A new species of Proctolaelaps Berlese (Acari: Melicharidae) associated with the nest of European starling Sturnus vulgaris

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Abstract:
A new species of melicharid mite, Proctolaelaps izabelae sp. n. was found in the nest of European starling Sturnus vulgaris in the Netherlands. Female, male and deutonymph of this new species are described and illustrated. A short key is provided for the Proctolaelaps Berlese associated with the nest of birds.

Key words: Acari, bird nest, new species, Proctolaelaps, the Netherlands

Taxonomy: Proctolaelaps izabelae sp. n.

Introduction
It was estimated that at least 2500 species of mites from 40 families are closely associated with birds (Proctor and Owens, 2000). Some of these mites are found mainly in the nest of birds and not on their bodies. One of the genera recorded from the nest of birds is Proctolaelaps Berlese, 1923 (Halliday et al. 1998). Fenda et al. (1998), recorded Proctolaelaps pygmaeus (Müller, 1859) and Proctolaelaps cylodi Samsinak, 1960 from the nests of birds in Slovakia. During a study to identify potential predators of the poultry red mite, Dermanyssus gallinae (De Geer, 1778), a new species of Proctolaelaps was found in the nest of European starling Sturnus vulgaris Linnaeus, 1758. The data from this survey, which was carried out in the Netherlands, is already published (Lesna et al., 2009). This paper describes and illustrates the female, male and deutonymph of the new species.

Material and Methods
Samples of nest material of European starling were transferred into Berlese funnels. After 3–4 days, the mites were collected in vials with alcohol. Specimens were cleared in a mixture of Nesbitt and lactophenol solutions 1:1, and mounted in modified Hoyer’s medium as described by Faraji & Bakker (2008). The mites were examined under a phase contrast microscope. Measurements are in micrometers (µm). The mean of the measurements is given first followed by the range in parentheses. The length of the genital shield was measured from the posterior margin of the membranous anterior longitudinal folds to the posterior margin of the shield. Legs measured from the base of coxae to the tip of pretarsus and setae from the base of insertion to tip. Notations for dorsal idiosoma and ventral setae follow Lindquist and Evans (1965) and Lindquist (1994) respectively. The type specimens are deposited in the National Museum of Natural History, Leiden, the Netherlands (RMNH) and Senckenberg Museum of Natural History, Görlitz (SMNG).
**Taxonomy**

*Proctolaelaps* Berlese, 1923

(*Proctolaelaps* Berlese, 1923: 255)

*Proctolaelaps izabelae* Faraji sp. n.

(Figs 1–14)

**LOCALITY AND TYPE MATERIAL.** Holotype female (RMNH); Paratypes: five females, two males and one deutonymph (RMNH), five females, one male and one deutonymph (SMNG). All types collected in the Netherlands, Eelde-Paterswolde, nest of European starling *Sturnus vulgaris*, June 2007, collected by I. Lesna.

**ETYMOLOGY.** This species is named after Dr. Izabela Lesna in recognition of her devotion to the studies of mite biological control.

**DESCRIPTION. FEMALE** (Figs. 1–6). Five specimens measured.

Dorsal idiosoma (Fig. 1). Dorsal shield entire and oval 415 (395–425) long, 256 (223–275) wide at j6, reticulate over entire surface except for a small area between setae j3 and j6, with 43 pairs of dorsal setae; all dorsal setae simple, 24 pairs on anterior half and 19 pairs on the posterior half; marginal setae r1–6 and R1–4 located on the dorsal shield, Rs6, R5 (if present) and UR1–4 on soft cuticle; dorsal shield with 17 pairs of pores. Length of some dorsal setae: j1 34 (33–35), J1 50 (48–53), z1 25 (23–26), Zs 51 (45–55), Zs 58 (50–63) and Ss 40 (35–43).

Ventral idiosoma (Fig. 2). All ventral setae simple; tritosternum 79 (75–83) long with paired laciniae, free for about half of total length and pilose; a pair of small triangular sclerotized prestral plates; sternal shield reticulate, but smooth between ST3 setae, 102 (95–105) long along midline, 108 (80–123) wide at ST2 level; with 3 pairs of sternal setae and two pairs of lyrifissures, one pair posterior to ST1, and another pair located between ST2 and ST3; metasternal platelets smooth, each with a seta and a pore, ST1–4 28–33 long; genital shield convex posteriorly and reticulate, 113 (108–120) long and 74 (60–83) wide, with a pair of simple setae ST3 30 (28–33); anal shield reticulate 86 (80–90) long and 63 (55–68) wide, anterior margin round and posterior truncate, with para–anal setae 19 (22–23) and post-anal seta 32 (28–35) and a pair of small pores closely associated with lateral margins; anal opening 33 (32–33) long; nine pairs of setae JV1, JV2, JV3, JV4, ZV1, ZV2, ZV3, SV1, 19–30, and JV4 42 (40–45) on soft cuticle surrounding anal shield; two pairs of metapodal plates, secondary platelet small 13 (10–15), primary platelet 21 (20–25) long; peritreme extending to seta z1, posterior part of peritremal shield narrowly connected to exopodal shield. Gnathosoma. Tectum (Fig. 4) anteriorly round and serrate; hypostome with 8 rows, 7 rows with hypognathal denticles, row 1 with two denticles, rows 2 and 3 wider, row 2 with 9–12 denticles, row 3 with 4 slightly larger denticles, rows 4–7 with 3–4 denticles and row 8 smooth (Fig. 6); capitular setae 22 (20–24), internal posterior rostral setae 31 (26–34), external 20 (19–20), and rostral setae 27 (25–30), all simple; corniculi horns-like and not divided; chelicera with fixed digit 28 (27–29) long and a row of 10 teeth, movable digit 35 (34–35) long and with 3 teeth, the middle tooth larger (Fig. 5); palp apotele two-tined. Legs. Leg I 387 (370–410), leg II 305 (280–330), leg III 318 (310–320), leg IV 400 (390–410) (Fig. 3); setation of legs I–II–III–IV: coxae 2–2–2–1, trochanters 6–5–5–5, femora 12–11–6–6, genua 13–11–9–9, tibiae 13–10–8–10; leg IV without any macrosetae (the longest seta on tarsus IV 30 (38–40) long).

