

ARTÍCULO:

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

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ARTÍCULO:

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

Farid Faraji

**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.

**Una nueva especie de *Proctolaelaps* Berlese (Acari: Melicharidae) asociada con el nido del estornino europeo *Sturnus vulgaris***

**Resumen:**

Se describe e ilustra la hembra, macho y deutoninfa de una nueva especie de ácaro, *Proctolaelaps izabelae* sp. n., encontrada en el nido del estornino europeo *Sturnus vulgaris* en Holanda. Se acompaña con una corta clave para las especies de *Proctolaelaps* Berlese asociadas a nidos de aves.

**Palabras clave:** Acari, nidos de ave, especie nueva, *Proctolaelaps*, Holanda

**Taxonomía:** *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 cyllodi* 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 ( $\mu\text{m}$ ). 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  $j_6$ ; reticulate over entire surface except for a small area between setae  $j_5$  and  $j_6$ ; with 43 pairs of dorsal setae; all dorsal setae simple, 24 pairs on anterior half and 19 pairs on the posterior half; marginal setae  $r_{1-6}$  and  $R_{1-4}$  located on the dorsal shield,  $R_{5-6}$ ,  $R_7$  (if present) and  $UR_{1-4}$  on soft cuticle; dorsal shield with 17 pairs of pores. Length of some dorsal setae:  $j_1$  34 (33–35),  $J_1$  50 (48–53),  $z_1$  25 (23–26),  $Z_4$  51 (45–55),  $Z_5$  58 (50–63) and  $S_5$  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 presternal plates; sternal shield reticulate, but smooth between  $ST_3$  setae, 102 (95–105) long along midline, 108 (80–123) wide at  $ST_2$  level; with 3 pairs of sternal setae and two pairs of lyrifissures, one pair posterior to  $ST_1$  and another pair located between  $ST_2$  and  $ST_3$ ; metasternal platelets smooth, each with a seta and a pore,  $ST_{1-4}$  28–33 long; genital shield convex posteriorly and reticulate, 113 (108–120) long and 74 (60–83) wide, with a pair of simple setae  $ST_5$  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 22 (19–23) 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  $JV_1$ ,  $JV_2$ ,  $JV_3$ ,  $JV_4$ ,  $ZV_1$ ,  $ZV_2$ ,  $ZV_3$ ,  $SV_1$ , 19–30, and  $JV_5$  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  $z_1$ , 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 four 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 horn-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 setae on tarsus IV 40 (38–40) long).

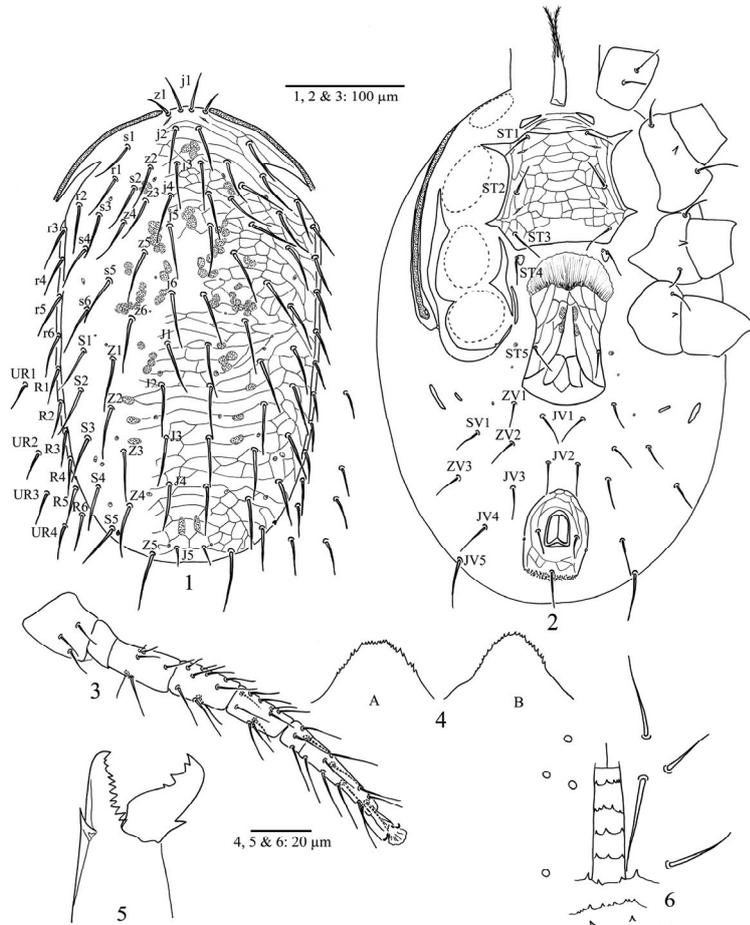
MALE (Figs 7–11). Three specimens measured.

Dorsal shield (Fig. 7) entire, broadly oval 370 (360–380) long, 245 (240–250) wide at  $j_6$ ; dorsal setation as in female except submarginal UR and  $R_{6-7}$  setae missing; dorsal shield with 15 pairs of pores. Length of some dorsal setae:  $j_1$  28 (28–29),  $J_1$  44 (43–45),  $z_1$  21 (20–23),  $Z_4$  42 (40–44),  $Z_5$  44 (44–45) and  $S_5$  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  $ST_2$  level, striated laterally and posteriorly, with 4 pairs of setae and three pairs of pores,  $ST_{1-4}$  30–33 long; ventrianal shield striated subtriangular 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  $z_1$ . 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).

