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Description of one new species of eriophyoid mites (Acari, Acariformes, Eriophyoidea) from New Alluvial Zone, West Bengal, India

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ABSTRACT

One new species of eriophyoid mites *Disella jasminae* **sp. nov.** from *Jasminum officinale* L. (family Oleaceae) was described and illustrated from New Alluvial Zone of West Bengal, India. The new mite species was found to be vagrant on the surface of the leaves without causing visible damage.

KEYWORDS

Disella, Eriophyidae, *Jasminum*, taxonomy, vagrant

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INTRODUCTION

Considering the Indian eriophyoid fauna, so far approximately 500 eriophyoid species in 109 genera and three families (Phytoptidae, Eriophyidae and Diptilomiopidae) have been recorded (Gupta 2012). The highest number was found from West Bengal, with an estimated 101 species from 46 genera in two families (Debnath and Karmakar 2016). A survey was conducted for exploration of eriophyoid mite species association with their respective host plants during 2018 in new alluvial zone, West Bengal which resulted in the discovery of one new species from *Jasminum officinale* L. (family Oleaceae), that is an important flowering plant which is cultivated throughout the West Bengal for commercial purposes. Eriophyid mites belong to the genus *Disella* sp. and are highly host specific and cause different abnormalities by injecting different chemical compound during feeding (Jana 2017). Apart from *Jasminum officinale*, *Disella* species also attack different host plants like *Ilex paraguariensis*, *Huodendron biaristatum*, *Caesalpinia* sp. (Wang *et al.* 2007). In the present text the elaborative taxonomic description of one new eriophyid mite is documented which is collected from new alluvial zone of West Bengal.

MATERIAL AND METHODS

Plant shoots were collected in separate polythene bags and mites were picked up by using a sharp wooded needle with the help of a microscope (Olympus BX 41). Then mites were placed into Hoyer's medium (Keifer 1975; Amrine and Manson 1996) for permanent mounting. After completing the mounting process, the slides were kept in a slide warmer for clearing of the slide for 4–5 days at 40–45

°C. The slide mounted mites were studied under a phase contrast microscope (Olympus BX41) and line drawings were prepared by using a camera lucida. The morphological nomenclature follows Lindquist (1996). Measurements were taken according to Amrine and Manson (1996) and de Lillo et al. (2010) and given in micrometres (µm). The systematic classification follows Amrine *et al.* (2003) and considering all the published species after 2003. In the description of new species, the holotype female measurement followed by the corresponding range for paratypes were given in parentheses. The slides were labelled properly with all relevant data and deposited in the National Zoological Collection, Zoological Survey of India, Kolkata and one slide with paratypes in the National Pusa Collection, Indian Agricultural Research Institute, New Delhi.

RESULTS

TAXONOMY

Family Eriophyidae Nalepa, 1898

Sub family Nothopodinae Keifer, 1956

Tribe Nothopodini Keifer, 1956

Genus *Disella* Newkrik & Keifer, 1975

Disella jasminae sp. nov. (Fig. 1)

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Description (Female, n = 10)

Body fusiform, 159 (158 – 168), 61 (60 – 65) wide, 62 (60 – 65) thick.

Gnathosoma – 20 (19 – 21), projecting downwards, dorsal pedipalp genual seta (*d*) 6 (4 – 6), chelicerae 14 (12–14).

Prodorsal shield – with minute frontal lobe, 28 (29 – 30), 45 (44 – 46) wide, median line incomplete end just before the anterior shield margin, admedian line present parallel with the median line, three short transverse lines connect with median and admedian lines delimiting six median cells. Two parallel submedian lines did not touch the rear shield margin; four irregular curved lines present on the lateral side of prodorsal shield; many small and large cells occupy the shield. Shield design did not touch the anterior shield margin. Dorsal tubercles ahead of rear shield margin, 25 (22–26) apart, scapular seta (*sc*) 8 (7–9), 24 (22–25) apart, directed backwards, convergent towards the admedian lines.

Coxigenital region – Coxal plate with granules, coxa I 17 (16–18), prosternalapodeme6 (6–7), distally bifurcate, anterolateral seta on coxisternum I (*1b*) absent, proximal seta on coxisternum I (*1a*) 7 (6–8), 11 (10–12) apart. Coxa II 11 (10–12), coxal bases 15 (15–16) apart, proximal seta on coxisternum II (*2a*) 20 (19–21), 20 (19–20) apart. Coxigenital region with 5 (4–7) semiannuli between coxae and genitalia.

Legs – Leg I 15 (14–16), femur 6 (6–7), genu 3 (3–4), tibia absent or fused with tarsus, tarsus 6 (5–7), basiventral femoral setae (*bv*) 5 (4–6), antaxialgenual seta (*l''*) 22 (21–23), paraxial fastigialtarsal setae (*ft'*) 15 (14–16), antaxialfastigial tarsal setae (*ft''*) 19 (19–21), paraxial unguinal tarsal setae(*u'*) 4 (3–4), tarsal empodium (*em*) 5 (4–6), 4-rayed, tarsal solenidion (*ω*) 4 (4–5), knobbed.