**MALE** (Figs 7–11). Three specimens measured. Dorsal shield (Fig. 7) entire, broadly oval 370 (360–380) long, 245 (240–250) wide at j6, dorsal setation as in female except submarginal UR and Rn–R setae missing; dorsal shield with 15 pairs of pores. Length of some dorsal setae: j1 28 (28–29), J1 44 (43–45), z1 21 (20–23), Z1 42 (40–44), Z2 44 (44–45) and S1 34 (33–35). Venter (Fig. 8) with all ventral setae simple; tritosternum 61 (58–63) long with paired laciniae, free for about half of total length and pilose; sternogenital shield 168 long along midline and 90 wide at ST2 level, striated laterally and posteriorly, with 4 pairs of setae and three pairs of pores, ST1–4 30–33 long; ventral shield striated triangular 149 (148–150) long and 192 (190–193) wide, with 7 pairs of preanal setae 25–35 long, para-anal setae 20 and post-anal seta 29 (28–30), and 3 pairs of pores; anal opening 26 (25–26) long; peritreme extending to seta z1. Tectum (Fig. 10) as in female; hypostome (Fig. 11) with 7 rows, 5 rows with hypognathal denticles, rows 4 and 5 with three denticles, rows 6 and 7 smooth; capitular setae 23, internal posterior rostral setae 30, external 20, and rostral setae 28, all simple; chelicera with fixed digit 25 long and a row of 7–8 teeth, movable digit 29 (28–30) long and with one tooth, spermatodactyl relatively short knife-shaped, 28 long (Fig. 9); leg setation as in female, Leg I 370, leg II 280, leg III 295 (290–300), leg IV 385 (380–390).

**DEUTONYMHP** (Figs 12–14). Two specimens measured. Dorsal shield (Fig. 12) divided and lightly sclerotized 365 (360–370) long, 250 (240–260) wide at j6, r–R setae on soft cuticle; with 9 pairs of pores; compare to female and male, a pair of setae missing (seta s1). Length of some dorsal setae: j1 25 (24–25), J1 32 (30–33), z1 17 (15–19), Zs 34 (33–35), Zs 50 and Ss 28. Venter (Fig. 13) with all ventral setae simple; tritosternum 58 (55–60) long; sternal shield smooth and lightly sclerotized 191 (188–193) long along midline and 87 (83–90) wide at ST1 level, with 3 pairs of setae (ST4 off the shield) and three pairs of lyrifissures, ST1–4 28–31 long; anal shield subcircular and smooth 70 long 60 wide, para-anal setae 22 and post-anal seta 25, and one pair of pores closely associated with lateral margins; anal opening 24 (25–26) long; ventral setae surrounding anal shield 15–28 long; peritreme extending to the level of seta j1, in one of specimens entire and in another di-
A new species of *Proctolaelaps* Berlese

**Figures 1–6.** *Proctolaelaps izabelae* sp. n., female. 1. Dorsal view of idiosoma; 2. Ventral view of idiosoma; 3. leg IV; 4. Tectum; 5. Chelicera; 6. Detail of gnathosoma, ventral view.


vided; tectum (Fig. 14) subtriangular with irregular serration; leg setation as in female, Leg I 350, leg II 290, leg III 285 (280–290), leg IV 355 (350–360).

REMARKS. Proctolaelaps izabelae resembles Proctolaelaps stammeri (Westerboer, 1963) and Proctolaelaps cubanus Karg & Rodriguez, 1984 closely. It differs from P. stammeri in that the fixed and movable cheliceral digits have 10 and 3 teeth, respectively instead of 3 and 1. Proctolaelaps stammeri is a larger mite (dorsal shield 445–455 long) while the new species is only 395–425 long. The dorsal setae of P. izabelae sp. n. are slightly longer than those of P. stammeri (e.g. 50–63 instead of 41 for setae Z5). The new species differs from P. cubanus in that the fixed and movable cheliceral digits have 10 and 3 teeth, respectively instead of 12 and 2. Anterior half of dorsal shield and ventral shields in P. cubanus are smooth while in P. izabelae sp. n. they are reticulated.

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Key to the species of Proctolaelaps (females) associated with birds’ nests

1 Most of dorsal setae longer than the distance to the next setae in series …………………………… 2

– Most of dorsal setae shorter than the distance to the next setae in series ……… P. cyllodi Samsinak, 1960

2 Sternal and genital shields smooth; fixed cheliceral digit with 5-6 small teeth subapically and 4-5 larger teeth medially, ………… P. pygmaeus (Müller, 1859)

– Sternal and genital shields reticulated; fixed cheliceral digit with 10 teeth relatively the same size (except the subapical one) ………… P. izabelae sp. n.

References


