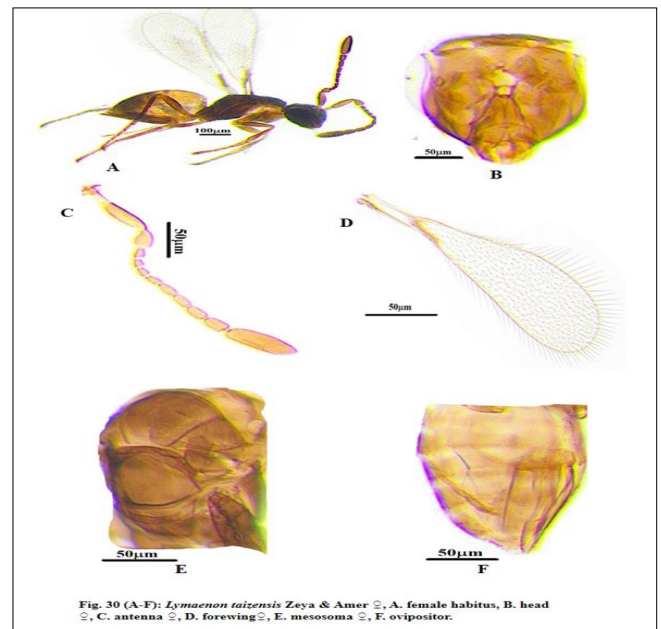


Fig. 30 (A-F): *Lymaenon taizensis* Zeya & Amer ♀, A. female habitus, B. head ♀, C. antenna ♀, D. forewing ♀, E. mesosoma ♀, F. ovipositor.

Fig 1: *Lymaenon taizensis* Zeya Amer

Redescription

Female: length 0.83 mm; body dark brown; head dark brown; antennae brown; legs light brown; mesosoma pale brown with dark brown patch in anterior third of mid lobe of mesoscutum; side lobe of mesocutum with dark brown patch; axilla pale brown; anterior scutellum medially dark brown and sides pale brown; metanotum with dorsellum dark brown; propodeum brown to dark brown. Fore wings

largely infumate, with yellowish-brown patches in distal to venation; hind wings largely hyaline; Gaster in basal third pale brown, the remainder dark brown to black; ovipositor sheath dark brown.

Head: in frontal view 1.2× as long as wide; antennae with 8 funicle segments; scape 3.5× as long as broad; pedicel as long as wide; F1 slightly longer than F2; F4–F7 distinctly longer than broad; F8 quadrate; longest funicle; Clava 4.2× as long as broad, longer than F6–F8 combined length.

Mesosoma: longer than wide; slightly longer than metasoma; mesoscutum as long as broad; fore wings 4.3× as long as broad; disc behind marginal vein sparsely setose with complete cubital row of setae, otherwise densely setose; hypochaeta almost in the middle of proximal and distal macrochaetae; longest marginal seta 0.2× maximum fore wing width; hind wing 25× as long as broad; wing blade bare, except sparsely setose in apical third; longest marginal seta 2.2× as long as maximum hind wing width.

Metasoma: longer than wide; Petiole as broad as long; ovipositor exerted beyond apex of gaster; exerted part 0.10× gaster length; ovipositor 2.2× as long as mid tibia.

Male. Unknown.

Material examined: INDIA: Jammu & Kashmir: Anantanag: Hillar; 2♀, 3. v.2023; Dooru; 1♀, 27.ix.2023. Budgam: Yousmarg; 1♀, 8.iv.2023; coll. Tahmeena Maqsood (sweeping).

Hosts. Unknown.

Distribution: India: (New record).

Globally: Yemen: Taiz.

