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NOTE

FIRST RECORD OF *LEPTOGENYS HYSTERICA* FOREL, 1900 (HYMENOPTERA: FORMICIDAE: PONERINAE) FROM PAKISTAN

Muhammad Tariq Rasheed, Imran Bodlah, Ammara Gull e Fareen & Xiaolei Huang

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The ant genus *Leptogenys* Roger, 1861 belongs to the subfamily Ponerinae and is considered to be one of the most speciose genera throughout tropical and subtropical regions with 308 species, 25 subspecies, and one fossil record (AntWeb 2018). These ants commonly reproduce by ergatogynes or gamergates (Ito 1997; Ito & Ohkawara 2000; Peeters 2012; Bharti & Wachkoo 2013). Individuals of this genus prefer rotten or dead wood, leaf litter, and surfaces under stones as habitats; a few species are also considered subarctic (Bolton 1975; Rakotonirina & Fisher 2014). These ants mainly predate on termites and terrestrial isopods (Bolton 1975; Lattke 2011).

Significant contributions to the knowledge of this genus from southeastern Asia include Wu & Wang (1995), Xu (2000), Zhou (2001), Terayama (2009), and Arimoto (2017). Bharti & Wachkoo (2013) provided keys to the *Leptogenys* in India with descriptions of two new species. Xu & He (2015) reviewed the Oriental species of this genus, provided an identification key to the ant fauna in China, and described and added two new records to the country. Other noteworthy studies include that of Bolton (1975) and Lattke (2011), which remarkably contributed to the species of *Leptogenys* in the Afrotropical region and the New World, respectively.

Very limited work on the exploration of ants in Pakistan was undertaken till date (Umair et al. 2012; Bodlah et al. 2016; Bodlah et al. 2017a,b). Twenty-seven species of *Leptogenys* were recorded from India, one of

FIRST RECORD OF *LEPTOGENYS HYSTERICA* FOREL, 1900 (HYMENOPTERA: FORMICIDAE: PONERINAE) FROM PAKISTAN

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its neighbouring countries (Bharti & Wachkoo 2013). Here we report *Leptogenys hystericus* for the first time from the country with diagnostic note and illustrations.

Materials and Methods

As a result of extensive surveys during 2016–2017, workers of the genus *Leptogenys* were collected from different forest areas of Margalla Hills in Rawalpindi, Islamabad, Pakistan. Specimens of this species were found under rocks near leaf litter and were hand collected. The collected specimens were placed in potassium cyanide killing jars. A few specimens were also preserved in 75% ethanol. Taxonomic analysis of the collected specimens was performed under Labomed microscope using keys by Bharti & Wachkoo (2013). Identifications were made by observing the metanotal groove, the width and length of the petiolar node, and comparison of the mesosomal length with the

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abdominal length.

Images were prepared by a digital camera (Nikon DS-Fi3) attached with a Nikon 1500 SMZ stereo microscope and cleaned using Adobe Photoshop CS6 software. Measurements (in millimeters) and indices were calculated with the help of a stage and ocular micrometer. Identified specimens were tagged with the valid names, localities, dates of collection, and microhabitats. After taxonomic treatment, the specimens were deposited in the Department of Entomology, Pir Mehr Ali Shah Arid Agriculture University, Rawalpindi, Pakistan.

Morphometric terminology (in millimeters) and indices are given as: HL - In full face view, the maximum length of head from clypeus to vertex in a straight line; HW - Maximum width of the head in frontal view; SL - Total length of scape without the neck; EL - Maximum eye length; EW - Maximum width of eye in oblique view; PW - Maximum pronotal width in dorsal view; WL - Maximum length of mesosoma from anterior to posterior margin of pronotum except for collar in lateral view; PL - Maximum length of petiole from anterior to the posterior margin of tergite; PH - Maximum height of petiole from apex to the dorsal point in lateral view; PDW - Maximum width of node in dorsal view; GL - Maximum abdominal length; CI - Cephalic index = $HW/HL \times 100$; OI - Ocular index = $EL/HW \times 100$; SI - Scape index = $SL/HW \times 100$; LPI - Lateral petiole index = $PH/PL \times 100$; DPI - Dorsal petiole index = $PDW/PL \times 100$

Results and Discussion

*Leptogenys hysteric*a Forel, 1900

(Images 1–9)

*Leptogenys (Lobopelta) hysteric*a Forel, 1900: 311 (w.) SRI LANKA. Imai et al., 1984 (k.) 5. Status as species: Bingham, 1903: 64; Bharti & Wachkoo, 2013: 17 (in key); Xu & He, 2015: 156 (in key).

Worker morphometrics (in millimetres): HL 0.98–1.0, HW 0.62–0.65, EL 0.16–0.18, EW 0.13–0.15, PW 0.52–0.55, SL 0.98–1.0, WL 0.53–0.6, PL 0.4–0.6, PW 0.41–0.43, PH 0.52–0.55, GL 1.66–1.68, TL 5.25–5.47. Indices: CI 63.41–65, SI 153.84–157.05, OI 24.61–28.84, LPI 91.66–132, DPI 68.33–108 (n=5).

