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A new species of predatory mite (Prostigmata: Cunaxidae: *Cunaxa*) from Kerala, India

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ABSTRACT: Mites belonging to the family Cunaxidae are potential predators of harmfull mites and insects. During a survey on predatory mites associated with vegetable crops in North Kerala yielded a new species of cunaxid mite under the genus *Cunaxa viz., Cunaxa soansi* sp.nov is described and illustrated. It was collected from *Manihot esculenta* leaves infested with *Tetranychus neocalidonicus.*

Keywords: Predatory mite, Prostigmata, Cunaxidae, *Cunaxa*, New species, Kerala.

INTRODUCTION

The members of the family Cunaxidae have been reported to feed on phytophagous mites and insects (Sathiamma, 1995; Arababi and Singh, 2000; Castro and Moreas, 2010). They are cosmopolitan in distribution. The family Cunaxidae was erected by Thor in 1902. The genus *Cunaxa* is the largest genus under family, this comprising over 170 described species worldwide (Smiley, 1992). Genus *Cunaxa* was erected by Von heyden (1826), who designated *Scirus setirostris* Hermann as the type species. The genus *Cunaxa* is diagnosed in having strongly sclerotized body covered with two dorsal shields. Propodosomal shield may be smooth, reticulate or striated. Propodosoma and hysterosoma may be with or without a shield. Palpi 5 segmented and may bear stout spine like setae and elongate apophysis. A number of taxonomic works has been done all over the world on this genus (Chinniah and Mohanasundaram, 2001; Corpuz – Raros and Garcia, 1995; Gupta, 1991, 1992, Bashir *et al.*, 2010; Mary Anitha and Ramani, 2006). The reports on occurrence of new species are scanty from Peninsular India, hence, a systematic survey was undertaken to unravel the occurrence of new species of Cunaxidae from various districts of Kerala.

MATERIALS AND METHODS

Samples of infected leaves were brought to the laboratory in polythene bags and examined under steriozoom microscope. The mites thus collected were stored in 70% alcohol and then upgraded in alcohol series. Permanent slides were prepared in Hoyer's medium. Detailed structural studies and illustrations were made using Olympus CX 31 microscope attached with drawing tube. The terminology is used is that of Kethley (1990). Measurements were made with the aid of an ocular micrometer and all measurements are in micrometers (µm). All the type specimens have been deposited in the Acarological collections maintained in the P G & Research Department of Zoology, Malabar Christian College, Calicut, which will be later transferred to Zoological survey of India, kolkata.
Abbreviations used: C: Chelicera, DF: Dorsal view of female, VF- Ventral view of female, L I - IV: Leg I - Leg IV showing setation, P: Pedipalp, H: Hypognathus.

RESULTS AND DISCUSSIONS

Description

***Cunaxa soansi* sp.nov (Fig: 1)**

Female: Length of the body including gnathosoma 538 long and 300 wide. Gnathosoma 138 long, 88 wide. Hypostome is subrectangular, cone shaped distally with 4 pairs of hypognathal setae and 2 pairs of adoral setae. Dorsal shield 269 long, 225 wide. Propodosoma with transversely striated subrectangular shield originating behind the base of gnathosoma, extending to anterior region of hysterosoma. Propodosomal shield with anterior sensillae 202 long and posterior sensillae 230 long and setae P_1 and P_2. Hysterosoma with subrectangular longitudinally striated median shield and setae D_2 and D_3. Hysterosoma separated from propodosoma by smooth striae. Thick longitudinal striations are present along the lateral margins of the dorsal shield. Measurements of setae: Propodosomal setae P_1 and P_2 equal in length, 30 long, D_1 – 18, D_2 – 25, D_3, D_4 – 30 each, D_5 – 35 and L_1 – 18 long.