Leg II 14 (14–15), femur 8 (7–9), genu 2 (2–3), tibia fused with genu, tarsus 4 (3–5), basiventral femoral setae (*bv*) 13 (12–14), antaxial genual setae (*l''*) 8 (7–9), paraxial fastigial tarsal setae (*ft'*) 5 (5–7), antaxial fastigial tarsal setae (*ft''*) 17 (16–18), paraxial unguinal tarsal setae (*u'*) 3 (3–4), tarsal empodium (*em*) length 4 (3–4), 4-rayed, tarsal solenidion (*ω*) 4 (4–5), knobbed.

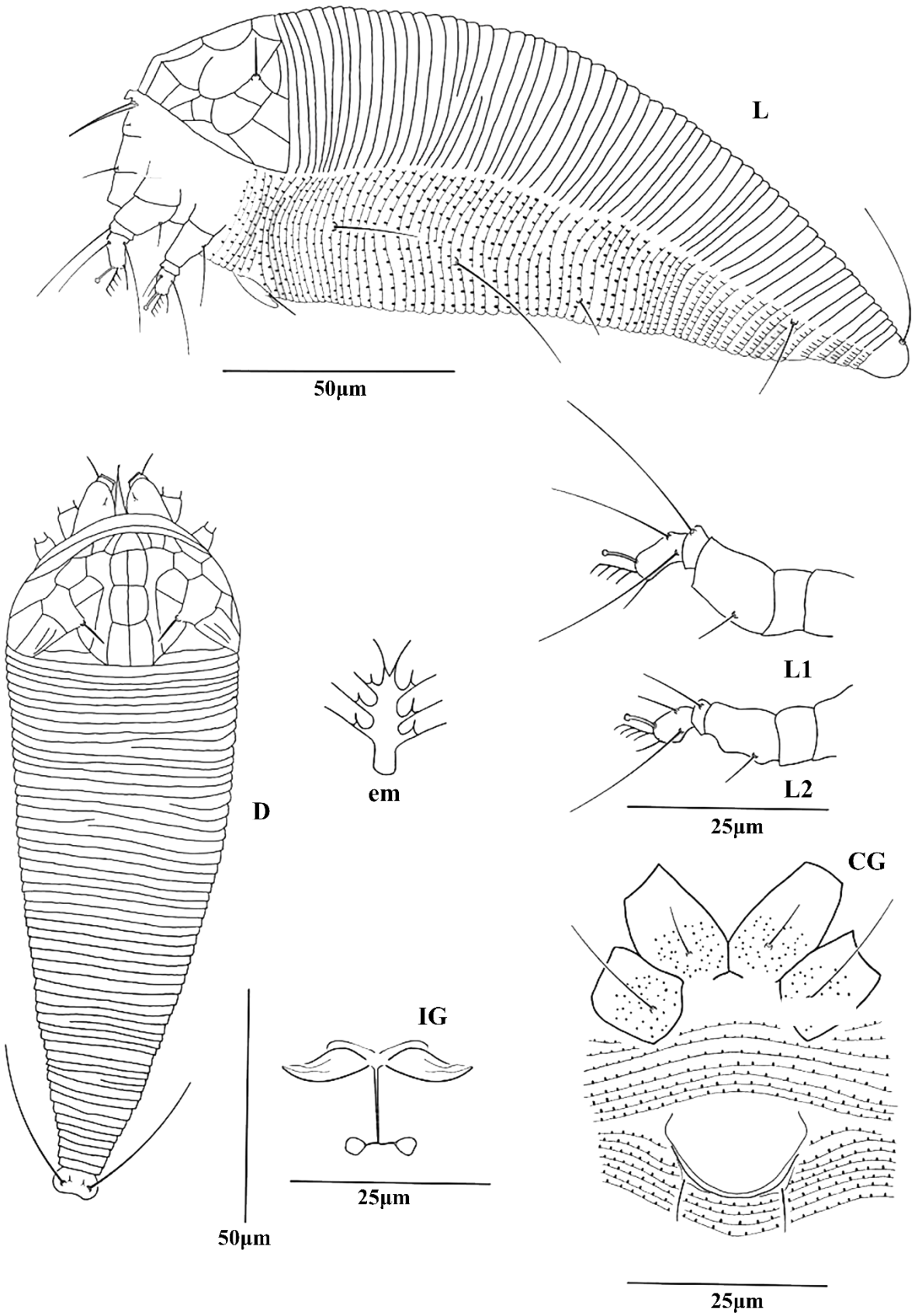

Figure 1. *Disella jasminae* sp. nov. (female) – **D.** Dorsal habitus; **L.** Lateral habitus; **L1.** Leg I female; **L2.** Leg II female; **em.** empodium; **CG.** Coxogenital region female; **IG.** Internal Genitalia.

