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THE FIRST RECORD OF THE SPECIES *LACINIUS ERINACEUS* STAREĘGA, 1966 (OPILIONES, PHALANGIIDAE) IN TURKEY WITH SOME SEM STUDIES ON ITS MORPHOLOGY

K. KURT[1] and Ö. K. ERMAN[2]

[1] *Gümüşhane University, Şiran Vocational School,* TR-29700 Gümüşhane, Turkey
[2] *Atatürk University, Science Faculty, Department of Biology,* TR-25240 Erzurum, Turkey

Abstract - The harvestman species of *Lacinius erinaceus* Staręga 1966, recorded for the first time in Turkey, is presented in this paper. The characteristic features of this species are described and illustrated and data regarding collecting sites and distribution all over the world are given. Scanning electron microscopy (SEM) studies on the dorsal integument, dorsal habitus, chelicerae, pedipalpus, trident, the ocularium and legs of the specimens are also presented. Localities of the collecting sites are plotted on a map.

Key words: Harvestmen, Opiliones, new record, *Lacinius erinaceus*, Scanning Electron Microscopy (SEM), Turkey

INTRODUCTION

The harvestmen fauna of Turkey is rather poorly known compared to other regions of the world. To date, 6125 species of 1638 genera of Opiliones have been described in the world (Hallan, 2005). There are only 63 species and 3 subspecies belonging to 7 families known from Turkey (Bayram et al., 2010; Kurt et al., 2010).

The genus *Lacinius* belongs to the family of Phalangiidae, and is characterized by its trident shape, pedipalp femur covered with many spines and thorns, and femur of the legs ornamented with longitudinal rows of denticles. Sixteen species of *Lacinius* have been reported all over the world. This genus is represented by 11 species in Europe. Three of them, *L. horridus* (Panzer, 1794), *L. ephippiatus* (C. L. Koch, 1835) and *L. dentiger* (C. L. Koch, 1847), are widely spread in central and northern Europe (Hallan, 2005). The species of *L. ephippiatus* (C. L. Koch, 1835) was only known in Turkey (Çorak et al., 2008).

This work adds *L. erinaceus* as a new record of harvestmen fauna in Turkey and presents a detailed description of this species.

MATERIALS AND METHODS

This study was carried out in different periods between April and September 2009-2010 in northern Turkey. Samples were collected by hand (with forceps and aspirator) by the authors. Examined specimens were preserved in 70% ethanol and deposited in the Organic Agriculture Department of Şiran Vocational School, Gümüşhane University. The identification of species was made with a ZX61 Olympus stereomicroscope.

For SEM studies, specimens were kept in 70% ethyl alcohol before being photographed by SEM. They were dried at 37°C in an oven for 30 min for dehydration and were fixed on copper stubs covered by two-sided sticky carbon paper. The specimens were then coated with a thin layer of gold by a sput-

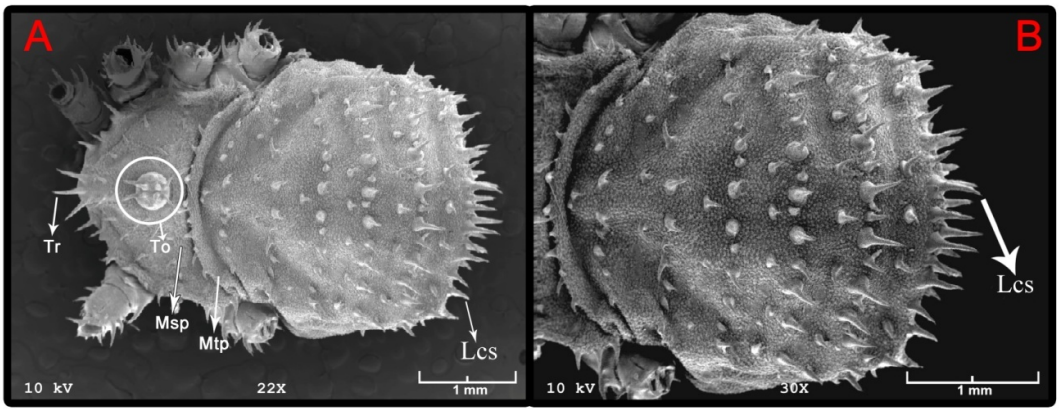


Fig. 1. (A). Dorsal view of *L. erinaceus* **(22X)** [Trident (Tr), Tuber ocularium (To), Mesopeltidium (Msp), Metapeltidium (Mtp), Long conical spine (Lcs)] **(B).** Dorsal view of abdomen of *L. erinaceus* **(30X)** [Long conical spine (Lcs)].

