JOURNAL OF INSECT BIODIVERSITY
ISSN: 2147-7612

RESEARCH ARTICLE

# A new species *Larinodontes freidbergi* sp. nov. (Coleoptera: Curculionidae: Lixinae) from India

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**Abstract:** A new species in the genus *Larinodontes* Faust, 1898 is described from India, in addition to two previously known species. Diagnostic features of this species are: femoral tooth small, ventral tibial tooth undeveloped, protibial pre-mucro reduced, penis in dorsal view parallel sided at apical 2/3 and subapically with wide V-form angularly upwards. Description, diagnosis and illustrations of new species are presented.

**Key words:** *Larinodontes freidbergi*, new species, Lixini, Curculionidae, Oriental region.

## Introduction

The taxonomic status of the genus *Larinodontes* Faust, 1898 has been recently clarified by Gültekin & Lyal (2014): *Larinodontes* is characterized by the presence of a femoral tooth, the fore tibia with a weak ventral tooth, a narrow frons, and H-shaped 2A and $1A_2$ veins of the metathoracic wing. Members of the genus are distributed in the Oriental region, e.g. India, Laos, Myanmar and Vietnam (Gültekin & Lyal 2014); host plants are unknown.

The new species is assigned to *Larinodontes* on the basis of two following characters: presence of a femoral tooth, although smaller than in *L. indicus* Faust, 1898 and *L. thompsoni* Gültekin & Lyal 2014, and narrow frons. It is a third species of *Larinodontes* from India, and a second species of *Larinodontes* described from southern India, from a location ca. 70 km SW of the type locality of *L. thompsoni*.

# Material and methods

Terminology follows Morimoto (1962) and Aslam (1963) for general morphology, Lyal (1995) for ventral surface of head and rostrum, Lyal & Curran (2000) for legs, Korotyaev *et al.* (2000) for genitalia, and Thompson (1992) for ventrites. Measurements were taken using an ocular micrometer under stereomicroscope Leica $MZ7_5$; body length was measured from anterior margin of eye to posterior margin of elytra; rostrum length from apex of rostrum to anterior margin of eye; prothorax length from apical margin to posterior margin of prescutellar projection.

For the morphological study the specimen was placed in lukewarm clean water overnight and the genitalia were dissected, macerated in 10% KOH overnight, and cleaned with distilled water and ethanol 70%. Following preparation, observations and pictures of genitalia were made under a stereomicroscope either in glycerine or dry. All parts of genitalia preparations were then dried, glued on paper rectangle, and pinned under the specimen. Photographs were taken with a Leica DFC 420 digital camera attached to a Leica Z16APO macroscope, using LeicaLAS software for montage. The digital images were then imported into Adobe Photoshop 8.0 and CorelDRAWX4 for labelling and plate composition.

The holotype is deposited in the National Collection of Insects, Department of Zoology, Tel Aviv University, Israel.

# Results

***Larinodontes friedbergi* sp. nov.** (Figs. 1-10)

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**Diagnosis:** The new species can clearly be distinguished from the two known *Larinodontes* species by the following diagnostic characters: femoral tooth minute, ventral tibial tooth undeveloped, pre-mucro reduced, penis parallel sided, with wide angularly upright V-form ventral plate.

## Description

*Measurements* (n = 1). Body length: 5.50 mm. Rostrum: length 1.30 mm, width 0.40 mm. Prothorax: length 1.40 mm, width 2.20 mm. Elytra: length 3.80 mm, width 2.90 mm.

*Vestiture.* Body covered with grayish-white hair-like dense pubescence forming longitudinal stripe on lateral margin of prothorax, four round spots along elytral intervals III-IV, and condensed irregularly along elytral intervals IX-X (Fig. 1). Rest of elytra covered by shorter sparsely scattered hair-like pubescence; pubescence on legs longer. Antennal funicle hairs with sub-erect, sparse and moderately short hairs; club densely covered by short bright hairs, with a few hairs erect and twice as long as others (Fig. 3).

*Structure.* Body oblong ovate (Fig. 1), ratio of length to maximum width across elytra less than 1.70. Head spherical, frons narrow, flat, surface densely and minutely punctated; inter-ocular area 0.65× as wide as rostrum width, inter-ocular foveola superficial (Fig. 2). Eyes sub-ellpitical, nearly flat. Rostrum cylindrical (Fig. 2), slightly shorter than prothorax, in dorsal view slightly constricted at basal quarter, slightly widened at antennal insertion area, ventral margin of scrobes visible dorsally; in lateral view, moderately curved, apical half slightly wider than basal half; rostral fovea lacking; surface of rostrum densely and minutely punctated. Antenna inserted about 0.50× way from apex of rostrum. Scape 0.65× as long as funicle, slightly and gradually widened toward apex, subequal in width to funicle segment I at

apex. Funicle segment I conical, 1.25× as long as segment II, segment II subconical 1.65× as long as segment III, segments III-V subequal in length, segments VI–VII gradually widened distad, VII being widest. Club 0.75× as long as funicle, large, elongate with obtuse apex, 1.55× as long as wide at widest part (Fig. 3).