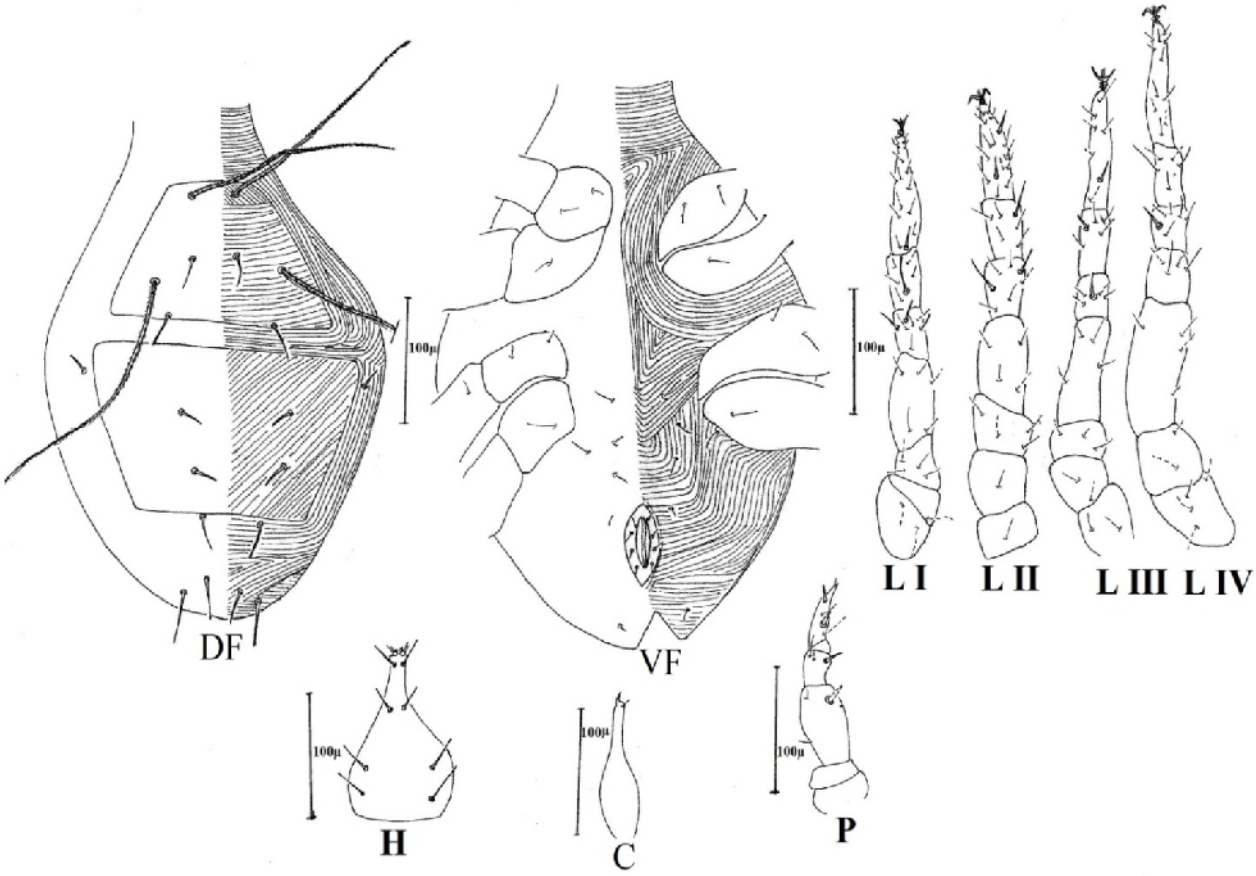

Fig. 1: *Cunaxa soansi* sp. nov.

Chelicerae 120 long, terminating in single digit, dorsal and ventral sides with lobes; with one dorsolateral simple seta. Length of palp 195 long, palpi 5 segmented, trochanter - none; basifemur – none, telofemur inner surface with one elongate apophysis, outer surface with 2 dorsolateral simple setae; genu inner surface with spine like seta, outer surface dorsally and ventrally with simple seta; tibiotarsus inner surface with one large simple seta, medially with one stout spine like seta, adjacently with one simple seta, outer surface with one dorsolateral simple seta, terminating with one simple seta and small claw. Ventral side of the idiosoma with smooth stariations, coxae I - II and coxae III – IV contiguous. Hysterosoma with 5 pairs of simple setae between coxae II and distal part of the body in addition to setae of genital and anal region. Genital shield with two halve with 4 simple genital setae in a row. Length of Leg I – 360, Leg II – 375, Leg III – 395 and Leg IV – 450 long.

Leg chaetotaxy: Coxae I – IV: 2-1-2-4; trochanter I – IV: 1-1-2-2; basifemur I – IV: 4-4-3-2; telofemur I – IV: 4-4-4-4; genu I - 2 attenuate solinidia plus 6; genu II – 2 attenuate solinidia plus 5, genu III - 1 attenuate solinidion plus 4, genu IV: 1 attenuate solinidion plus 5; tibia I – 1 attenuate solinidion plus 4, tibia II - 1 attenuate solinidion plus 5; tibia III: 1 attenuate solinidion plus 4; tibia IV: 1 smooth trichobothrium plus 4, tarsus I - 1 attenuate solinidion plus 6; tarsus II: 2 attenuate solinidia plus 14, tarsus III - 1 attenuate solinidion plus 15, tarsus IV – 11.