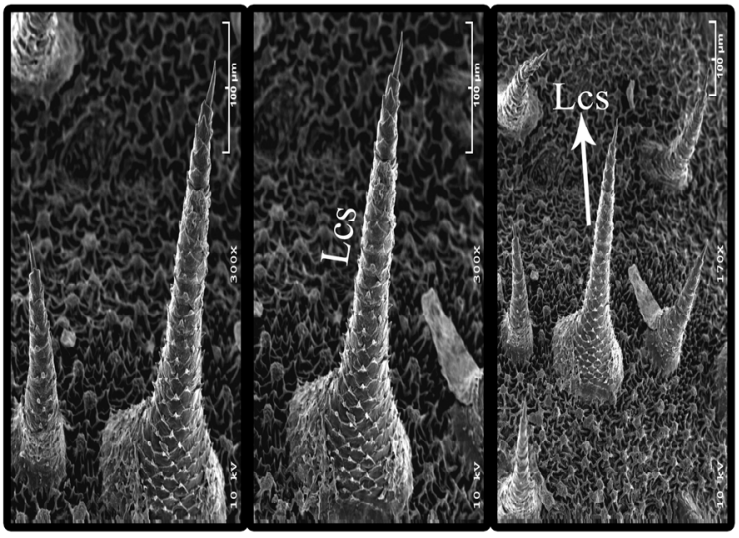


Fig. 2. Dorsal view of integument of *L. erinaceus* (300X-300X-170X) [Long conical spine (Lcs)].

ter coater in the electron microscopy unit of the University of Karadeniz Technical (Trabzon, Turkey). Finally, the specimens were photographed by SEM (JSM 6400).

Abbreviations used in the text are as follows: F - Femur; P - Patella; Ti - Tibia; M - Metatarsus; Tr - Tarsus.

RESULTS

Lacinius erinaceus Staręga, 1966

Lacinius erinaceus: Staręga, 1966: 399, Figs: 15-17; Dunlop and Mitov, 2009: 368, Figs: 27, 32-32.

Examined materials

Gümüşhane province: Şiran District, Yukarıkulaca village, 15.V.2009, (2♀♀); Çilhoroz Pass, 16.VII.2009, (1♀); Köse District, Köse Mountain, 20.VIII.2010, (1♀); *Bayburt Province*: Kop Mountain, 08.VII.2010, (3♀♀).

Description

***Body*:** Body length: 4.7-5.5 mm. Pale yellowish brown or gray on dorsal. Saddle less conspicuous.

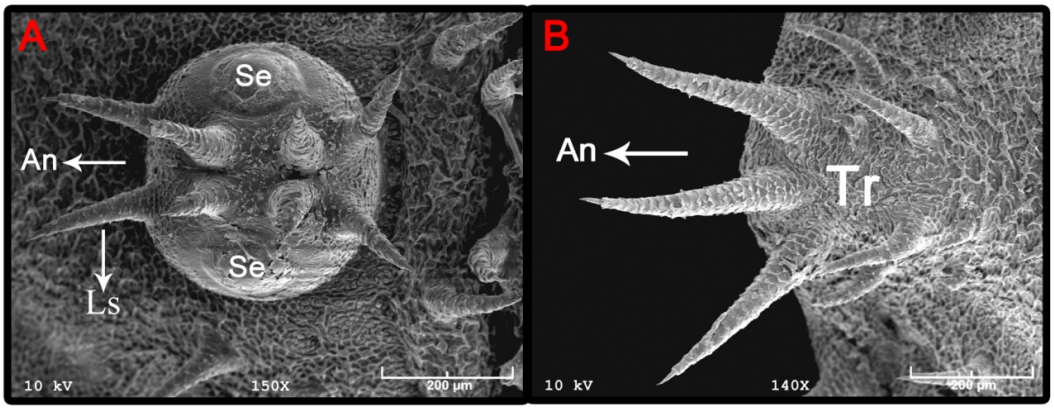


Fig. 3. (A). Tuber ocularium view of *L. erinaceus* (150X) [Simple eyes (Se), Long spine (Ls), Anterior (An)] (B). Trident view of *L. erinaceus* (140X) [Trident (Tr), Anterior (An)].*naceus* (140X) [Trident (Tr), Anterior (An)].