Prothorax subtrapeziodal (Fig. 1), transverse, 0.65× as long as wide, 0.75× as wide as elytra. Pronotum densely punctated with small to moderate size, rounded punctures, moderately convex, laterally rounded, gradually narrowing anteriorly, slightly constricted on apical collar area. Anterior margin evenly curved downward towards postocular lobe, postocular lobes strongly developed. Posterior margin bisinuate, produced medially into acute prescutellar projection. Anterior margin of prosternum slightly emarginated.

Elytra (Fig. 1) laterally sub-parallel at basal quarter, weakly to obsoletely emarginated at basal third, gradually slightly widened immediately after middle, and gradually narrowed toward apex, 0.75× as wide as long in widest part; humeral callus moderately developed, located at base of intervals VII–IX; preapical callus strongly developed, at the end of intervals IV-VI. Interstriae flat, subequal in width and about 3× as wide as striae on the basal half of disc, gradually narrowed toward apices; striae formed by nearly rounded, deep separate punctures of moderate size, on basal half of elytra, gradually becoming smaller toward elytral apices.

All femora with minute blunt tooth (Fig. 4); profemur as wide as rostrum in widest part. Protibia 1.05× as long as rostrum, moderately curved (Fig. 5), inner margin sinuate, distinctly emarginated subapically, pre-mucro reduced and blunt, ventral tibial tooth undeveloped. Uncus of protibia developed, weakly curved and directed distad, tiny tuft of setae projecting from base of pre-mucro to intersect apex of uncus; anterior apical setae comb tiny and located only base of protibial uncus, longer and denser on meso- and metatibia. Mesotibia moderately curved, metatibia nearly straight. Tarsi (Fig. 6) wide, tarsomere I asymmetrical, triangular and longer than tarsomere II, tarsomere II trapeziform, tarsomere III bilobed, 1.30× as wide as tarsomere II. Spongy pads completely covering ventral lobes of tarsomere III, and partly of tarsomeres I-II. Tarsomere V cylindrical, curved, gradually widened from base to apex, 0.70× as long as tarsomeres I-III combined. Claws connate basally, moderately divergent anteriorly.

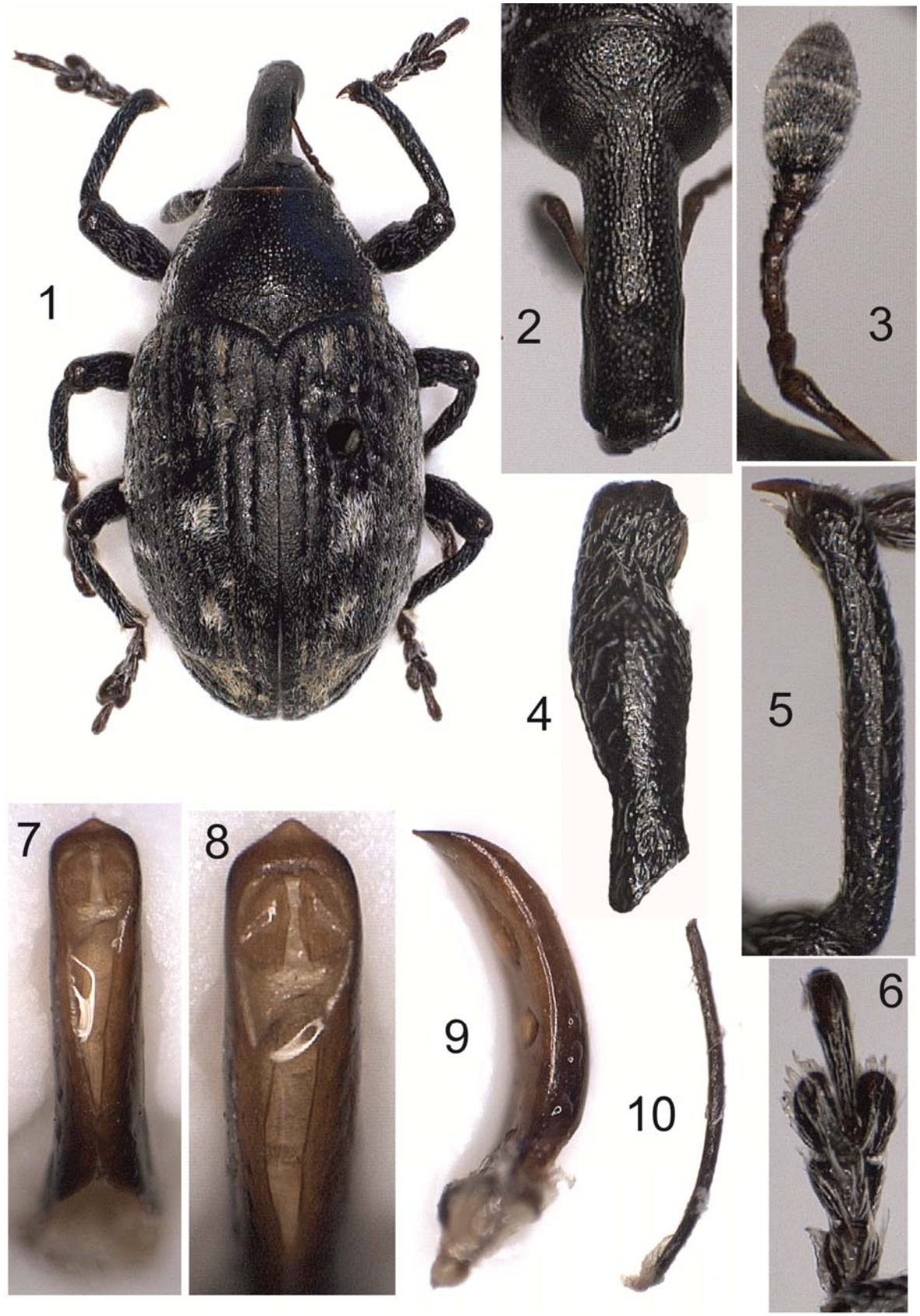
Abdomen moderately convex, first visible ventrite widely depressed medially.