Worker description: Head densely punctate, rectangular in full face view, likewise narrowed anteriorly and posteriorly, posterior and lateral margin convex, carinate medially, exceeding nearly the level of eyes; eyes convex, placed laterally just below the cephalic mid length; frontal groove narrow hardly touching the level of eyes; clypeus triangular, medial clypeal lobe rounded, apex bluntly rounded with minute setae, strongly carinate at middle, thin and translucent, anterior and

lateral margin longitudinally carinate; mandible long, narrow at anterior, thicker at apex, carinate longitudinally in lateral view, basal tooth absent, apical tooth present, masticatory margin without teeth, smooth; scape exceeding the lateral cephalic margin.

Mesosoma in dorsal view densely punctate (Image 5), deeply impressed at metanotal groove; mesothorax shorter than pro- and metathorax; metathorax rugose laterally (Image 6); gaster one and half times longer than mesosomal length (Image 8), pronotum width more than rest of mesosomal width, metanotum length more than rest of mesosomal length; propodeum declivity transversely striated (Image 9).

Posterior petiolar margin slightly wider than anterior petiolar margin, longer in length than width, forming smooth convexity.

Gaster's length more than weber's length (Image 8); basal tergite shining and densely punctate; base of second tergite cross-ribbed, remaining tergite after basal tergite smooth and shiny.

Mandible smooth dorsally, narrow, sparsely punctate laterally; clypeus triangular with strong medial carinae, longitudinally striated; scape covered with piligerous and become dense at apex; pro pleuron rugose longitudinally and meso-meta pleuron transversally rugose.

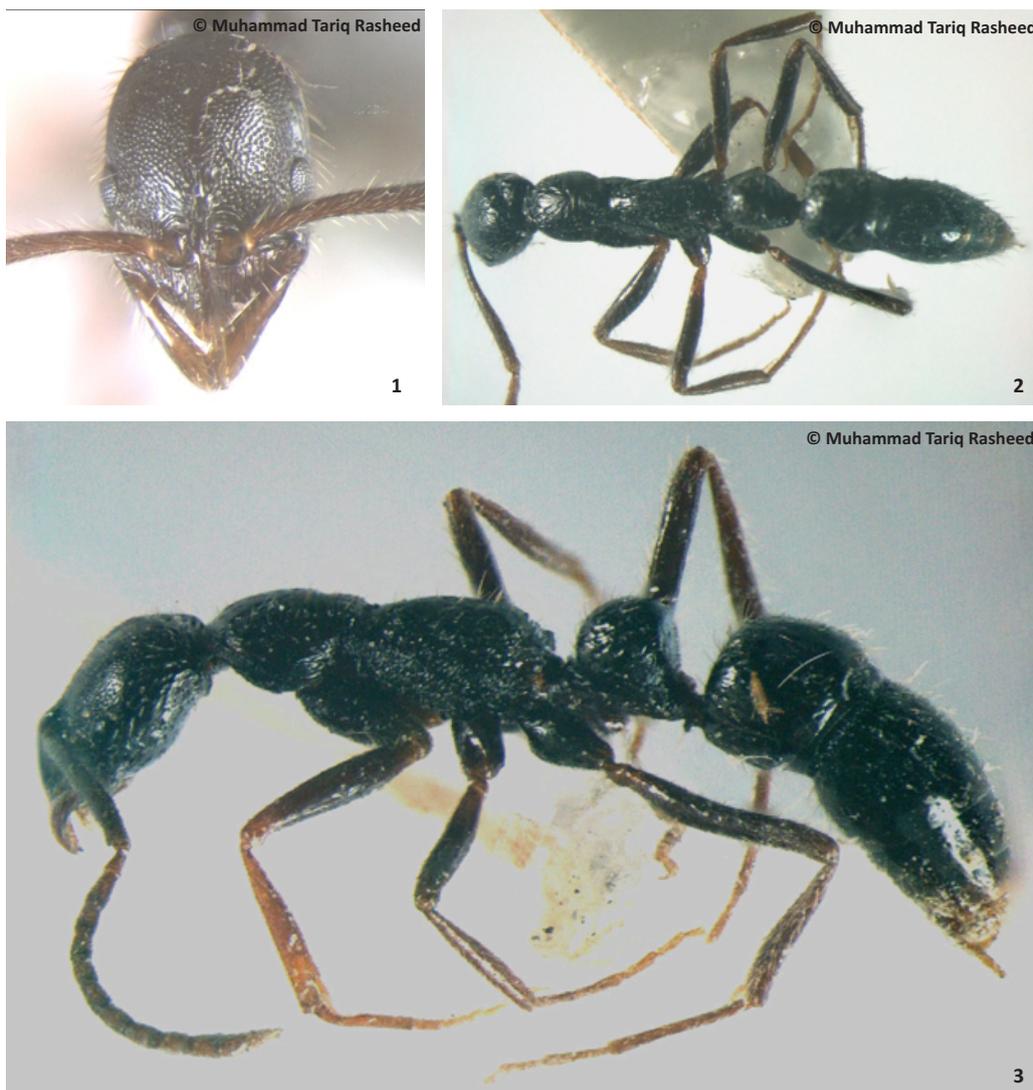
Distribution: Indo-Malayan region in Borneo, India, Indonesia, Laos, Malaysia, Sri Lanka, and Thailand (Bharti et al. 2017; AntWeb 2018).