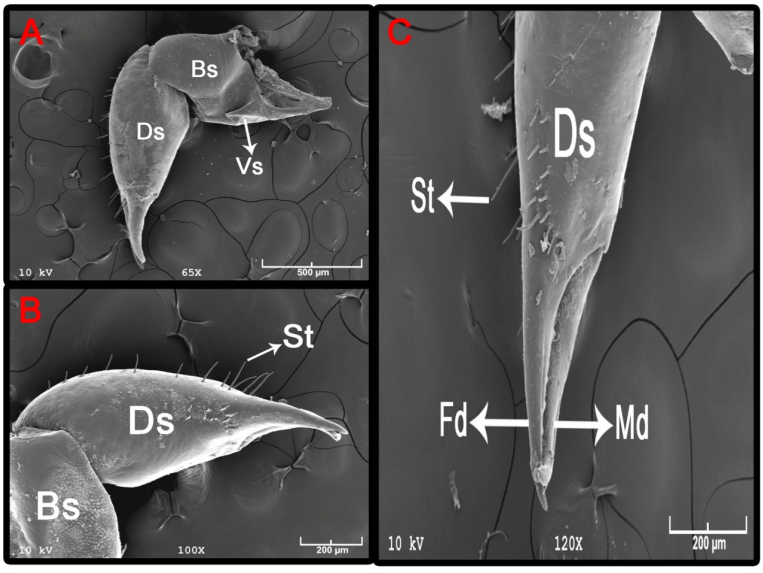


Fig. 4. (A). (65X) - (B). (100X) Lateral view of *L. erinaceus* chelicerae [Setae (St), Distal segment (Ds), Basal segment (Bs), Ventral spur (Vs)] (C). Distal segment view of chelicerae of *L. erinaceus* (120X) [Movable digit (Md), Fixed digit (Fd), Setae (St), Distal segment (Ds)].

Trident approximately equal in length and located in the middle of the anterior carapace edge. Smaller spines located behind ocular tubercle. Suprachelicer-al lamella are visible, not armed. Odoriferous glands entirely covered with long spines. Opisthosoma has unclear segmentation, but is ornamented. Opistho-soma tergites are covered with transverse rows of long conical spine (Figs. 1, 2).

***Ocular tubercle*:** Quite high and pronounced, with two dorsally longitudinal rows of 4-5 long spines (Fig. 3).

***Chelicerae*:** Shaped normally, basal segment with an inconspicuous ventral spur, distal segment covered with setae and hairs. Chelicerae, originally pale yel-low, with brown spots on dorsal of basal segment and lateral of distal segment (Figure 4).

