



A report on numerical variations in the dorso-central setae *pdx* of *Neophyllobius yunusi* Akyol and Koç (Trombidiformes: Camerobiidae)

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ASBTRACT: *Neophyllobius* Berlese is the largest genus of the family Camerobiidae Southcott, with about 140 species to date. In this study, the presence of numerical variations in setae *pdx* of *Neophyllobius yunusi* Akyol and Koç, known from Türkiye, has been demonstrated for the first time.

Keywords: Acari, anomaly, asymmetry, dorsal seta, morphology

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The Camerobiidae Southcott (Trombidiformes) is the second largest family in the superfamily Raphignathoidea after Stigmaeidae, and comprises more than 175 species within seven genera (Akyol and Koç, 2006; Akyol, 2020; Beron, 2020, 2022; Mirza et al., 2022; Escobar-Garcia et al., 2023, 2024). *Neophyllobius yunusi* Akyol and Koç was described from Afyonkarahisar and Kütahya provinces, Türkiye (Akyol and Koç, 2006; Doğan, 2019; Beron, 2020). It can be recognized by having setae *pdx* on prodorsum, dorsal setae with small denticles, tarsus IV with one midventral setae, femur I with 4 setae and femur II with 3 setae (Akyol and Koç, 2006; Uluçay and Koç, 2014; Mirza et al., 2022). The aim of this study is to demonstrate the existence of numerical variations in setae *pdx* of *Neophyllobius yunusi*.

Altogether 21 females and 1 protonymph of *Neophyllobius yunusi* were collected from litter and moss in the Karasu Valley, Türkiye, between May 2022 and April 2023, as part of an on-going study on mite biodiversity, and subsequently examined. Mite specimens were extracted with using Berlese-Tullgren funnels, cleared in 60% lactic acid and mounted in Hoyer's medium on microscopic slides as discussed in detail by Fan and Zhang (2005). Asymmetrical variations in the specimens were studied and photographed with the aid a Leica DM 4000B phase-contrast microscope.

Typically, *Neophyllobius yunusi* exhibits a single pair of *pdx* setae on the prodorsum; however, among the 22 examined mite specimens, 9% showed anomalies in *pdx*. In one female, the *pdx* on the left side was duplex (Fig. 1A), while a protonymph displayed a single duplex *pdx* (Fig. 1B). This is the first report on the numerical variations in *N. yunusi*.

In some species of *Neophyllobius* and *Tycherobius*, variations or anomalies in setal notation on the leg, and on the dorsal and ventral idiosoma have been documented by Akyol and Koç (2006), Koç and Akyol (2007), Paredes-León et al. (2016) and Zmudzinski (2020).

The number and shape of dorsal and leg setae can be used for species identification, and variations might be observed in different developmental stages or among different populations. Numerical variations in these setae can occur due to a variety of factors, including species differences, developmental stages, and environmental conditions (such as temperature, humidity, and diet) (Bingül et al., 2017). These variations that disrupt bilateral symmetry can be expressed as anomaly (Bingül et al., 2017, 2018).

Neophyllobius ostovani Khanjani and Ahmad Hoseini has a single (unpaired) *pdx* seta (Khanjani et al., 2014). Similarly, dorsal idiosoma of three species of another genus *Tycherobius* in Camerobiidae, namely: *T. virginiensis* (McGregor), *T. acicula* Fan and Walter, and *T. emadi* Khanjani, Hajizadeh, Ahmad Hoseini and Jalili, also have a single *pdx* seta (McGregor, 1950; Bolland, 1986; Fan and Walter, 2006; Khanjani et al., 2013).

As the number of dorsal setae in some genera of this family can vary, caution is required when identifying or describing new species on the basis of a few specimens, particularly if their distinctive characters are related to the setae.

Authors' contributions

Salih Doğan: Conceptualization, project administration, funding acquisition, data curation, writing-original draft, writing-review and editing. **Qing-Hai Fan:** Validation, writing-original draft, writing-review and editing.

Statement of ethics approval

Not applicable.

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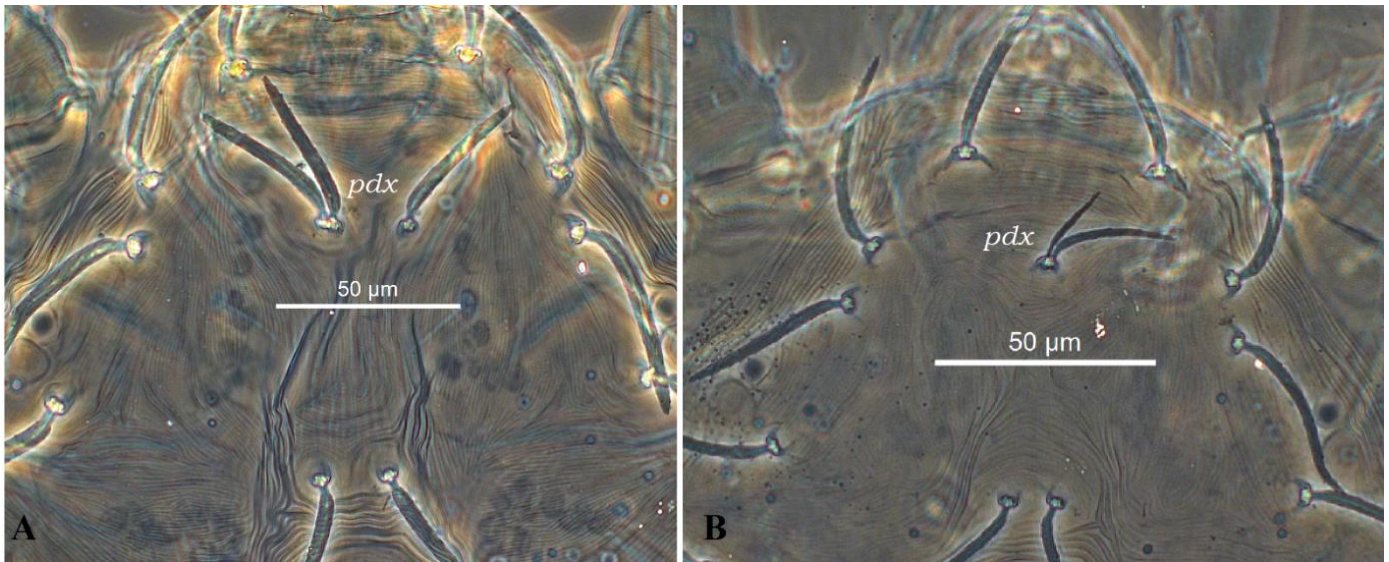


Figure 1. Numerical variations in setae *pdx* of *Neophyllobius yunusi* Akyol and Koç. **A.** Female, **B.** Protonymph.

Conflict of interest

The authors confirm that there are no conflicts of interest.

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