Opisthosoma – With 58 (56–60) smooth dorsal annuli, without mid-dorsal furrow or ridge, ventral annuli 68 (66–69) microtuberculate. Opisthosomal setae *c2* 17 (16–18), on annulus 17 (16–18), setae *d* 31

(29–32), on annulus 29 (27–30), 28 (26–28) apart, setae *e* 8 (7–9), on annulus 41 (40–42), 25 (23–25) apart, setae *f* 17 (15–18), on annulus 62, 30 (28–30) apart, *h1* minute, setae *h2* 39 (38–40).

External Genitalia – smooth, 10 (9–11), 20 (19–21) wide, proximal seta on coxisternum III (*3a*) 6 (5–6).

Internal Genitalia – transverse lateral apodemes laterally expanded, longitudinal bridge 8 (7–9), spermatheca round shaped.

Male – Not observed.

Host plant – *Jasminum officinale* L. (Oleaceae)

Relation to host – *Disella jasminae* **sp. nov.** is vagrant on the lower surface of the leaves without causing no damage symptoms.

Type locality – India, West Bengal, Nadia, Madanpur (23°N, 88°E), 14m above sea level, 4 February. 2018, coll. Shamik Dey.

Type material – Holotype, single female (slide number.Acar.Lab./BCKV/4180/2018) from *Jasminum officinale*, Madanpur, Nadia, West Bengal, India, 4 February, 2018. coll. Shamik Dey. **Paratypes,** 14 slides bearing 20 females (slide number. Acar. Lab./BCKV/4181-4195/2018) with the same data as holotype were deposited in the Acarology Laboratory, BCKV, Kalyani, Nadia, India.

Differential diagnosis

By observing the entire morphological characters and comparing with other species it was decided that *D. jasminae* sp. nov. was very close to the species *D. oblongifoliae* Ghosh, Mondal & Chakraborty, 1986 with the presence of accessory setae (*h1*), 4 rayed empodium, granular coxal plates, smooth genital coveflap and knobbed tarsal solenidion. However, it differs from that species in prodorsal shield design. In this new species the median line is incomplete whereas in *D. oblongifoliae* complete median line is present. The three transverse or cross lines do not extend laterally but thet extend laterally in *D. oblongifoliae*. Difference in orientation of Scapular setae (*sc*) reveals to be a prominent character. They are medially converged in *D. jasminae* sp. nov. and divergent in *D. oblongifoliae*. Apart from the above differential diagnostic features, other morphometric characters (Table 1) are also different between the new species and compared species.

Table 1. Distinguishing characters between *Disella jasminae* **sp. nov.** and *D. oblongifoliae* Ghosh, Mondal & Chakraborty, 1986.

Characters	*Disella jasminae* sp. nov.	*D. oblongifoliae*
Stylet length	14 (12–14)	22–27
Length of Leg I	15 (14–16)	25–30
Length of femur	6 (6–7), smooth	6–8, granulated
Length of seta *bv* on leg I	5 (4–6)	9–12
Length of genu I	3 (3–4)	4–6
Length of tarsus I	6 (5–7)	26–30
Tarsal solenidion length of leg I	4 (4–5)	6
Length of Leg II	14 14–15)	23–26
Length of femur II	8 (7–9)	6
Length of seta *bv* on leg II	13 12–14)	7–11
Length of genu II	2 (2–3)	4–5
Length of seta *l"* on leg II	8 (7–9)	16–21
Length of tarsus II	4 (3–5)	6–8
Length of seta *c2* and on	17 (16–18), on annules 17 (16-18)	18–24, on semiannules 6
Length of seta *d* and on semiannulus	31 (29–32), on annules 29 (27-30)	22–36, on semiannules 36
Length of seta *e* and on semiannulus	8 (7–9), on annules 41 (40 – 42)	6–8, on semiannules 33
Length of seta s*f* and on semiannulus	17 (15–18), on annules 62	15–18, on semiannules 52

Etymology

The species name "*jasminae*" was derived from scientific name of the host plant *Jasminum officinale*

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Data availability: Holotype and Paratype materials are submitted into the Acarology Laboratory, BCKV with accession number.

Ethics approval: This study only included arthropod material, and all required ethical guidelines for the treatment and use of animals were strictly adhered to in accordance with international, national, and institutional regulations. No human participants were involved in any studies conducted by the authors for this article.

Conflict of interest: The authors declare no conflict of interest.

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توصیف گونه‌ای جدید از کنه‌های اریوفیوئید (Acari, Acariformes, Eriophyoidea) از منطقهٔ آبرفتی جدید، بنگال غربی، هند

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دبیر تخصصی

پ. لطف‌الهی

چکیده

گونه‌ای جدید از کنه اریوفیوئید *Disella jasminae* **sp. nov.** از *Jasminum officinale* L. (خانواده Oleaceae) از منطقهٔ آبرفتی جدید بنگال غربی، هند توصیف و ترسیم می‌شود. مشخص شد که این گونه جدید کنه بدون ایجاد آسیب قابل مشاهده، روی سطح برگ‌ها پرسه می‌زند.

واژگان کلیدی: *Disella*، Eriophyidae، *Jasminum*، آرایه‌شناسی، سرگردان.

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