***Palps*:** Palp length (F+P+Ti+Tr): 2.7 mm

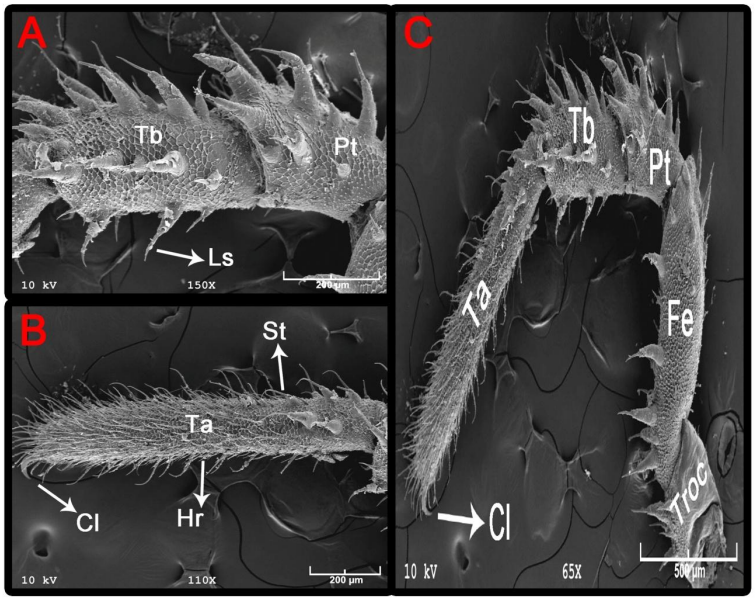


Fig. 5. (A). Lateral view of Patella and Tibia of pedipalpus of *L. erinaceus* (150X) [Long spine (Ls), Patella (Pt), Tibia (Tb)] (B). Tarsus view of pedipalpus of *L. erinaceus* (110X) [Claw (Cl), Setae (St), Hairs (Hr) Tarsus (Ta)] (C). Lateral view of pedipalpus of *L. erinaceus* (65X) [Trochanters (Troc), Femur (Fe), Patella (Pt), Tibia (Tb), Tarsus (Ta), Claw (Cl)].

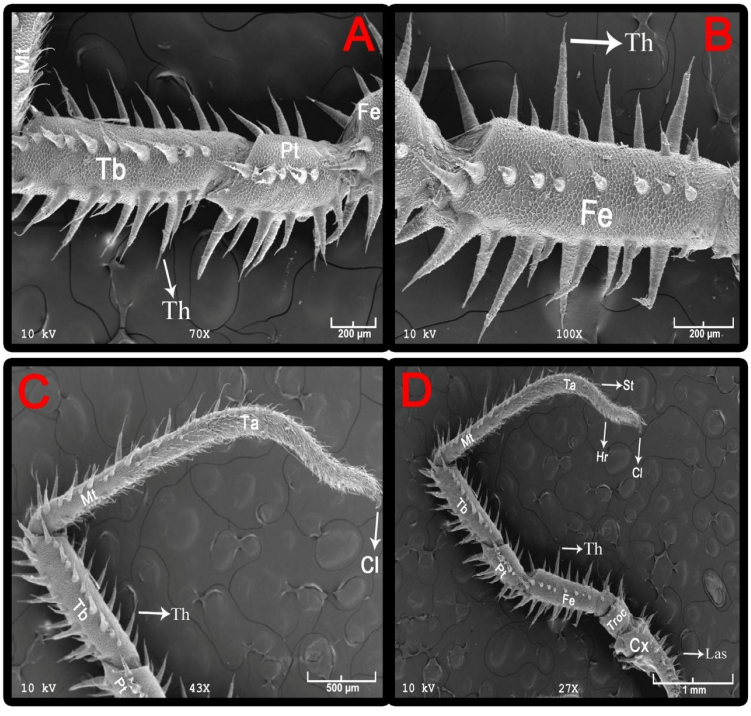


Fig. 6. (A). Lateral view of Patella and Tibia of legs *L. erinaceus* (70X) [Femur (Fe), Patella (Pt), Tibia (Tb), Metatarsus (Mt), Thorns (Th)] (B). Lateral view of Femur of legs *L. erinaceus* (100X) [Femur (Fe), Thorns (Th)] (C). (43X) - (D). (27X) Lateral view of legs of *L. erinaceus* [Coxae (Cx), Trochanters (Tr), Femur (Fe), Patella (Pt), Tibia (Tb), Metatarsus (Mt), Tarsus (Ta), Claw (Cl), Setae (St), Hairs (Hr), Thorns (Th), Long acute spine (Las)].