Material examined

Pakistan: FOR-001, 10 workers, 05.iii.2016, Pakistan, Islamabad, Trail 5, 33.818°N, 73.123°E, 630m, coll. M.T. Rasheed; 7 workers, 08.iv.2016, Pakistan, Islamabad, Pir Sohawa, 35.872°N, 73.185°E, 1,046m, coll. I. Bodlah; 10 workers, 25.v.2016, Pakistan, Rawalpindi, Murree, 33.293°N, 73.368°E, 1,158m, coll. A.G. Fareen; 10 workers, 08.vi.2017, Pakistan, Islamabad, Daman e koh, 34.243°N, 73.185°E, 722m, coll. M.T. Rasheed.

Differential diagnosis: *Leptogenys hysteric*a most resembles *L. punctiventris* (Mayr, 1879) from which it can be distinguished by its distinct metanotal groove (Image 4) and broader than long petiole in dorsal view (Image 7). The DPI in *L. hysteric*a is 68.00–108.00 mm while in *L. punctiventris* the metanotal groove is obsolete with longer than wide petiolar node and DPI < 90.00mm.

Ecology: Members of the genus *Leptogenys* prefer to make their nests in the soil or under stone surfaces, logs of trees, tree bark, dead wood, and leaf litter in mountainous areas having humid forests (Bolton 1975; Lattke 2011; Bharti & Wachko 2013). We found *L. hysteric*a nesting in loose soil on a stone embankment



Images 1–3. *Leptogenys hysteric*a Forel, 1900, worker. 1 - head, full-face view; 2 - body, dorsal view; 3 - body, lateral view

near leaf litter and dried vegetation in the forest areas of Margalla Hills in Rawalpindi.

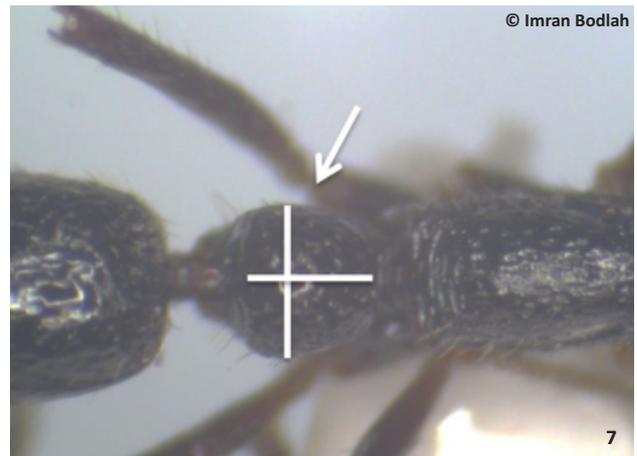
Remarks

The discovery of this species from the mountainous forests of Pakistan extends its known distribution reported by Bharti & Wachkoo (2013) from neighbouring country, India. The current study indicates that this species is also distributed in the foothills of the Himalayan region. Extensive deforestation, development of housing societies, and an increase in public activities in national park trails in Margalla Hills in Islamabad, Murree and Rawalpindi are causing forest fragmentation and degradation, which may threaten the existence of *L. hysteric*a in the country in the future. National policies are needed for the conservation of this species and its

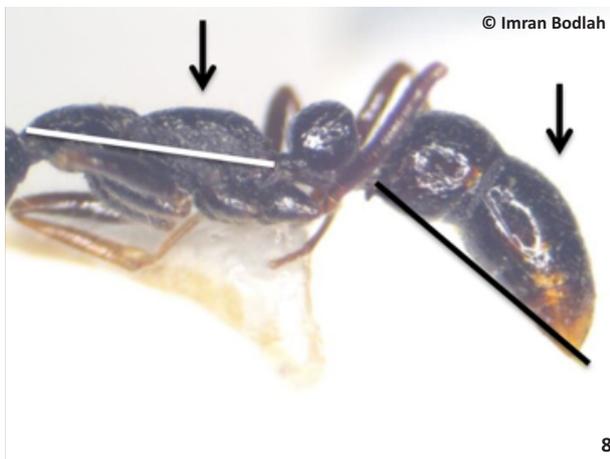
natural habitats. Most of the forest areas of Pakistan are still unexplored for ants and efforts need to be made for the further exploration of the species in the country.

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Images 4–7. *Leptogenys hysteric*a Forel, 1900, worker. 4 - distinct metanotal groove; 5 - mesosoma in dorsal view densely punctate; 6 - metathorax rugose laterally; 7 - petiolar node broader than long dorsally



Images 8–9. *Leptogenys hysteric*a Forel, 1900, worker. 8 - gaster length is one half than mesosomal length; 9 - propodeum declivity transversely striated

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