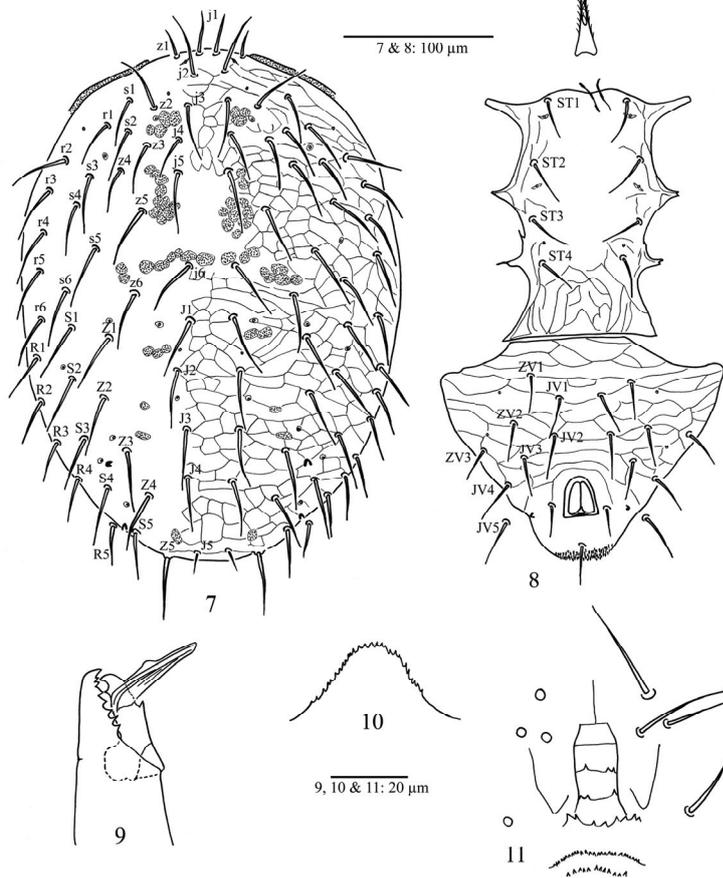
DEUTONYMPH (Figs 12–14). Two specimens measured.

Dorsal shield (Fig. 12) divided and lightly sclerotized 365 (360–370) long, 250 (240–260) wide at  $j_6$ ;  $r$ -R setae on soft cuticle; with 9 pairs of pores; compare to female and male, a pair of setae missing (setae  $s_1$ ). Length of some dorsal setae:  $j_1$  25 (24–25),  $J_1$  32 (30–33),  $z_1$  17 (15–19),  $Z_4$  34 (33–35),  $Z_5$  50 and  $S_5$  28.

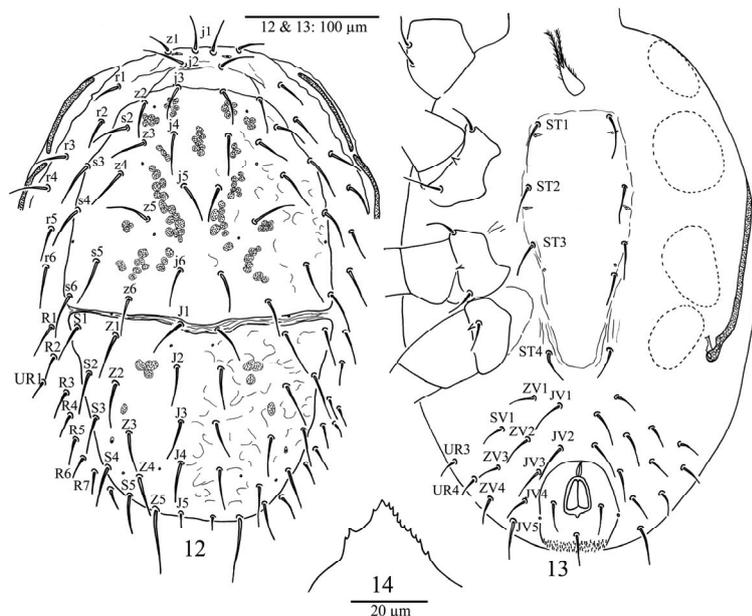
Venter (Fig. 13) with all ventral setae simple; tritosternum 58 (55–60) long; sternal shield smooth and lightly sclerotized 191 (188–193) long along midline and 87 (83–90) wide at  $ST_2$  level, with 3 pairs of setae ( $ST_4$  off the shield) and three pairs of lyrifissures,  $ST_{1-4}$  28–31 long; 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  $j_3$ , in one of specimens entire and in another di-



**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.



**Figures 7–11.** *Proctolaelaps izabelae* sp. n., male. 7. Dorsal view of idiosoma; 8. Ventral view of idiosoma; 9. Chelicera; 10. Tectum; 11. Detail of gnathosoma, ventral view.



**Figures 12–14.** *Proctolaelaps izabelae* sp. n., deutonymph. **12.** Dorsal view of idiosoma; **13.** Ventral view of idiosoma; **14.** Tectum.

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 Z<sub>5</sub>). 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.**

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