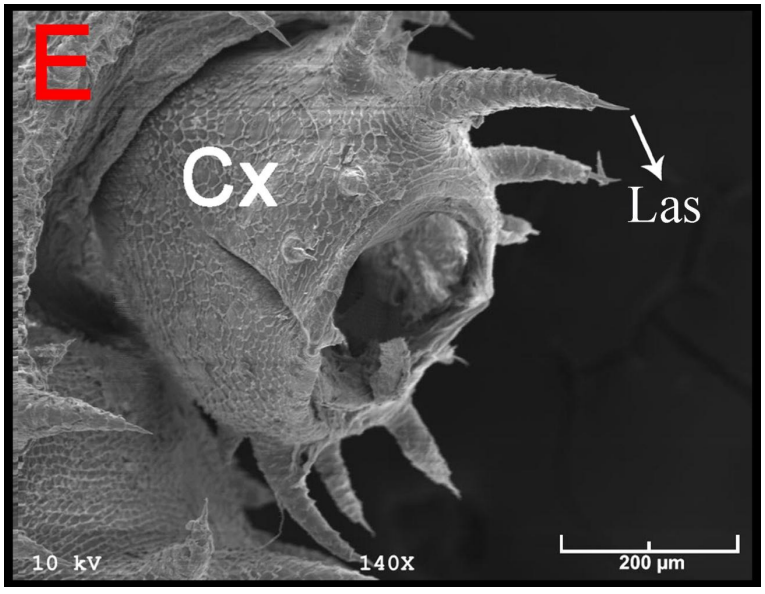
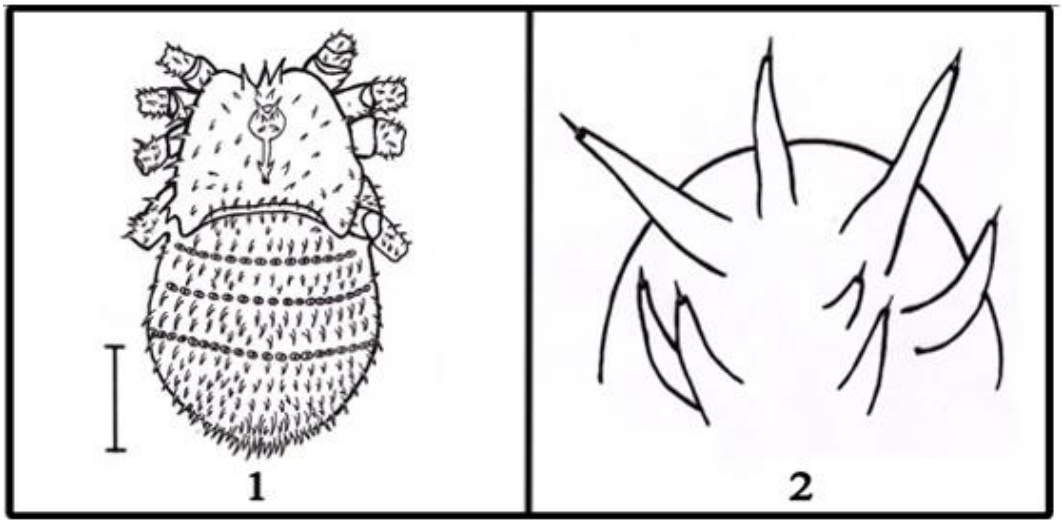


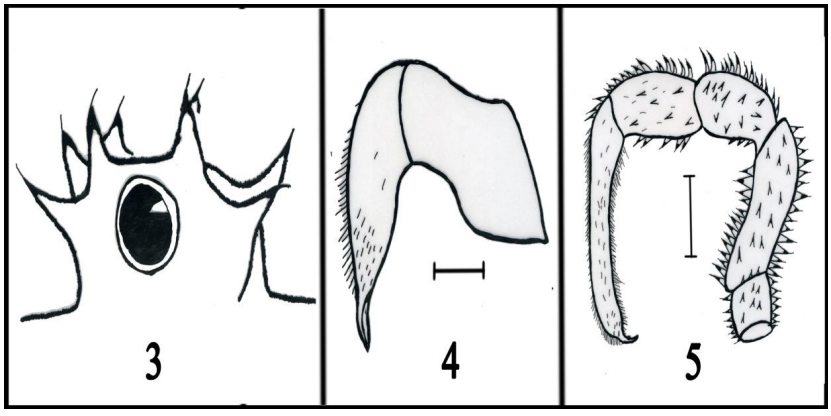
Fig. 7. Top view of coxae of *L. erinaceus* **(140X)** [Coxae (Cx), Long acute spine (Las)].