Remarks: This new species closely resembles to *Cunaxa terrula* Den Heyer, 1979 but can be clearly separated from it by the following characters:

1. Hysterosomal shield complimented with setae D_1 and D_2 in the new species but in *C. terrula* it is with setae D_1, D_2 and D_3.
2. Propodosomal setae P_1 and P_2 equal in length in the new species whereas P_1 about one half as long as P_2 in *C. terrula*.
3. In the new species the length of setae D_1, D_2 and D_3 greatly varies but in *C. terrula* they are about equal in length.
4. Setae D_4 and D_5 being simple in the new species instead of setose in *C. terrula*.
5. Length of the palp is smaller in the new species (195 long) when it is compared with *C. terrula* (230 long).

6. Palp basifemur without any seta in the new species but in *C. terrula* it is with one dorsomedial simple setae.
7. Inner surface of tibiotarsus having a nobe like apophysis in the new species but it is absent in *C. terrula*.
8. Chelicerae with single digit in the new species instead of 2 in *C. terrula*.
9. Hysterosomal shield is subrectangular in shape in the new species but it is squarish in *C. terrula*.
10. Both species differ in setal counts on leg.

Male: Unknown.

Habitat: *Manihot esculenta* Crantz.

Material examined: Holotype ♀ marked on the slide, INDIA: KERALA: Kunduparamba (Kozhikode district), 15.vi.2015, ex. *M. esculenta*, coll. Rahul (No. C 292/1). Three paratype ♀ ♀, collection details same as holotype (No. C 292/2, 292/3, 292/4).

Etymology: In honour of late Prof. Soans.

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REFERENCES

Arababi, M., & Singh, J. (2000). Studies on biological aspects of predacious mite *Cunaxa setirostris* on *Tetranychus ludeni* at laboratory conditions in Varanasi, India. *Journal of Agriculture and Rural Development*, **2**: 13-23.

Bashir, M. H., Afzal, M., Ashfaq, M., Akbar, S., & Ali, S. (2010). Two new species of genus *Cunaxa* (Acari: Cunaxidae) from district Nankana. *Pakistan Journal of Zoology*, **42**: 217-222.

Castro, T. M. M. G., & Moraes, G. J. (2010). Life cycle and behaviour of the predaceous mite *Cunaxatricha tarsospinosa* (Acari: Prostigmata: Cunaxidae). *Experimental and Applied Acarology*, **50**: 133-139.

Chinniah, C., & Mohanasundaram, M. (2001). New species of acarine fauna (Acarina: Mesostigmata) from Shevroy range of Eastern Ghats of Tamil Nadu, India. *Zoo's print journal*. **16**(7): 523-531.

Corpuz – Raros, L. A., & Garcia, R. C. (1995). Philippine predatory mite of the family Cunaxidae (Acari) Genus *Cunaxa* Von Heyden. *Philippine entomologist.* **9**(6): 605-624.

Den Heyer, J. (1979). Description of seven African species of *Cunaxa* Von Heyden 1826 (Actinedida: Acarida), with remarks on the genus. *Phytophylactica.* **11**(1): 24-42.

Gupta, S. K. (1991). Studies on the predatory prostigmatid mites of North-East with descriptions of new species and new records from India. *Records of Zoological Survey of India*. **88**(1-4): 2307-239.

Gupta, S. K. (1992). Arachnida: Plant mites (Acari). In. Fauna of West Bengal, Part 3 (Arachnida and Acari). Ed. A K Ghosh, Zoologica Survey of India, Culcutta. 61-211.

Kethley, J. B. (1990). Acarina: Prostigmata (Actinedida). In. Dindal DL (Ed), Soil Biology Guide. John Wiley & Sons, New York. pp. 667-756.

Sathiamma, B. (1995). Biological suppression of the white spider mite *Oligonychus iseilemae* (Hirst) on coconut foliage. *Entomon*, **18**: 377-382.

Smiley, R. L. (1992). The predatory mite family Cunaxidae (Acari) of the world with a new classification. Indira Publishing House, West Bloomington, Michigan, pp 356.

Thor, S. (1902). Zur Systematic der acarinenfamilien bdellidae Koch, 1842, Grube 1859, Eupodidae Koch, 1842 und Cunaxidae Sig Thor, 1902. Verhandllungen der kaiserlich – kongiglichen zoologish – botanischen Gesellschaft in Wien, 159-165.

Von Heyden, C. (1826). Versuch einer systematicschen Eintheilung der Acariden. "Isis" von Oken 1826; **18**(6):19.