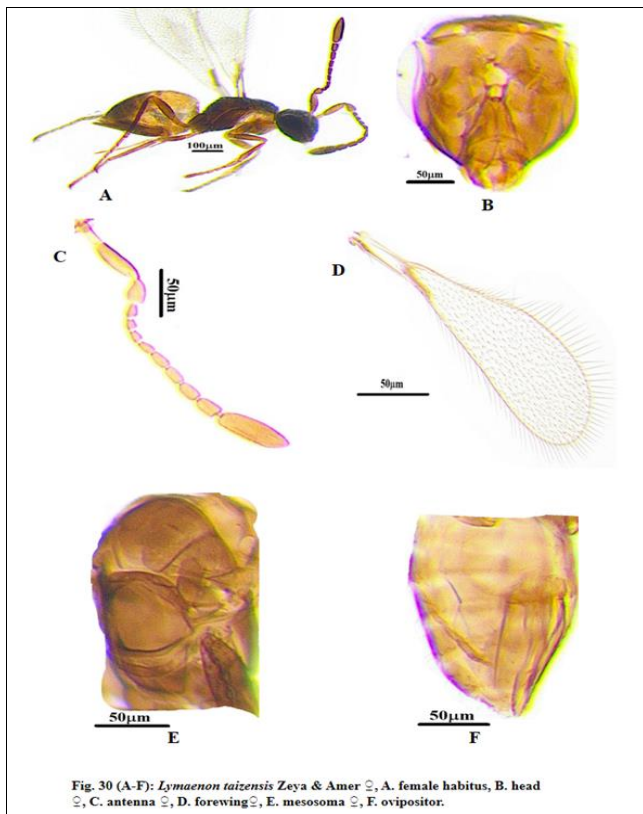


Fig 2: *Lymaenon naiquanlini* Aishan & Hu

Redescription

Female: body length 0.75mm; brown to dark brown; head yellowish-brown: antenna with radicle yellow, scape and pedicel yellowish-brown; legs light yellowish-brown; antennae with scape 3.4× as long as wide; pedicel about 1.4× as long as wide; longer than wide; F2 the shortest funicle segment; F1–F4 slightly longer than preceding ones: F5 the longest funicle segment; F6 and F7 subequal in length; F8 slightly longer than F7; Clava long; 3.5 × as long as wide; slightly shorter than combined length of F6–F8; mesosoma a little longer than Metasoma; propodeum with submedian lines wide apart; fore wings 4× as long as wide; longest marginal seta about 0.3× maximum fore wing width; cubital row of setae extending to base of marginal vein hind wings about 30× as long as wide; longest marginal seta 3.5× as long as maximum hindwing width; ovipositor long; occupying entire length of gaster; slightly exerted beyond apex of gaster its own length; 2.3× as long as metatibia.

Male. Unknown.

Material examined. INDIA: Jammu & Kashmir: Pulwama: Arigam; 2♀, 21.vii.2023; coll. Tahmeena Maqsood (sweeping).

Hosts. Unknown.

Distribution: India: (New record).

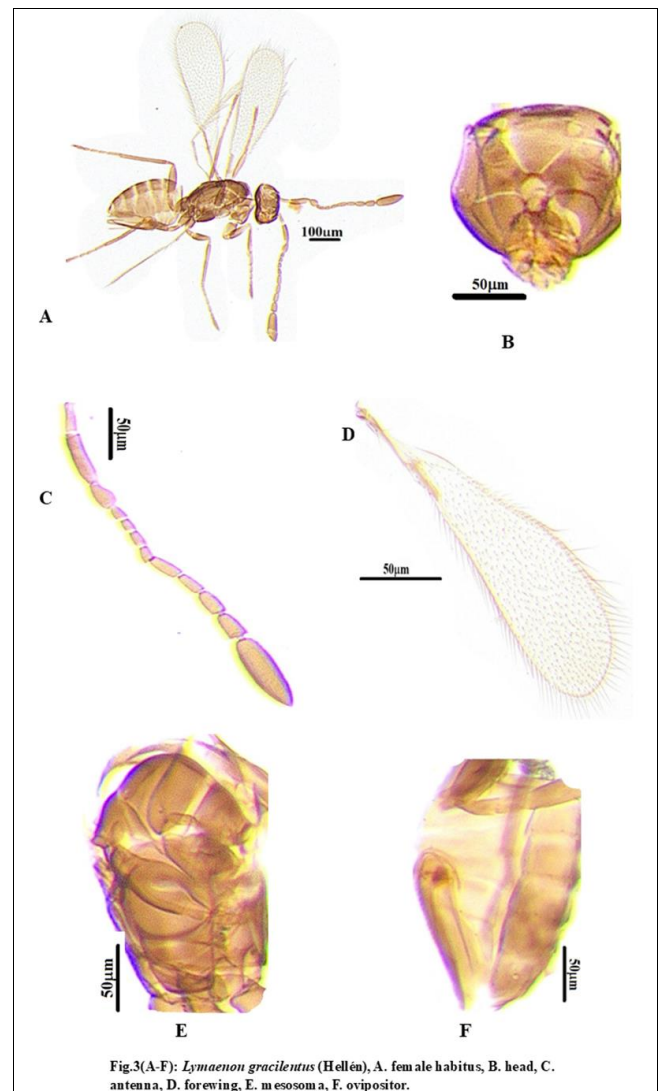


Fig 3: *Lymaenon gracilentus* Hellén

Redescription

Female: body length 0.99 mm; body mostly brown to dark brown except base of gaster light brown; antennae brown; legs light brown; head yellow brown; longer than wide; antennae with 8 funicle segmented; scape $3.2 \times$ as long as broad; pedicel $1.7 \times$ as long as wide; pedicel longer than F1; longer than all funiculars; F1–F4 more or less sub equal in length; shorter than following funicular segments; F5 about as long as F7 (the longest funicular segment); F5 slightly longer than F6; F6 equal to F7; F6 equal to F8; F6 without mps; Clava with 10 mps $3 \times$ as long as wide; a little longer than combined length of F6–F8; fore wings $3.8 \times$ as long as wide; longest marginal setae $0.3 \times$ maximum forewing width; disc almost hyaline; more or less uniformly setose behind marginal vein and densely setose; cubital row of setae; hind wings $28.8 \times$ as long as wide; mesosoma longer than wide; metasoma longer than wide; petiole about as wide as long; mesosoma as long as Metasoma; ovipositor occupying about 0.5 length of gaster; not exerted beyond its apex; about $0.8 \times$ length of metatibia.

Male: Known and described from Finland (Hellen 1974).

Material examined. INDIA: Budgam: Yousmarg; 1♀, 8.iv.2023; coll. Tahmeena

Maqsood (sweeping).

Hosts. Unknown.

Distribution: India: (New record).

Globally: Palaearctic Region (Finland).

Discussion and Conclusion

There has not been any systematic research conducted on the taxonomy of *Mymaridae* egg parasitoids in this region. During a recent survey, four species from genus *Lymaenon* were documented for the first time in the Kashmir Valley: *Lymaenon taizensis*, *Lymaenon naiquanlini* and *Lymaenon gracilentus*. This study thus makes a significant contribution to the understanding of *Mymaridae* diversity in the Kashmir Valley.

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