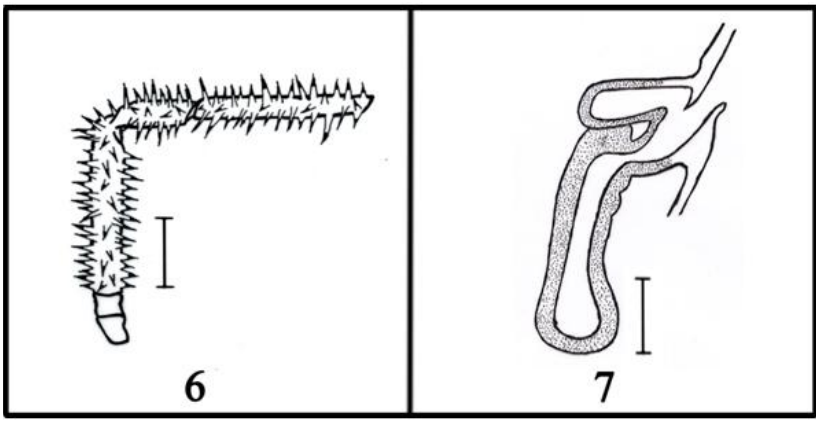
Picture. 1-2: General habitus (1), trident (2) of the *L. erinaceus*

(0.7+0.3+0.5+1.2). Pedipalps are robust, short and dark yellow. Ventral-dorsal surface of femur and lateral-dorsal surface of patella and tibia are armed with long strong spine. Patella of pedipalp with at least three denticle-like spines. Tarsus is covered with hairs and numerous setae. Tarsal claw is smooth (Fig. 5).

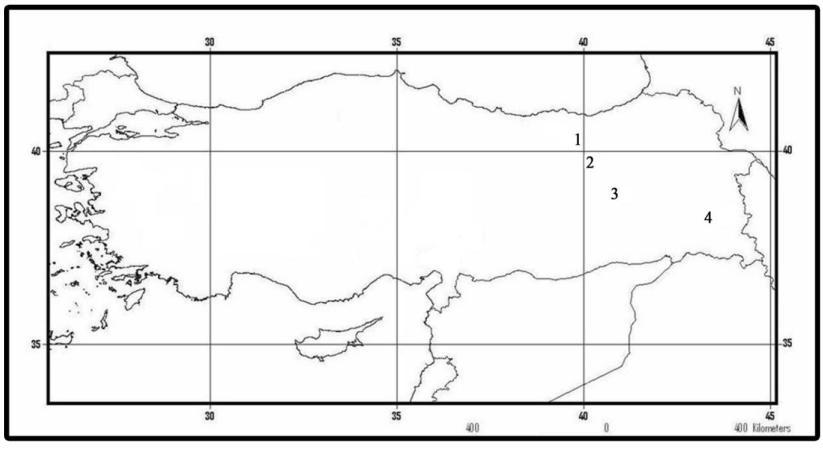
***Legs*:** Legs length (F+P+Ti+M+Tr), I: 7.2 mm (1.7+0.5+1.5+1.4+2.1), II: 16.9 mm (4.1+1.1+3.9+3.1+4.7), III: 8.1 mm (1.8+0.7+1.7+1.5+2.4), IV: 12.8 mm (3.3+0.9+2.8+2+3.8). Legs are normal, strong and all are cylindrical. There are dark spots on these tawny legs. Femur, patella and tibia quite robust and heavily ornamented with rows of thorns. Ventral surface of coxae is covered with numerous directed spines. Ventral surface of trochanters is armed with long acute spines. Femur, patella and tibia are covered with



Picture. 3-5: Ocularium (3), chelicerae (4) and palp (5) of the *L. erinaceus*



Picture. 6-7: The shape of leg I (6) and receptaculum seminis (7) of the *L. erinaceus*



Picture. 8: Distribution of *Lacinius* in Turkey. **1-2:** *L. erinaceus* Staręga, 1966; **3-4:** *L. ephippiatus* (C. L. Koch, 1835) [Çorak et al., 2008].

thorns in the shape of a saw. Metatarsus proximally covered with one to three thorns, but distal area only bears setae. Tarsus is covered with setae and hairs, ending distally in single, curved claw (Fig. 6).

World distribution

To date, this speciesis only recorded in Abkhazia the Caucasus (Staręga, 1966).

Habitat

The members of this species were collected from ruins, shrub, under stones and leaf litter in a *Pinus* forest glade.

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