*Male genitalia*. Penis in dorsal view stout, elongated, slightly constricted at basal third, apicad parallel sided, incompletely sclerotized from midpoint to the ventral plate, anterior margin of ventral plate ends with wide angularly V-form upwards with obtuse apex (Figs. 7-8). In lateral view, penis curved, gradually narrowed from base to apex (Fig. 9). In ventral view, penis incompletely sclerotized. Spiculum gastrale slender, distinctly curved, arms undeveloped (Fig. 10).

**Type material:** Holotype, 1♂, "INDIA: Kerala, Chinnakanal, Club Mahindra, 20 km SE Munnar, 1500 m, 24-29.xi.2002, A. Freidberg. The holotype is deposited in the Steinhardt Museum of Natural History and National Research Center, National Collection of Insects, Department of Zoology, Tel Aviv University, Israel.

**Etymology:** The new species is named in honor of Dr A. Freidberg (The Steinhardt Museum of Natural History and National Research Center, National Collection of Insects, Department of Zoology, Tel Aviv University, Israel), who collected the unique specimen.

**Bionomics**: The host plant of *Larinodontes freidbergi* is unknown. The unique specimen was collected by Dr Amnon Freidberg either on the ornamental vegetation in the yard of Club




**Figures 1–10.** *Larinodontes friedbergi* sp. nov. **1,** adult, holotype, male; **2,** rostrum, dorsal view; **3,** antenna; **4,** profemur; **5,** protibia; **6,** protarsus; **7-8,** penis, dorsal view; **9,** penis, lateral view; **10,** spiculum gastrale.

Mahindra Hotel or in a close proximity to it, on the slopes of the surrounding hills that were partly covered by *Vernonia indica* Wall. ex C.B. Clarke (Asteraceae) shrubs (Fig. 11). It is possible that the specimen was swept from *V. indica*, which is suspected of being host of three species of Schistopterini fruit flies (Tephritidae), which were the main goal of Amnon's collecting efforts there (A. Freidberg, pers. comm.). The flower heads of *V. indica* are appropriate for larval development of a weevil of the size of *L. freidbergi*. We therefore suggest that *V. indica* can be a host plant of *L. freidbergi*; pending support by further research.

**Figure 11.** Mahindra Club Hotel, Kerala, India; at the background – hill slopes covered with *Vernonia indica* (courtesy A. Freidberg).

## Acknowledgements

We would like to thank Dr A. Freidberg (The Steinhardt Museum of Natural History and National Research Center, National Collection of Insects, Department of Zoology, Tel Aviv University, Israel) for enabling us to study this nice weevil, and Ms Naomi Paz and Dr Mike Mostovski (Department of Zoology, Tel Aviv University, Israel) for reviewing the early draft of the manuscript.

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*Received*: 31.12.2014 *Accepted*: 27.01.2015 *Published*: 28.01.2015
*Cite paper*: Gültekin L. & Friedman A. L. L. 2015. A new species *Larinodontes freidbergi* sp. nov. (Coleoptera: Curculionidae: Lixinae) from India. *Journal of Insect Biodiversity* 3(1): 1–6.
http://dx.doi.org/10.12976/jib/2015.3.1 http://www.insectbiodiversity.org